

Project: Milldale **Project No:** 310206516
To: Greg Dewe (Fulton Hogan Land Development) **Date:** 31 October 2025
Rachel Morgan (Barker and Associates)
From: Trevor Lee-Joe (Stantec NZ) / Alasdair McGeachie (Stantec NZ)

RE: Milldale North Fast Track Referral

1. Background

The Milldale development is located within the Wainui Precinct, in the northern region of Auckland. The Precinct has been carefully planned to balance residential, commercial, and open-space land uses, providing a framework for creating a cohesive and well-functioning urban environment. Further background on the Wainui Precinct is included within the Assessment of Environmental Effects.

To support the development of Milldale, an Integrated Transportation Assessment (**ITA**) was undertaken and subsequently finalised in 2019. The ITA included recommendations for roading infrastructure and concluded that subject to the implementation of the recommendations an anticipated build out of approximately 4,500 dwellings and 40,000m² of commercial area could be supported with no significant impacts on the surrounding transport network. The ITA (including the modelling) was reviewed by representatives of Auckland Transport (**AT**) and the New Zealand Transport Agency, Waka Kotahi (**NZTA**) through the resource consenting process and the ITA was subsequently approved by AT. A copy of the approval letter issued by AT is attached to this memo in **Appendix A**.

Since the ITA was approved, the Milldale development has progressed through multiple stages, with significant roading infrastructure, including a new overbridge over State Highway 1 (Milldale Bridge), already completed. A primary school (Ahutoetoe School) and several pre-schools are now operational. Stage 1 of a neighbourhood centre off Henry Taylor Rise was completed in 2024 and Stage 2 is under construction and due for completion in 2026 to support the rapidly growing populace. Furthermore, Stage 1 of the town centre off Parish Drive has been completed and two of the five commercial sites in this stage have been sold. Housing development in Stages 1 through 9 has been consented through multiple resource consent applications and within those staged areas, construction is either complete, or consent has been approved, for construction to begin. In October 2025, a fast-track resource consent application was approved for Stages 4C and 10 to 13, which will essentially complete the consenting of development within the Milldale Precinct.

Pre-empting the completion of Milldale, Fulton Hogan Land Development (**FHLD**) submitted two Private Plan Change (**PPC**) applications to Council in 2024 known as Milldale North and Wainui West. The PPCs seek to live zone the Future Urban Zone (**FUZ**) areas directly adjacent to the northern and western boundaries of Milldale. An ITA was undertaken and submitted as a part of both PPCs. The PPCs are yet to be accepted by Council to be notified but extensive discussions with Council and Auckland Transport on the ITA have been held, including responses to requests for further information.

2. Introduction

FHLD is applying for referral to the Fast-track Approval Act (FTAA) to enable the development of future urban zoned land to the north of the Wainui Precinct, herein referred to as Milldale North. **Figure 1**, a conceptual Masterplan for the wider area as provided by Barker and Associates, illustrates the location of this area in the context of the existing Precinct.

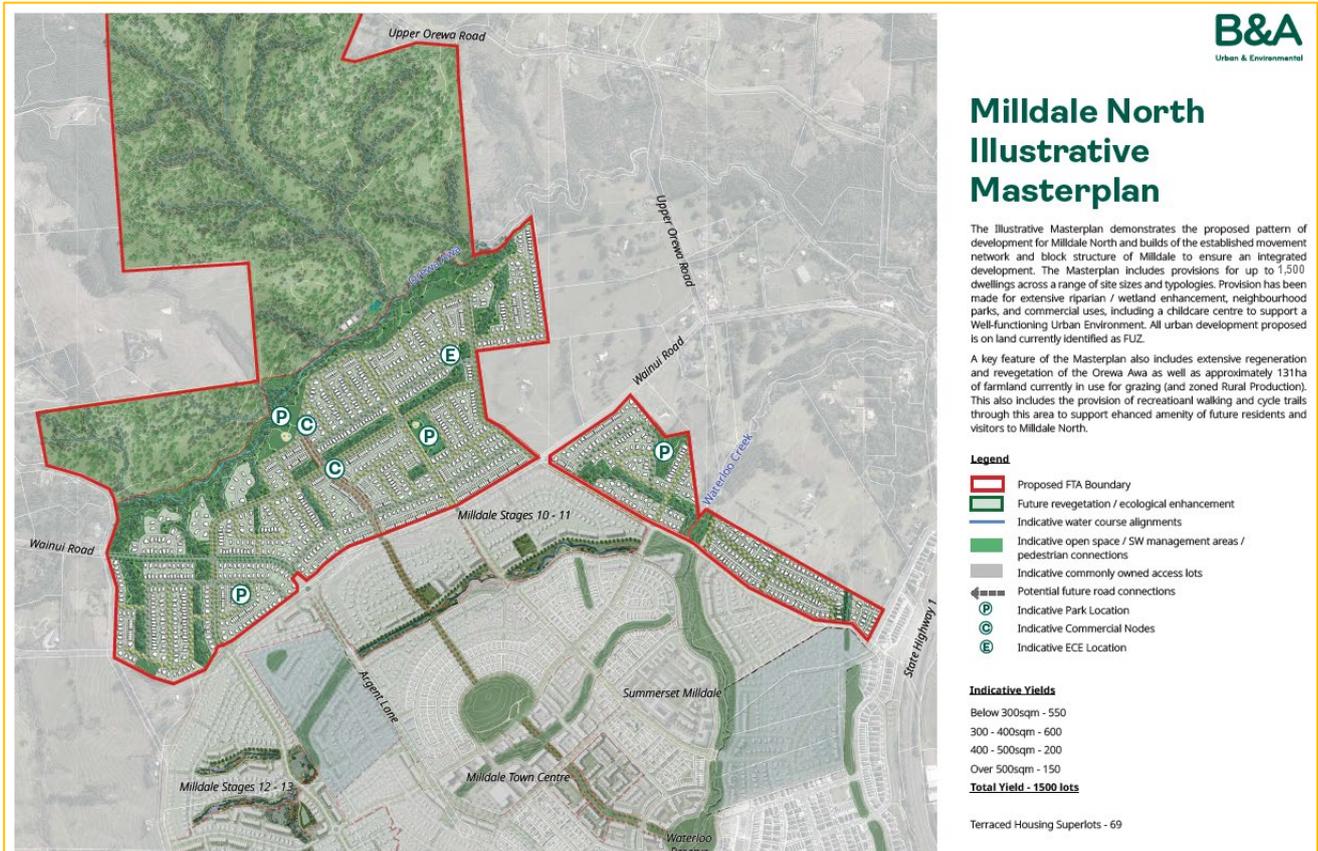


Figure 1: Milldale North Area

Milldale North is in the same general geographic location as assessed for the 2024 PCC applications. However, for the purposes of this application, the extent of the subject site only incorporates FHLD's landholdings. The yield anticipated through this application is approximately 1,500 dwellings (as opposed to around 2,500 dwellings anticipated for the wider PCC area).

This memorandum relies on the technical work undertaken for the PPCs which assumed a uniform rate of growth of construction of approximately 220 dwellings per year between 2028 and 2038.

3. Unfunded Projects (Milldale)

The ITA for the Wainui Precinct and the AT approval letter identified three unfunded roading projects which would be required to support the full buildout of the Wainui Precinct to 4,500 dwellings if the O Mahurangi - Penlink project (**Penlink**), a new seven-kilometre highway linking the Whangaparaoa peninsula with State Highway 1 (**SH1**), was not to proceed. The unfunded road projects comprised:

- An additional westbound lane on the Silverdale Interchange over-bridge;
- Four-laning of Dairy Flat Highway between Pine Valley Road and the Silverdale Interchange; and
- Additional upgrade of the Dairy Flat Highway / Pine Valley Road intersection.

As indicated in the ITA, the trigger for these projects was offered at 3,800 dwellings if Penlink didn't proceed. However, as of November 2023 the Penlink project entered its main construction phase and the target date for completion of the project is early 2028. Based on this, the unfunded projects listed above will not be required. Furthermore, the current number of dwellings occupied within Milldale currently sits at around 1,600 to 1,700 and by 2028, a conservative estimate would be 2,500 dwellings occupied in Milldale. This is well below the trigger identified by the modelling for the three unfunded projects.

4. Other Supporting Projects (Milldale)

In terms of the other mitigation measures identified through the modelling as being required to support the build out of the Wainui Precinct, FHLD entered into two Infrastructure Funding Agreements (IFA's) with AT and Auckland Council to deliver these projects. A number of these projects have already been completed, some are currently being constructed, and others will be completed through the continued development of Milldale. The status of each of the agreed projects as of October 2025 is shown in **Table 1** below.

Table 1: Project Status

Project Description	Status as at October 2025	Additional Comments
Left turn slip lane on the northbound off-ramp at the Silverdale Interchange	Completed and operational (2021)	
Weiti Stream Bridge	Completed and operational (2022)	
Argent Lane / Pine Valley Road / Old Pine Valley Road roundabout	Completed and operational (2023)	
Highgate Over-bridge	Completed and operational (2025)	
Argent Lane / Wainui Road roundabout	Consented and due for completion in late 2026	
Pine Valley Road / Dairy Flat Highway intersection upgrade	Consented and due for completion in late 2026	
Argent Lane extension to connect Dairy Flat Highway to Wainui Road	Being constructed in stages as development within Milldale proceeds. Pine Valley Road to Parish Drive section completed and operational since December 2024.	Parish Drive to Wainui Road section due for completion late 2026 to align with the Argent Lane/Wainui Rd roundabout completion.
Wainui Road upgrade to collector road standard between Lysnar Road and Argent Lane	Consented and will be constructed as the adjacent Stages 10 and 11 are completed – expected to be completed by mid-2028.	
Lysnar Road / Wainui Road Intersection upgrade	Consented and will be constructed in conjunction with the adjacent Stage 10 – expected to be completed by mid-2027.	
Lysnar Road Bridge	Consented and will be constructed in conjunction with the adjacent stage of development (Stage 8)	
Sidwell Road / Endsley Rise Intersection	Consented and will be constructed in conjunction with the adjacent stage of development (Stage 8)	

As indicated in the details of Table 1, all of the identified mitigation measures to support the full build-out of Milldale and the wider Wainui Precinct (to around 4,500 dwellings) have already been completed, or will be completed by the end of 2028.

5. Public Transport

Further to the provision of roading infrastructure within and around Milldale, FHLD has continued to work together with AT to enable a robust and efficient public transportation system to support the residents of Milldale. A bus service (the 989 bus-route) was established in November 2022 which connects Milldale (via John Fair Drive) and the Hibiscus Coast Station. AT provided the patronage figures for this bus route from the time the route was established through to March 2024, and these figures are illustrated in **Figure 2**.

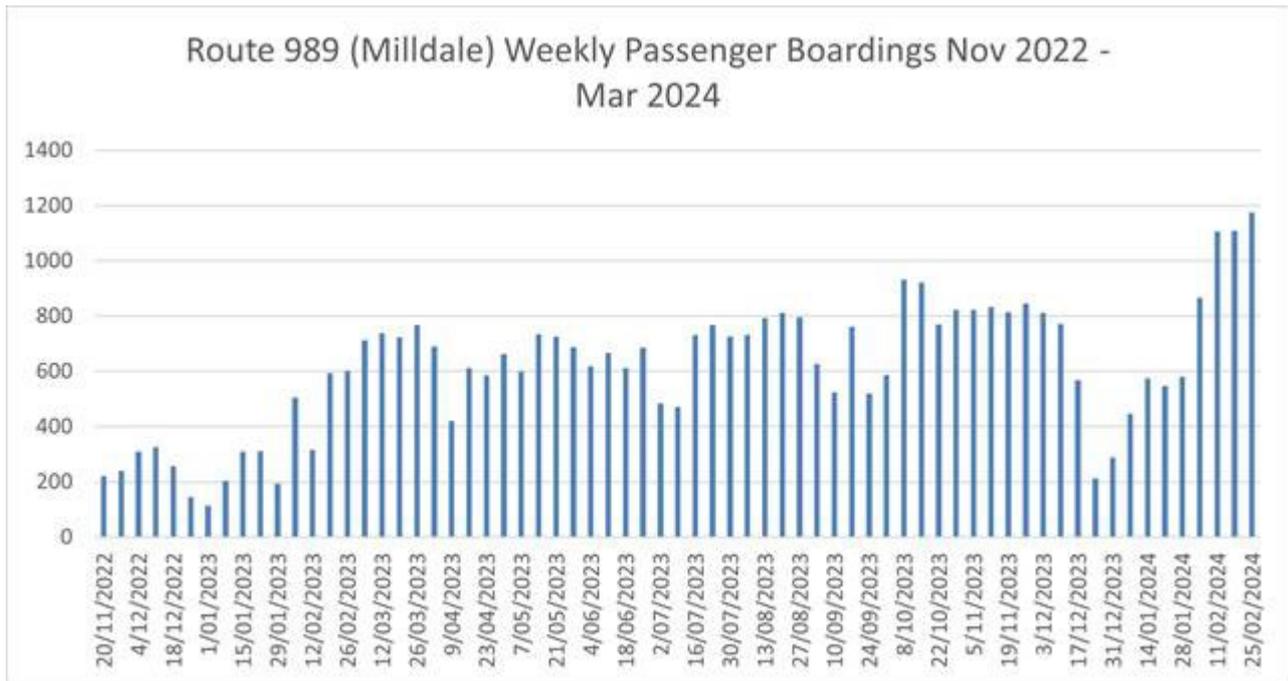


Figure 2: Bus Patronage (Route 989)

The latest data from the AT Metro website¹ indicate bus patronage in March 2025 being more than 1,600 passengers per week. This indicates a continual increasing rate since the route was established, and this trend is likely to be maintained as the Milldale suburb continues to be developed. This will ensure that public transport continues to provide a viable alternative transport mode for the Precinct and will help reduce reliance on private vehicles.

¹ Link to bus patronage numbers here: <https://at.govt.nz/about-us/reports-publications/at-metro-patronage-report>.

6. Fast-Track Assessment

Since the completion of the original ITA in 2019 Stantec have been involved with every stage of development at Milldale, which has involved separate transport assessments for each stage consented (Stages 1 through 9) and for the FTAA application of the remaining stages (4C and 10 - 13), which has now been approved. None of these assessments have identified any additional projects/upgrades to be required over and above those contained in the original ITA. As such it is considered that the projects shown in Table 1 remain current and will ensure that the delivery of the balance of the live-zoned areas within Milldale will not adversely impact the operation of the surrounding transport network, particularly now that Penlink is currently being constructed and due for completion at the start of 2028. In addition, the dwelling yields, infrastructure provision (completed and programmed) and current rate of build are consistent with the modelling assumptions of the ITA.

