Delmore Fast-Track

25/06/2025 – Auckland Council Response

Annexure 20:

Auckland Transport

Tessa Craig (AT),

plus attaching reports by:

- **Craig Richards (Beca); and**
- **Paul Schischka (PTM Consultants)**

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Monday 23rd June 2025

Carly Hinde - Principal Project Lead, Planning & Resource Consents - Premium Unit
Auckland Council

Dear Ms Hinde,

DELMORE FAST-TRACK CONSENT - BUN60444768

Thank you for referring the Delmore fast-track consent (**the Project**) to Auckland Transport (**AT**) for review. This memo provides a summary of ATs assessment and position on the Project, and should be read in conjunction with the supporting material attached with this response, namely:

- Annexure A, Delmore Fast Track Application Beca Review Transport, dated 23 June 2025;
- Annexure B, NoR 6 Cost Technical Note, Te Tupu Ngatahi – Supporting Growth dated 19 June 2025; and
- Annexure C, Delmore Residential Subdivision Fast Track Application Transport Assessment, dated 23 June 2025 prepared PTM Consultants.

We have reviewed the substantive application material as it relates to AT, along with the additional material submitted by the Applicant on the 12th of June 2025. These are listed as follows:

- Assessment of Environmental Effects and Statutory Analysis (AEE), prepared by B&A and dated 17/02/2025.
- Stormwater Management Plan Revision B, prepared by McKenzie & Co dated 11/02/205.
- Stormwater Infrastructure Revision E, prepared by McKenzie & Co dated 18/02/205.
- Indicative Wainui / Ōrewa Structure Plan.
- Scheme Plans Prepared by McKenzie & Co.
- Roading and Access Report Revision F prepared by McKenzie & Co and dated 11/02/205.
- Roading Drawings prepared by McKenzie & Co.
- Proposed Conditions prepared by B&A.
- Integrated Transport Assessment prepared by Commute dated 13/02/2025.
- Economic Assessment prepared by Economic and Property Research dated 13/02/2025.
- Notice of Requirement 6 Southern Realignment Assessment prepared by McKenzie & Co and dated 26/05/2025.
- Memo Retaining Walls within AT Road Reserve prepared by McKenzie & Co.
- Delmore Overall Plan NoR 6 Alignment (Proposed New Road Alignment) prepared by McKenzie & Co.
- Commute Specialist Comments Response dated 12/06/2025.
- Memorandum prepared by Economic and Property Research dated 30/05/2025.

- Delmore Fast Track Application – Accessibility / Connectivity Analysis prepared by B&A, dated 11 June 2025.

The reasons for resource consent as relevant to AT are (as per Section 8.5 of the Applicants AEE):

- E9 Stormwater Quality – High Contaminant Generating Carparks and Roads
    - The proposal involves the construction of a new high use road greater than 5,000m² in area. This is a controlled activity pursuant to E9.4.1(A7)
- E11 Land Disturbance – Regional
    - The proposal involves general earthworks of approximately 19.1 hectares, being greater than 2,500m2, where land has a slope equal to or greater than ten degrees. This is a restricted discretionary activity pursuant to E11.4.1(A8).
- E12 Land Disturbance – District
    - The proposal involves general earthworks of approximately 584,000m2, being greater than 2,500m², in the FUZ. This is a restricted discretionary activity pursuant to E12.4.1(A6). • The proposal involves general earthworks of approximately 2,225,000m³, being greater than 2,500m³, in the FUZ. This is a restricted discretionary activity pursuant to E12.4.1(A10).
- E27 Transport
    - The proposal exceeds trip generation standards set out in Standard E27.6.1 and is a restricted discretionary activity pursuant to E27.4.1(A3).
- E36 Natural Hazards and Flooding
    - The proposal involves the construction of infrastructure such as roads and infrastructure servicing on parts of the site which are located within the 1% AEP flood plain. This is a restricted discretionary activity pursuant to E36.4.1(A56).
- E27 Transport (PC79 Decisions Version)
    - The proposal exceeds trip generation standards set out in Standard E27.6.1 and is a restricted discretionary activity pursuant to E27.4.1(A3).

Executive Summary

1. AT's assessment is that there are sufficiently significant adverse impacts which are out of proportion to the Project's regional benefits, and not able to be avoided, remedied, mitigated, offset, or compensated for by conditions or modifications, such that the Panel should consider declining consent (under Section 85 (3) of the Fast-track Approvals Act 2024) (**FTAA**). The regional benefits are overstated by the Applicant and development occurring ahead of supporting infrastructure is likely to result in poor transport outcomes. The adverse impacts include reduced productivity and reduction in efficiency of the State Highway network as a result of congestion at the SH1 interchange (delays to freight and commercial vehicles), impacts on accessibility for the existing communities at Ōrewa (impacted by delays at the interchange), and serious safety impacts at the tie in to the existing rural network to the south of the development (Stage 2 of the development), which has an economic cost in terms of Deaths and Serious Injuries (**DSI**s).
2. The Auckland Future Development Strategy (**FDS**) identifies four roading infrastructure prerequisites needed to be in place prior to the land developing:
    a) NoR 1 - New Rapid Transit Corridor, including a walking and cycling path,
    b) NoR 2 – New Rapid Transit Station at Milldale,
    c) NoR 6 - New Connection between Milldale and Grand Drive, Ōrewa and

d) NoR 10 - Upgrade to Wainui Road.

3. The benefits contended by the Applicant could only be considered regionally beneficial if the entire NoR 6 Connection between Milldale and Grand Drive Ōrewa corridor were to be delivered. The arterial road cannot operate with its intended function (as an arterial corridor supporting urban growth and improving access) until it is fully constructed and does not have any regional benefit until it can operate as an arterial corridor. The Project is considered likely to result in adverse impacts related to cumulative effects, capacity, safety, public transport serviceability, actives modes provision and stormwater hazards.

4. In the absence of the proper plan change process to address zoning, land use and infrastructure services, it is expected that the Project should address larger cumulative issues and effects resulting from the development. In this case, however, the Project has not addressed major concerns in relation to the provision of appropriate infrastructure. There are gaps in the information that should be considered and addressed. The following sections explain the significant adverse impacts identified by AT in its assessment.

Partial Delivery of NoR 6 - Connection between Milldale and Grand Drive Ōrewa

5. The Applicant proposes constructing a section of the NoR 6 Connection between Milldale and Grand Drive Ōrewa tying in at the north to Grand Drive and terminating in a turning head at the southern extent. The proposed horizontal alignment for NoR 6 in the Project differs from that shown in the concept design developed by Supporting Growth Alliance, Te Tupu Ngātahi (**SGA**) (the agency responsible for route protection via designation for the new Connection between Milldale and Grand Drive, Ōrewa NoR 6). Whilst the proposed road alignment would remain within the designation boundary, the drawings in the substantive application show that the southern portion of road is shifted east outside of the land owned by the Applicant or AT (the paper road) to be within a neighbouring property (3 Russell Road) and that the intersection with Upper Ōrewa Road will not be formed as part of the Project. The southern section of NoR 6 including the proposed roundabout would therefore need to be delivered by further development or AT and changing the alignment means the road could not be constructed in the AT owned paper road, therefore AT would have to bear the cost of land acquisition. The delivery of a portion of the NoR 6 does not equate to regional benefits as it would only serve the development site and provide no efficiency or arterial corridor benefits.

6. When designating for NoR 6 the SGA work considered a 2048+ scenario for anticipated growth in this area. The SGA Integrated Transport Assessment (**ITA**) associated with NoR 6 identifies the potential effects of land use occurring ahead of both NoR 6 and NoR 10 (Upgrade to Wainui Road including the intersections of Lysnar Road, Upper Ōrewa Road and Kowhai Road). This is outlined in more detail in the Delmore Fast Track Application Beca Review Transport (Annexure A), this report outlines impacts relating to safety, poor access to amenities, poor connectivity, and reliance on the existing network causing inefficiencies, congestion and delays that translate to adverse impacts on productivity.

7. To be consistent with the FDS the arterial road to be constructed as NoR 6 should encompass the entire future site frontage to the proposed urbanised area, which means in doing so the extent of NoR 6 to be constructed and vested should extend to and include the intersection of Grand Drive / Upper Ōrewa Road and Russell Road. The stopping of the arterial road with a turning bay to the north of the intersection means that a through link is not provided by the development at all. The arterial road is a significant linkage for private and public transport and active modes. It is intended to form a major component of the envisaged future strategic transport network. More specifically, the arterial road is needed to accommodate and support future growth of which the proposed 1250 dwellings form a significant part.

8. The lack of provision for the entirety of NoR6 cannot be conditioned as it necessitates the need for a redesign of the developments street network for it to be located on the Applicant and AT paper road land.

9. NoR 6 which is for route protection only has a lapse date of 30 years, which in itself highlights that AT is not currently able to fund or deliver the proposed urban arterial road corridor (the southern section of NoR 6 linking to Upper Ōrewa Road) NoR 10, that would provide the public transport network and walking and cycling facilities necessary to serve the residential development proposed. The cost estimates for the NoR 6 and NoR 10 corridors, along with the required upgrades to Upper Ōrewa Road and Russell Road (referred to later in this response) are set out in the SGA Technical Note (Annexure B).

10. The Project is to gain access via a connection to be formed by an adjacent residential development (as per section 7.4.1.1 of the Applicants AEE). Given the reliance on delivery of this road by a third party, consideration should be had under Section 106 of the Resource Management Act, as to whether sufficient provision will be made for legal and physical access to each allotment.

NoR 6 - Connection between Milldale and Grand Drive Ōrewa Costings

11. The cost savings contended by the Applicant [1] for the proposed arterial road alignment option are significantly inflated. The difference in length has been overstated by a factor of 10 (i.e. 30m as opposed to 300m). Design refinement and optimisation of the bridge over a single stream (rather than two stream as proposed by the Applicant in the revised alignment) for the SGA NoR alignment has not been undertaken, so it's not appropriate to use this as the basis for comparison. The Applicants proposed alignment will require crossing two streams at a convergence point, which increases environmental risks and reduces opportunities to refine the design further. The vertical grade has also been increased beyond what is desirable, so a comparison of this with the SGA bridge is not fair or appropriate comparison.

12. AT has calculated the potential operating costs for the roading network proposed to be provided by the Applicant and for the increased maintenance of existing rural roads which will function more as urban collector roads with the substantial increase in traffic generated by the proposal. These roads will require additional maintenance for 25-30 years which would not be required if the development occurred in line with the FDS. These are considered to be in the order $166,634.82 per annum for the 5.9km of local roads, 2.1km of collector road and 820m of arterial road for which would result from the Project which AT and Council has not budgeted. These figures only cover maintenance and renewals, and not depreciation. These additional costs would need be covered by ratepayers and require funding to be moved from areas which are consistent with the FDS for Auckland.

Grand Drive Interchange Impact

13. The New Zealand Transport Agency Waka Kotahi (NZTA) is the Road Controlling Authority for the state highway network including the Grand Drive interchange. Whilst the Applicant is proposing to construct a section of NoR 6, the benefits of an arterial road are not able to be realised until it is fully built, as there is no ability to efficiently transport freight, run public transport services, or provide a safe active modes network. A bottleneck effect will result at the point the Project ties into the existing road network and there is a significant risk adverse efficiency impacts will result at the SH1 interchange, with the eastern roundabout at the interchange operating below acceptable performance levels, as outlined in the NZTA) response to Auckland Council.

14. The SIDRA modelling (provided in the Integrated Transport Assessment (ITA)) shows that there will be significant effects on the eastern roundabout of Grand Drive Motorway Interchange, with queues of more than 600 meters expected on this approach during morning peak times. Cars coming from the development (west) have priority at the roundabout. Notwithstanding these issues in the assessment, the Applicants ITA shows that with the consented trips from the Ara Hills development and the proposed development, the Grand Drive / SH1 motorway interchange will not have adequate capacity. NZTA have suggested

[1] Notice of Requirement 6 Southern Realignment Assessment, prepared by McKenzie & Co, dated 26/05/2025.

further sensitivity testing given the impact at the interchange and AT support this request. NZTA have raised significant issues related to the operation of the interchange and AT concurs that sensitivity testing is required including assessment of southbound trip percentage, impact of varying trip distribution on roundabout performance and queue lengths and delays under different growth scenarios.

15. The Applicants ITA identifies the eastern roundabout at the Grand Drive interchange (providing access to SH1) is likely to operate over capacity during the morning peak hour. To mitigate this, the Applicant has proposed providing the Projects Stage 2 access onto Upper Ōrewa Road, to provide an alternative route. The modelling suggests this would reduce traffic at the interchange by 30% however, it is not clear whether this considers the potential for through traffic as a result of the connection or why this would be the case. Trip distribution at this roundabout (particularly volume headed southbound onto SH1) is unclear and there is concern that the impact on the interchange is under-represented especially as there is a proposed private plan change (Private Plan Change 103 – waiting for a decision) for Silverdale West industrial area , which would attract people from Ōrewa and the development down to the employment area, through the development site to avoid SH1 (and the interchange) in the morning peak. The Applicant will need to investigate solutions to the congestion and efficiency issues in consultation with NZTA.

16. The Applicant has used a trip generation rate of 0.65 peak hour trips per dwelling based on the New South Wales Roads and Transport Authority Guide to Traffic Generating Developments ('The RTA guide rate for medium density. There is a lack of modal choice provided in the area due to a lack of frequent public transport and/or walking/cycling routes to employment and core services. Also, most of the dwellings are stand alone and have 3 to 4 bedrooms proposed. that the PTM Consultants assessment consider that the RTA rate of 0.85 peak hour trips per dwelling for a dwelling house would have been a more appropriate rate for this development given the size of the dwellings. The Applicant has not provided a sensitivity test to assess how changes in this key input variable affects the model outputs, which would help to understand the robustness of their assessment and to better understand the impact of uncertainties. The Applicant should have varied key parameters, in order to identify influential factors so that informed decisions can be made on the models predictions. AT cannot support the assumed trip generation rate and does not consider this a robust analysis given the potential for significant impacts on a key part of the transport network.

17. As a result of the development, the Level of Service (**LOS**) for the eastern approach of the eastern roundabout will drop from LOS A (best) to LOS F (worst) (vehicles travelling from Ōrewa to the motorway) as acknowledged in the Applicants ITA, and the overall intersection performance will drop from LOS A to LOS E. There are six LOS ratings ranging from A, which defines very good user experience, through to F, depicting a very poor user experience. Typically, a user experience or LOS rating of A, B or C is considered as a positive outcome for that particular mode, whereas D, E or F increasingly highlights a deficiency for that mode at that time and location. LOS F translates to average travel speed being less than 30% of the posted speed limit, experiencing significant delays at intersections and 85% of journeys exceeding the median journey time by more than double. This will result in significant disruption to traffic that will be felt by the existing communities at Ōrewa and AT are in agreement with the PTM Consultants assessment in this regard.

18. The Delmore Residential Subdivision Fast Track Application Transport Assessment (Annexure C) assesses the trip generation and modelling in detail (paragraphs 4 -31) and the Delmore Fast Track Application Beca Review Transport (Annexure A) discusses trip distribution and modelling at the interchange (Page 7).

19. The Arup and EY Auckland's Cost of Congestion January 2025 [2]report has found Auckland's congestion problem will cost $2.6 billion a year by 2026. The Economic Assessment prepared

[2] Auckland's Cost of Congestion, January 2025, Arup and EY

by the Applicant should take into account the congestion cost generated by the Project at the interchange. The purported regional benefits should consider this cost.