The proposed development of the future urban zoned land in Milldale North, the subject of this fast-track referral application, will be extensions to the Milldale development and will expedite the delivery of much needed housing to support population growth in Auckland, particularly in the northern region.

It should be noted that the internal roading and intersection typologies will be consistent with the typologies adopted for the rest of Milldale, which have been subject to approvals by AT over the past 6 years.

6.1 Modelling Background

The modelling which was undertaken for the 2024 PPC application has been used to assist with assessment of this referral application. The model relied on demands extracted by the Auckland Forecasting Centre (**AFC**) from the Supporting Growth Alliance (**SGA**) region-wide, macro-scale Northern Region EMMÉ transport model, to feed into a more local-scale and detailed AIMSUN² operational micro-simulation traffic model. AIMSUN is a traffic modelling software package which is in common usage by transportation engineers throughout New Zealand and globally. The AIMSUN model developed for the PPC assessment was an extension of the model which was used to assess the existing Wainui Precinct. As noted earlier, the original model was separately reviewed and approved by representatives of AT and the NZTA as part of the process for delivering the ITA for the Milldale development and assumes the full buildout (4,500 occupied dwellings plus 40,000sqm GFA of commercial/retail activities within the local centre) of the Wainui Precinct by 2028.

The extent of the model includes the following:

- the section of SH1 from a point some 4.5km south of the Silverdale interchange to a point around 1.9km north of the Grand Drive interchange, inclusive of the Silverdale, Millwater, and Grand Drive interchange ramps;
- Hibiscus Coast Highway, between the Silverdale interchange and the Hibiscus Coast Highway / Whangaparaoa Road intersection;
- Wainui Road, between Silverdale Street and Cemetery Road;
- Dairy Flat Highway, between the Silverdale interchange a point around 500m south of the Kahikatea Flat Road intersection with Dairy Flat Highway;
- Wilks Road, and its intersections with Dairy Flat Highway and East Coast Road;
- Millwater-Parkway, between the Millwater interchange and Whangaparaoa Road;
- East Coast Road, between Hibiscus Coast Highway and a point around 650m south of Wilks Road;
- the Milldale Overbridge;
- the internal road network within Milldale; and
- indicative primary roading network for the Milldale North and Wainui West areas.

The model extent includes the primary access points for the precinct to the wider transportation network, specifically the Silverdale and Millwater interchanges. For robustness, the extent also includes the Silverdale West Plan Change area (Private Plan Change 103 – PPC103), an area to the south of Milldale which seeks to be re-zoned for light industrial purposes. PPC103 was the subject of a Council Hearing in April 2025 and the decision to approve the plan change was notified on 30 October 2025, with the deadline for any appeals being 11 December 2025. It should be noted that as part of the PPC103 hearings process Auckland Council's traffic engineering representative (Abley Limited) viewed the model and was comfortable with its operation and outputs. The full model extent, with the Milldale North and Wainui West PPC areas highlighted in red and blue respectively, and the PPC103 area highlighted in green, is illustrated in **Figure 19**.

² AIMSUN – Advanced Interactive Microscopic Simulator for Urban and Non-Urban Networks – Yunex Traffic Group.

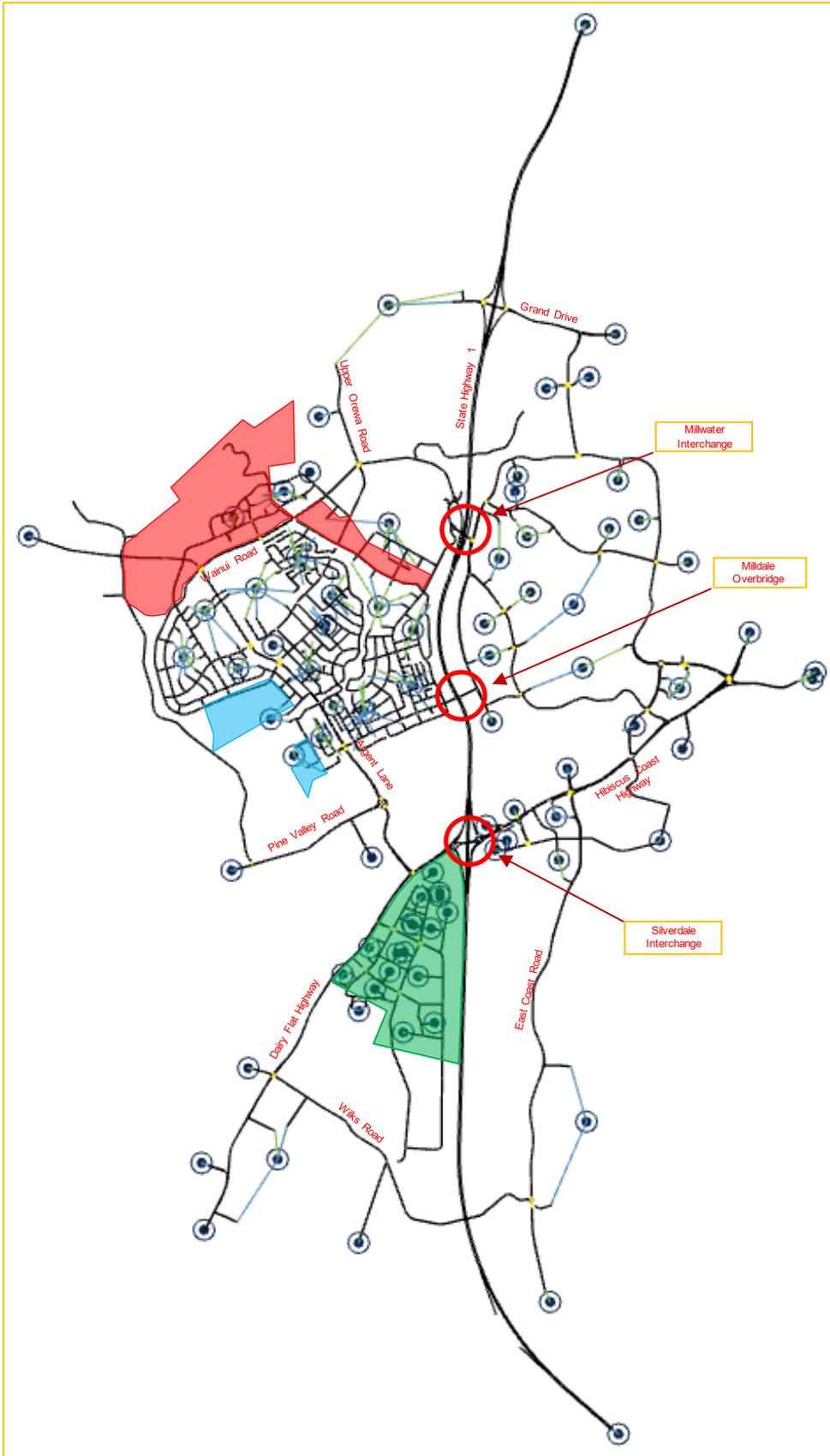


Figure 3: Model Extent

6.2 Trip Generation

An average peak hour trip rate of 0.62 trips/dwelling has been adopted for the residences within Milldale North. This is consistent with the trip rate assumed for the existing Milldale development and reflects the varying dwelling typologies anticipated within the site. It also takes into consideration the proposed public transport and active mode links within and around the PPC area.

6.3 Trip Distribution

The trip distribution associated with the activities within the Milldale North area has been derived directly from the SGA Northern model. Vehicle trips have been assigned to the network dynamically using the C-logit function and the default AIMSUN cost functions have been used for the micro-simulation.

6.4 Assumed Local Network Upgrades

As noted earlier, the following transportation network upgrades are assumed to be in place prior to any development being operational within the Milldale North area:

- Highgate over-bridge (connecting John Fair Drive with Highgate Parkway) – completed as of February 2025.
- Argent Lane / Wainui Road roundabout - consented and due for completion in late 2026.
- Signalisation of the Pine Valley Road / Dairy Flat intersection and the realignment of Argent Lane between Pine Valley Road and Dairy Flat (consented and due for completion in late 2026).
- Completion of the internal roading network within Milldale (including the Argent Lane link between Pine Valley Road and Wainui Road).
- Connections between the proposed development areas and the adjacent road network.

6.5 Build Rate

The impact of the proposed development of 1,500 dwellings within the Milldale North area was assessed as part of the wider Plan Change assessment as for that assessment an annual rate of growth of around 220 dwellings per year was assumed between 2028 and 2038 future forecast years and the performance of the network for each year was separately assessed. For the purposes of the assessment, the likely number of dwellings available by year is shown in **Table 2**.

Table 2: Total Dwellings Per Year

Year	Dwellings
2028	300
2029	520
2030	740
2031	960
2032	1,180
2033	1,400
2034	1,620
2035	1,840
2036	2,060
2037	2,280
2038	2,500

As indicated, a total of around 1,500 dwellings is anticipated to be developed sometime between 2033 and 2034.

6.6 Network Performance

General network performance was measured against the Level of Service (**LOS**) indicator (average delay in seconds) at key intersections within the road network. LOS is defined as an incremental scale from A to F with an LOS of A indicating the best performance level and LOS F indicating the worst. The following **Table 2** describes traffic flow operation for each of the LOS levels, including a brief description of likely performance at a basic level.

Table 3: LOS Description

LOS	General description of operation
A	Free flow conditions; little interaction between vehicles
B	Reasonably free flow conditions: speeds similar to LOS A but some movement is restricted due to interaction between vehicles within traffic streams
C	Stable flow conditions; ability to manoeuvre within traffic streams is notably restricted but roads remain below capacity
D	Approaching unstable flow; freedom to manoeuvre is much more limited and driver comfort levels decrease. This is the common level for urban streets during peak hours of travel
E	Unstable flow; operating at capacity; drivers comfort level becoming poor. This would be a more common standard in larger urban areas where some congestion is inevitable during peak hours
F	Forced or breakdown flow; vehicle movement very constrained; traffic demand generally higher than capacity

Amongst traffic engineers, LOS is a commonly used measure of qualitatively describing the operating conditions of transport infrastructure, including intersections and roadways. The results of the assessment are summarised in the following sections of this report.

7. Traffic Effects Summary

Detailed model outputs, inclusive of queue information, are provided in **Appendix B** for the first year (2028), the last year (2034) and an interim year (2031). Summaries of intersection performance are provided in the following sub-sections for the morning (AM) and evening (PM) peak hours.

7.1 AM Peak Hour

The performance of the key intersections for the AM peak hour is provided in **Table 4**. Within the table, the LOS is reported in parentheses after the average intersection delay (in seconds/vehicle).

Table 4: Intersection Performance (AM Peak Hour)

Intersection	2028	2029	2030	2031	2032	2033	2034
Hibiscus Coast Highway / Whangaparaoa Road	24 (C)	25 (C)	24 (C)	25 (C)	24 (C)	25 (C)	25 (C)
Hibiscus Coast Highway / East Coast Road	21 (C)	21 (C)	22 (C)	22 (C)	21 (C)	22 (C)	22 (C)
Hibiscus Coast Highway / Painton Road	16 (B)	17 (B)	18 (B)	19 (B)	19 (B)	23 (C)	21 (C)
Silverdale Interchange (Eastern roundabout)	8 (A)	10 (A)	13 (B)	15 (B)	13 (B)	15 (B)	16 (B)
Silverdale Interchange (Western roundabout)	9 (A)	8 (A)	8 (A)	9 (A)	9 (A)	10 (B)	12 (B)
Dairy Flat Highway / Pine Valley Road	17 (B)	18 (B)	18 (B)	19 (B)	21 (C)	25 (C)	30 (C)
Dairy Flat Highway / Silverdale West (Northern access)	9 (A)	12 (B)	18 (B)	24 (C)	18 (B)	28 (C)	32 (C)
Dairy Flat Highway / Wilks Road	31 (D)	35 (D)	59 (F)	26 (C)	28 (C)	29 (C)	31 (C)
East Coast Road / Wilks Road	26 (D)	32 (D)	31 (D)	20 (B)	22 (C)	24 (C)	25 (C)
Argent Lane / Pine Valley Road	10 (B)	18 (B)	14 (B)	17 (B)	13 (B)	6 (A)	6 (A)
Argent Lane / John Fair Drive	8 (A)	10 (B)	10 (B)	12 (B)	10 (B)	14 (B)	15 (B)
Argent Lane / Maryvale Road	7 (A)	9 (A)	9 (A)	10 (B)	9 (A)	11 (B)	12 (B)
Argent Lane / Wainui Road	4 (A)	4 (A)	4 (A)	5 (A)	5 (A)	5 (A)	6 (A)
Wainui Road / Western Access (priority)	6 (A)	5 (A)	5 (A)	6 (A)	6 (A)	6 (A)	7 (A)
Wainui Road / Waiwai Road	3 (A)						
Wainui Road / Lysnar Road	4 (A)						
Wainui Road / Upper Orewa Road	4 (A)	5 (A)	6 (A)	7 (A)	8 (A)	9 (A)	9 (A)
Millwater Interchange (off-ramp)	4 (A)	4 (A)	4 (A)	5 (A)	5 (A)	5 (A)	5 (A)
Wainui Road / Sidwell Road	3 (A)	4 (A)	4 (A)	5 (A)	5 (A)	6 (A)	10 (B)
Wainui Road / Millwater-Parkway	15 (B)	16 (B)	16 (B)	17 (B)	19 (B)	18 (B)	20 (B)
Millwater Interchange (on-ramp)	5 (A)	6 (A)					

The modelling indicates that apart from the Dairy Flat Highway / Wilks Road intersection which declines to an LOS of F in 2030, the rest of the key intersections are expected to operate at an LOS of D or better for the AM peak hour for all years leading up to the full buildout of around 1,500 dwellings in Milldale North. Mitigation measures are proposed for the Dairy Flat / Wilks Road and East Coast Road / Wilks Road intersections to bring performance levels back in line with the other key intersections post 2030. These improvements are already required by the Silverdale West PPC and the upgrades will be provided by that developer. Overall, this level of operation of the road network during the AM peak hour is considered acceptable.

7.2 PM Peak Hour

The performance of the key intersections for the PM peak hour is provided in **Table 5**.