Safety Effects

20. Upper Ōrewa Road is a rural road, with a 60km/hr speed limit, no street lighting, no footpaths and constraints in terms of forward visibility. This rural road would need to accommodate traffic volumes expected on an urban road after Stage 2 of the development forms a connection (an increase of traffic by 183%), with a higher movement function than it is currently designed for. Significant safety issues are likely to result with the addition of this volume of traffic. The rural road would need upgrading, for which AT do not have any funding in place and have not scoped in terms of what is required. Further assessment in this regard is required.
21. It is noted the Applicant has proposed a roundabout at the Upper Ōrewa Road/ Road 17 intersection. This will address safety at this intersection (with detailed design requiring further review), however both the Upper Ōrewa Road/ Russell Road intersection and the Upper Ōrewa Road/ Wainui Road intersection are likely to experience increased safety risk as outlined in the Delmore Residential Subdivision Fast Track Application Transport Assessment prepared by PTM Consultants (Annexure C).
22. The design for NoR 6 and NoR 10 includes upgrades to the existing intersections at Upper Ōrewa Road/ Russell Road and Ōrewa Road/ Wainui Road to ensure safety. The Applicant needs to address safety impacts at these intersections caused by the 183% increase in traffic generated after Stage 2 of the development ties into the existing rural road network.
23. In addition, there are potential safety issues with direct Jointly Owned Access Lot and local road access onto the arterial Road (NoR 6) identified in the Delmore Fast Track Application Beca Review Transport memo (Annexure A, Page 4) undermining the safety and efficiency of the future road. Cycle and pedestrian crossings on side roads need to be considered carefully to avoid safety effects. AT does not support Jointly Owned Access Lots (JOALs) having direct access onto NoR. These connections would not be supported at Engineering Approval stage and it would be a poor resource management outcome to approve a design as part of this process and then for the applicant to have to undertake a variation to consent in the future to redesign this aspect.
24. The NZTA Monetised benefits and costs manual updated in July 2024, values the social cost of crashes at $12.5 million per fatality, $660,100 per serious injury and $68,000 per minor injury. AT have not been able to calculate a likely figure for the DSIs that may occur as a result of the Project tying into the existing rural road network, and therefore the potential cost of DSIs but suggest this social cost should be considered in weighing up regional benefits.[3]

Public Transport Servicing and Active Modes

Public Transport

25. The ability for AT to run any future public transport services for the development is dependent on several factors, the critical one being the ability of roads to accommodate bus services including carriageway width, gradient and turning facilities. Except for the northern section of the arterial Road (NoR 6) to be built by the Applicant, the plans indicate all other roads are going to be built to a local road standard as per the Auckland Council's Code of Practice Chapter 3 Transport.
26. It should be noted that the possible future bus service on the fully formed arterial road connecting Upper Orewa Road to Grand Drive (NoR 6) will be a "connector" service. This is a 30-minute frequency all-day service with potential for a higher peak frequency. A benchmark frequency would be the 985 service which operates through Millwater which is

[3] Monetised benefits and cost manual, NZ Transport Agency Waka Kotahi Version 1.7.1, Published July 2024

20 minutes peak and 30 minutes at other times. The 985 route cannot extend through the development site as it operates through Millwater on the eastern side of the motorway, travelling down to East Coast Heights.

27. The strategic intent and function of a road determines its design and the required components and width. It is critical to get the required road reserve width established at subdivision stage as it is costly and, in some cases, impossible to amend it once houses or other infrastructure have been provided. For example, it is critical to ensure that consideration is given to the provision of public transport early to ensure that roads that will be public transport routes are designed to accommodate the requirements of buses and bus stops. If a road corridor is too narrow it would prevent buses being able to travel along it and/or maneuver.

28. Road 1, for example, is shown as a Collector Road in the indicative structure plan. Road 17 which is the road that is going to connect to Upper Ōrewa Road in Stage 2 of the development, is a Collector Road in the indicative structure plan. The roading drawings only show cross-sections for the NoR 6 and Local Roads. The Local Road cross-sections show that the width is 3 metres. This width is not adequate for buses to go through them (a carriageway width of 3.5m is required). If buses are not able to travel through the development because of the road design, the ability to service the residents via public transport will be reliant on the NoR 6 southern connection being formed (although other Collector roads may be needed to run bus services in the western part of the development). Lack of public transport further encourages the use of private cars, resulting in an adverse effect on road network (in terms of congestion, operation and safety).

29. To avoid a situation where the site cannot be served by public transport, the following is required: Roads which are planned to connect through to Russell Road (Road 1) and Upper Ōrewa Road (Road 17) should be built to a Collector Road standard and be suitable for buses. The following connecting roads must also be built to accommodate buses:

    - Road 1
    - Road 17 Upper Ōrewa Road to Road 14
    - Road 14 from Road 17 to Road 05
    - Road 05

30. The standard for these roads should include separated cycling facilities given they will eventually carry over 3000 vehicle per day once the area is fully developed. AT's Engineering Design Code - Cycling Infrastructure requires separate cyclist facilities on new roads with over 3000 vehicles per day using them to the following standard "A Cycleway separated from moving traffic by a narrow raised buffer relies on the physical barrier between different modes to provide real and perceived safety to people on bicycles. It is suitable for streets with local to strategic place significance and low to moderate traffic volumes." These are needed to avoid conflict between vehicles and bikes, minimise conflict between pedestrians and bikes and minimise driveway entrances.

31. These roads also need to include bus stops with provision for shelters. This would ensure provision for a loop service from the Hibiscus Coast Station which would travel through Milldale, use Upper Ōrewa Road and loop around the development using the link road between the two parts of the development, Grand Drive and Road 1.

Active Modes

32. The Applicants ITA refers to the SH1 active modes overbridge over SH1, however there is no certainty around timing for delivery of this connection and without it, the Delmore development will be severely disconnected in terms of active modes with SH1 causing a severance effect. Similarly, the Accessibility / Connectivity Analysis prepared by B&A refers

to shops, the Frequent Transit Network and Schools which are not currently in place and are likely to be 10 or more years away.

33. The development will connect to services and the wider walking and cycling network via an active mode link over the motorway. However, this link, which is a bridge and part of the Ara Hills development to the north of the site, has not been constructed yet. If the link is not provided before the occupation of the dwellings for the Project, this will remove options for residents to use other modes of transport and the development will further rely on private vehicles. Therefore, a condition will be recommended below to ensure that the bridge and path are complete and open for public use before the first dwelling is occupied.

34. The NZTA Monetised benefits and costs manual assigns an annual benefit per new user of active modes ($3,100 annually for people who switch from private vehicle use to walking and cycling). The lack of actives modes facilities (the SH1 overbridge) means this health benefit cannot be ascribed to users/ residents of the development.

35. In addition to requiring the bridge be in place, there is a requirement for the Collector Roads to be built with separated cycling facilities as required by the AT Transport Design Manual (**TDM**).

Traffic Engineering Detail

36. Further technical engineering detail needing to be addressed is detailed in the Delmore Residential Subdivision Fast Track Application Transport Assessment prepared by PTM Consultants and relates to vehicle tracking issues (paragraphs 63-66), sight distance assessment (paragraphs 67-72), visibility splays (paragraphs 73-75), gradients, speed calming, turning heads and Approach Sight Distance (**ASD**) (paragraphs 76-86).. A Safe Systems Audit should be completed prior to the Engineering Approval stage. All frontages to existing roads including Upper Ōrewa Road, and Russell Road must be upgraded to an urban standard as would be required under the Auckland Unitary Plan at the time a site is urbanised.

Stormwater

37. AT's interest in the Projects stormwater management is twofold, firstly as future asset owner of any stormwater devices that take runoff (solely) from the road reserve. AT need to consider whole of life cycle costings for any devices proposed to be vested to AT, as ultimately ratepayers will bear the ongoing costs of these assets. Secondly, stormwater management must consider pedestrian and vehicle safety in storm events.

38. The Applicant has not provided a complete Over Land Flow Path (**OLFP**) assessment and has not demonstrated that flood hazards associated with the OLFP within the road corridor are safely managed.

39. An assessment for the proposed culverts has not been provided and has not demonstrated that the culverts are appropriately sized or enable non-hazardous conveyance of stormwater. This is also highlighted in NZTAs comments to Auckland Council. If the culverts are identified to be insufficiently sized and require upsizing, this could affect lot boundaries near the culvert and channels.

40. The Applicant's Flood Assessment Report does not provide a suitable assessment of flooding within the development. The hydraulic modelling has not been demonstrated as appropriate for use and validation method has only been compared to the Healthy Waters Rapid Flood Hazard Assessment (**RFHA**) in a single location.

41. AT concur with the major concern raised by NZTA in relation to existing stormwater infrastructure being inadequate to accommodate impacts of the proposed development. A full assessment of the impact has not been provided. Therefore, it is not possible to determine flood hazards impacts, whether stormwater infrastructure is appropriate for the development, or the potential flood depth increases. There are serious flood risks that require further investigation to be undertaken to confirm the degree of safety risk to the public.

Consent Conditions

Proposed Consent Conditions

42. AT have reviewed the Proposed Consent Conditions (Appendix 22) and those recommended in the Applicants ITA. The Proposed Consent Conditions document is missing some of the conditions recommended in the ITA which are noted below. These initial comments on conditions are provided to assist the Panel but are offered without prejudice to AT's ability to make more comprehensive comments on any draft conditions under section 70 of the Fast-track Approvals Act 2024, should the Panel decide to grant approval.

43. Before commenting on some matters of detail, there are a number of significant and complex issues that require resolution and, if the Project were to be approved, would need to be addressed through comprehensive and carefully considered conditions. While it is not clear to AT whether all of these matters can in fact be satisfactorily addressed through conditions, they nonetheless represent key areas requiring further work and scrutiny by the Applicant and Panel from AT's perspective. The key areas that require particular attention, including in any conditions, encompass:

    a) *NoR 6 alignment, extent, and cost implications* — matters that would need to be carefully addressed through conditions, to the extent this is feasible, including:

        i. the full extent of NoR 6 to be constructed and vested down to the intersection of Grand Drive, Upper Ōrewa Road, and Russell Road, to ensure the corridor can function as intended and deliver the regional transport benefits relied on in support of the application;

        ii. the arterial road to be aligned in accordance with the SGA NoR 6 concept design, or robust justification for any deviation, including in terms of design optimisation and cost; and

        iii. where any deviation from the SGA NoR 6 concept design continues to be proposed, that the Applicant fund or otherwise mitigate any additional costs arising from misalignment (such as dual stream crossings or increased gradients).

    b) *Grand Drive / SH1 interchange improvements* — conditions relating to the identification and implementation (in co-ordination with Auckland Transport and NZTA) of necessary upgrades to the SH1 interchange to address capacity, safety, and efficiency issues arising from the development;

    c) *Public transport and active mode facilities* — conditions ensuring that:

        i. collector roads (including Road 1, Road 17, Road 14, and Road 05) are designed to accommodate buses (including appropriate carriageway widths and turning facilities), include separated cycling infrastructure, and provide for bus stops with shelters; and

        ii. no dwellings are occupied until the active mode connection across SH1 is complete and open for public use;

    d) *Stormwater and flood risk management* — conditions requiring the Applicant to provide *complete* Overland Flow Path (OLFP) assessments, demonstrate that proposed culverts are adequately sized and designed, and confirm that all stormwater infrastructure is designed to safely manage flood hazards in accordance with relevant safety and hydraulic standards; and

    e) *Safe Systems Audits* — conditions requiring Safe Systems Audits to be completed prior to *Engineering* Approval at key locations, including but not limited to the Upper Ōrewa Road, Russell Road, and Road 17 intersections, with upgrades implemented as necessary to address any identified risks.

Road 17 Sight Distance

44. That Road 17 be connected through to Upper Ōrewa Road only when an adequate sight distance (114m) is provided in each direction (Recommended at page 67 of the ITA). The Applicant has since proposed that this intersection be formed as a roundabout, and this should form a condition of consent.

Lots 1304 and 603

45. The condition that Lots 1304 & 603 (Recommended at Page 53 and Page 67 of the ITA) have the vehicle crossing shifted to the adjacent lot boundary to achieve 8m of distance to the intersection. This is to ensure that the intersections are operated safely to avoid conflict with vehicles using them. AT recommends that this condition be included to ensure that safety effects in relation to these lots are managed adequately.

Vehicle Crossing Separation

46. That separation of vehicle crossings (Recommended at Page 56 of the ITA) in accordance with the AUP is achieved for:

    - Lots 121/121 (1.13m separation)
    - Lots 267/266 (1.93m separation)
    - Lot 614 / JOAL 16 (1m separation)
    - Lot 634 / JOAL 16 (1.6m separation)
    - Lot 902 / JOAL 19 (1.6m separation)
    - Lots 860/861 (1.74m separation) Lot 782 / JOAL 26 (1.5m separation)

47. AT recommends the Panel include a condition on this matter to ensure that safety and amenity effects are sufficiently managed in relation to pedestrians and other road users.

Visibility Splays

48. In addition, Section 9.1 of the ITA recommends that visibility splays are provided at all vehicle crossings as a condition of consent. AT agrees with Commute's recommendation but consider that 1.0m is too high for a fence and that 0.9m should be used. Some shorter drivers or those using lower vehicles have an eye height below 1.0m, and for this reason AT's standard visibility splay condition recommends boundary fencing around the splay to be maximum 0.9m high.

Suggested wording is provided here:

49. *A pedestrian visibility splay of 2m x 2.5m (2m along the property boundary) must be provided on both sides of all the proposed vehicle crossings. Any obstructions including boundary fencing and/or landscaping within the visibility splay areas must not exceed 900mm in height. If fencing is provided above 900mm height stipulation it must be at least 80% visually permeable. Landscaping in the visibility splay area must be trimmed and maintained in perpetuity to comply with the stipulated height by the consent holder.*

50. AT supports the inclusion of the Construction Traffic Management Plan condition supplied by the Applicant.

Additional Conditions Recommended

51. Additional conditions are likely to be required to address the adverse impacts of the development including improvements to the Grand Drive/SH1 interchange. The actives modes link over SH1 being in place prior to occupation of any dwellings, safety improvements to the intersections at Upper Ōrewa Road/ Russell Road, Ōrewa Road/ Wainui Road and the Upper Ōrewa Road/ Road 17 intersection prior to the southern connection to Upper Ōrewa Road from Stage 2 of the development being formed.

52. Conditions must be imposed ensuring roads can accommodate buses and active modes facilities as indicated above. Safe Systems Audits are required throughout the development and at the intersections mentioned above.

53. Turning heads, culverts and retaining walls must meet Auckland Council's Code of Practice Chapter 3 Transport standards as a condition of consent.

Conclusions

54. Overall, from a transport perspective, the adverse impacts identified — including safety risks, poor transport outcomes, car dependency, unplanned cost burdens, and inefficiencies at the SH1 interchange — are sufficiently significant to be out of proportion to the regional benefits contended by the Applicant. These benefits are further diminished by the partial and misaligned delivery of NoR 6, as the corridor cannot function as intended or deliver the transport efficiencies relied on in support of the application until it is completed in full. In particular, the formation of only part of NoR 6, combined with the proposed alignment deviation, not only undermines transport outcomes but also creates potentially significant cost implications for Auckland Transport and the Council. In order for AT to ensure that the full benefits of the provision of NoR 6 and 10 were realised and to avoid a very high risk of DSI's on Upper Orewa Road, AT (and Council) would have a funding gap of $460m[4] (un-escalated cost).

Ngā mihi | Kind regards,

Tessa Craig
NW Development Planning Team Leader

Cc: Dylan Pope, Consultant Planner Auckland Council

[4] Memorandum – Funding and Financing input: Auckland Council FTA159 – Delmore Fast Track – Auckland Council Application Reference: BUN60444768 dated 25th June 2025

Annexure A: Delmore Fast Track Application Beca Review Transport, dated 23 June 2025

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Auckland Transport
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23 June 2025

Attention: Alastair Lovell

Dear Alastair

Delmore Fast Track Application Beca Review Transport

Beca has been engaged by Auckland Transport (AT) to provide a review of transportation matters in regard to the proposed residential development at Russell Road and Upper Ōrewa Road, Ōrewa (the Delmore application). The application is being progressed under the Fast Track Approvals Act (FTAA).

Our review focusses on integration with strategic transport infrastructure planned to enable development in this area through the Supporting Growth Alliance (SGA), specifically Notices of Requirement 6 and 10 (NoR 6 and NoR 10). We understand that AT is also reviewing the application in regard to other transport matters.

The comments provided in this memo arise from our review of the application documents, in particular the Integrated Transport Assessment (Commute, February 2025) and Roading and Access Report (McKenzie & Co, February 2025). A supplementary Commute memo 'Specialist Comments Response…' dated 12 June has also been reviewed in regard to matters discussed in this memo.

The applicant proposes to progress a significant development in an area where strategic transport infrastructure has been identified as necessary to support urban growth. However, at this time there is no public funding identified for delivery of the strategic infrastructure, and should urban development proceed there is a risk of significant effects on the safe and efficient operation of the network.