Table 5: Intersection Performance (PM Peak Hour)

Intersection	2028	2029	2030	2031	2032	2033	2034
Hibiscus Coast Highway / Whangaparaoa Road	34 (C)	33 (C)	32 (C)	34 (C)	33 (C)	36 (D)	35 (D)
Hibiscus Coast Highway / East Coast Road	31 (C)	30 (C)	31 (C)	30 (C)	31 (C)	33 (C)	37 (D)
Hibiscus Coast Highway / Painton Road	12 (B)	14 (B)	13 (B)	13 (B)	13 (B)	18 (B)	18 (B)
Silverdale Interchange (Eastern roundabout)	5 (A)	6 (A)	8 (A)	8 (A)	9 (A)	13 (B)	14 (B)
Silverdale Interchange (Western roundabout)	22 (C)	28 (C)	25 (C)	34 (C)	20 (B)	19 (B)	26 (C)
Dairy Flat Highway / Pine Valley Road	23 (C)	25 (C)	19 (B)	19 (B)	21 (C)	23 (C)	24 (C)
Dairy Flat Highway / Silverdale West (Northern access)	11 (B)	13 (B)	16 (B)	20 (C)	20 (C)	25 (C)	29 (C)
Dairy Flat Highway / Wilks Road	44 (E)	66 (F)	68 (F)	28 (C)	29 (C)	30 (C)	32 (C)
East Coast Road / Wilks Road	40 (E)	44 (E)	50 (E)	26 (C)	27 (C)	37 (D)	50 (D)
Argent Lane / Pine Valley Road	12 (B)	13 (B)	16 (B)	17 (B)	17 (B)	10 (B)	10 (B)
Argent Lane / John Fair Drive	7 (A)	8 (A)	8 (A)	9 (A)	8 (A)	10 (B)	14 (B)
Argent Lane / Maryvale Road	5 (A)	5 (A)	6 (A)				
Argent Lane / Wainui Road	6 (A)	6 (A)	6 (A)	6 (A)	7 (A)	7 (A)	8 (A)
Wainui Road / Western Access (priority)	5 (A)	4 (A)	4 (A)	5 (A)	5 (A)	5 (A)	6 (A)
Wainui Road / Waiwai Road	6 (A)	3 (A)					
Wainui Road / Lysnar Road	5 (A)	5 (A)	5 (A)	5 (A)	6 (A)	6 (A)	5 (A)
Wainui Road / Upper Orewa Road	6 (A)	8 (A)	7 (A)	9 (A)	11 (B)	12 (B)	16 (C)
Millwater Interchange (off-ramp)	6 (A)	6 (A)	5 (A)	6 (A)	6 (A)	6 (A)	7 (A)
Wainui Road / Sidwell Road	4 (A)	5 (A)					
Wainui Road / Millwater-Parkway	17 (B)	19 (B)	17 (B)	18 (B)	18 (B)	20 (B)	20 (B)
Millwater Interchange (on-ramp)	4 (A)						

As indicated, apart from the two intersections at either end of Wilks Road which are expected to operate at an LOS of E or F up to 2030, the rest of the intersections operate at LOS D or better up to the full buildout of Milldale North to around 1,500 dwellings. As noted previously, mitigation is proposed for the Dairy Flat / Wilks Road and East Coast Road / Wilks Road intersections to bring performance levels back in line with the other key intersections. This level of operation of the road network during the PM peak hour is considered acceptable.

8. Mitigation and Thresholds

The modelling outcomes of Section 7 rely on mitigation measures being implemented at various intersections and approximate timing of these measures to support development at Milldale North. These measures and the dwelling thresholds to the full buildout of around 1,500 dwellings within Milldale North are summarised in **Table 6**.

Table 6: Mitigation Measures and Approximate Timing

Approximate Year	Development Threshold for Milldale North (Dwellings)	Infrastructure Upgrade	Status
2028	300	None	N/A
2029	520	None	N/A
2030	740	<ul style="list-style-type: none"> Dairy Flat / Pine Valley Intersection – Upgrade 1 	<ul style="list-style-type: none"> Due for completion in late 2026
2031	960	<ul style="list-style-type: none"> Signalisation of Wilks Road / Dairy Flat Highway – Upgrade 2 Signalisation of Wilks Road / East Coast Road – Upgrade 3 	<ul style="list-style-type: none"> External upgrades developer funded External upgrades developer funded
2032	1,180	<ul style="list-style-type: none"> Silverdale interchange upgrade – Upgrade 4 	<ul style="list-style-type: none"> External upgrades developer funded
2033	1,400	<ul style="list-style-type: none"> Double-laning of Pine Valley Road / Argent Lane roundabout – Upgrade 5 	<ul style="list-style-type: none"> Designation in place
2034	1,620 – 1,700	No further upgrades	N/A

As indicated, five specific mitigation measures are required to support the development of up to 1,500 dwellings in Milldale North and with these measures included the surrounding road network performs at acceptable levels. These upgrades are illustrated in **Appendix C** which is attached to this memo.

An important matter to note is that the development of Milldale North will allow the full upgrade of Wainui Road as a multi-modal corridor. This will enable the efficient use of the significant investment in transport infrastructure and also incentivise the use of public transport and non-car travel modes with respect to routing and connectivity.

9. Summary and Conclusions

A high-level assessment of the transportation effects of providing around 1,500 new dwellings within future-urban zoned areas adjacent to the Milldale Precinct (Milldale North) has been undertaken. The proposal provides an opportunity to deliver much-needed housing to support the population growth in Auckland, particularly in the northern region.

The proposed development is a continuation of the Milldale development, and the proposed internal roads and new road connections will ensure that the development is suitably integrated with the surrounding road network which currently exists. As noted earlier, the development of Milldale North also allows the full development of Wainui Road as a multi-modal corridor enabling good connectivity and efficient travel paths for all users.

Detailed modelling has been undertaken to assess the likely effects of the development from a transportation perspective. The modelling has relied on outputs from the SGA's Northern model and supplemented with a more detailed micro-simulation model to assess the likely effects on the transportation network.

Improvements to the road network are recommended to ensure that the performance of the surrounding road network remains within acceptable levels. These upgrades and anticipated timing of the upgrades are summarised in Section 8 of this report and further detailed within Appendix B. The results of the modelling indicate that with these mitigation measures in place (or with suitable planning provisions to deliver them in a timely manner) the integrity of the surrounding road system and the motorway can be maintained.

With the recommended roading infrastructure implemented, it is considered that there are no transport planning or engineering reasons to preclude referral to the FTAA sought by FHLD. Overall, we consider the transport effects of the development provide for a safe, effective and efficient operations of the roading network within the site and do not impact on the safe, effective and efficient operation of the surrounding transport network.

Stantec New Zealand



Trevor Lee-Joe
Principal Transportation Engineer



Alasdair McGeachie
Transportation Delivery Team Lead, Auckland

APPENDIX A – AT Approval Letter

20 December 2019

Fulton Hogan Land Development Ltd
PO Box 39185
Harewood, Christchurch

Attention: Greg Dewe, Operations Manager

Dear Greg

Re: Milldale Integrated Transport Assessment

This letter confirms that the Milldale Integrated Transport Assessment (“ITA”) prepared by Stantec, dated 1 October 2019 (Final version) has been reviewed by Auckland Transport. The transport interventions (projects) identified are considered appropriate to support the development of the Milldale Precinct as set out in the ITA.

In accordance with the technical note dated 1 October 2019, prepared by Mott MacDonald, the specific designs of these projects, along with the wider precinct in general, will need to be worked through as part of the detailed design, consenting and delivery phases of these projects.

There are three projects identified in the ITA (page 45) as unfunded but required for the buildout of the Milldale Precinct should Penlink not be in place. AT is interested in better understanding these gaps noting the overlap with several of the funded projects. We will be in contact in the early 2020 to discuss this further.

If you have any queries in relation to this letter, please contact Kelly Seekup, Principal Planner, on +64 9 447-4410.

Yours sincerely



Alastair Lovell
Policy and Planning Manager North West

APPENDIX B – Detailed Model Results

AM 2028_Avg

07:45 - 08:45

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(Wainui FUZ - 300 Dwellings)

Intersection	Appr & Turn	Count	Mvmt Delay	App Delay	App LOS	App 95% Q (veh)	Int Del	Int LOS
HCH & Whangaparaoa (Signals)	S Left	944	5	13	B	5	24	C
	S Thru	309	38					
	S Right	10	54					
	E Left	4	3	33	C	8		
	E Thru	816	32					
	E Right	187	39					
	N Left	96	3	27	C	4		
	N Thru	64	26					
	N Right	220	38					
	W Left	9	6	30	C	7		
	W Thru	268	20					
	W Right	428	36					
HCH & East Coast (Signals)	S Left	45	12	32	C	4	21	C
	S Thru	7	32					
	S Right	344	35					
	E Left	247	3	21	C	12		
	E Thru	1243	24					
	E Right	25	49					
	N Left	5	4	36	D	1		
	N Thru	2	64					
	N Right	7	51					
	W Left	32	2	16	B	4		
	W Thru	618	9					
	W Right	305	33					
HCH & Painton (Signals)	S Left	122	11	16	B	1	16	B
	S Thru	0	0					
	S Right	18	50					
	E Left	183	18	24	C	12		
	E Thru	1083	26					
	E Right	1	41					
	N Left	1	1	39	D	1		
	N Thru	0	0					
	N Right	1	60					
	W Left	3	2	10	B	4		
	W Thru	972	2					
	W Right	625	24					
Silverdale Interchange East (Roundabout)	E Left	904	4	7	A	7	8	A
	E Thru	319	16					
	N Left	405	20	30	C	7		
	N Right	220	48					
	W Thru	1189	1	2	A	1		
	W Right	744	3					
Silverdale Interchange West (Roundabout)	S Left	312	4	5	A	2	9	A
	S Right	577	6					
	E Thru	473	1	1	A	1		
	E Right	69	2					
	W Left	151	12	13	B	7		
	W Thru	1357	14					
Dairy Flat & Pine Valley (Signals)	E Thru	459	14	21	C	7	17	B
	E Right	327	30					
	N Left	1200	11	13	B	7		
	N Right	223	23					
	W Left	73	3	24	C	3		
	W Thru	302	28					
Dairy Flat & SW1 (Signals)	S Thru	326	6	8	A	2	9	A
	S Right	46	22					
	E Left	18	12	17	B	1		
	E Right	49	18					
	N Left	126	7	9	A	4		
	N Thru	557	9					
Argent & Pine Valley (Roundabout)	S Left	143	8	8	A	2	10	A
	S Thru	257	8					
	S U-Turn	0	0	12	B	8		
	N Thru	1128	12					
	N Right	47	12					
	N U-Turn	0	0	5	A	2		
	W Left	37	5					
	W Right	291	5					
W U-Turn	0	0						

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(Wainui FUZ - 300 Dwellings)

Intersection	Appr & Turn	Count	Mvmt Delay	App Delay	App LOS	App 95% Q (veh)	Int Del	Int LOS
Argent & John Fair (Roundabout)	S Left	13	5	6	A	1	8	A
	S Thru	151	6					
	S Right	129	6					
	S U-Turn	0	0	14	B	5		
	E Left	319	14					
	E Thru	6	16					
	E Right	28	13					
	E U-Turn	0	0					
	N Left	76	7	7	A	3		
	N Thru	809	7					
	N Right	2	9					
	N U-Turn	0	0	5	A	1		
	W Left	1	3					
	W Thru	8	5					
	W Right	43	4					
W U-Turn	0	0						
Argent & Maryvale (Roundabout)	S Left	10	4	5	A	1	7	A
	S Thru	155	5					
	S Right	15	5					
	S U-Turn	0	0	13	B	2		
	E Left	89	13					
	E Thru	12	12					
	E Right	22	12					
	E U-Turn	0	0					
	N Left	26	6	7	A	2		
	N Thru	773	7					
	N Right	19	7					
	N U-Turn	0	0	3	A	1		
	W Left	7	1					
	W Thru	8	2					
	W Right	26	3					
W U-Turn	0	0						
Argent & TC1 (Roundabout)	S Left	7	3	3	A	1	5	A
	S Thru	131	3					
	S Right	29	4					
	S U-Turn	0	0	5	A	2		
	E Left	124	5					
	E Thru	6	6					
	E Right	7	6					
	E U-Turn	0	0					
	N Left	11	5	5	A	2		
	N Thru	492	5					
	N Right	1	6					
	N U-Turn	0	0	3	A	1		
	W Left	5	3					
	W Thru	6	2					
	W Right	46	3					
W U-Turn	0	0						
Argent & TC2 (Roundabout)	S Left	32	4	5	A	1	4	A
	S Thru	108	5					
	S Right	3	6					
	S U-Turn	0	0	3	A	1		
	E Left	13	3					
	E Thru	14	3					
	E Right	25	4					
	E U-Turn	0	0					
	N Left	9	6	5	A	2		
	N Thru	357	5					
	N Right	6	6					
	N U-Turn	0	0	2	A	1		
	W Left	4	1					
	W Thru	15	1					
	W Right	134	2					
W U-Turn	0	0						

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(Wainui FUZ - 300 Dwellings)

Intersection	Appr & Turn	Count	Mvmt Delay	App Delay	App LOS	App 95% Q (veh)	Int Del	Int LOS		
Argent & Wainui (Roundabout)	S Left	0	0	6	A	2	4	A		
	S Thru	123	6							
	S Right	8	6							
	S U-Turn	0	0	6	A	2				
	E Left	17	6							
	E Thru	9	5							
	E Right	175	6							
	E U-Turn	0	0							
	N Left	147	1	2	A	1				
	N Thru	322	2							
	N Right	6	1							
	N U-Turn	0	0	3	A	1				
	W Left	7	3							
	W Thru	11	3							
W Right	0	0								
W U-Turn	0	0								
Wainui & MN_West (Priority)	E Thru	305	1	6	A	1	6	A		
	E Right	1	6	4	A	1				
	N Left	15	4							
	N Right	20	4							
	W Left	5	4	4	A	1				
W Thru	458	2	1	A	1	3	A			
S Left	27	1								
S Thru	2	1								
S Right	9	1								
S U-Turn	0	0								
E Left	6	3								
E Thru	164	3								
E Right	7	4								
E U-Turn	0	0								
N Left	16	2						2	A	1
N Thru	8	2								
N Right	9	2								
N U-Turn	0	0						3	A	1
W Left	1	2								
W Thru	148	3								
W Right	17	3								
W U-Turn	0	0								
Wainui & Lysnar (Roundabout)	S Left	47	1	1	A	1	4	A		
	S Thru	10	1							
	S Right	15	2							
	S U-Turn	0	0							
	E Left	18	3	4	A	1				
	E Thru	129	4							
	E Right	25	4							
	E U-Turn	0	0							
	N Left	51	3	3	A	1				
	N Thru	7	3							
	N Right	1	3							
	N U-Turn	0	0	4	A	1				
	W Left	0	0							
	W Thru	163	4							
W Right	9	5								
W U-Turn	0	0								
Wainui & Upper Orewa (Priority)	E Thru	117	1	4	A	1	4	A		
	E Right	17	4	4	A	2				
	N Left	38	3							
	N Right	55	4							
	W Left	51	2	2	A	1				
W Thru	179	1	3	A	2	4	A			
S Left	178	3								
S Thru	85	4								
N Right	215	4						4	A	1
W Left	51	2	2	A	1					
Wainui & MillOff (Roundabout)	S Left	12	1	2	A	1	3	A		
	S Right	332	2							
	S U-Turn	0	0							
	E Left	120	3	3	A	1				
	E Thru	38	3							
	E U-Turn	0	0							
	W Thru	343	5	5	A	3				
W Right	49	5								
W U-Turn	0	0								

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(Wainui FUZ - 300 Dwellings)

Intersection	Appr & Turn	Count	Mvmt Delay	App Delay	App LOS	App 95% Q (veh)	Int Del	Int LOS
Wainui & Millwater (Signals)	S Left	18	2	19	B	3	15	B
	S Thru	199	20					
	N Thru	77	9					
	N Right	141	23	18	B	1		
	W Left	542	11					
	W Right	135	16	12	B	11		
Millwater & MillOn (Roundabout)	S Left	423	5	6	A	2	5	A
	S Thru	313	7					
	S Right	6	5					
	S U-Turn	0	0					
	E Left	1	2					
	E Thru	34	4	4	A	1		
	E Right	6	5					
	E U-Turn	0	0					
	N Left	6	2	3	A	1		
	N Thru	219	3					
	N Right	324	3					
	N U-Turn	1	4					
	East Coast Road & Wilks (Priority)	S Left	99	2	7	A		
S Thru		300	2					
S Right		4	7					
E Left		7	11	22	C	1		
E Thru		2	22					
E Right		9	14					
N Left		4	6	6	A	1		
N Thru		307	5					
N Right		31	6					
W Left		44	13	26	D	2		
W Thru		1	12					
W Right		138	26					
Postman Road & Wilks (Priority)	S Left	43	3	3	A	1	3	A
	S Thru	89	3					
	N Thru	136	2					
	N Right	28	2	2	A	1		
	W Left	35	2					
	W Thru	46	0					
Dairy Flat Highway & Wilks (Priority)	S Left	25	4	11	B	1	31	D
	S Thru	246	5					
	S Right	96	11					
	E Left	50	16	31	D	2		
	E Thru	12	31					
	E Right	59	27					
	N Left	68	7	9	A	2		
	N Thru	375	7					
	N Right	137	9					
	W Left	72	4	14	B	1		
	W Thru	7	7					
	W Right	23	14					

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(Wainui FUZ - 300 Dwellings)

Intersection	Appr & Turn	Count	Mvmt Delay	App Delay	App LOS	App 95% Q (veh)	Int Del	Int LOS
HCH & Whangaparaoa (Signals)	S Left	435	2	21	C	7	34	C
	S Thru	329	46					
	S Right	5	65					
	E Left	11	13	43	D	6		
	E Thru	349	42					
	E Right	200	47					
	N Left	227	15	31	C	5		
	N Thru	141	28					
	N Right	269	47					
	W Left	31	7	37	D	21		
	W Thru	754	38					
	W Right	1209	37					
HCH & East Coast (Signals)	S Left	69	8	37	D	8	31	C
	S Thru	17	48					
	S Right	685	40					
	E Left	200	2	21	C	9		
	E Thru	635	21					
	E Right	110	52					
	N Left	263	23	32	C	4		
	N Thru	33	51					
	N Right	135	43					
	W Left	128	12	35	D	14		
	W Thru	1324	36					
	W Right	75	50					
HCH & Painton (Signals)	S Left	433	10	15	B	4	12	B
	S Thru	0	0					
	S Right	230	26					
	E Left	10	5	17	B	10		
	E Thru	872	17					
	E Right	0	0					
	N Left	3	11	27	C	1		
	N Thru	0	0					
	N Right	3	41					
	W Left	3	7	8	A	5		
	W Thru	1333	6					
	W Right	182	26					
Silverdale Interchange East (Roundabout)	E Left	611	3	7	A	11	5	A
	E Thru	700	10					
	N Left	232	6	11	B	3		
	N Right	188	16					
	W Thru	1289	1					
W Right	307	2	1	A	2			
Silverdale Interchange West (Roundabout)	S Left	506	7	18	B	10	22	C
	S Right	1006	23					
	E Thru	593	2	3	A	12		
	E Right	294	4					
	W Left	248	53					
W Thru	592	51	52	D	16			
Dairy Flat & Pine Valley (Signals)	E Thru	303	8	26	C	30	23	C
	E Right	804	32					
	N Left	356	8	14	B	3		
	N Right	96	37					
	W Left	290	6					
W Thru	468	35	24	C	6			
Dairy Flat & SW1 (Signals)	S Thru	629	11	11	B	4	11	B
	S Right	22	32					
	E Left	49	14	16	B	2		
	E Right	126	17					
	N Left	51	4					
N Thru	346	9	9	A	3			
Argent & Pine Valley (Roundabout)	S Left	258	12	13	B	4	12	B
	S Thru	833	14					
	S U-Turn	0	0					
	N Thru	231	4	4	A	2		
	N Right	61	5					
	N U-Turn	0	0					
	W Left	72	17	17	B	7		
	W Right	220	16					
W U-Turn	0	0						

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(Wainui FUZ - 300 Dwellings)

Intersection	Appr & Turn	Count	Mvmt Delay	App Delay	App LOS	App 95% Q (veh)	Int Del	Int LOS
Argent & John Fair (Roundabout)	S Left	81	8	9	A	4	7	A
	S Thru	513	9					
	S Right	312	9					
	S U-Turn	0	0					
	E Left	100	2	4	A	2		
	E Thru	31	4					
	E Right	131	4					
	E U-Turn	0	0					
	N Left	86	6	6	A	2		
	N Thru	168	6					
	N Right	4	6					
	N U-Turn	0	0					
	W Left	3	11	9	A	1		
	W Thru	11	9					
W Right	25	10						
W U-Turn	0	0						
Argent & Maryvale (Roundabout)	S Left	56	5	6	A	2	5	A
	S Thru	579	6					
	S Right	11	6					
	S U-Turn	0	0					
	E Left	10	3	3	A	1		
	E Thru	13	2					
	E Right	15	3					
	E U-Turn	0	0					
	N Left	9	4	5	A	1		
	N Thru	231	5					
	N Right	34	5					
	N U-Turn	0	0					
	W Left	19	4	5	A	1		
	W Thru	15	6					
W Right	17	5						
W U-Turn	0	0						
Argent & TC1 (Roundabout)	S Left	47	4	4	A	1	4	A
	S Thru	370	4					
	S Right	147	4					
	S U-Turn	0	0					
	E Left	37	2	2	A	1		
	E Thru	10	2					
	E Right	9	3					
	E U-Turn	0	0					
	N Left	23	4	4	A	1		
	N Thru	194	4					
	N Right	2	5					
	N U-Turn	0	0					
	W Left	6	5	5	A	1		
	W Thru	8	6					
W Right	15	5						
W U-Turn	0	0						
Argent & TC2 (Roundabout)	S Left	143	4	5	A	1	4	A
	S Thru	222	5					
	S Right	19	5					
	S U-Turn	0	0					
	E Left	6	1	1	A	1		
	E Thru	32	1					
	E Right	8	1					
	E U-Turn	0	0					
	N Left	17	3	3	A	1		
	N Thru	152	3					
	N Right	9	4					
	N U-Turn	0	0					
	W Left	7	2	2	A	1		
	W Thru	14	2					
W Right	62	2						
W U-Turn	0	0						

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(Wainui FUZ - 300 Dwellings)

Intersection	Appr & Turn	Count	Mvmt Delay	App Delay	App LOS	App 95% Q (veh)	Int Del	Int LOS
Argent & Wainui (Roundabout)	S Left	0	0	9	A	4	6	A
	S Thru	177	9					
	S Right	15	8					
	S U-Turn	0	0					
	E Left	32	7	7	A	3		
	E Thru	23	7					
	E Right	382	7					
	E U-Turn	0	0					
	N Left	149	1	2	A	1		
	N Thru	148	2					
	N Right	11	2					
	N U-Turn	0	0					
	W Left	9	6	6	A	1		
	W Thru	14	6					
W Right	0	0						
W U-Turn	0	0						
Wainui & MN_West (Priority)	E Thru	562	1	3	A	1	5	A
	E Right	7	3					
	N Left	4	2	3	A	1		
	N Right	5	3					
	W Left	7	5	5	A	1		
	W Thru	305	2					
Wainui & Waiwai (Roundabout)	S Left	24	1	1	A	1	3	A
	S Thru	19	1					
	S Right	18	1					
	S U-Turn	0	0					
	E Left	28	3	4	A	1		
	E Thru	407	4					
	E Right	0	0					
	E U-Turn	0	0					
	N Left	16	2	2	A	1		
	N Thru	9	2					
	N Right	5	3					
	N U-Turn	0	0					
	W Left	5	3	3	A	1		
	W Thru	148	3					
W Right	25	3						
W U-Turn	0	0						
Wainui & Lysnar (Roundabout)	S Left	84	4	4	A	2	5	A
	S Thru	14	3					
	S Right	12	3					
	S U-Turn	0	0					
	E Left	42	4	5	A	1		
	E Thru	351	5					
	E Right	59	5					
	E U-Turn	0	0					
	N Left	17	3	3	A	1		
	N Thru	6	2					
	N Right	1	5					
	N U-Turn	0	0					
	W Left	5	3	4	A	1		
	W Thru	169	4					
W Right	8	5						
W U-Turn	0	0						
Wainui & Upper Orewa (Priority)	E Thru	378	2	3	A	1	6	A
	E Right	32	3					
	N Left	24	3	6	A	2		
	N Right	73	6					
	W Left	74	2	2	A	1		
	W Thru	121	1					
Wainui & MillOff (Roundabout)	S Left	493	6	6	A	3	6	A
	S Thru	314	7					
	N Right	145	4	4	A	1		
	W Left	91	3					
Wainui & Sidwell (Roundabout)	S Left	18	1	2	A	1	4	A
	S Right	173	2					
	S U-Turn	0	0					
	E Left	260	5					
	E Thru	75	5	5	A	3		
	E U-Turn	0	0					
	W Thru	404	4					
	W Right	236	5					
W U-Turn	0	0						

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(Wainui FUZ - 300 Dwellings)

Intersection	Appr & Turn	Count	Mvmt Delay	App Delay	App LOS	App 95% Q (veh)	Int Del	Int LOS
Wainui & Millwater (Signals)	S Left	45	3	21	C	3	17	B
	S Thru	221	24					
	N Thru	73	8					
	N Right	289	24	20	C	3		
	W Left	456	12	13	B	9		
	W Right	121	17					
Millwater & MillOn (Roundabout)	S Left	224	4	5	A	1	4	A
	S Thru	426	5					
	S Right	27	6					
	S U-Turn	0	0					
	E Left	0	0					
	E Thru	8	4	4	A	1		
	E Right	7	3					
	E U-Turn	0	0					
	N Left	10	3	3	A	1		
	N Thru	363	3					
	N Right	113	3					
	N U-Turn	0	0					
	East Coast Road & Wilks (Priority)	S Left	171	3	10	A		
S Thru		441	3					
S Right		6	10					
E Left		2	11	18	C	1		
E Thru		3	15					
E Right		9	18					
N Left		8	9	9	A	3		
N Thru		278	7					
N Right		74	9					
W Left		48	14				40	E
W Thru		2	40					
W Right		117	31					
Postman Road & Wilks (Priority)		S Left	73	5	5	A	1	5
	S Thru	174	5					
	N Thru	122	1					
	N Right	28	3	3	A	1		
	W Left	34	3	3	A	1		
	W Thru	47	0					
Dairy Flat Highway & Wilks (Priority)	S Left	20	4	11	B	3	44	E
	S Thru	375	5					
	S Right	67	11					
	E Left	111	25	44	E	3		
	E Thru	12	36					
	E Right	79	44					
	N Left	65	8	12	B	2		
	N Thru	230	8					
	N Right	103	12					
	W Left	197	7					
	W Thru	22	11					
	W Right	42	15					

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(Wainui FUZ - 960 Dwellings)

Intersection	Appr & Turn	Count	Mvmt Delay	App Delay (s/veh)	App LOS	App 95% Q (veh)	Int Del (s/veh)	Int LOS
HCH & Whangaparaoa (Signals)	S Left	903	4	14	B	5	25	C
	S Thru	292	41					
	S Right	8	58					
	E Left	3	4	33	C	8		
	E Thru	824	33					
	E Right	171	37					
	N Left	91	4	27	C	4		
	N Thru	70	23					
	N Right	253	37					
	W Left	7	6	30	C	7		
	W Thru	285	23					
	W Right	442	36					
HCH & East Coast (Signals)	S Left	59	14	32	C	4	22	C
	S Thru	10	28					
	S Right	340	35					
	E Left	280	3	21	C	12		
	E Thru	1292	25					
	E Right	25	50					
	N Left	3	6	42	D	1		
	N Thru	3	56					
	N Right	4	59					
	W Left	20	2	17	B	4		
	W Thru	608	9					
	W Right	305	35					
HCH & Painton (Signals)	S Left	155	9	13	B	1	19	B
	S Thru	0	0					
	S Right	16	52					
	E Left	221	23	30	C	13		
	E Thru	1098	31					
	E Right	1	63					
	N Left	2	6	34	C	1		
	N Thru	0	0					
	N Right	3	54					
	W Left	3	2	12	B	4		
	W Thru	959	2					
	W Right	733	26					
Silverdale Interchange East (Roundabout)	E Left	841	4	10	B	11	15	B
	E Thru	403	24					
	N Left	387	48	64	E	14		
	N Right	279	86					
	W Thru	1299	2	2	A	1		
W Right	650	3						
Silverdale Interchange West (Roundabout)	S Left	367	5	7	A	3	9	A
	S Right	558	8					
	E Thru	619	1	1	A	1		
	E Right	64	2					
	W Left	201	12	13	B	8		
W Thru	1391	13						
Dairy Flat & Pine Valley (Signals)	E Thru	682	18	22	C	5	19	B
	E Right	302	32					
	N Left	1176	15	17	B	7		
	N Right	376	26					
	W Left	117	4	20	B	4		
W Thru	412	24						
Dairy Flat & SW1 (Signals)	S Thru	411	9	15	B	4	24	C
	S Right	147	34					
	E Left	63	15	23	C	2		
	E Right	120	27					
	N Left	401	24	29	C	12		
N Thru	653	33						
Argent & Pine Valley (Roundabout)	S Left	129	9	9	A	2	17	B
	S Thru	290	8					
	S U-Turn	0	0	22	C	13		
	N Thru	1258	22					
	N Right	67	23					
	N U-Turn	0	0	5	A	3		
	W Left	46	5					
	W Right	298	5					
W U-Turn	0	0						