1.1 NoR 6

A Notice of Requirement (NoR) has been lodged by Auckland Transport for designation of a new urban arterial corridor with active mode facilities between Wainui Road in Milldale and Grand Drive in Upper Ōrewa (NoR 6). The designation future proofs a new road corridor with the following characteristics[1]:

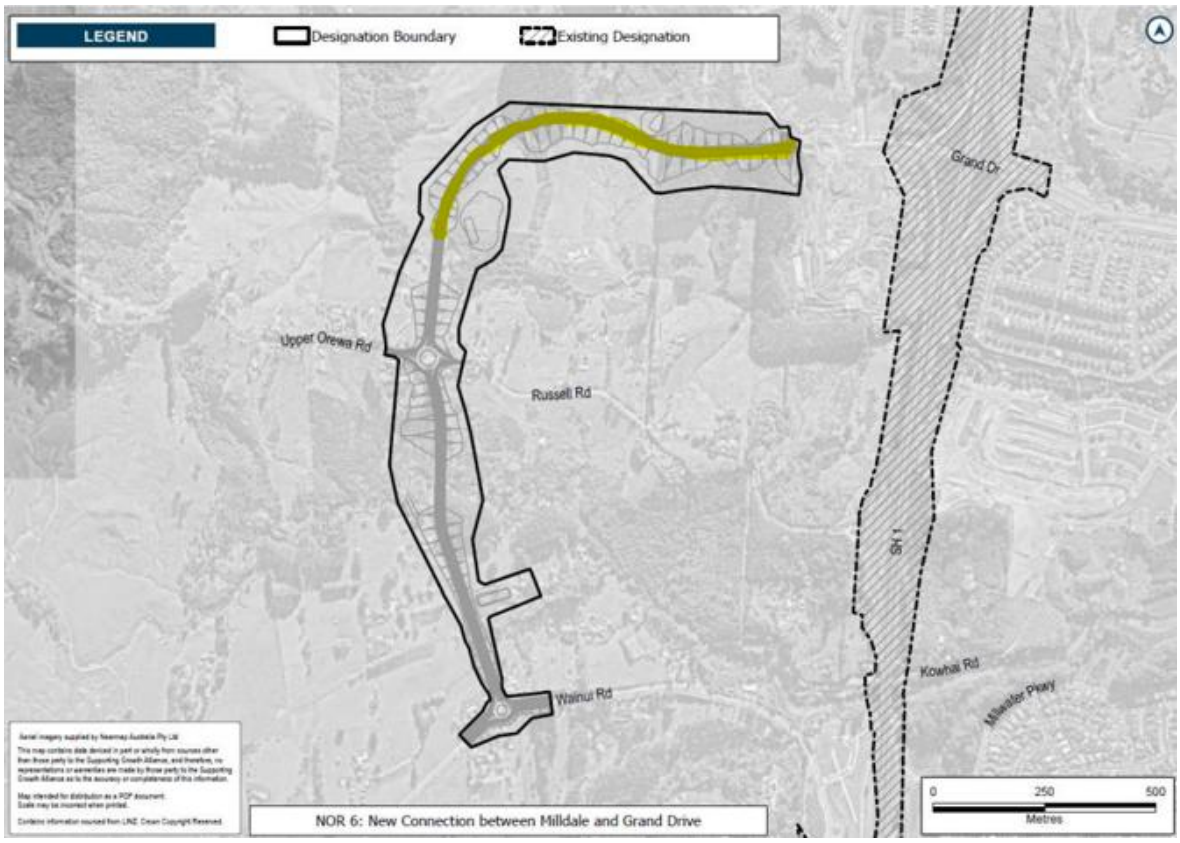
- A new two-lane urban arterial with separated walking and cycling facilities on both sides between Wainui Road (Milldale) and the western edge of the Ara Hills development in Ōrewa
- 50 km/hr posted speed
- 6 buses per hour during the peak and every 20 minutes outside of the peak period

[1] North, Assessment of Transport Effects, Supporting Growth Alliance, 2023

- 13,200 vehicles per day in 2048[2]
- Intersection upgrades:
    - Intersection of Upper Ōrewa Road and Wainui Road – Roundabout
    - Intersection of Upper Ōrewa Road and Grand Drive Interchange – Roundabout.

A portion of the NoR 6 designation crosses through the applicant site, and the applicant proposes to construct this section of the road. The following image shows the full NoR 6 designation and the section that would be constructed as part of this application highlighted in yellow.

Figure 1: NOR 6 Designation Boundary[3] and Section within the Delmore Application Highlighted Indicatively



There is no timeframe for construction of the remaining section of road enabled by NoR 6 outside of this application. The SGA considered a full build out (completion) scenario for the North growth area to be "2048 +", i.e. meaning development and supporting infrastructure was anticipated to occur sometime beyond 2048, with timing now assumed to be 2050 or later in line with the updated Future Development Strategy. Although that does not mean that individual projects will not be delivered ahead of this time.

[2] SGA's transport modelling assumed a full build out (completion) scenario for the North growth area to be "2048 +". The FDS has shifted the expected live zoning and development timing for this area to 2050 or beyond. As such, earlier vehicle demand forecasts would now be expected to occur later, in line with the updated sequencing.

[3] https://www.aucklandcouncil.govt.nz/UnitaryPlanDocuments/01_nNoR 6_form_18.pdf

1.1.1 Alignment with NoR 6 Route

There is a slightly different alignment between the indicative road shown in the NoR drawings and the proposed road design by the applicant. The applicant alignment is further east in the development roading plans and the stormwater pond is located on the western side of the road. This can be seen in the image below.

Figure 2: NoR 6 Alignment (blue) overlaid on Applicant Roading Plan

The proposed road alignment is within the designation boundary and should not preclude construction of the connection south to integrate with the proposed roundabout at Upper Ōrewa Road. However, it is notable that the new alignment may require a longer bridge across the stream to the south of the site. This could result in higher future construction costs for AT / Council (given that the applicant is not proposing to construct this section) and other effects than the alignment shown on the NoR plans.

The road alignment within the NoR boundary inside the site taken in isolation is acceptable but gives rise to the potential problem outside the site discussed immediately above.

1.1.2 Corridor Form

Characteristics

The following design characteristics are proposed by the applicant[4].

[4] Integrated Transport Assessment Report, Commute, February 2025.

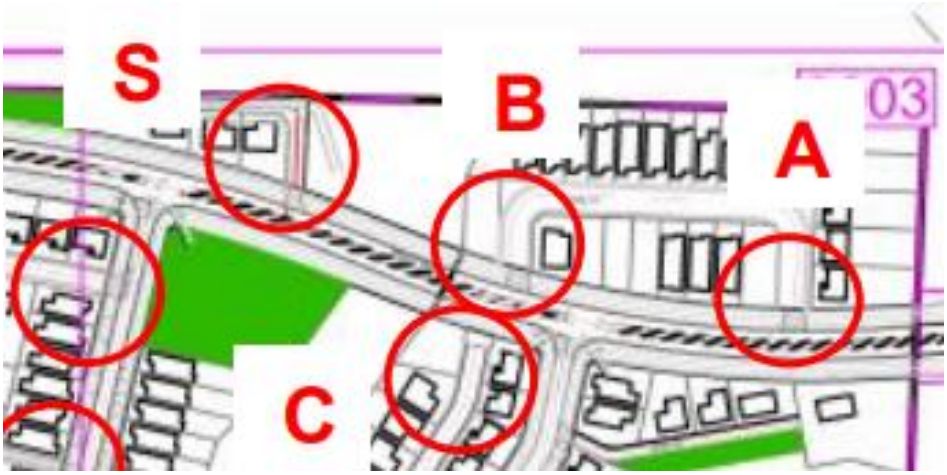
Roads	Road Reserve Width	Lane Width	Pedestrian Footpath Width	Parking Provisions
NoR 6 Road / Grand Drive extension	24 metres	3.8m in either direction plus 2.8m median (10.4 total width)	2.0m footpath and 2.0m cycle lane on either side	NA

The applicant is proposing a two lane road with separated walking and cycling facilities on both sides as expected in the NoR. The central median will provide space for right turn facilities and pedestrian refuge islands in places which supports the higher movement function of an arterial road.

Side Roads / Intersections

The applicant site layout appears to avoid driveways directly on the NoR 6 road, which is expected for an arterial corridor. A condition to this effect is recommended.

There are however, four Joint Owned Access Lots (JOAL) with direct connection to the NoR 6 road, all within a relatively short section. As shown in the image below (intersections S,B,C,A). There are also two local road intersections in this area.



A proliferation of turning movements in this area, considering the local road intersections as well as the JOALs, will impact on movement along the corridor and could compromise safety, especially for pedestrians and cyclists.

A review is recommended of whether all of the proposed JOAL intersections with the NoR 6 road are warranted / necessary, and potential options to rationalise the approach should be considered by the applicant. Future traffic volumes on the NoR 6 road will be relatively high (over 13,000vpd[5]) and an alternative solution may be appropriate to combine access and pedestrian and cyclist crossing facilities. A condition restricting direct JOAL access to the NoR 6 road could be considered by AT.

There are six local road intersections with the NoR 6 corridor proposed by the applicant. There has been no traffic modelling undertaken to check the performance of these intersections with the final expected traffic volumes (i.e. with the full NoR 6 road complete). It is possible that given high volumes and restricted visibility in places it may be difficult to exit some side roads, which would have efficiency and safety effects. There

[5] North, Assessment of Transport Effects, Supporting Growth Alliance, 2023

also needs to be further consideration given to cyclist crossings of the side roads, which may also make it more difficult for drivers (discussed further below).

We consider the applicant should assess the operation of intersections on the NoR 6 road with forecast future traffic volumes, i.e. traffic modelling, to check whether alternative intersection arrangements are necessary.

Walking, Cycling and Public Transport

There is no detail around how cyclists will cross side road intersections and this will need to be agreed with AT. It is recommended that, if the application is granted, a condition is imposed that the applicant works with AT to agree the detailed form of facilities for pedestrians and cyclists in line with AT standards.

It is unclear how the separated pedestrian and cycle facilities along the arterial road will integrate with the existing path along Grand Drive. This should be clarified by the applicant and a condition may be necessary to ensure this connection is provided prior to occupation of any houses so that pedestrians and cyclists have suitable access from the outset.

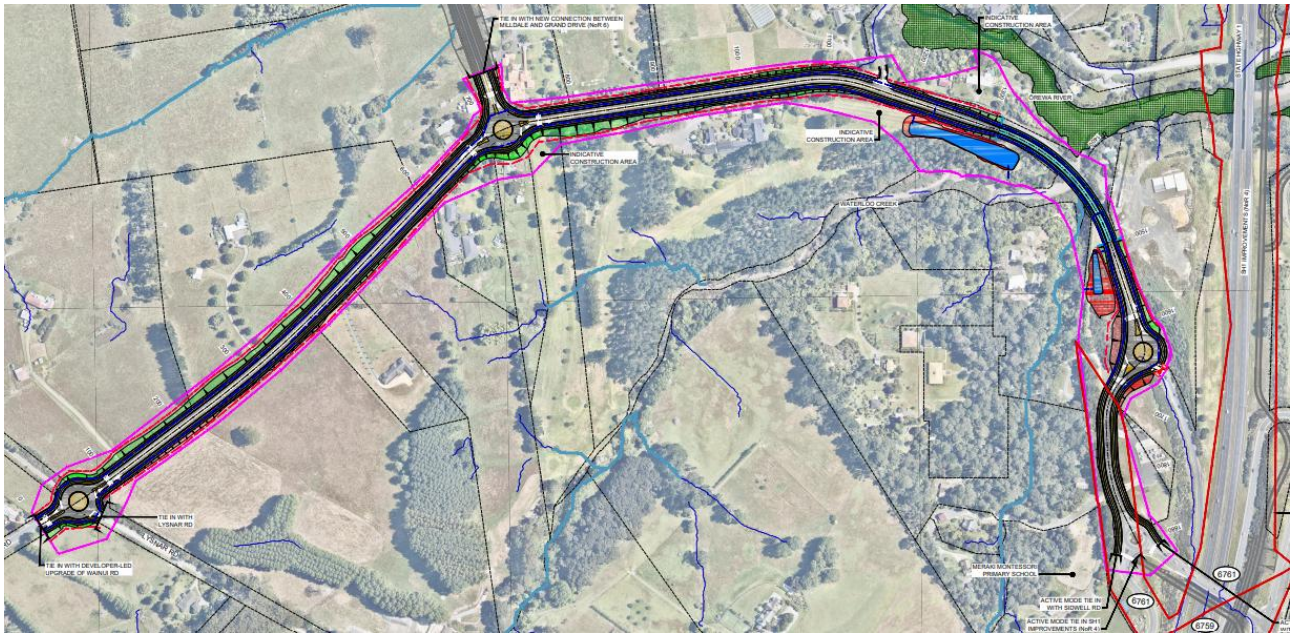
It is noted in the applicants ITA that the Ara Hills development has a condition to provide a path across SH1 to the existing paths to the east[6]. Paths within the Delmore application will be able to connect into the proposed footpaths and cycle ways along Grand Drive leading to an effective pedestrian connection from the site to attraction facilities in Ōrewa[6]. On this basis, without this connection there will not be effective pedestrian access to the east and access would only be possible by car, which is a poor environmental and transport outcome. As the SH1 connection has not yet been constructed, there should be a condition on this development that occupation of the first dwelling in the development does not proceed until the pedestrian and cycle path across SH1 has been completed, as until this time there will be no effective connection for pedestrians and cyclists.

Public transport is discussed in the applicant's ITA but there is no specific provision for bus stops identified on this section of the NoR 6 road. As per the SGA ITA there is expected to be up to six buses per hour using the NoR 6 road and this will require bus access facilities (bus stops, crossings etc). It is recommended that, if the application is granted, a condition be imposed requiring the applicant to work with AT to agree bus stop locations and design in accordance with AT standards.

1.2 NoR 10

NoR 10 relates to an upgrade of Wainui Road to the south of the applicant site (connecting to NoR 6). The upgrade will improve the existing rural corridor to a 24m urban arterial cross section with separated cycle lanes and footpaths on both sides of the corridor. It includes upgrades to the intersections at Lysnar Road, Upper Ōrewa Road and Kowhai Road.

[6] Integrated Transport Assessment Report, Commute, February 2025. Page 34



As with NoR 6 there is no timeframe for delivery of NoR 10.

There is no direct implication with NoR 10 in terms of alignment or road design, but the potential for traffic from the development to use Wainui Road prior to the NoR 10 upgrade may lead to safety or efficiency effects and this is discussed below.

1.3 Potential Wider Effects

The SGA considered a '2048+' scenario with the supporting infrastructure protected for through the NoR process in place to support the anticipated growth within the Future Urban Zone (again, under the FDS the live zoning and development of this area has now shifted to 2050+). The SGA ITA identifies potential effects of land use proceeding ahead of the NoR 6 and 10 corridors in terms of Safety, Walking, Cycling, Public Transport and General Traffic. The following risks are noted in the SGA ITA[7]:

- Without the NoR 6 connection there will be greater potential conflict between through movements and local movements. The expected increase in safety issues resulting from high traffic volumes on local and collector roads will also reduce the attractiveness of walking and cycling.
- Access to employment and social amenities will be compromised, especially for immediately adjacent land uses.
- Without this corridor in place walking and cycling connectivity will be via the local and collector network and will likely be less direct, resulting in longer travel times for pedestrians and cyclists.
- There will be increased use of private vehicles resulting in increased vehicle related emissions.
- As growth increases in the area the current lack of an arterial network will reduce connectivity and result in a heavy reliance on the existing network. Without an arterial network, there will be an increasing reliance on the local and collector network. This will result in longer, less efficient bus networks, and safe cycle connections on desire lines would be limited. Without providing for through

[7] Section 4.2.3 Future Transport Environment without the North Projects

movement functions on arterials, there will likely be an increase in traffic utilising lower order corridors such as local and collector roads, with potential adverse effects on amenity and capacity.

- Without the new connection between Milldale and Grand Drive, there will be an additional 13,200 vehicles using local and collector roads to access the land use within Wainui/Ara Hills. This is expected to cause significant delays and congestion to general traffic and freight using these connections due to the limited capacity on these lower order roads.

Whilst these outcomes would not all be attributed to this development (at such scale), some potentially significant effects are likely in terms of traffic, safety, walking and cycling if this development proceeds ahead of the NoR 6 and 10 upgrades. Effects would be cumulative if this and other developments proceed ahead of the strategic infrastructure.