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(Wainui FUZ - 960 Dwellings)

Intersection	Appr & Turn	Count	Mvmt Delay	App Delay (s/veh)	App LOS	App 95% Q (veh)	Int Del (s/veh)	Int LOS
Argent & John Fair (Roundabout)	S Left	13	5	5	A	1	12	B
	S Thru	188	5					
	S Right	134	6					
	S U-Turn	0	0					
	E Left	293	29	29	C	7		
	E Thru	6	28					
	E Right	25	30					
	E U-Turn	0	0					
	N Left	57	8	9	A	4		
	N Thru	987	9					
	N Right	1	10					
	N U-Turn	0	0					
	W Left	1	3	5	A	1		
	W Thru	9	4					
	W Right	50	5					
	W U-Turn	0	0					
Argent & Maryvale (Roundabout)	S Left	12	4	5	A	1	10	A
	S Thru	186	5					
	S Right	16	6					
	S U-Turn	0	0					
	E Left	102	30	29	C	3		
	E Thru	8	25					
	E Right	19	26					
	E U-Turn	0	0					
	N Left	33	8	9	A	3		
	N Thru	915	9					
	N Right	28	9					
	N U-Turn	1	9					
	W Left	9	2	3	A	1		
	W Thru	7	2					
	W Right	24	4					
	W U-Turn	0	0					
Argent & TC1 (Roundabout)	S Left	8	3	3	A	1	5	A
	S Thru	154	3					
	S Right	37	4					
	S U-Turn	0	0					
	E Left	150	7	7	A	3		
	E Thru	6	6					
	E Right	13	7					
	E U-Turn	0	0					
	N Left	11	5	6	A	3		
	N Thru	595	6					
	N Right	1	6					
	N U-Turn	0	0					
	W Left	5	2	3	A	1		
	W Thru	8	3					
	W Right	48	3					
	W U-Turn	0	0					
Argent & TC2 (Roundabout)	S Left	35	4	5	A	1	5	A
	S Thru	134	5					
	S Right	4	5					
	S U-Turn	0	0					
	E Left	17	5	5	A	1		
	E Thru	19	5					
	E Right	37	5					
	E U-Turn	0	0					
	N Left	14	5	5	A	3		
	N Thru	458	5					
	N Right	4	5					
	N U-Turn	0	0					
	W Left	6	2	2	A	1		
	W Thru	21	2					
	W Right	132	2					
	W U-Turn	0	0					

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(Wainui FUZ - 960 Dwellings)

Intersection	Appr & Turn	Count	Mvmt Delay	App Delay (s/veh)	App LOS	App 95% Q (veh)	Int Del (s/veh)	Int LOS			
Argent & Wainui (Roundabout)	S Left	0	0	7	A	3	5	A			
	S Thru	157	7								
	S Right	10	6								
	S U-Turn	0	0								
	E Left	62	7	8	A	3					
	E Thru	8	8								
	E Right	217	8								
	E U-Turn	0	0								
	N Left	230	2	3	A	2					
	N Thru	381	3								
	N Right	7	3								
	N U-Turn	0	0								
	W Left	12	3	3	A	1					
	W Thru	14	3								
	W Right	0	0								
	W U-Turn	0	0								
Wainui & MN_West (Priority)	E Thru	378	1	4	A	1	6	A			
	E Right	7	4								
	N Left	51	4	4	A	1					
	N Right	28	3								
	W Left	15	6	6	A	1					
	W Thru	571	3								
Wainui & Waiwai (Roundabout)	S Left	38	1	1	A	1	3	A			
	S Thru	12	1								
	S Right	9	1								
	S U-Turn	0	0								
	E Left	7	4	4	A	1					
	E Thru	208	4								
	E Right	15	4								
	E U-Turn	0	0								
	N Left	79	2	2	A	1					
	N Thru	30	2								
	N Right	43	3								
	N U-Turn	0	0								
	W Left	3	2	3	A	1					
	W Thru	237	3								
	W Right	13	3								
	W U-Turn	0	0								
Wainui & Lysnar (Roundabout)	S Left	51	2	2	A	1	4	A			
	S Thru	19	2								
	S Right	17	2								
	S U-Turn	0	0								
	E Left	24	4	4	A	1					
	E Thru	170	4								
	E Right	39	5								
	E U-Turn	0	0								
	N Left	83	3	4	A	1					
	N Thru	35	4								
	N Right	8	4								
	N U-Turn	0	0								
	W Left	3	5	5	A	1					
	W Thru	292	5								
	W Right	31	5								
	W U-Turn	0	0								
Wainui & Upper Orewa (Priority)	E Thru	156	1	6	A	1	7	A			
	E Right	21	6								
	N Left	39	5	7	A	2					
	N Right	74	7								
	W Left	55	2	2	A	1					
	W Thru	334	1								
Wainui & MillOff (Roundabout)	S Left	161	4	5	A	3	5	A			
	S Thru	104	5								
	N Right	378	5								
	W Left	72	3	3	A	1					
	W Thru	15	2								
Wainui & Sidwell (Roundabout)	S Right	374	2	2	A	1	5	A			
	S U-Turn	0	0								
	E Left	111	3								
	E Thru	57	4								
	E U-Turn	0	0	3	A	1					
	W Thru	503	8								
	W Right	37	7								
	W U-Turn	0	0								
									7	A	4

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(Wainui FUZ - 960 Dwellings)

Intersection	Appr & Turn	Count	Mvmt Delay	App Delay (s/veh)	App LOS	App 95% Q (veh)	Int Del (s/veh)	Int LOS
Wainui & Millwater (Signals)	S Left	15	2	26	C	3	17	B
	S Thru	191	28					
	N Thru	84	17	25	C	1		
	N Right	154	30					
	W Left	734	13	13	B	11		
W Right	146	16						
Millwater & MillOn (Roundabout)	S Left	536	6	6	A	3	5	A
	S Thru	386	7					
	S Right	5	8					
	S U-Turn	0	0					
	E Left	1	2	4	A	1		
	E Thru	31	4					
	E Right	9	4					
	E U-Turn	0	0					
	N Left	5	2	3	A	1		
	N Thru	237	3					
	N Right	263	3					
	N U-Turn	1	3					
East Coast Road & Wilks (Signals)	S Left	168	10	14	B	2	20	B
	S Thru	297	17					
	S Right	2	58					
	E Left	6	27	27	C	1		
	E Thru	3	23					
	E Right	8	29					
	N Left	6	16	24	C	3		
	N Thru	350	22					
	N Right	53	39					
	W Left	57	15	22	C	2		
	W Thru	2	11					
W Right	163	24						
Postman Road & Wilks (Priority)	S Left	81	6	6	A	1	6	A
	S Thru	142	6					
	N Thru	150	2	4	A	2		
	N Right	83	4					
	W Left	60	3	3	A	1		
W Thru	72	0						
Dairy Flat Highway & Wilks (Signals)	S Left	34	24	25	C	3	26	C
	S Thru	348	22					
	S Right	102	37					
	E Left	60	17	25	C	2		
	E Thru	16	24					
	E Right	117	30					
	N Left	132	21	26	C	5		
	N Thru	418	24					
	N Right	169	35					
	W Left	101	18	24	C	2		
	W Thru	14	27					
	W Right	33	38					

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(Wainui FUZ - 960 Dwellings)

Intersection	Appr & Turn	Count	Mvmt Delay (s/veh)	App Delay (s/veh)	App LOS	App 95% Q (veh)	Int Del (s/veh)	Int LOS
HCH & Whangaparaoa (Signals)	S Left	456	2	21	C	6	34	C
	S Thru	315	46					
	S Right	8	64					
	E Left	12	9	41	D	7		
	E Thru	399	40					
	E Right	201	45					
	N Left	208	15	31	C	5		
	N Thru	133	29					
	N Right	251	46					
	W Left	33	7	37	D	18		
	W Thru	773	42					
	W Right	1173	35					
HCH & East Coast (Signals)	S Left	102	7	36	D	9	30	C
	S Thru	16	49					
	S Right	688	40					
	E Left	207	3	21	C	9		
	E Thru	679	23					
	E Right	94	51					
	N Left	261	22	32	C	4		
	N Thru	45	47					
	N Right	132	46					
	W Left	141	11	31	C	15		
	W Thru	1309	32					
	W Right	73	52					
HCH & Painton (Signals)	S Left	433	11	16	B	5	13	B
	S Thru	0	0					
	S Right	212	27					
	E Left	7	10	20	B	11		
	E Thru	959	20					
	E Right	1	57					
	N Left	4	5	22	C	1		
	N Thru	0	0					
	N Right	3	45					
	W Left	2	5	8	A	5		
	W Thru	1375	6					
	W Right	180	27					
Silverdale Interchange East (Roundabout)	E Left	603	3	12	B	17	8	A
	E Thru	784	20					
	N Left	230	9	19	B	6		
	N Right	246	28					
	W Thru	1338	1	2	A	1		
	W Right	336	3					
Silverdale Interchange West (Roundabout)	S Left	525	11	29	C	15	34	C
	S Right	935	39					
	E Thru	737	5	5	A	16		
	E Right	295	6					
	W Left	356	68	67	E	24		
	W Thru	738	66					
Dairy Flat & Pine Valley (Signals)	E Thru	443	7	19	B	7	19	B
	E Right	822	26					
	N Left	351	10	17	B	3		
	N Right	153	34					
	W Left	423	10	21	C	8		
	W Thru	721	27					
Dairy Flat & SW1 (Signals)	S Thru	793	17	20	B	13	20	C
	S Right	61	55					
	E Left	151	19	24	C	7		
	E Right	353	26					
	N Left	135	9	17	B	7		
	N Thru	461	20					
Argent & Pine Valley (Roundabout)	S Left	276	17	19	B	4	17	B
	S Thru	978	19					
	S U-Turn	0	0	4	A	2		
	N Thru	310	4					
	N Right	54	5					
	N U-Turn	0	0	27	C	13		
	W Left	84	26					
	W Right	192	27					
	W U-Turn	0	0					

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(Wainui FUZ - 960 Dwellings)

Intersection	Appr & Turn	Count	Mvmt Delay (s/veh)	App Delay (s/veh)	App LOS	App 95% Q (veh)	Int Del (s/veh)	Int LOS
Argent & John Fair (Roundabout)	S Left	82	9	10	B	6	9	A
	S Thru	631	10					
	S Right	352	11					
	S U-Turn	0	0					
	E Left	108	3	4	A	3		
	E Thru	34	5					
	E Right	130	5					
	E U-Turn	0	0					
	N Left	89	6	6	A	3		
	N Thru	238	6					
	N Right	2	10					
	N U-Turn	0	0					
	W Left	2	10	11	B	1		
	W Thru	15	11					
	W Right	18	11					
	W U-Turn	0	0					
Argent & Maryvale (Roundabout)	S Left	48	6	6	A	2	6	A
	S Thru	702	6					
	S Right	13	6					
	S U-Turn	0	0					
	E Left	9	3	3	A	1		
	E Thru	14	3					
	E Right	15	2					
	E U-Turn	0	0					
	N Left	8	5	5	A	2		
	N Thru	300	5					
	N Right	36	6					
	N U-Turn	0	0					
	W Left	25	6	6	A	1		
	W Thru	13	6					
	W Right	19	7					
	W U-Turn	0	0					
Argent & TC1 (Roundabout)	S Left	42	4	4	A	2	4	A
	S Thru	480	4					
	S Right	165	5					
	S U-Turn	0	0					
	E Left	45	3	3	A	1		
	E Thru	15	2					
	E Right	13	3					
	E U-Turn	0	0					
	N Left	22	4	5	A	2		
	N Thru	254	5					
	N Right	3	4					
	N U-Turn	0	0					
	W Left	6	5	6	A	1		
	W Thru	7	6					
	W Right	13	6					
	W U-Turn	0	0					
Argent & TC2 (Roundabout)	S Left	147	5	5	A	1	4	A
	S Thru	330	5					
	S Right	22	5					
	S U-Turn	0	0					
	E Left	5	3	2	A	1		
	E Thru	20	2					
	E Right	9	2					
	E U-Turn	0	0					
	N Left	18	3	4	A	1		
	N Thru	222	4					
	N Right	15	5					
	N U-Turn	0	0					
	W Left	5	2	3	A	1		
	W Thru	12	3					
	W Right	53	3					
	W U-Turn	0	0					

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(Wainui FUZ - 960 Dwellings)

Intersection	Appr & Turn	Count	Mvmt Delay (s/veh)	App Delay (s/veh)	App LOS	App 95% Q (veh)	Int Del (s/veh)	Int LOS
Argent & Wainui (Roundabout)	S Left	0	0	11	B	5	6	A
	S Thru	288	11					
	S Right	17	11					
	S U-Turn	0	0					
	E Left	43	7	7	A	4		
	E Thru	23	6					
	E Right	375	7					
	E U-Turn	0	0					
	N Left	210	2	2	A	1		
	N Thru	211	2					
	N Right	17	2					
	N U-Turn	0	0					
	W Left	12	8	8	A	1		
	W Thru	14	9					
	W Right	0	0					
	W U-Turn	0	0					
Wainui & MN_West (Priority)	E Thru	645	1	4	A	1	5	A
	E Right	30	4					
	N Left	17	4	4	A	1		
	N Right	23	3					
	W Left	35	5	5	A	1		
	W Thru	419	2					
Wainui & Waiwai (Roundabout)	S Left	24	1	1	A	1	3	A
	S Thru	57	1					
	S Right	23	2					
	S U-Turn	0	0					
	E Left	26	3	4	A	1		
	E Thru	401	4					
	E Right	6	5					
	E U-Turn	0	0					
	N Left	16	2	2	A	1		
	N Thru	32	2					
	N Right	14	3					
	N U-Turn	0	0					
	W Left	9	2	3	A	1		
	W Thru	196	3					
	W Right	35	3					
	W U-Turn	0	0					
Wainui & Lysnar (Roundabout)	S Left	98	4	5	A	2	5	A
	S Thru	55	5					
	S Right	12	5					
	S U-Turn	0	0					
	E Left	42	5	6	A	2		
	E Thru	331	6					
	E Right	194	6					
	E U-Turn	0	0					
	N Left	56	3	3	A	1		
	N Thru	21	3					
	N Right	6	3					
	N U-Turn	0	0					
	W Left	10	4	5	A	2		
	W Thru	214	5					
	W Right	10	5					
	W U-Turn	0	0					
Wainui & Upper Orewa (Priority)	E Thru	467	2	5	A	2	9	A
	E Right	31	5					
	N Left	22	6	9	A	2		
	N Right	99	9					
	W Left	90	2	2	A	1		
	W Thru	191	1					
Wainui & MillOff (Roundabout)	S Left	470	7	7	A	4	6	A
	S Thru	396	7					
	N Right	210	4	4	A	1		
	W Left	102	4					
	S Left	15	1	2	A	1		
S Right	154	2						
S U-Turn	0	0						
E Left	295	5	5	A	3			
E Thru	88	6						
E U-Turn	0	0						
W Thru	473	4	4	A	3			
W Right	205	5						
W U-Turn	0	0						