There is no safety assessment in the applicant's ITA of the potential for residents of the proposed development to travel on Upper Ōrewa Road and Wainui Road once the connection proposed in Stage 2 of the development is operational. Upper Ōrewa Road is a narrow rural road with a 60km/h speed limit and no shoulders in places (see figure below). If this development is completed prior to the NoR upgrades, then traffic and cyclists will use the existing roads.

Figure 3: Upper Ōrewa Road (Google)

The applicant's ITA predicts that 30% of development traffic, or 2,437 movements per day, will distribute to the south via Upper Ōrewa Road / Wainui Road, which would not be appropriate from a safety and capacity perspective. The applicant's ITA notes that four crashes have occurred at the Wainui Road / Upper Ōrewa Road intersection. We consider the level of additional traffic, which will more than double existing volumes, is significant and warrants further assessment.

In the supplementary memo (12 June 2025), the applicant provides some consideration of impacts at the Upper Ōrewa Road / Wainui Road intersection. The supplementary memo provides the following statement:

"The requirements for a right turn bay at this point is likely to be already triggered by NZTA's internal guidelines (regardless of the Delmore proposal) and thus, is an existing issue which the applicant should not be required to fix, given anticipated scheduling of works and the distance from the roundabout to Delmore"[8].

It is not clear if the applicant is stating that the intersection already warrants a right turn bay or will do once the development traffic is added to the intersection. There is no assessment of safety with future turning movements and as such it is possible that the development will exacerbate poor safety outcomes at this intersection leading to increased crashes.

The applicant should evaluate the implications of development traffic using Upper Ōrewa Road and Wainui Road prior to the NoR upgrades and determine whether any interim upgrades are necessary to provide safe and efficient access for the development, i.e. road widening, footpath/cycle paths, intersection upgrades etc. We note there is a town centre and School development located in the Milldale area that will attract trips from this development. If the development proceeds ahead of upgrades to these roads there may be significant safety effects.

Grand Drive Interchange

The applicant's ITA has identified that the existing Eastern Roundabout at the Grand Drive interchange is likely to operate over capacity during the morning peak hour with the full development in place. Mitigation for this is to open access to Upper Ōrewa Road in Stage 2. As above, the effects of this have not been assessed.

The traffic modelling described in the ITA took an approach of progressively reducing traffic volumes at the interchange until reaching an acceptable level of service, which requires a 30% reduction in traffic volume. It is then assumed that traffic using the interchange will reduce by 30% when access to Upper Ōrewa Road opens in Stage 2. There is no clear evidence that this will be the case, and it is not clear if this considers the potential for external traffic to route through the development, thus necessitating higher levels of development traffic to exit via Upper Ōrewa Road to achieve the 30% reduction.

It is unclear how development trips are distributed through the eastern roundabout in the traffic modelling. We expect a relatively high proportion of right turn movements (southbound), especially with the Silverdale West industrial area progressing in future. If the right turn volume is higher than assumed in the ITA, then the impact on Grand Drive will also be more significant. The resulting congestion and delay will have economic impacts in terms of productivity, travel time and vehicle operating costs.

The applicant's ITA states that SGA "did not identify any upgrades were required to the Grand Drive Interchange"[9], however SGA evaluated the network with all land use and infrastructure upgrades in place, it did not consider the need for potential interim upgrades until the strategic network is complete. In this application, land use is proceeding ahead of the strategic network upgrades and interim measures may be necessary at the interchange to safely and efficiently support access for the development, and avoid potential economic impacts associated with increased traffic congestion.

1.4 Conclusions

The following points summarise our review and matters for AT to consider in responding to the application.

[8] Specialist Comments Response – 88,130,133 Upper Orewa Road And 53a,53b,55 Russell Road, Orewa, Commute, 12 June 2025

[9] Integrated Transport Assessment Report, Commute, February 2025. Page 27

NoR 6

The applicant proposes to construct a section of road within the NoR 6 designation. The new road alignment may result in higher costs to construct the southern connection to Upper Ōrewa Road, which AT should consider and which should be taken into account when assessing the Delmore proposal.

AT should also request conditions that ensure the NoR desired outcomes are achieved, i.e.:

- That driveways, and potentially JOALs, do not intersect with the arterial road.
- That the applicant confirms all intersections with the NoR 6 road will operate with an acceptable level of service and safety with long term forecast traffic volumes.
- That the applicant defines appropriate details around pedestrian, cycle and bus access facilities on the NoR 6 arterial road section.
- That occupation of the first dwelling in the development does not proceed until the pedestrian and cycle path across SH1 is complete.

If these conditions are not adopted, then there is potential for significant effects to the objectives sought through the Notice of Requirement, and as a result, significant safety and efficiency effects to the transport system.

Upper Ōrewa Road and Wainui Road

The applicant should provide an assessment of potential effects on Upper Ōrewa Road should development proceed ahead of the NoR 6 upgrades. Some interim upgrades may be necessary to support safe access by all modes.

The applicant should provide an assessment of safety at the Upper Ōrewa Road / Wainui Road intersection if the development proceeds ahead of the NoR upgrades. Crashes may increase at this intersection if no improvements are delivered prior to access between the site and Upper Ōrewa Road being constructed.

The applicant should provide an assessment of potential effects on Wainui Road should development proceed ahead of the NoR 10 upgrades. Some interim upgrades may be necessary to support safe access to opportunities (e.g. retail, education) south of the site by all modes.

Grand Drive Interchange

The safe and efficient operation of the Grand Drive interchange is highly dependent on the assumed distribution of development trips. The applicant should provide robust analysis of future year trip distribution and if necessary sensitivity testing of alternative distribution scenarios. This may indicate that without upgrades to the Grand Drive interchange significant adverse effects will arise in regard to safety and efficiency for all users, and associated economic impacts (travel time, vehicle operating costs etc), in which case mitigation should be identified.

In conclusion, noting the need for strategic infrastructure to enable growth in this area and that there is no public funding or timing for such upgrades, there should be further consideration of potential effects and upgrades required. If the development proceeds without appropriate supporting transport infrastructure, then there is likely to be significant adverse effects (and, in terms of section 85 of the FTAA, significant adverse impacts) on transportation safety and efficiency.

Yours sincerely

Craig Richards

Technical Director - Transportation

on behalf of

Beca Limited

Phone Number: +647 577 3899
Email: Craig.Richards@beca.com

Annexure B: NoR 6 Cost Technical Note, Te Tupu Ngatahi – Supporting Growth, dated 19 June 2025

TE TUPU NGĀTAHI
SUPPORTING GROWTH

Technical Note

Date Prepared: 19/06/2025

Prepared by: Rob Mason/ Martin Barrientos

Revision: 1

SGA North - Delmore Fast Track Application - Assessment of Costs

1. Background

This technical note has been prepared to identify specific costs that would be required to upgrade the Transport network to support the proposed Delmore Development north of Auckland

The proposed Delmore Development is located on the western side of State Highway 1 at the Grand Drive Interchange North of Auckland. This interfaces with the future arterial road proposed to connect Milldale in the south with Grand Drive in the North (referred to the DBC as NoR 6). It is understood that the northern section of this corridor is proposed to be constructed as part of this development.

The effects of the proposed Delmore Development are anticipated to extend beyond the development. This report sets out the basis for the development of cost estimates for specific upgrades to the network.

2. Extent of Network

Cost estimates have been developed for several corridors as outlined below:

a. Proposed arterial road connection Milldale to Grand Drive (NoR 6)
b. Proposed arterial road upgrade of Wainui Road (NoR 10)
c. Arterial Road Upgrade of Upper Orewa Road to accommodate a bus route
d. Arterial Road Upgrade of Russell Road to accommodate a bus route

The images below provide an indication of the extent of the corridors included in the cost analysis. The basis for developing these costs is set out in the following sections below. This outlines the assumptions and rates that have informed the cost allowance.

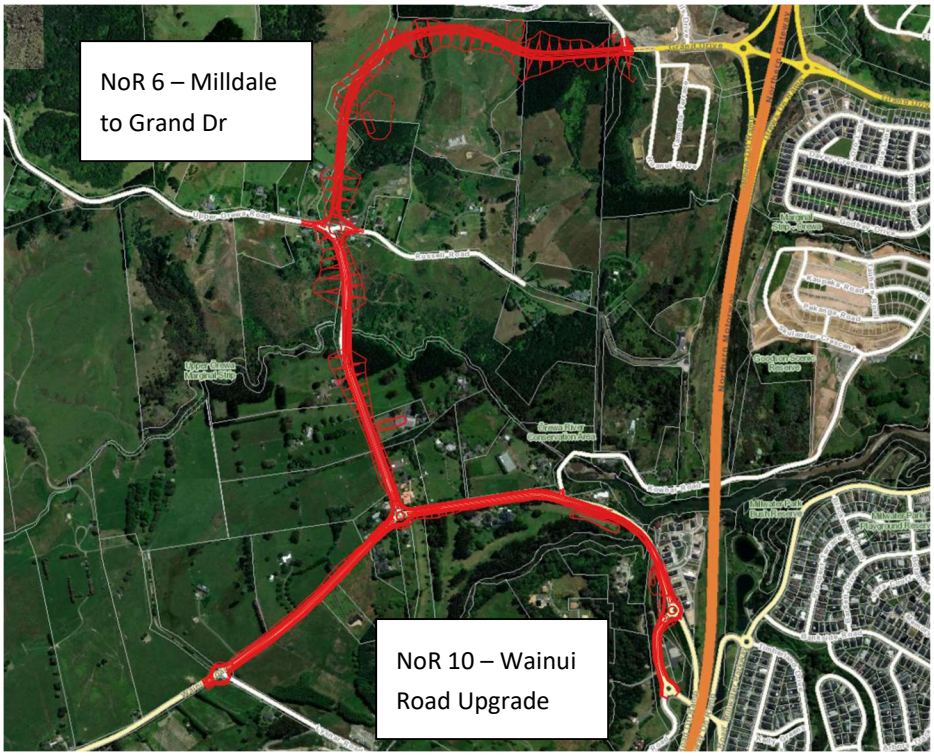


Figure 1: Proposed Arterial Roads (NoR 6 and NoR 10)

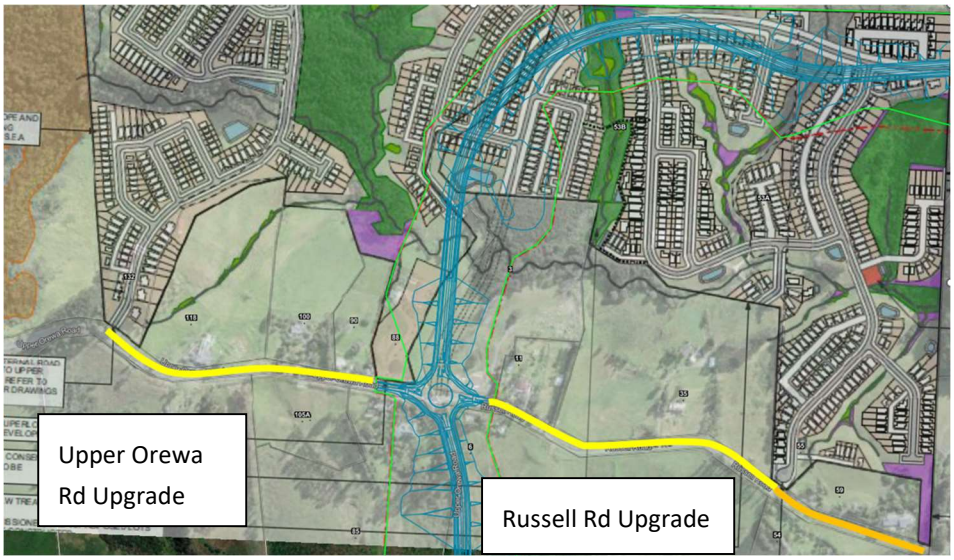


Figure 2: Proposed Upgrades to existing roads (shown in yellow)

3. NoR 6: New Connection between Milldale and Grand Drive, Orewa

3.1 Identification of Section elements for costing and Scope

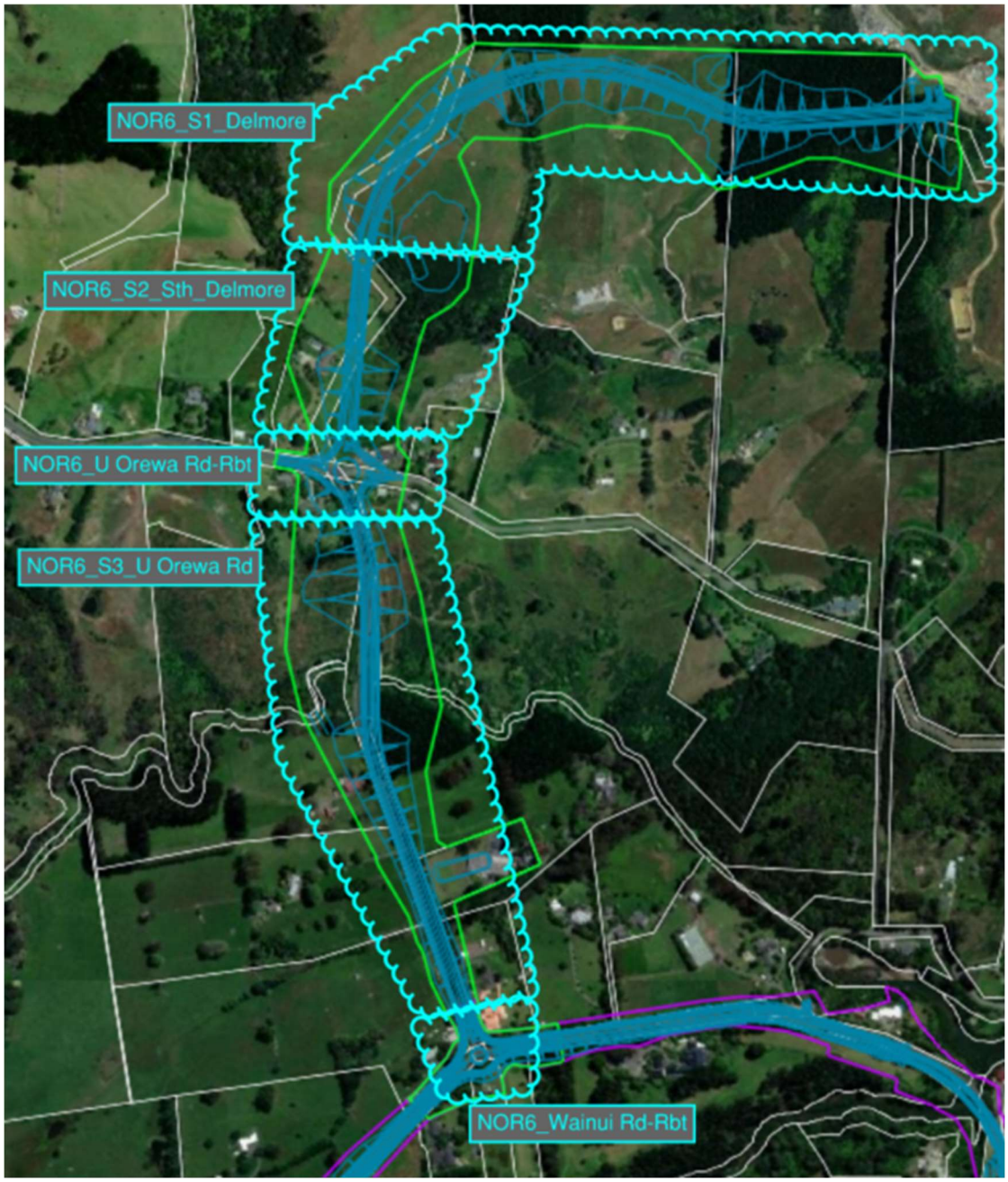


Figure 3: Cost Sections for Proposed Upgrades for NoR6

3.2 Resultant Cost Estimate

The Base Estimate for the total NoR6 project included in original Cost Report[1] was $250.3M. This included an allowance of $26.4M for property, $11.5M for implementation fees and $21M for project development and pre-implementation fees. Without the property and other costs, the Base estimate was $191.4M. This Base estimate accounts for the physical works and includes environmental compliance, traffic management and preliminary and general costs. It was calculated in 2023.

The Section elements indicated in the figure were allocated a proportion of the Base estimate ($191.4M) based on:

- Length of Section, where a pro-rata of the Base estimate for that design element was appropriate (e.g., for items such as pavements, network drainage, landscaping, etc), and
- Special features unique to a Section that should only be included in that Section (e.g., bridges, retaining walls, ground improvements, wetlands and major culverts).

A summary of costs per Section is provided in the table below.

Section	Proportion of Base Estimate
NOR6_S1_Delmore	$62.6M
NOR6_S2_Sth_Delmore	$33.2M [1]
NOR6_U Orewa Rd-Rbt	$9.2M
NOR6_S3_U Orewa Rd	$88.4M
NOR6_Wainui Rd-Rbt	$4.5M [2]

Notes:
[1] = An additional $2M was included for this Section to allow for a 20m increase in bridge length for the bridge in this Section, per directive from AT on 12 June 2025.
[2] = The costs for this Section come from the NoR 10 Base estimate.

Table 1 : Cost Summary for Sections of NoR 6

[1] "North DBC, Appendix J – Cost Report", prepared by Te Tupu Ngātahi, Version 1.0 May 2023

3.3 Comparison with SGA Cost Estimate

In developing the proportion of costs to be applied for this purpose, the latest guidance set out in the Auckland Transport Cost Estimation Guide[2] was used to determine the appropriate allowances for professional fees, AT managed costs and contingency and risk allowance that should be applied (approach set out in Sections 7and 8 below). These have been updated since the DBC for this network was developed, resulting in changes to the overall Expected Estimate (P50) and Risk adjusted estimate (P95).

4. NoR 10: Upgrade to Wainui Road

4.1 Identification of Section elements for costing and Scope

Figure 4: Cost Sections for Proposed Upgrades for NoR10

[2] "Cost Estimation", prepared by Auckland Transport, Rev 3.0 May 2023

4.2 Resultant Cost Estimate

The Base Estimate for the total NoR10 project included in original Cost Report[3] was $118.8M. This included an allowance of $18.1M for property, $5.2M for implementation fees and $13.4M for project development and pre-implementation fees. Without the property and other costs, the Base estimate was $82.1M. This Base estimate accounts for the physical works and includes environmental compliance, traffic management and preliminary and general costs. It was calculated in 2023.

The Section elements indicated in the figure were allocated a proportion of the Base estimate ($82.1M) based on:

- Length of Section, where a pro-rata of the Base estimate for that design element was appropriate (e.g., for items such as pavements, network drainage, landscaping, etc), and
- Special features unique to a Section that should only be included in that Section (e.g., bridges, retaining walls, ground improvements, wetlands and major culverts).

A summary of costs per Section is provided in the table below.

Section	Proportion of Base Estimate
NOR10_S1_Wainui Rd-West	$26.1M
NOR10_S2_Wainui Rd-East	$51.6M
Notes: [1] = The Base estimate also included $4.5M for the Wainui Road roundabout, which is included in the costs for NoR 6, presented in the previous section.	

Table 2 : Cost Summary for Sections of NoR 10

4.3 Comparison with SGA Cost Estimate

As set out in section 0 above,

[3] "North DBC, Appendix J – Cost Report", prepared by Te Tupu Ngātahi, Version 1.0 May 2023

5. Upper Orewa Road Upgrade:

This corridor would be upgraded to provide a Public Transport Corridor to support the development and is therefore assumed to be an arterial standard to accommodate the buses. The length of corridor identified for upgrade extends from the intersection with Russel Road in the east to the proposed Collector Road at the western end of the development (as indicated in Figure 2 above).

5.1 Existing Road Environment

Upper Orewa Road is a narrow rural road with a chip seal surface (Figure 5 below). The width of the existing pavement is approximately 7m, and there are side drains along both sides of the road. There are driveways located intermittently along the corridor with culverts beneath. Power poles run along the northern side of the corridor.

5.2 Assumed Cross Section

This will be upgraded to an urban arterial with 2 traffic lanes, kerb and channel and berm areas with footpaths. The assumed cross section will be 20, with two 3.5m traffic lanes and a painted median. The total width would therefore be 9m, with kerb and channel installed along both sides of the road.

The remaining width of 5.2m each side would be allocated to the berm, with separated walking and cycling facilities, and a grass berm area.

Figure 5: Image of existing road environment - Upper Orewa Road

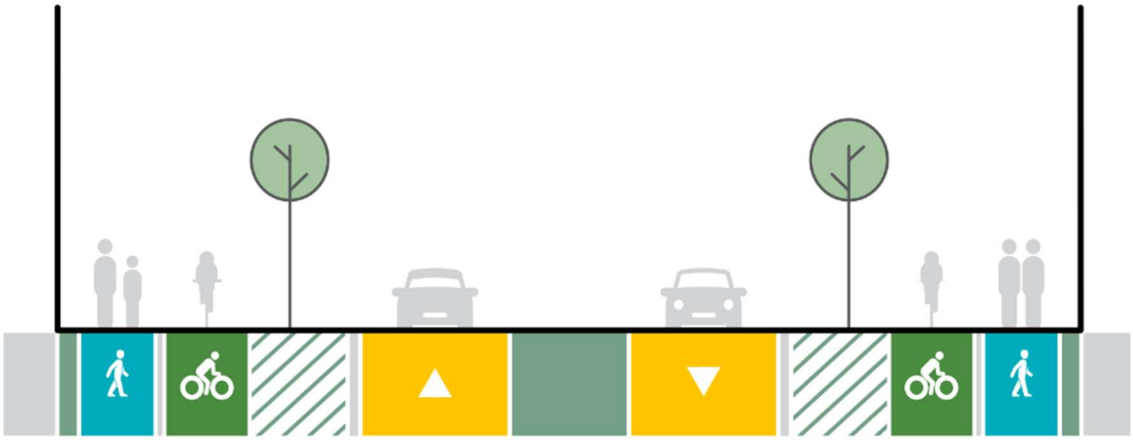


Figure 6: Indicative cross section to be provided as part of upgrade

5.3 Assumptions to inform cost

The cost allowance for the upgrade has been based on the following scope assumptions:

- Length of road corridor to be upgrade – 420m (as shown in Figure 2)
- Increased pavement width – 2m (i.e. increase from 7m to 9m)
- Existing pavement remains. Additional widening of 2m required.
- Earthworks – assumed average depth of 1m across the full width beyond existing paving
- Kerb and channel provided on both sides of the road
- 100m of retaining wall at a height of 1m
- 160m of retaining wall at a height of 2m
- Linear rate applied for traffic services and utilities
- 2m footpath and 2m cycleway provided
- Allowance for tree planting, fence reconstruction and grass berm

6. Russell Road Upgrade:

This corridor would also be upgraded to provide a Public Transport Corridor to support the development and would be upgraded to an arterial standard to accommodate the buses. The length of corridor identified for upgrade extends from the intersection with Upper Orewa Road in the west to the edge of the development boundary in the east. This corridor upgrade has been divided into 2 sections. The western section is required to accommodate a PT loop, with an additional length of upgrade at the eastern end to reflect the urbansiation of the adjacent land use and the need for an upgrade. The extent of the corridor is presented in Figure 2 above.

6.1 Existing Road Environment

Russell Road is rural environment and is currently unsealed with side drains. The topography is generally considered level with localised areas for potential retaining walls. There are driveways located intermittently along the corridor with culverts beneath. Power poles are located within the corridor.

Figure 7: Image of existing road environment - Russell Road

6.2 Assumed Cross Section

As with the Upper Orewa Road section, it is assumed that this corridor will be upgraded to an urban arterial with 2 traffic lanes, kerb and channel and berm areas with footpaths. The assumed cross section will be 20, with 2 3.5m traffic lanes and a painted median.

Figure 8: Image of existing road environment - Upper Orewa Road

6.3 Assumptions to inform cost

The existing road is in poor condition and is effectively a driveway. Therefore, it is assumed that the full cross section will need to be reconstructed. As there is no design for this corridor, a linear metre allowance has been developed based on a typical project included within the Te Tupu Ngātahi programme. This identified an allowance of $9,290 per liner metre for construction of a new corridor. The topography is likely to result in the need for retaining walls, so this cost has been increased by 10% for potential retaining walls. This results in an allowance of $10,220 per metre.

The cost allowance for the upgrade has been based on the following project lengths:

- Length of western section of the road corridor to be upgraded – 450m (as shown in Figure 2)
- Length of eastern section of the road corridor to be upgraded – 230m (as shown in Figure 2)

7. General Allowances, Contingency and Risk

Allowances for Traffic Management (7%), Environmental Compliance (3%) and Contractors Preliminary and General (22%) have also been applied.

In addition to the physical works cost, there are additional costs for progressing through the design development, consenting and construction supervision phase. The AT Cost Estimation guide sets out appropriate allowances that can be used, and these are set out in the table below. For this corridor, the physical works cost is approximately $5M, so the allowance for <$5M has been adopted.

	Cost ratios spanning 3 phases: Project development(PBE,IBE,DBE); Pre-implementation(PE1); Implementation(PE2).						
PHASE	**D.2 Physical Works cost($m):**	**< $5**	**$20**	**$50**	**$100**	**$250**	**$500**
DEVELOPMENT	AT Managed Costs - Development	6.0%	4.5%	3.3%	2.4%	1.7%	1.3%
	Consultancy Fees - Development	12.0%	9.8%	7.8%	6.0%	5.0%	4.5%
	DEVELOPMENT SUBTOTAL:	**18.0%**	**14.3%**	**11.1%**	**8.4%**	**6.7%**	**5.8%**
PRE-IMPLEMENTATION	AT Managed Costs - Pre-Implementation	6.0%	4.7%	3.7%	2.8%	2.0%	1.5%
	Consultancy Fees - Pre-Implementation	10.0%	8.3%	7.0%	6.0%	5.2%	4.5%
	PRE-IMPLEMENTATION SUBTOTAL:	**16.0%**	**13.0%**	**10.7%**	**8.8%**	**7.2%**	**6.0%**
IMPLEMENTATION	AT Managed Costs - Implementation	3.0%	2.5%	2.2%	1.9%	1.7%	1.5%
	Consultancy Fees - Implementation	7.0%	6.0%	5.2%	4.5%	3.9%	3.5%
	IMPLEMENTATION SUBTOTAL:	**10.0%**	**8.5%**	**7.4%**	**6.4%**	**5.6%**	**5.0%**
ENTITY SUBTOTALS - ALL PHASES	AT Managed Costs - Total	15.0%	11.7%	9.2%	7.1%	5.4%	4.3%
	Consultancy Fees - Total	29.0%	24.1%	20.0%	16.5%	14.1%	12.5%
	GRAND TOTAL - ALL PHASES:	**44.0%**	**35.8%**	**29.2%**	**23.6%**	**19.5%**	**16.8%**

Table 3 : Cost Ratios for AT Managed Costs and Consultancy Fees[4]

The information above has been used to determine the base cost allowance for the project. An allowance for contingency and risk also need to be applied to determine the Expected Estimate (P50) and the 95th percentile Estimate (P95).Guidance on the appropriate level of contingency to be applies is also set out in the AT Cost Estimation Guide and is also presented below (Table 4).

There has been no site investigations or design carried out for this corridor, rather an estimate of the likely scope with assumptions for particular design elements that may be expected. Therefore cost allowance is considered to be consistent with a Programme Business Case level, and the 50th percentile and 95th percentile contingencies that have been adopted are 50% and 70% respectively.

[4] "Cost Estimation" Guide, Table 2, Auckland Transport June 2023

COST ESTIMATE AT PHASE ACTIVITY	CONTINGENCY RANGE	
NOTE: 1. P50 contingency is added to the base estimate. 2. P95 contingency can be added to the base estimate, or the difference between P95 and P50 added to the P50 expected estimate (as done on the AT estimate summary excel sheet). In either case the funding risk contingency is the difference between the P50 and P95 figures and reported as such on the Estimate Summary Sheet.	**50TH PERCENTILE (P50 Expected Estimate)**	**95TH PERCENTILE (P95)**
Programme Business Case (provides budgets)	+40 to 60%	+70 to 150%
Indicative Business Case (based on multiple options)	+30 to 50%	+50 to 70%
Detailed Business Case (based on preliminary design for preferred option)	+30 to 50%	+50 to 70%
Pre-Implementation 1 (include preliminary design updated with Notice of Requirements/Resource Consents conditions)	+20 to 40%	+40 to 60%
Pre-Implementation 2 (also called the Engineer's Estimate. Based on detailed design for the Implementation Phase)	+15 to 20%	+20 to 30%
Implementation Phase Estimate (based on preferred tender price). AT does not do these estimates.	+15%	+15-20%

Table 4 : Contingency range to be applied to cost estimates

8. Cost Estimate Summary

The resultant cost allowances for the projects based on the information above is set out in the summary table below. These costs don't include any property costs, which may need to be included with the ultimate project cost.

No	Project Schedule	Project Developme	Pre-Implementation	Implementation	Physical Works ($M)	Indicative Cost ($M)	Estimate Base Date
1	Delmore Subdivision - Upper Orewa Road Upgrade (western extent)	0.9	0.8	0.5	5	**10 - 12**	Jul-21
2	Delmore Subdivision - Russell Road Upgrade to cul-de-sac	0.9	0.8	0.5	6	**13 - 14**	Jul-21
3	Delmore Subdivision - Russell Road Upgrade from cul-de-sac to eastern end	0.6	0.5	0.3	3	**7 - 8**	Jul-21
4	SGA NoR6 - Within Delmore development (Section 1)	5.3	5.5	4.0	63	**116 - 131**	Apr-23
5	SGA NoR6 - South of Delmore Development (Section 2)	3.7	3.6	2.9	33	**65 - 74**	Apr-23
6	SGA NoR6 - Upper Orewa Rd Roundabout	1.3	1.2	0.8	9	**19 - 21**	Apr-23
7	SGA NoR6 - Upper Orewa Road (Section 3)	7.4	7.8	5.7	88	**164 - 186**	Apr-23
8	SGA NoR6 - Wainui Rd Roundabout	0.8	0.7	0.4	4	**10 - 11**	Apr-23
9	SGA NoR10 - Wainui Rd West (Section 1)	3.7	3.4	2.2	26	**53 - 60**	Apr-23
10	SGA NoR10 - Wainui Rd East (Section 2)	4.3	4.5	3.3	52	**96 - 108**	Apr-23

Table 5: Comparison with Previous DBC Costs estimates

9. Limitations

These cost allowances are indicative only and not based on preliminary design. Site investigations have not been undertaken, and the assumed Project scope is based judgement. Costs utilise simplified unit rates, rather than from specific design and quantity measurements. The assumed scope and cost estimates are not considered sufficiently accurate to obtain construction funding.

Information from the Te Tupu Ngātahi Supporting Growth Programme has been used to form the basis of these allowances. Those cost allowances in the DBC were verified by an "independent" person within Te Tupu Ngātahi (i.e. separate from the originator) with appropriate skills and experience to undertake the activities required. This review process was approved by AT and Waka Kotahi for application on Te Tupu Ngātahi as construction funding was not being sought for the projects.

Annexure C, Delmore Residential Subdivision Fast Track Application Transport Assessment, prepared PTM Consultants, dated 23 June 2025

Memorandum

To:	Tessa Craig | Team Leader – Development Planning North/West | Auckland Transport Shahriar Tehrani | Senior Development Planner (North/West) | Auckland Transport
From:	Paul Schischka | Consultant Transportation Engineer | PTM Consultants
Date:	24 June 2025
Subject:	Delmore Residential Subdivision Fast Track Application Transport Assessment
Revision:	3

This memorandum contains my road safety / traffic engineering specialist review comments on the Delmore fast-track application.

The proposed Delmore residential development, located in the Wainui / Orewa area north of Auckland contains approximately 1,250 new houses, 28 new roads to vest, and has an overall area of around 109 hectares.

I have reviewed the application documents supplied by the applicant. The documents most pertinent to my review are;

- The Integrated Transportation Assessment (ITA) report prepared by Commute Transportation Consultants (Commute) dated 13 February 2025.
- The letter with further information and assessment of transportation matters from Commute dated 12 June 2025 ('the 12 June Commute letter').
- The roading drawings prepared by McKenzie and Co. dated 30 January 2025.
- The proposed conditions of consent prepared by B&A Urban and Environmental (undated).
- The Indicative Wainui Orewa Structure Plan prepared by B&A Urban and Environmental (undated).

As part of this review I visited the site on 14 May 2025 in a joint site visit with Auckland Transport, Auckland Council, the applicant and their advisors.