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(Wainui FUZ - 960 Dwellings)

Intersection	Appr & Turn	Count	Mvmt Delay (s/veh)	App Delay (s/veh)	App LOS	App 95% Q (veh)	Int Del (s/veh)	Int LOS
Wainui & Millwater (Signals)	S Left	63	4	21	C	3	18	B
	S Thru	230	26					
	N Thru	73	9	23	C	3		
	N Right	321	26					
	W Left	508	12	13	B	12		
	W Right	125	19					
Millwater & MillOn (Roundabout)	S Left	262	4	5	A	1	4	A
	S Thru	454	6					
	S Right	26	6					
	S U-Turn	0	0					
	E Left	0	0	4	A	1		
	E Thru	8	4					
	E Right	3	5					
	E U-Turn	0	0					
	N Left	10	2	3	A	1		
	N Thru	396	3					
	N Right	116	3					
	N U-Turn	0	0					
East Coast Road & Wilks (Signals)	S Left	185	14	21	C	2	26	C
	S Thru	473	23					
	S Right	4	67					
	E Left	3	35	46	D	1		
	E Thru	4	52					
	E Right	7	47					
	N Left	13	34	35	D	4		
	N Thru	279	32					
	N Right	89	46					
	W Left	80	20	26	C	3		
	W Thru	4	25					
	W Right	190	29					
Postman Road & Wilks (Priority)	S Left	112	7	7	A	1	7	A
	S Thru	169	6					
	N Thru	180	2	5	A	3		
	N Right	85	5					
	W Left	76	4	4	A	1		
	W Thru	90	0					
Dairy Flat Highway & Wilks (Signals)	S Left	36	23	28	C	4	28	C
	S Thru	481	27					
	S Right	75	42					
	E Left	89	20	29	C	4		
	E Thru	22	28					
	E Right	122	36					
	N Left	140	22	28	C	5		
	N Thru	323	25					
	N Right	153	39					
	W Left	244	22	25	C	4		
	W Thru	29	32					
	W Right	51	40					

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(Wainui FUZ - 1,620 Dwellings)

Intersection	Appr & Turn	Count	Mvmt Delay (s/veh)	App Delay (s/veh)	App LOS	App 95% Q (veh)	Int Del (s/veh)	Int LOS
HCH & Whangaparaoa (Signals)	S Left	908	4	13	B	5	25	C
	S Thru	296	40					
	S Right	7	56					
	E Left	5	4	35	C	9		
	E Thru	868	34					
	E Right	170	40					
	N Left	87	3	28	C	4		
	N Thru	56	23					
	N Right	216	40					
	W Left	14	5	31	C	7		
	W Thru	329	23					
	W Right	458	37					
	HCH & East Coast (Signals)	S Left	62	13	36	D		
S Thru		4	37					
S Right		398	39					
E Left		308	4	22	C	14		
E Thru		1309	26					
E Right		26	47					
N Left		3	11	38	D	1		
N Thru		1	77					
N Right		4	47					
W Left		29	2	17	B	5		
W Thru		672	9					
W Right		313	36					
HCH & Painton (Signals)		S Left	159	9	13	B	1	21
	S Thru	0	0					
	S Right	15	61					
	E Left	250	26	34	C	14		
	E Thru	1084	36					
	E Right	0	0					
	N Left	3	2	31	C	1		
	N Thru	0	0					
	N Right	4	52					
	W Left	1	1	13	B	5		
	W Thru	1029	2					
	W Right	804	27					
	Silverdale Interchange East (Roundabout)	E Left	803	4	16	B	12	
E Thru		457	37					
N Left		482	18	40	D	11		
N Right		373	69					
W Thru		1339	5	6	A	6		
W Right		643	7					
Silverdale Interchange West (Roundabout)	S Left	415	15	14	B	4	12	B
	S Right	566	14					
	E Thru	771	2	2	A	1		
	E Right	72	3					
	W Left	112	0	16	B	10		
	W Thru	1429	16					
Dairy Flat & Pine Valley (Signals)	E Thru	882	27	31	C	8	30	C
	E Right	309	42					
	N Left	1162	28	34	C	10		
	N Right	470	49					
	W Left	161	4	19	B	5		
	W Thru	499	24					
Dairy Flat & SW1 (Signals)	S Thru	515	7	12	B	4	32	C
	S Right	96	36					
	E Left	32	22	28	C	2		
	E Right	143	30					
	N Left	575	37	41	D	9		
	N Thru	780	44					
Dairy Flat & SW2 (Signals)	S Thru	577	9	19	B	6	18	B
	S Right	161	54					
	E Left	81	29	32	C	2		
	E Right	36	38					
	N Left	59	13	16	B	7		
	N Thru	754	16					
Argent & Pine Valley (Roundabout)	S Left	140	9	8	A	1	6	A
	S Thru	331	7					
	S U-Turn	0	0					
	N Thru	1360	5	5	A	1		
	N Right	63	6					
	N U-Turn	0	0					
	W Left	47	3	5	A	1		
	W Right	268	5					
	W U-Turn	0	0					
	W U-Turn	0	0					

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(Wainui FUZ - 1,620 Dwellings)

Intersection	Appr & Turn	Count	Mvmt Delay (s/veh)	App Delay (s/veh)	App LOS	App 95% Q (veh)	Int Del (s/veh)	Int LOS
Argent & John Fair (Roundabout)	S Left	18	6	6	A	1	15	B
	S Thru	216	6					
	S Right	145	6					
	S U-Turn	0	0					
	E Left	262	49	50	D	7		
	E Thru	7	43					
	E Right	13	67					
	E U-Turn	0	0					
	N Left	38	11	10	B	5		
	N Thru	1099	10					
	N Right	2	9					
	N U-Turn	0	0					
	W Left	1	4	5	A	1		
	W Thru	6	5					
	W Right	59	5					
	W U-Turn	0	0					
Argent & Maryvale (Roundabout)	S Left	10	4	5	A	1	12	B
	S Thru	204	5					
	S Right	16	6					
	S U-Turn	0	0					
	E Left	101	47	47	D	3		
	E Thru	8	36					
	E Right	12	54					
	E U-Turn	0	0					
	N Left	31	9	10	B	3		
	N Thru	1022	10					
	N Right	32	11					
	N U-Turn	0	0					
	W Left	9	1	3	A	1		
	W Thru	5	2					
	W Right	17	4					
	W U-Turn	0	0					
Argent & TC1 (Roundabout)	S Left	8	3	3	A	1	6	A
	S Thru	160	3					
	S Right	44	4					
	S U-Turn	0	0					
	E Left	161	9	9	A	4		
	E Thru	5	7					
	E Right	18	9					
	E U-Turn	0	0					
	N Left	10	5	6	A	3		
	N Thru	672	6					
	N Right	1	3					
	N U-Turn	0	0					
	W Left	6	2	3	A	1		
	W Thru	7	2					
	W Right	47	3					
	W U-Turn	0	0					
Argent & TC2 (Roundabout)	S Left	28	4	5	A	1	5	A
	S Thru	151	5					
	S Right	4	5					
	S U-Turn	0	0					
	E Left	17	7	7	A	1		
	E Thru	16	8					
	E Right	39	6					
	E U-Turn	0	0					
	N Left	22	5	6	A	4		
	N Thru	549	6					
	N Right	3	6					
	N U-Turn	0	0					
	W Left	5	2	2	A	1		
	W Thru	18	2					
	W Right	116	2					
	W U-Turn	0	0					
Argent & Wainui (Roundabout)	S Left	0	0	8	A	3	6	A
	S Thru	176	8					
	S Right	15	7					
	S U-Turn	0	0					
	E Left	61	10	10	A	4		
	E Thru	8	9					
	E Right	265	10					
	E U-Turn	0	0					
	N Left	246	3	3	A	2		
	N Thru	486	4					
	N Right	9	4					
	N U-Turn	0	0					
	W Left	10	4	5	A	1		
	W Thru	10	6					
	W Right	0	0					
	W U-Turn	0	0					

AM_2034_Avg

07:45 - 08:45

8

(Wainui FUZ - 1,620 Dwellings)

Intersection	Appr & Turn	Count	Mvmt Delay (s/veh)	App Delay (s/veh)	App LOS	App 95% Q (veh)	Int Del (s/veh)	Int LOS
Wainui & MN_West (Priority)	E Thru	439	1	6	A	1	7	A
	E Right	11	6					
	N Left	70	6					
	N Right	48	5	7	A	1		
	W Left	29	7					
	W Thru	669	3					
Wainui & Waiwai (Roundabout)	S Left	51	1	1	A	1	3	A
	S Thru	31	1					
	S Right	4	1					
	S U-Turn	0	0					
	E Left	8	3					
	E Thru	237	4					
	E Right	8	4	4	A	1		
	E U-Turn	0	0					
	N Left	51	2					
	N Thru	44	2					
	N Right	45	3					
	N U-Turn	0	0					
	W Left	10	2	2	A	1		
	W Thru	236	3					
	W Right	22	3					
	W U-Turn	0	0					
Wainui & Lysnar (Roundabout)	S Left	37	2	2	A	1	4	A
	S Thru	11	1					
	S Right	1	3					
	S U-Turn	0	0					
	E Left	4	4					
	E Thru	199	5					
	E Right	33	5	5	A	1		
	E U-Turn	0	0					
	N Left	51	3					
	N Thru	33	3					
	N Right	16	4					
	N U-Turn	0	0					
	W Left	5	4	3	A	1		
	W Thru	226	4					
	W Right	59	5					
	W U-Turn	0	0					
Wainui & Upper Orewa (Priority)	E Thru	239	2	7	A	1	9	A
	E Right	11	7					
	N Left	34	7					
	N Right	84	9	9	A	3		
	W Left	66	2					
	W Thru	408	1					
Wainui & MillOff (Roundabout)	S Left	150	5	6	A	3	5	A
	S Thru	147	6					
	N Right	444	5					
	W Left	105	3					
Wainui & Sidwell (Roundabout)	S Left	8	2	4	A	2	10	A
	S Right	464	4					
	S U-Turn	0	0					
	E Left	96	3					
	E Thru	96	4	4	A	1		
	E U-Turn	0	0					
	W Thru	547	17					
	W Right	48	17					
W U-Turn	0	0						
Wainui & Millwater (Signals)	S Left	21	2	29	C	3	20	B
	S Thru	191	32					
	N Thru	74	17					
	N Right	171	35	30	C	2		
	W Left	889	15					
	W Right	128	20					
Millwater & MillOn (Roundabout)	S Left	677	7	8	A	3	6	A
	S Thru	397	8					
	S Right	3	6					
	S U-Turn	0	0					
	E Left	1	5	5	A	1		
	E Thru	26	5					
	E Right	8	5					
	E U-Turn	0	0					
	N Left	7	2					
	N Thru	247	3					
	N Right	288	3	3	A	1		
	N U-Turn	0	0					

AM_2034_Avg

07:45 - 08:45

8

(Wainui FUZ - 1,620 Dwellings)

Intersection	Appr & Turn	Count	Mvmt Delay (s/veh)	App Delay (s/veh)	App LOS	App 95% Q (veh)	Int Del (s/veh)	Int LOS
East Coast Road & Wilks (Signals)	S Left	226	12	17	B	2	25	C
	S Thru	311	20					
	S Right	2	58					
	E Left	7	33	37	D	1		
	E Thru	2	39					
	E Right	9	39					
	N Left	7	28	33	C	4		
	N Thru	401	30					
	N Right	80	49					
	W Left	72	16	24	C	3		
	W Thru	1	30					
	W Right	189	27					
	Postman Road & Wilks (Priority)	S Left	118	6	6	A		
S Thru		189	6					
N Thru		165	4	7	A	3		
N Right		136	7					
W Left		90	4	4	A	1		
W Thru		97	0					
Dairy Flat Highway & Wilks (Signals)	S Left	33	26	30	C	3	31	C
	S Thru	432	27					
	S Right	117	40					
	E Left	65	20	31	C	3		
	E Thru	23	24					
	E Right	171	37					
	N Left	181	26	31	C	5		
	N Thru	444	29					
	N Right	212	41					
	W Left	143	22	28	C	2		
	W Thru	25	35					
	W Right	41	42					

PM_2034_Avg

16:30 - 17:30

7

(Wainui FUZ - 1,620 Dwellings)