Executive Summary

A. I consider that residents of the proposed residential subdivision are likely to be highly dependent on the use of private motor vehicles as a mode of transportation. Many of the roads within the subdivision have steep gradients, it is not within walking distance of local schools, the road network has not been designed for public transport services (expect for the NOR 6 road), and while there is a small planned commercial development within neighbouring the Ara Hills development, there are no supermarkets or larger retail developments within a practical walking distance.

B. There is presently no safe active modes route from the development across the SH1 / Grand Drive motorway interchange. My understanding is that the neighbouring Ara Hills developer is required to build a connection as a condition of their consent, but there is no firm date for construction of this to commence. I recommend that a condition of consent is sought for the proposed Delmore subdivision requiring that a safe active modes link across the motorway be provided before any dwellings are occupied.

C. The applicant's trip generation assessment is based on a medium design residential rate. I consider that, due to most dwellings in the sub-division being standalone and the likelihood that the development will be highly car dependant, that actual trip generation rates will be higher.

D. The applicant's traffic modelling shows that if all traffic generated by the development were to travel via the Grand Drive motorway interchange that this would have a significant adverse effect on traffic congestion the interchange. In particular it shows that for the Grand Drive eastern approach to the interchange the level of service (LoS) in the morning peak would drop from B to F, and that queue lengths would increase from approximately 60 metres to 683 metres.

E. To address this the applicant proposes to provide an alternative route in the form of a connection between the development and Upper Orewa Drive. However, they have not made any recommendation as to at which stage of the development this link would need to be open. I recommend that a condition of consent be sought requiring that no more than 670 dwellings be occupied before the Upper Orewa Drive link is open to the public

F. In the 12 June traffic response letter the applicant provides information on a revised traffic model which shows lower queue lengths and average delay times and a better level of service than the model provided in the ITA. The letter does not include output tables from the SIDRA traffic modelling software or a clear description of all changes made when preparing the revised model and I have therefore been unable to fully review it.

G. However it appears that the revised model is based on lower trip generation rates taken from a more recently published guide than the source used in the ITA. I consider that these lower trip generation rates are not appropriate for this proposal. The published rates are based on surveys of existing medium density residential developments which had higher rates of walking, cycling, and public transport mode share than is likely to be achieved by the proposal. Also the proposal is most consistent with the guide's definition of a low density residential development, and I consider that use of the medium density rates is not appropriate.

H. The applicant has proposed that the link to development will be via a new roundabout at the intersection of Road 17 and Upper Orewa Drive. I consider that this is an appropriate form for the intersection to take, but note that the roundabout design provided lacks information like vehicle tracking, sight distance assessment, and 3D design which would allow a full review. Nonetheless, there is nothing in the limited information provided to date which indicates that an appropriate intersection design cannot be provided.

I. I consider that the Wainui Road / Upper Orewa Drive intersection should be upgraded to a roundabout as part of the development to address potential safety and operational traffic effects caused by increased traffic at this intersection travelling to and from the development. I also consider that the Russell Road / Upper Orewa Drive intersection should also be upgraded to address potential road safety effects caused by limited sight distances for drivers turning right into Russell Road.

J. The proposed subdivision lacks the normal road hierarchy of arterial roads, collector roads, and local roads. Instead all roads except for the NOR 6 arterial road have been designed as local roads. No provision has been made in the design of the local roads for future bus routes expect on the NOR 6 road, nor have any cycling facilities been proposed. I recommend that collector roads, with carriageway widths suitable for bus routes and separate cycle facilities, are provided in both stages in the locations indicated in the indicative structure plan for Wainui-Orewa which was provided with the application.

K. To address potential traffic safety and operational effects I also recommend that intersections between the collector roads and the NOR 6 road or between two collector roads are designed as roundabouts.

L. The vehicle tracking drawings for some of the horizontal curves within the new road network indicate that there is insufficient space for vehicles to pass a rubbish truck coming in the other direction. Addressing this will require carriageway widening near the curves which could have an impact on the width of the road reserve. To mitigate the potential traffic safety and operational effects I recommend that a condition of consent is sought requiring that sufficient carriageway space be provided to allow vehicle tracking which complies with the Auckland Council Code of Practice for Land Development and Subdivision Chapter 3 Transport without the footpath or berm widths going below the minimums in the code.

M. The applicant has provided a sight distance assessment in the form of drawings for selected intersections and vehicle crossings serving jointly owned access lots (JOAL). These drawings show that in order to provide safe driver sight distances at some of the intersections or JOALs that certain areas of some of the residential lots adjacent to the road must be kept clear of low level planting or structures. In some cases these areas are only relatively small parts of the lot and I consider that in these cases the potential traffic safety effects could be mitigated with a consent notice on the title of the lots requiring these areas to be kept clear of high structures or planting.

N. In other cases the area which would need to be kept clear is comprises a significant proportion of the overall lot and a consent notice could potentially prevent a dwelling being built on the lot. In these cases I recommend that the proposed development be redesigned to address the potential traffic safety effects by adjusting lot boundaries or moving vehicle crossings to locations to positions where driver sight lines are sufficient.

Car Dependency

1. Car dependency in residential subdivisions occurs when land use and transport patterns heavily favour private motor vehicle use over alternative travel modes such as public transport, or active modes such as walking and cycling.

2. Car dependency in residential subdivisions can result in a number of adverse effects. High trip generation can cause congestion on the wider transport network causing delays and increased travel time both for motorists travelling to and from the development but also for other users of the transport network. It can make travel difficult or inaccessible to people who do not have readily available access to a private car. More private vehicle use can have adverse environmental effects in the forms of increased emissions, both greenhouse gases, but also fine particulate matter emissions which can cause health effects. There are health benefits from active travel modes which residents who travel exclusively or nearly exclusively by private vehicles are denied.

3. I consider that the proposed Delmore residential development is likely to be very car dependant for the following reasons.

    a. Many of the roads within the development have steep gradients (over 8%) which discourage walking.

    b. There are no schools within reasonable walking distance. The nearest school is Nukumea Primary School which is around 4km away (about 1 hour walking time) when measured by the shortest walking route.

c. There is a small commercial centre included in the Ara Hills development (which is consented but not built) but things like supermarkets will require the residents to drive to them.

d. This site is difficult to service by public transport. Practically servicing the site via public transport would require a road link through stage 2 to be complete and a connection to Upper Orewa Drive provided. Walking distances and road gradients to likely bus stop locations from the outer edges of the development are likely to discourage public transport use. The location and density of the proposed development mean that future bus services are unlikely to be more than a connector type service with around 30 minute frequency. The lack of collector type roads in the proposed design means that roads other than the NOR 6 road are inappropriate for use by a bus service.

Trip Generation and Modelling

4. Car dependency is likely to result in higher trip generation rates per dwelling than would be expected for similar developments with better walkability and public transport access.
5. The Commute Integrated Transportation Assessment (ITA) section 5.1 has used a trip generation rate of 0.65 peak hour trips per dwelling based on the New South Wales Roads and Transport Authority Guide to Traffic Generating Developments ('The RTA guide') rate for medium density residential.
6. The RTA guide defines medium density residential as follows:

   "A medium density residential flat building is a building containing at least 2 but less than 20 dwellings. This includes villas, town houses, flats, semi-detached houses, terrace or row houses and other medium density developments. This does not include aged or disabled persons' housing."

7. I note that most of the dwellings are stand alone and are larger (3 or 4 bedrooms) than is typical for medium density.
8. I consider that the RTA guide trip rate of 0.85 peak hour trips per dwelling for a dwelling house would have been a more appropriate rate for this development. The daily trip generation rate for dwelling houses in the guide is 9 trips per dwelling.
9. If this were used then the trip generation for the whole development given in Section 5.1 of the ITA peak hour would increase from 813 to 1,063 trips per hour and the daily trips would increase from 8,125 trips to 11,250 trips.
10. The development will be undertaken in stages. The ITA provides modelling (using the SIDRA traffic modelling software package) for the Grand Drive / SH1 motorway interchange using a scenario which accounts for existing traffic on the network, consented trips from the neighbouring Ara Hills development, and trips from the proposed Delmore development, but without the connection between the development and Upper Orewa Road which would occur in Stage 2.
11. The interchange is laid out as two roundabouts. Figure 26 of the ITA shows SIDRA traffic modelling results in the morning peak hour at the eastern roundabout using existing traffic with an adjustment to account for the consented but yet to be constructed parts of the Ara Hills subdivision. The overall level of service (LOS) for the intersection is A (on a scale of A to F). The movement with the worst LOS is the right turn from the SH1 Motorway offramp which has a LOS of B. Drivers entering from the east leg (Grand Drive) of the

intersection experience average delays of 4.6 seconds and queue lengths are expected to be 60 metres.

12. Figure 30 of the ITA shows SIDRA traffic modelling results for the eastern roundabout in the morning peak hour with the existing traffic, consented Ara Hills subdivision traffic, and the traffic from the proposed Delmore subdivision. The modelling for this scenario shows that this will result in significant capacity and congestion issues. For drivers approaching the interchange from the east on Grand Drive in the morning peak hour queues 683 metres long are predicted. The overall LOS of the intersection is E and the LOS for the eastern approach is F. Average delay time for motorists on the eastern approach is 114 seconds.
13. The SIDRA modelling shows that the proposal will have a clear impact on the operation of the interchange, especially for drivers coming from the eastern side of the motorway in the morning peak hour who will experience significantly increased average delay times and queue lengths. I consider that this constitutes a significant adverse operational effect on the road network.
14. The SIDRA modelling in the ITA is based on the medium density trip generation rate of 0.65 peak hour trips per dwelling, which I consider to be too low for reasons outlined above. If the 0.85 peak hour trips per dwelling rate which I consider to be more appropriate was used then it is likely that the modelling would show even longer queue lengths and delay times at the eastern roundabout.
15. Section 1.2 of the 12 June response letter from Commute refers to a revised SIDRA model. According to the letter the revised model shows that, at the SH1 / Grand Drive motorway interchange in the AM peak period, the LOS will be C, the average delay will be 25 seconds, and the queue length will be 230 metres.
16. While this is a reduction when compared to the values provided in the post-development scenario SIDRA model for the interchange in the ITA it is still a significant increase in queue lengths and delays when compared to the existing scenario which shows a LOS of B, average delays of 4.6 seconds, and queue lengths of 60 metres on the eastern approach.
17. The 12 June letter does not include output tables from SIDRA for the revised model and does not clearly state what changes where made compared to the SIDRA model provided by the applicant in the ITA. Without this information I cannot fully review the revised SIDRA model.
18. Based on Section 1.2 of the 12 June letter it appears that the revised SIDRA model uses the trip generation rates from new Transport for New South Wales Guide to Transport Impact Assessment ('TfNSW guide'). This document was published in November 2024 has lower trip rates for medium density housing when compared to the rates in the RTA guide which was used for the model in the ITA . For the morning peak hour the medium density housing rate in the TfNSW guide is 0.41 trips per dwelling compared to the RTA guide rate of 0.65 trips per dwelling.
19. The 12 June letter explains that the reduction in trip generation rates for medium density dwellings between the TfNSW guide and the RTA guide *"is likely due to changes in work habits since the original RTA surveys in 2002 including, wider congestion (peak spreading) and the ability for workers to more easily remotely work / work from home."*
20. Work from home has become more common since the Covid-19 epidemic. For the Auckland Region the percentage of people reporting that they work mostly from home has increased from 8.7% to 18.2% when comparing 2018 and 2023 census data.

21. The census data also indicates that people who were previously travelling to work via modes other than private motor vehicle in 2018 were disproportionately more likely to be working from home 2023, and therefore the increased number of people working from home does not directly translate into the same number of people no longer travelling to work via private motor vehicle. Furthermore, there is some anecdotal evidence that employers are increasingly requiring their employees to work from the office.

22. This is not a sufficient increase in the number of people working from home to account for a significant proportion of the reduction in morning peak trip generation rates from 0.65 to 0.41. I consider that most of the reduction in trip generation rates between the RTA and TfNSW guides is likely to be due to improved public transport services and access to them as well as improved walking and cycling infrastructure.

23. The proposed Delmore development does not have good access to public transport. Only the NOR 6 road has been designed to accommodate bus services. All of the other roads in the development have insufficient carriageway widths for bus services and the intersections have not been designed with sufficient space for vehicle tracking by turning buses. There are no cycling facilities proposed, other than on the NOR 6 road, and the steep gradients of many of the local roads discourage walking as a travel mode, making it more difficult to access public transport.

24. The TfNSW guide provides information on mode share for the medium density residential developments which it is based on. It shows 68% car use, 30% walking, and 2% cycling (walking to public transport is included in the walking percentage). I consider that it is unlikely that the Delmore subdivision will ever achieve anything approaching 32% combined active and public transport modes share based given the limitations in the proposal described in the preceding paragraph. Due to this I consider that actual trip generation rates for the proposed subdivision are likely to be significantly higher than rates provided for medium density dwellings in the TfNSW guide, and therefore any revised SIDRA modelling based on the TfNSW guide is unlikely to accurately predict future operation of the surrounding road network.

25. I also note that the 12 June response letter is based on the proposed dwellings being considered to be medium density, which I do not consider to be the case. The TfNSW guide describes low density housing as follows;

    "Low density residential areas are defined as areas where the majority of dwellings are on separate lots. On larger lots, the provision of large duplexes has also been assumed to be low density generating dwellings. Public transport accessibility in such areas is often limited."

26. I consider that the proposed development should be considered to be a low density residential development when considering trip generation.

27. The 12 June letter includes results from a traffic survey of the neighbouring Ara Hills development which shows an AM peak trip generation of 0.75 trips per dwelling. The letter explains that Commute expect that this will drop as the area is further developed, and although this may be the case, it should be noted that many parts of the proposed Delmore development, particularly Stage 2, are more remote from the future Awa Hills neighbourhood centre or the wider Owera area, and are less likely to have a significantly lower trip generation rate when Awa Hills and Delmore are fully developed, and it is very unlikely that the rates in the TfNSW which the revised SIDRA modelling was based on will be achieved.

28. Section 6.2.5 of the ITA provides information on SIDRA traffic modelling for a scenario where the connection to Upper Orewa Road from Stage 2 is open and 30% of trips generated from the development use this route. The ITA refers to this as the 'revised SIDRA model'. This model shows that that provided the diversion occurs the interchange will operate satisfactory.
29. The ITA does not provide a basis or explanation for how the 30% diversion was calculated. I consider that this, combined with the trip generation rate potentially being higher than expected, means that a problem at the interchange (with queues extending back into the AT network) are a potential adverse effect caused by the proposal.
30. To address this, I recommend that there is a condition of consent requiring the link to Upper Orewa Road to be open before any dwellings over a certain threshold are occupied. This link should take the form of a roundabout at the intersection of Road 17 and Upper Orewa Road. The 12 June Commute letter updates the proposal and a roundabout is not proposed at this intersection.
31. I recommend that this threshold is set at 670 dwellings. The ITA uses 1250 dwellings with 70% using the Grand Dr interchange in the updated model with a rate of 0.65 trips per dwelling. This equates to 568.75 trips. If the trip generation rate was 0.85 trips per dwelling this gives 669.18 dwellings (rounded up to 670 dwellings).
32. The ITA only provides modelling for the Grand Drive / SH1 motorway interchange. No other locations are modelled. Possible locations where additional trips generated by the proposed developments could cause congestion and capacity effects are the Upper Orewa Road / Wainui Road intersection and the Wainui Road / SH1 interchange.
33. Traffic data from the Mobile Road website (https://mobileroad.org/) shows daily traffic volumes on Upper Orewa Road near the intersection with Wainui Road are 1,342 vehicles per day (vpd). The ITA assesses overall trip generation from the proposal to be 8,215 vpd of which the ITA indicates that 30% will use Upper Orewa Road. This would be an increase of 2,465 vpd, a 183% increase over current traffic volumes.
34. The Upper Orewa Road / Wainui Road intersection is presently a give way priority controlled T-intersection. There is no right turn bay on Wainui Road and no shoulders which could be used by a westbound driver on Wainui Road to pass a vehicle waiting in the lane to turn right into Upper Orewa Road. This is likely to result in a significant increase in delays for westbound drivers on Wainui Road, even if they are not travelling to or from the Delmore development. The 12 June letter from Commute does include any SIDRA modelling for the intersection which would allow us to quantify the effects of increased traffic at the intersection.
35. There is also a potential traffic safety effect as vehicles waiting in the traffic lane to turn right from Wainui Road into Upper Orewa Road will be vulnerable to rear-end type crashes. An increase in the number of vehicles turning out of Upper Orewa Road is also likely to increase the crash risk at the intersection.
36. The 12 June letter from Commute provides some assessment of the Upper Orewa Road / Wainui Road intersection (section 2.12 of the letter). They note that an upgrade to a roundabout at this location is included in NOR 6. I note that the purpose of the NOR is to secure route protection designations. No implementation funding or definite timeline is associated with the NOR, and even if public funds were allocated it could be over a decade before the roundabout is constructed. The intersection should be upgraded at the same time as the proposed Delmore development to address the effects of traffic generated by the development.

37. The 12 June letter also states that the applicant should not be required to construct a right turn bay at the intersection as *"requirements for a right turn bay at this point is likely to be already triggered by NZTA's internal guidelines (regardless of the Delmore proposal) and thus, is an existing issue which the applicant should not be required to fix, given anticipated scheduling of works and the distance from the roundabout to Delmore"*.
38. I disagree with this statement. The applicant's proposal would increase traffic volumes turning right into Upper Orewa Road at the intersection by 183%. The traffic safety and capacity effects associated with this increase are the applicant's responsibility to address.
39. To address this, I recommend that a condition requiring roundabout to be constructed at the Upper Orewa Road / Wainui Road intersection (unless the NOR 6 upgrade comes first) at the same time the 670 dwelling threshold is exceeded.
40. The potential issue at the Wainui Rd / SH1 interchange is more difficult to comment on as the interchange is under NZTA's control and any capacity improvement works would need their approval. However, while capacity improvements at the interchange would need to occur within the area controlled by NZTA, the effects of insufficient capacity could still have an impact on the Auckland Transport network, similar to the issue at the Grand Drive interchange where the SIDRA modelling showed a 600 metre long queue extending back from the interchange and into Auckland Transport's network. I recommend that NZTA is consulted on this interchange and whether they consider additional assessment or works to mitigate the effects of increased traffic volumes are required.

Active Modes Link Across Interchange and Along Grand Dr

41. Section 7.4.2 of the ITA assessed active modes accessibility for the development. It relies on an active modes bridge across the motorway interchange and a shared path along one side of Grand Drive which is a condition of the Ara Hills development but which has not been constructed yet.
42. Section 1.5 of the 12 June letter from Commute notes that *"We understand that Ara Hills are at the point that any further consent will trigger this active mode required to be constructed (i.e. new bridge over motorway and link to existing cycle-lanes / footpath on Grand Drive."*
43. It should not be assumed that the Ara Hills developer will have completed this link before the first dwelling of the Delmore development is occupied. I recommend a that there is condition of consent requiring that the bridge and path are complete and open for public use before the first dwelling is occupied.

Road Network Hierarchy

44. The proposed road network lacks the normal road hierarchy as it only has local roads and the NOR 6 arterial road. A more typical road hierarchy includes collector roads which function to collect and distribute traffic between local roads and arterial roads.
45. Appendix 13 of the application included an indicative structure plan for Wainui-Orewa with future collector roads indicated. The structure plan collector roads correspond with the following roads in the Civil drawings and ITA;
    a. Road 1
    b. Road 17 Upper Orewa Rd to Road 14 only
    c. Road 14 from Road 17 to Road 05 only.
    d. Road 05

46. I consider that the locations of the collector roads indicated in the indicative structure plan are appropriate for the proposal.

47. I also consider that these roads should be designed to allow them to be used as future bus routes. It should be noted that while bus routes and collector roads have many of the same design features they are not the same and Auckland Transport often operates bus services on roads otherwise considered to be local roads, but when this occurs the roads need to be designed to accommodate buses.

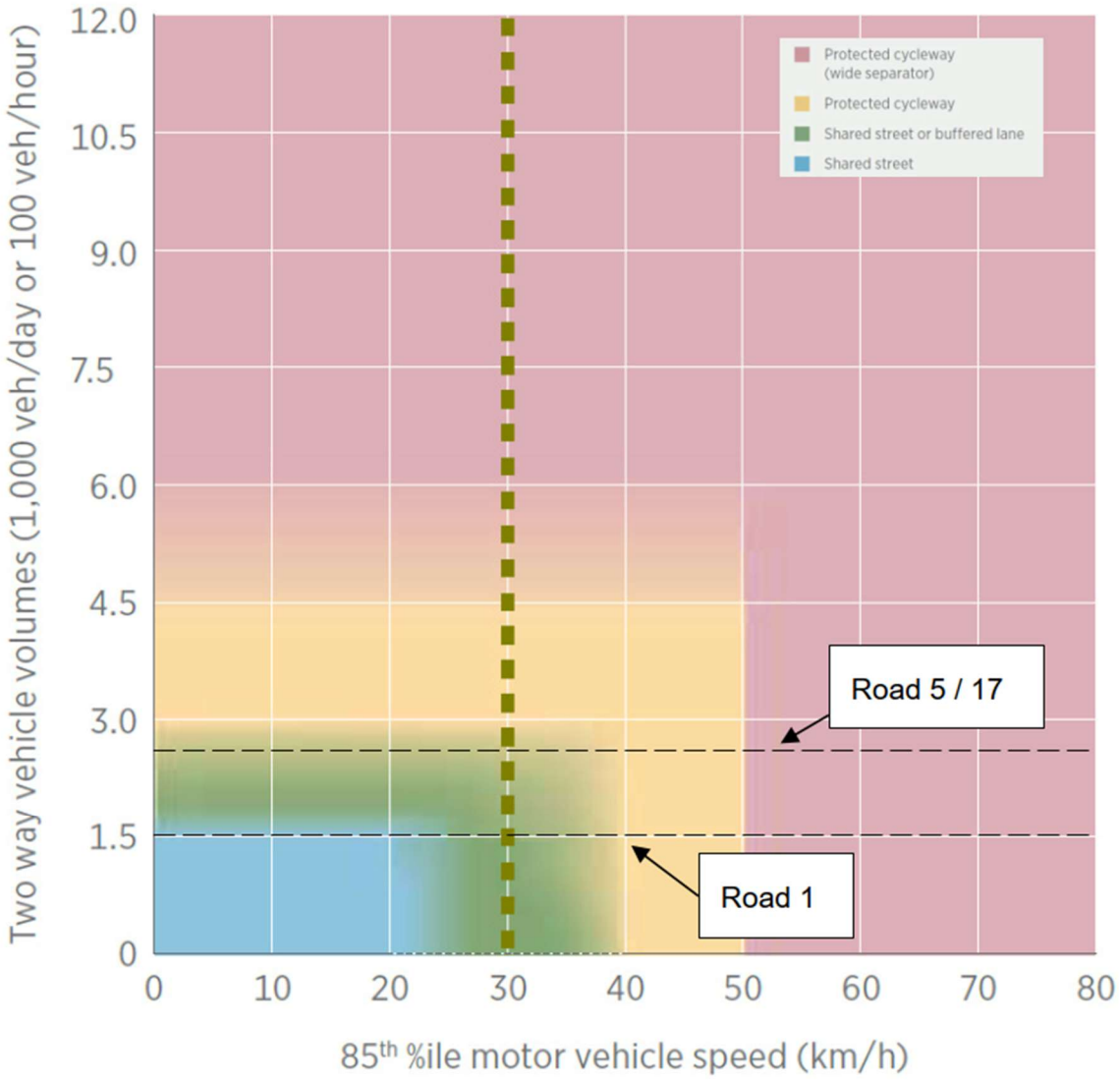
48. The principal features which are required on a bus route are wider traffic lanes (typically 3.5 metres wide in each direction, intersections and other road geometry designed for bus tracking, an absence of traffic calming, bus stops or provision in the design to allow bus stops to be retrofitted later, and minimisation of on-street parking and vehicle crossings where these things can be provided from other roads or JOALs).

49. Allowance for future bus routes inside the development is necessary to help mitigate the effects of an otherwise very car dependent proposal.

50. Section 2.2 of the 12 June letter from Commute includes further assessment of the proposed road hierarchy. It refers to the Auckland Transport Roads and Streets Framework (RSF). Commute appear to be using an earlier version of the RSF for their assessment. The current version (May 2020) does not have the same traffic volume based thresholds for road hierarchy and places greater emphasis on the road's function in relation to surrounding land use as the method for determining a road's status.

51. Figure 7 of the 12 June letter shows estimated daily volumes on Roads 1, 5, and 17 of 1,500vpd, 2,600vpd, and 2,500vpd respectively. This appears to be based on the medium density residential trip generation rate, which as I discussed earlier in this memorandum, I do not consider to be appropriate. Applying the dwelling house rate which I used earlier in this memorandum I calculate trip daily traffic volumes of 2,000vpd, 3,500vpd, and 3,400vpd for Roads 1, 5, and 17 respectively, exceeding the 3,000vpd threshold referred to in the 12 June Commute letter. Road 1 can be expected to provide a link the future urban zoned land to the south of the applicant's site to NoR 6 road when it is developed and this will mean additional trips beyond the 2,000vpd generated from within the Delmore subdivision.

52. AT's Engineering Design Guide Cyclist Infrastructure contains a diagram (Section 2.2 types of cycling infrastructure) showing what type of cycling infrastructure is appropriate in what circumstances based on traffic volumes and vehicle operating speeds. Figure 9 of the 12 June Commute letter takes this diagram and annotates where roads 1, 5, and 17 would fall (refer Figure below).



53. While the 12 June Commute letter states that cycle facilities are not needed on these roads this is clearly not what the figure shows. Roads 5 and 17 are well within the zone for which a protected cycleway (wide separator) is indicated, while Road 1 is in the protected cycleway zone.

54. I recommend that these routes (as well as Road 14 from Road 17 to Road 05 only) are designed as cycle routes and cycle infrastructure in the form of off-road cycle paths, separate from the footpath, are provided on each side. This is necessary to help mitigate the effects of an otherwise very car dependant development.

55. For the four roads identified I recommend that the road cross-section for these roads is increased to 21.4 metres with the following cross-section;
    a. 1m back berms
    b. 1.8m wide footpath
    c. 0.2m mountable low kerb between cyclist path and footpath
    d. 2.0m wide cyclist path
    e. 2.2m wide front berm
    f. 3.5m wide traffic lanes
    g. No on-street parking on bus routes.
56. Furthermore, I recommend that the intersections on these routes are designed to allow vehicle tracking bus buses, and that any horizontal curves on these roads (in particular the curves in Roads 1 and 5) incorporate road widening near the curves to allow for two-way bus movements.
57. I recommend that a condition of consent is sought in relation to this cross-section and vehicle tracking. This will require additional space within the road reserve and the scheme plans for the proposal should be updated to allow for this before issue of consent.

Intersection Design – Upper Orewa Road / Road 17 Intersection

58. In response to concerns raised by Auckland Transport and Council regarding driver sight distances and associated road safety effects the applicant has updated the proposal to include a roundabout at the intersection of Upper Orewa Road and Road 17 (refer Section 1.13 of the 12 June Commute letter).
59. Figure 6 of the letter shows an indicative layout of the roundabout.
60. This design is presented on a conceptual level only. No 3D design vertical information on levels or gradients is shown, no vehicle tracking is provided, nor has an updated sight line assessment been undertaken.
61. However, I consider that nothing in the information provided to date indicates that an appropriate roundabout design cannot be achieved at the intersection. The 32 metre diameter size is within the range which I would expect for compact roundabout design in this location.
62. The central island has been offset to the north of the true centre of the intersection, which appears to have been done to avoid issues with the property boundary and steep topography on the south side of the intersection. In some circumstances this can result in poor speed control as drivers enter the roundabout, however in this case I consider that the design has appropriately dealt with this issue by bending the eastern leg around to point in toward the central island.

Intersection Design – Russell Road / Upper Orewa Road Intersection

63. There is a pre-existing traffic safety issue at the Russell Road / Upper Orewa Road intersection near the site. This intersection is currently laid out as a T-intersection with a Give Way priority control on the Russell Road approach. There is a horizontal curve in Upper Orewa Road at the intersection and vegetation on the inside of the curve (much of

which is in private land) limits sight distances between drivers turning right into Russell Road and southbound drivers on Upper Orewa Road. This limited sight distance increases the risk of a crash between a vehicle turning right into Russell Road and a southbound vehicle.

64. An excerpt from Google Streetview showing the intersection is shown in the figure below.

Figure: Excerpt from Google Streetview showing the Upper Orewa Road / Russell Road intersection.

65. While this is a pre-existing issue, the proposal would increase traffic volumes on Upper Orewa Road near this intersection by 183% (as per the section of this memorandum discussing the Wainui Road / Upper Orewa Road intersection above), and this would significantly exacerbate the pre-existing issue.

66. It is acknowledged that the proposal would not increase traffic entering or leaving Russell Road itself, but the increase in southbound traffic on Upper Orewa Road which the drivers of existing traffic turning right into Russell Road must give way to results in a traffic safety effect.

67. Section 2.13 of the 12 June letter from Commute contains a sight distance assessment for the right turn into Russell Road which indicates that sight distances were sufficient.

68. However, I was able to view the intersection during the site visit with the applicant and Council in May 2025 and I consider that the position where Commute has positioned the vehicle turning right into Russell Road in the sight distance assessment to be unrealistic (refer Figure 1 of the 12 June letter). In the position shown turning drivers is already approximately half way around the curve before they can see far enough along Upper Orewa Road to see oncoming traffic. This means that instead of making a 90 degree turn they must make a 135 degree turn into Russell Road. This is not a realistic representation of actual driver behaviour and in reality drivers making the right turn are doing so from a position further to the south where there is insufficient visibility along Upper Orewa Road.

69. I consider that this intersection should be upgraded before the link between the development and Upper Orewa Road is opened to mitigate any potential traffic safety

effects at this location. The NOR 6 design shows a roundabout at this intersection and I consider that this would be an appropriate upgrade.

Intersection Design – Internal to the Development

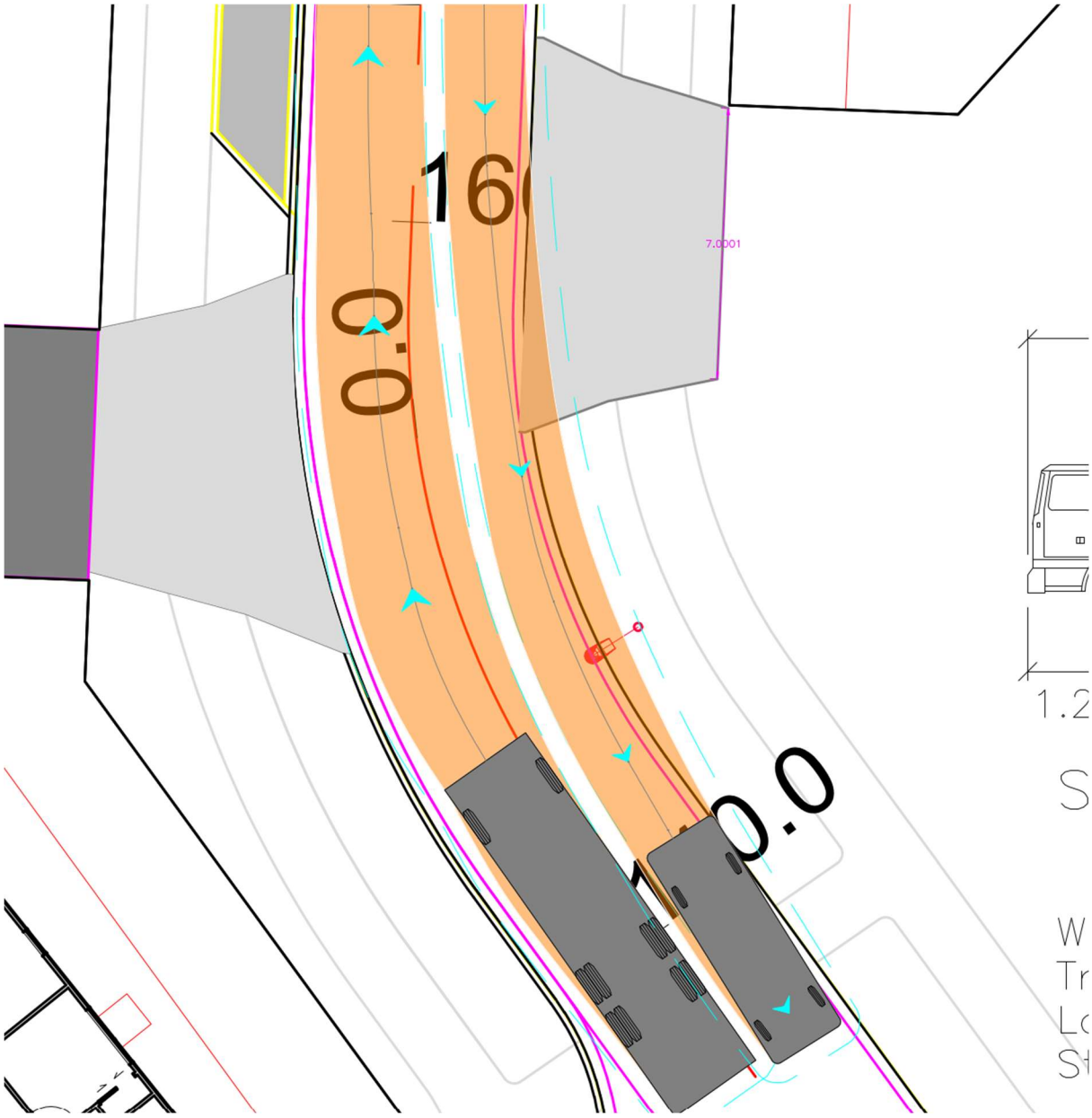
70. All intersections internal to the development are priority controlled T-intersections. While this type of intersection is appropriate for the intersection of two low-speed / low-volume local roads, it is less appropriate from both a safety and capacity perspective for higher volume and speed roads.
71. I recommend that, to address potential traffic safety and operational effects the following intersections should be designed as roundabouts and that a condition of consent should be sought requiring this;
    1. Road 01 / NOR 6 Road
    2. Road 05 / NOR 6 Road
    3. Road 05 / Road 14
    4. Road 14 / Road 17
72. These intersections correspond with the collector roads / future bus routes which I discussed earlier in the memorandum. By providing roundabouts at these intersections delays to buses at intersections can be limited, particularly when turning in or out a side road off the NOR 6 Road. This helps provide faster and more reliable travel times for public transport users and helps mitigate the car dependency related effects of the proposed development.
73. The NOR 6 drawings do not show roundabouts on the NOR 6 road within the development but this is because none of the site road intersections where shown. It was expected that the developer would design appropriate intersections to connect onto and this did not limit the type of intersection which could be used to preclude roundabouts.
74. All intersections should be designed for vehicle tracking to AT Engineering Design Code Urban and Rural Roadway Design. This includes but is not limited to bus tracking as all these roads are potential bus routes.
75. The horizontal curve in Road 05 should be straightened out, the curve shown in the drawings increases travel distance, causes visibility issues from driveways, and is a potential loss-of-control run-off-road crash hazard location.