Intersection	Appr & Turn	Count	Mvmt Delay (s/veh)	App Delay (s/veh)	App LOS	App 95% Q (veh)	Int Del (s/veh)	Int LOS
HCH & Whangaparaoa (Signals)	S Left	435	2	21	C	7	35	D
	S Thru	326	44					
	S Right	7	59					
	E Left	13	8	42	D	9		
	E Thru	436	40					
	E Right	228	46					
	N Left	276	13	30	C	5		
	N Thru	117	31					
	N Right	233	49					
	W Left	32	9	41	D	7		
	W Thru	726	50					
	W Right	1139	35					
	HCH & East Coast (Signals)	S Left	71	10	51	D		
S Thru		22	43					
S Right		755	56					
E Left		250	3	23	C	9		
E Thru		640	25					
E Right		111	52					
N Left		266	27	37	D	4		
N Thru		49	53					
N Right		129	51					
W Left		150	18	40	D	15		
W Thru		1322	41					
W Right		85	58					
HCH & Painton (Signals)		S Left	486	21	25	C	6	18
	S Thru	1	22					
	S Right	225	34					
	E Left	9	10	31	C	14		
	E Thru	908	32					
	E Right	2	43					
	N Left	3	6	25	C	1		
	N Thru	0	0					
	N Right	3	37					
	W Left	4	5	8	A	5		
	W Thru	1370	6					
	W Right	168	29					
	Silverdale Interchange East (Roundabout)	E Left	591	3	25	C	20	
E Thru		811	41					
N Left		235	7	27	C	5		
N Right		288	44					
W Thru		1318	1	2	A	1		
W Right		416	3					
Silverdale Interchange West (Roundabout)	S Left	530	12	29	C	14	26	C
	S Right	830	40					
	E Thru	770	3	3	A	7		
	E Right	328	5					
	W Left	450	0	48	D	16		
	W Thru	902	48					
Dairy Flat & Pine Valley (Signals)	E Thru	560	8	23	C	9	24	C
	E Right	739	34					
	N Left	404	18	25	C	5		
	N Right	194	39					
	W Left	555	12	25	C	11		
	W Thru	967	33					
Dairy Flat & SW1 (Signals)	S Thru	981	32	33	C	25	29	C
	S Right	12	87					
	E Left	25	31	35	D	10		
	E Right	519	35					
	N Left	180	10	19	B	8		
	N Thru	572	22					
Dairy Flat & SW2 (Signals)	S Thru	910	21	26	C	11	24	C
	S Right	85	78					
	E Left	219	30	33	C	5		
	E Right	73	41					
	N Left	20	11	17	B	7		
	N Thru	574	18					
Argent & Pine Valley (Roundabout)	S Left	265	13	12	B	2	10	B
	S Thru	1032	12					
	S U-Turn	0	0					
	N Thru	405	4	4	A	1		
	N Right	79	5					
	N U-Turn	0	0					
	W Left	81	7	11	B	2		
	W Right	197	12					
	W U-Turn	0	0					

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(Wainui FUZ - 1,620 Dwellings)

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Intersection	Appr & Turn	Count	Mvmt Delay (s/veh)	App Delay (s/veh)	App LOS	App 95% Q (veh)	Int Del (s/veh)	Int LOS
Argent & John Fair (Roundabout)	S Left	78	18	20	B	6	14	B
	S Thru	683	19					
	S Right	353	22					
	S U-Turn	0	0					
	E Left	144	4	5	A	3		
	E Thru	35	5					
	E Right	136	6					
	E U-Turn	0	0					
	N Left	90	6	7	A	3		
	N Thru	326	7					
	N Right	3	8					
	N U-Turn	0	0					
	W Left	2	7	12	B	1		
	W Thru	9	13					
	W Right	17	12					
	W U-Turn	0	0					
Argent & Maryvale (Roundabout)	S Left	50	6	6	A	3	6	A
	S Thru	753	6					
	S Right	17	7					
	S U-Turn	0	0					
	E Left	15	4	3	A	1		
	E Thru	14	3					
	E Right	9	4					
	E U-Turn	0	0					
	N Left	13	5	5	A	2		
	N Thru	382	5					
	N Right	37	5					
	N U-Turn	0	0					
	W Left	26	6	7	A	1		
	W Thru	13	6					
	W Right	23	7					
	W U-Turn	0	0					
Argent & TC1 (Roundabout)	S Left	50	4	5	A	1	5	A
	S Thru	500	4					
	S Right	177	5					
	S U-Turn	0	0					
	E Left	49	3	3	A	1		
	E Thru	12	3					
	E Right	12	3					
	E U-Turn	0	0					
	N Left	12	4	5	A	2		
	N Thru	333	5					
	N Right	1	8					
	N U-Turn	0	0					
	W Left	6	7	6	A	1		
	W Thru	6	6					
	W Right	13	5					
	W U-Turn	0	0					
Argent & TC2 (Roundabout)	S Left	145	5	5	A	2	4	A
	S Thru	357	5					
	S Right	17	5					
	S U-Turn	0	0					
	E Left	4	3	3	A	1		
	E Thru	33	3					
	E Right	11	3					
	E U-Turn	0	0					
	N Left	19	4	4	A	1		
	N Thru	297	4					
	N Right	11	4					
	N U-Turn	0	0					
	W Left	7	3	3	A	1		
	W Thru	21	3					
	W Right	45	4					
	W U-Turn	0	0					
Argent & Wainui (Roundabout)	S Left	0	0	13	B	6	8	A
	S Thru	326	13					
	S Right	12	12					
	S U-Turn	0	0					
	E Left	42	9	8	A	4		
	E Thru	22	7					
	E Right	413	9					
	E U-Turn	0	0					
	N Left	208	2	3	A	1		
	N Thru	284	3					
	N Right	14	4					
	N U-Turn	0	0					
	W Left	9	10	11	B	1		
	W Thru	14	12					
	W Right	0	0					
	W U-Turn	0	0					

PM_2034_Avg
(Wainui FUZ - 1,620 Dwellings)

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Intersection	Appr & Turn	Count	Mvmt Delay (s/veh)	App Delay (s/veh)	App LOS	App 95% Q (veh)	Int Del (s/veh)	Int LOS			
Wainui & MN_West (Priority)	E Thru	701	1	6	A	1	6	A			
	E Right	48	6								
	N Left	29	4	4	A	1					
	N Right	35	4								
	W Left	55	5	5	A	1					
	W Thru	478	3								
Wainui & Waiwai (Roundabout)	S Left	31	1	2	A	2	3	A			
	S Thru	91	2								
	S Right	10	2								
	S U-Turn	0	0								
	E Left	22	3	4	A	1					
	E Thru	422	4								
	E Right	7	5								
	E U-Turn	0	0								
	N Left	8	2	2	A	1					
	N Thru	39	2								
	N Right	25	3								
	N U-Turn	0	0								
	W Left	9	2	3	A	1					
	W Thru	191	3								
	W Right	35	3								
	W U-Turn	0	0								
	Wainui & Lysnar (Roundabout)	S Left	57	3	3	A			1	5	A
		S Thru	29	3							
		S Right	1	6							
		S U-Turn	0	0							
E Left		14	5	5	A	1					
E Thru		380	5								
E Right		128	6								
E U-Turn		0	0								
N Left		24	2	3	A	1					
N Thru		14	3								
N Right		14	4								
N U-Turn		0	0								
W Left		10	4	5	A	1					
W Thru		184	5								
W Right		15	4								
W U-Turn		0	0								
Wainui & Upper Orewa (Priority)	E Thru	674	3	6	A	3	16	C			
	E Right	31	6								
	N Left	24	9	16	C	3					
	N Right	101	16								
	W Left	97	2	2	A	1					
	W Thru	223	1								
Wainui & MillOff (Roundabout)	S Left	467	8	8	A	6	7	A			
	S Thru	474	9								
	N Right	244	4	4	A	1					
	W Left	232	5								
Wainui & Sidwell (Roundabout)	S Left	14	1	2	A	1	5	A			
	S Right	161	2								
	S U-Turn	0	0								
	E Left	247	6								
	E Thru	219	7	7	A	4					
	E U-Turn	0	0								
	W Thru	479	4								
	W Right	233	5								
W U-Turn	0	0	5	A	3						
Wainui & Millwater (Signals)	S Left	76	5	23	C	4	20	B			
	S Thru	240	28								
	N Thru	76	10	24	C	4					
	N Right	391	26								
	W Left	505	14	16	B	12					
	W Right	134	21								
Millwater & MillOn (Roundabout)	S Left	294	4	5	A	1	4	A			
	S Thru	431	6								
	S Right	21	6								
	S U-Turn	0	0								
	E Left	0	0	4	A	1					
	E Thru	5	4								
	E Right	8	4								
	E U-Turn	0	0								
	N Left	11	2	3	A	1					
	N Thru	467	3								
	N Right	113	3								
	N U-Turn	0	0								

PM_2034_Avg

16:30 - 17:30

7

(Wainui FUZ - 1,620 Dwellings)

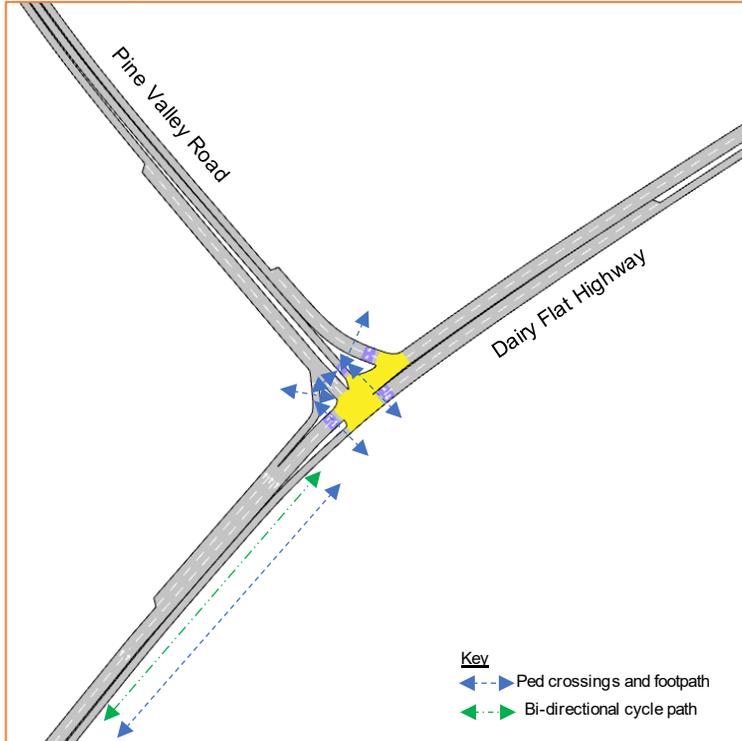
Intersection	Appr & Turn	Count	Mvmt Delay (s/veh)	App Delay (s/veh)	App LOS	App 95% Q (veh)	Int Del (s/veh)	Int LOS
East Coast Road & Wilks (Signals)	S Left	192	33	39	D	2	50	D
	S Thru	518	41					
	S Right	5	87					
	E Left	3	31	50	D	1		
	E Thru	3	51					
	E Right	6	59					
	N Left	11	60	67	E	5		
	N Thru	293	62					
	N Right	124	78					
	W Left	156	59	50	D	4		
	W Thru	4	35					
	W Right	233	45					
	Postman Road & Wilks (Priority)	S Left	162	7	7	A		
S Thru		159	7					
N Thru		249	4	7	A	4		
N Right		139	7					
W Left		92	4	4	A	2		
W Thru		138	0					
Dairy Flat Highway & Wilks (Signals)	S Left	46	26	31	C	5	32	C
	S Thru	556	29					
	S Right	107	46					
	E Left	66	24	36	D	4		
	E Thru	24	33					
	E Right	139	42					
	N Left	196	24	30	C	6		
	N Thru	403	28					
	N Right	194	42					
	W Left	286	29	36	D	7		
	W Thru	43	59					
	W Right	63	49					

APPENDIX C – Mitigation Measures

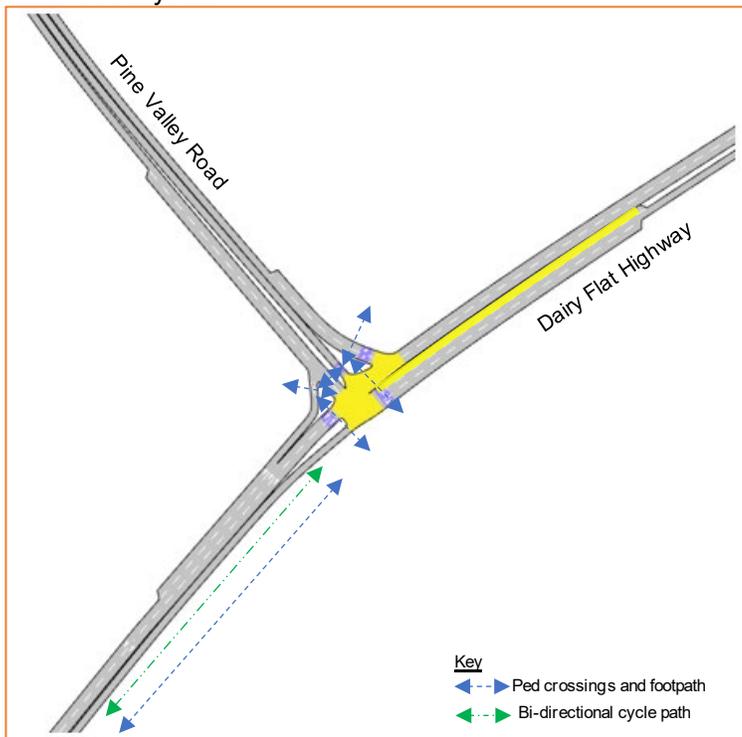
Upgrade 1

- Upgrade of the Pine Valley Road / Dairy Flat Highway intersection to include a second right turn short bay from the east (turns into Pine Valley Road) (approximately 135m)
 - formal pedestrian crossings incorporated within the intersection layout, plus advance cycle boxes

Original layout:



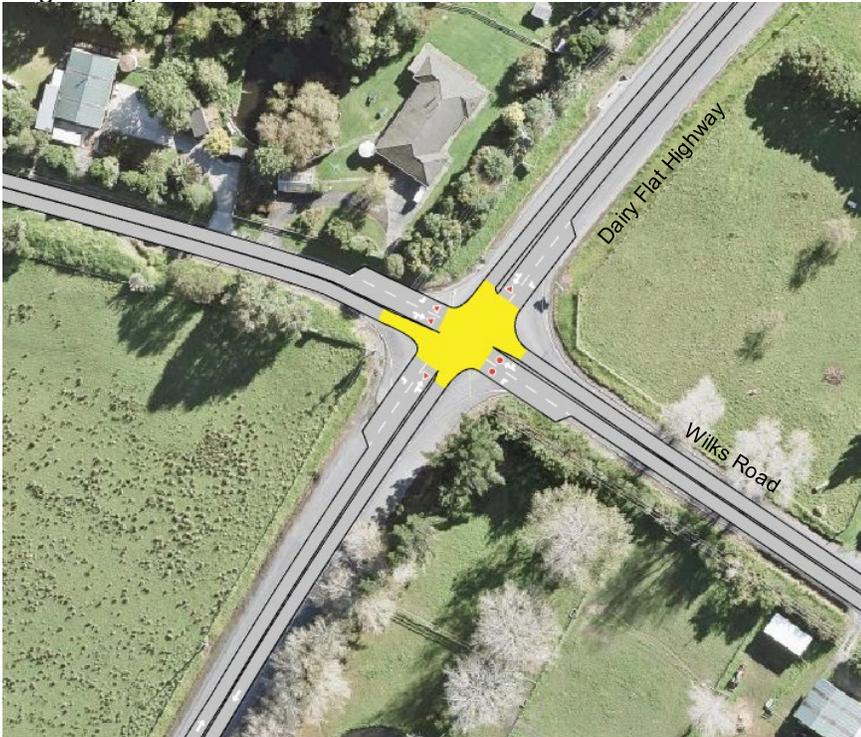
Amended layout:



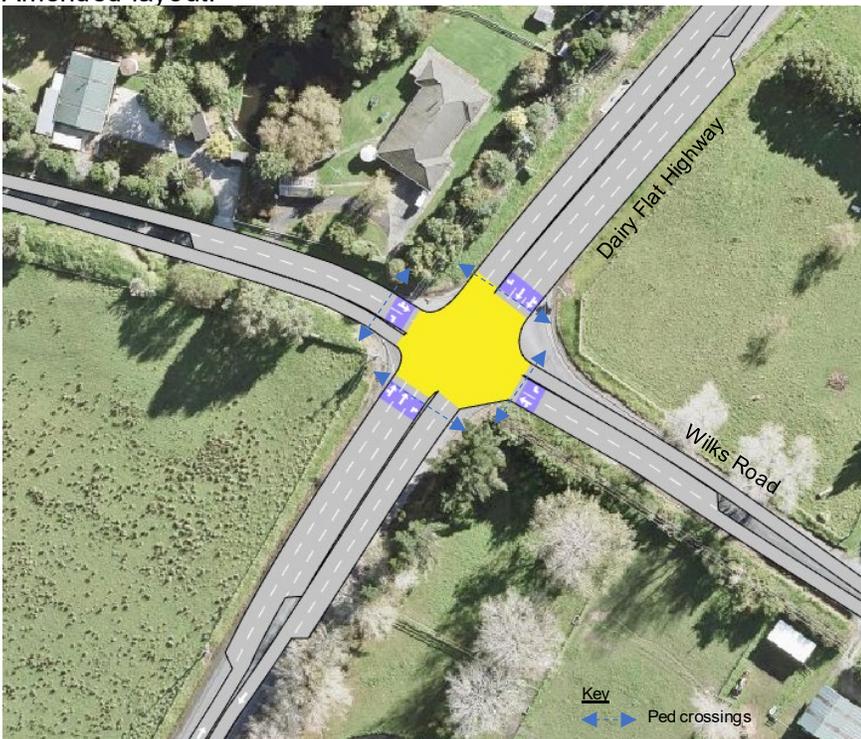
Upgrade 2

- Signalisation of the Wilks Road / Dairy Flat Highway intersection
 - signalised pedestrian crossings incorporated within the intersection layout
 - advance cycle boxes assumed

Original layout:



Amended layout:



Upgrade 3

- Signalisation of the Wilks Road / East Coast Road intersection
 - signalised pedestrian crossings incorporated within the intersection layout
 - advance cycle boxes assumed

Original layout:



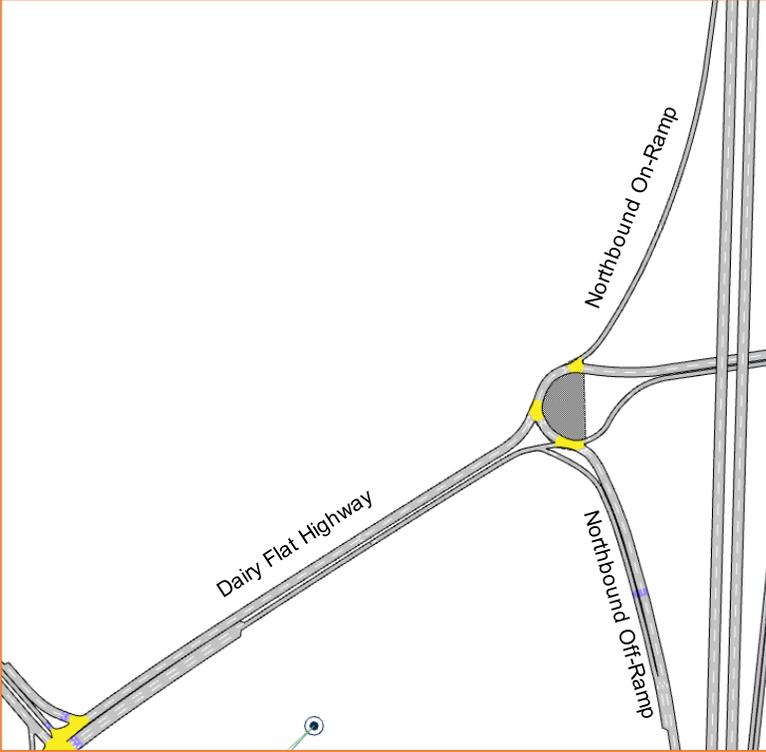
Amended layout:



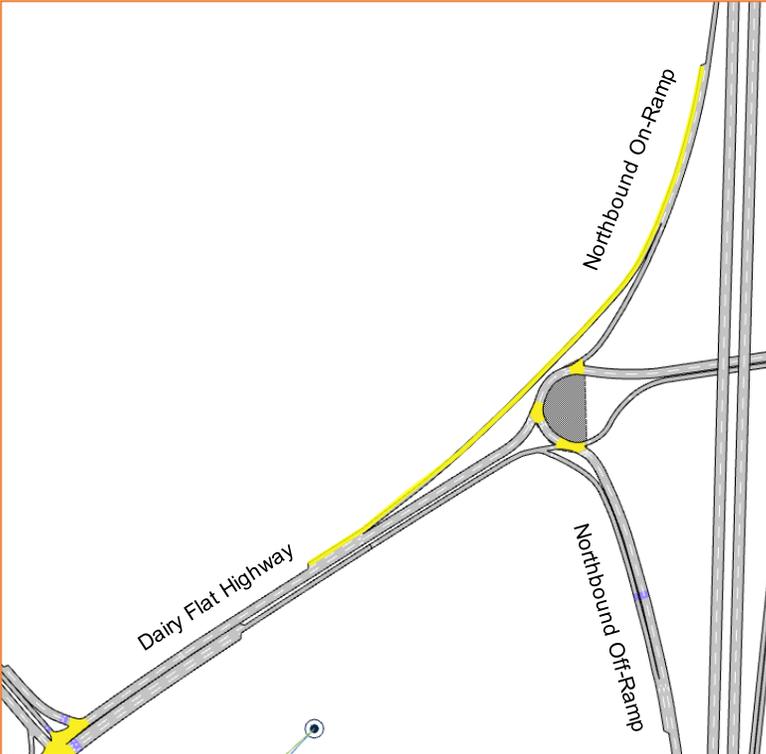
Upgrade 4a

- Provision of a slip lane on the western approach to the Silverdale interchange which connects to the northbound on-ramp

Original layout:



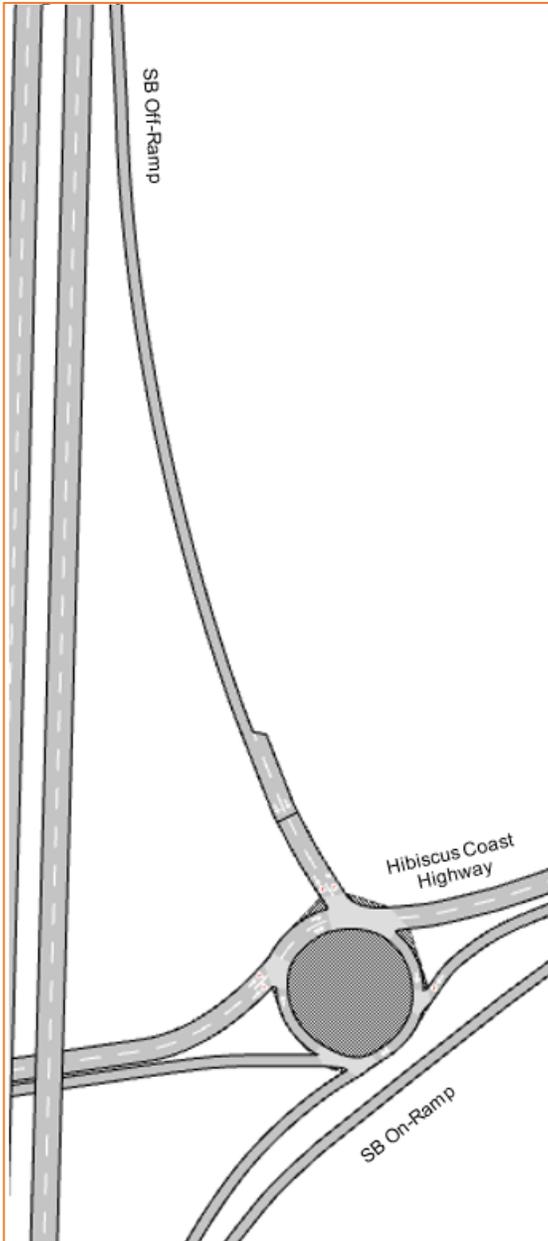
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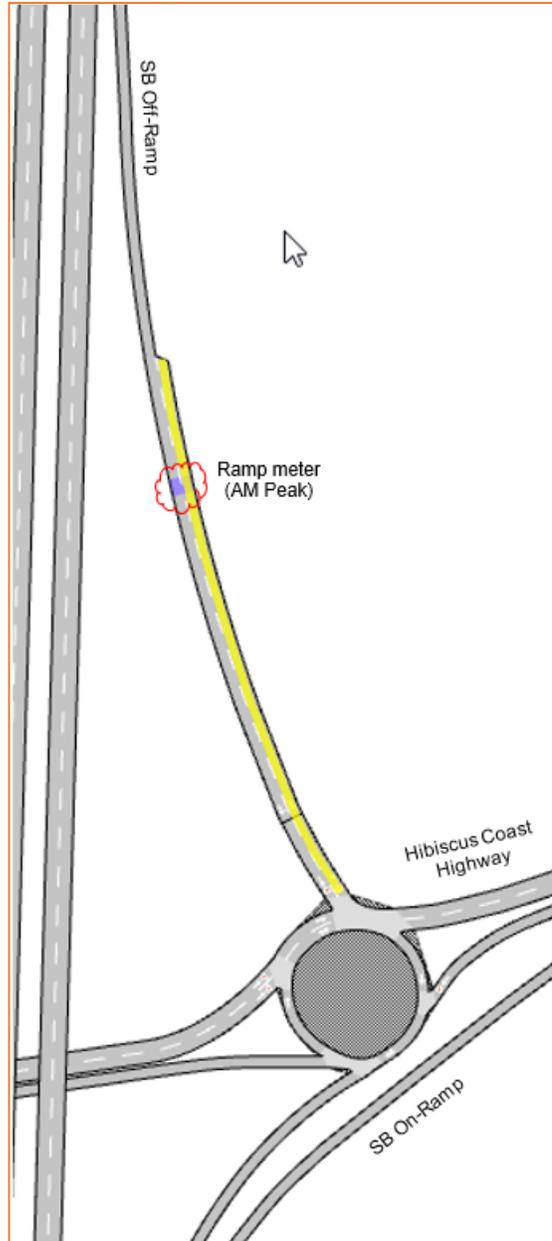
Upgrade 4b and c

- Extending the length of the left turn slip lane on the southbound off-ramp at the Silverdale interchange to around 150m and introducing a ramp meter for the AM peak

Original layout:



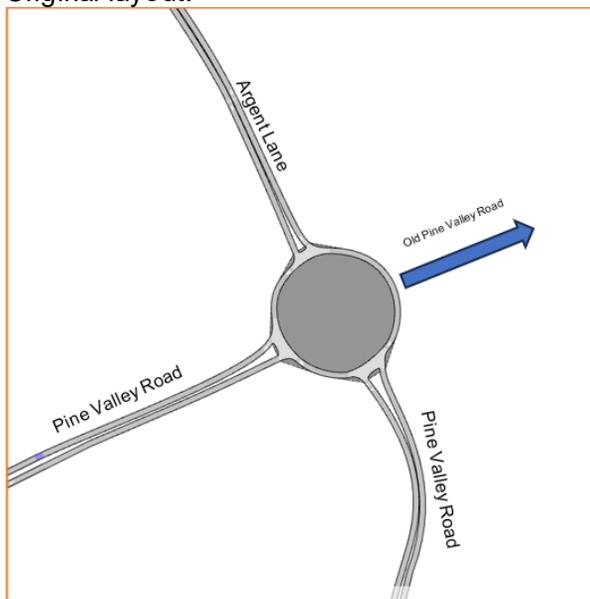
Amended layout:



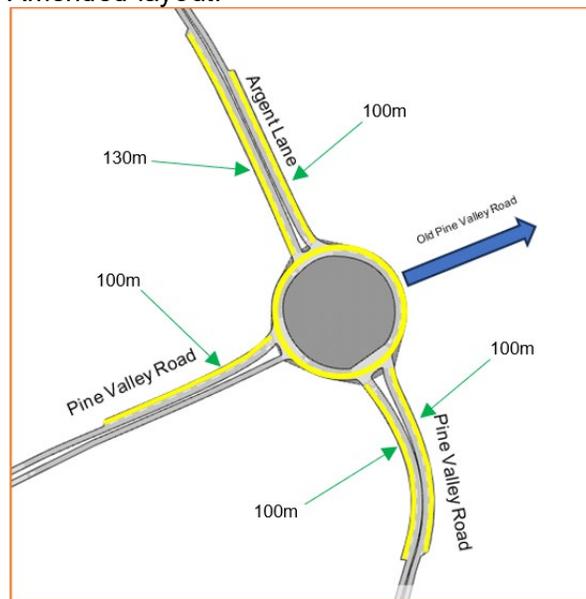
Upgrade 5 (as per Table IX.6.1.1 in the Precinct Provisions – upgrade (e))

- Double-laning of the Argent Lane / Pine Valley Road roundabout
- Additional widening of approaches and departure lanes as follows (also annotated in the Amended layout diagram):
 - 100m additional short lane on Pine Valley Road (western approach)
 - 100m additional short lane on Argent Lane (northern approach)
 - 100m additional short lane on Pine Valley Road (southern approach)
 - 100m additional short lane on Pine Valley Road (southern departure)
 - 130m additional short lane on Argent Lane (northern departure)

Original layout:



Amended layout:



It should be noted that Old Pine Valley Road has not been specifically included in the model as it is a no-exit road with only a small number of properties accessing it. It can be included once a notable level of future development along the road is identified.