Vehicle Tracking Issues

76. Appropriate design of roads and intersections for the appropriate design and check vehicles is important to address potential traffic safety and operational effects on the road network. If insufficient space is provided this can cause safety effects in the form of increased side-swipe or head-on crashes between vehicles travelling in opposite directions or operational effects where heavy vehicles (like buses or rubbish trucks) cannot use a route without mounting the kerb. If excess space is provided then this increases both crossing distances for pedestrians and vehicle turning speeds and it can result in a pedestrian safety effect.
77. Section 8.1 and the appendix of the ITA contains a vehicle tracking assessment. It states that that there are some minor issues, less than 300mm, where slight widening is needed and that it can be addressed at engineering approval stage.

There are minor areas (intersections and curves) that require slight widening to accommodate the vehicles (less than 300mm). This widening of kerbs will not change the overall lot layout however **vehicle tracking will be checked again at the EPA stage to ensure compliance**.

78. However the drawings in the appendix to the ITA show differently. Below is one example from Drawing 6B. The van on the inside driving over the kerb line. This is much more than 300mm. There are several other locations with similar tracking issues.



79. To address this I recommend that a condition of consent is imposed requiring that tracking is to be provided to the Auckland Council Code of Practice for Land Development and Subdivision Chapter 3 Transport without the footpath or berm widths going below the minimums in the Code. The applicant should be advised that if their footpath and berm widths go below the minimum they will either need to vest more land or get a Departure from Standards from Auckland Transport at Engineering Approval Stage.

Sight Distance Assessment – Internal Roads

80. Section 8.3 of the ITA includes sight distance assessments. It uses a 40 km/h operating speed for these assessments and not accounted for grade correction. I consider that a 50 km/h operating speed should be used for the collector and arterial road sight distance assessments (requiring 97m of SISD rather than the 73m they have used). The local roads could be assessed using a 30 km/h operating speed.

81. Section 2.11 of the 12 June letter from Commute provides an updated assessment using a 50 km/h operating speed.

82. Two updated intersection sight distance assessments were provided for Stage 1. They are;

    a. Intersection F (Road 6 / Road 1). This is on Grand Dr and it is close to a horizontal curve. The updated assessment (refer Drawing SD 1 of the 12 June letter) shows that, in order to achieve recommended sight distances, there will need to be an area within private lots on the inside of the curve north of Road 6 which will have only low level planting and structures. I recommend a condition of consent is sought requiring a consent notice to be registered on the title of these lots.

    b. Intersection J (Road 1 / Road 8). The updated assessment (refer Drawing SD 2 of the 12 June letter) shows sight lines cutting across the boundary of two lots north of Road 8. Unlike Drawing SD 1 this has not been annotated on the drawing. I recommend that a similar consent notice condition is imposed on these two lots.

Figure 38. Stage 1 Proposed Local Road Intersection locations

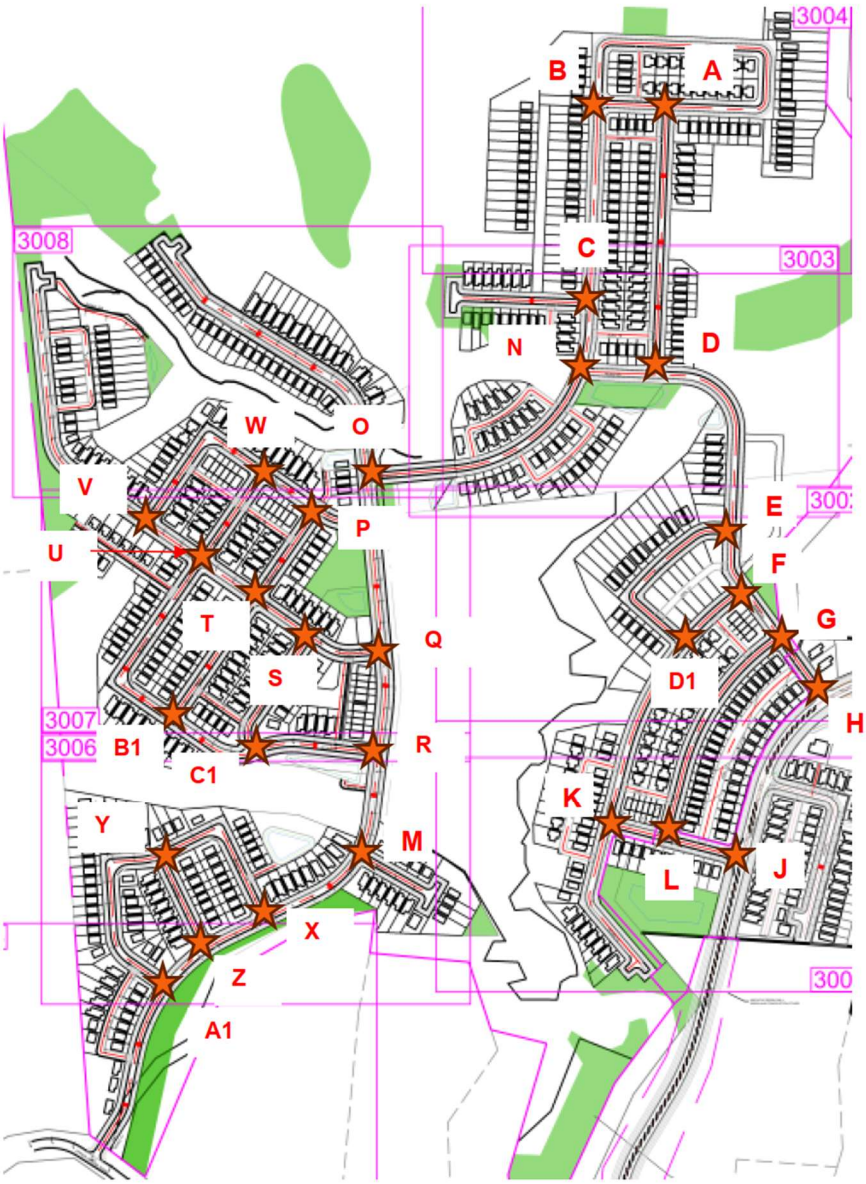
83. Two updated sight distance assessment were provided for Stage 2 in Section 2.12 of the 12 June Commute letter. There were;

    a. Intersection D (Road 5 / Road 13), refer Drawing SD7.

    b. Intersection E (Road 5 / Road 15), refer Drawing SD8.

    In both cases the drawings show areas of non-road reserve land where only low level planting or structures can be located. I recommend that consent conditions requiring a consent notice be placed on the applicable titles be sought in respect of this.

Figure 39. Stage 2 Proposed Local Road Intersection locations



84. Section 2.15 of the 12 June 2025 letter from Commute provides an updated visibility assessment for JOALs D, R, Q, and N (shown in Drawings SD3, SD4, SD5, and SD6 respectively). My comments on each are as follows;

    a. JOAL D (Drawing SD3). Drawing SD3 shows that some private lots will have low-level plating and structures only. I recommend that a consent condition requiring a consent notice to be registered on the applicable lots be sought.

    b. JOAL R (Drawing SD4). Drawing SD4 shows that some private lots will need to have low-level plating and structures only. I note that the proportion of the lots covers are much higher than in other locations, and would make at least one lot

unsuitable for a dwelling. In Section 2.12 of the letter Commute argue that 56 metres of visibility can be achieved and this should be acceptable if speed management is provided in the north.

This JOAL is off Road 1 which I consider to be a future bus route and collector road and therefore traffic calming is not appropriate on it. While the proposal shows Road 1 as terminating at cul-de-sac at its southern end I anticipate that when the future urban zoned land to the south is further developed that Road 1 will be extended and that it is likely to eventually carry significant volumes of traffic and buses from not just the applicant's site but land to the south. I therefore do not agree with Commute's recommendation that a reduced sight distance is acceptable. I recommend that the lot boundaries or design of Road 1 be updated to provide at least 97 metres of sight distance from JOAL R looking north along Road 1.

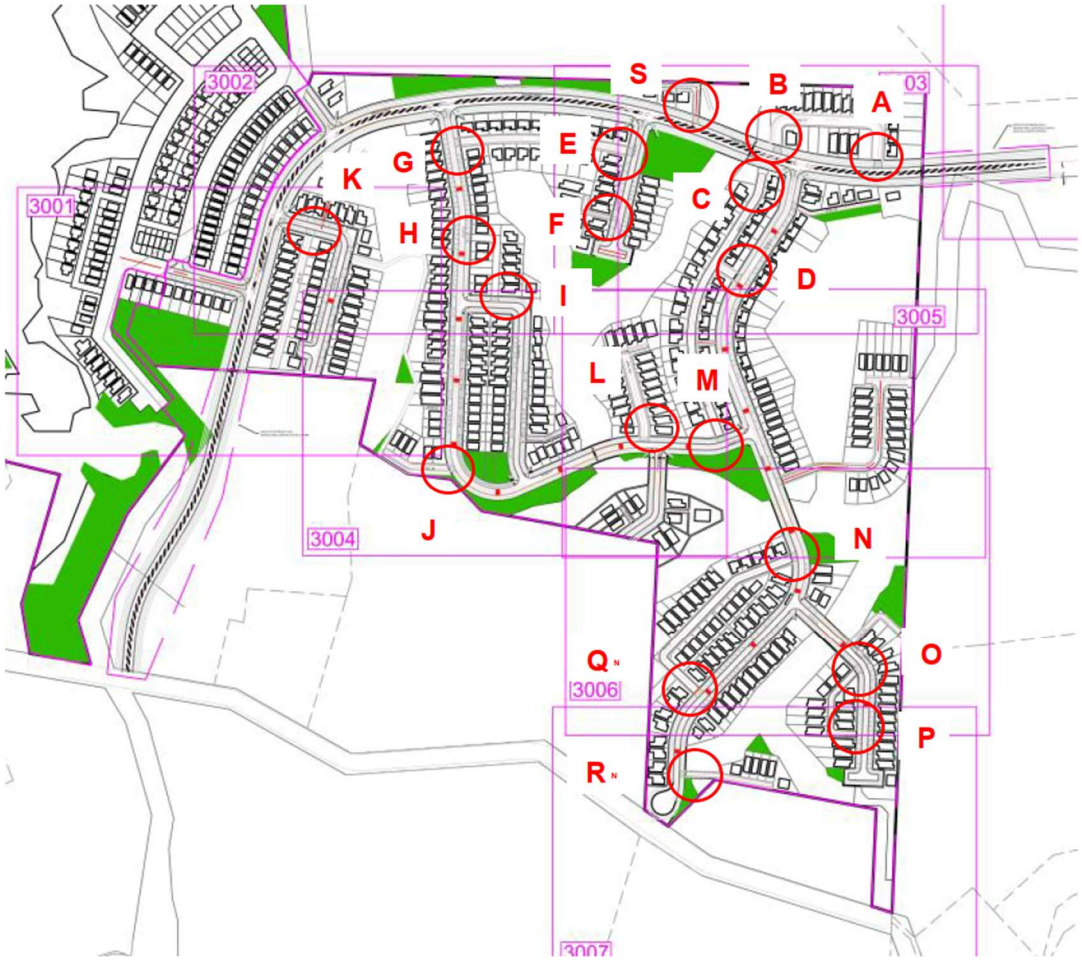
c. JOAL Q (Drawing SD5). The assessment supplied by Commute with the letter shows that adequate sight distances can be achieved at this JOAL.

d. JOAL N (Drawing SD6). This is similar to JOAL R. Drawing SD6 shows three private lots will need to have low-level plating and structures only. The extent of the area is such that it will impact the ability of the lots to contain dwellings.

   In Section 2.12 of the letter Commute argue that 44 metres of visibility can be achieved and this should be acceptable if speed management is provided in the south.

   JOAL N is off Road 1, which as discussed above I consider to be a future bus and collector route and that traffic calming is not appropriate. I consider that reduced sight distances here would have an adverse effect on road safety. I recommend that the lot boundaries or design of Road 1 be updated to provide at least 97 metres of sight distance from JOAL N looking south along Road 1.

Figure 40. Stage 1 proposed JOAL / local road Intersection locations



85. Sight distances for vehicle crossings in Stage 2 appear to be generally acceptable. Most are off local roads and those which are off collector roads have acceptable visibility.

Visibility Splays at Vehicle Crossings

86. Providing sufficient Inter-visibility between drivers exiting private property and pedestrians crossing or about to cross vehicle crossings is important to help reduce the risk of a vehicle colliding with a pedestrian on a vehicle crossing and associated pedestrian safety effects.

87. Section 9.1 of the ITA recommends that visibility splays are provided at all vehicle crossings as a condition of consent. I agree with Commute's recommendation but consider that there recommend height restriction for objects in the visibility splay of 1.0 m is too high for a fence and that 0.9 m should be used. Some shorter drivers or drivers with lower vehicles have an eye height below 1.0 m.

88. Appendix 22 of the application contains the applicant's proposed conditions of consent. These visibility splays are the only transport matter which they have recommended a condition for.

9.1 GENERAL

Access to individual lots has been provided directly onto the road via individual vehicle crossings, combined vehicle crossings or via JOALs. Vehicle crossings have been combined to minimise crossing points and maximise crossing separation and JOALs have been provided on higher volume roads to minimise the number of vehicle crossings.

- **all vehicle crossings are designed as per the Auckland Transport Standard GD017A (or equivalent)**
- **visibility splays to be provided on either side of all vehicle crossings (including JOAL crossings) in accordance with Figure 3.3 of Standard ASNZS2890.1-2004 (2.0m x 2.5m splays), whereby any vegetation within the splay area should be limited to 0.6m in height and any fencing should be permeable and restricted to a maximum of 1m in height should be a condition of consent.**

Other ITA matters

89. Page 53 of the ITA contains recommended conditions relating to Lots 1304 and 603. This is not in the applicant's Appendix 22 recommend conditions of consent. I recommend this is included as a condition of consent.

- For Lots 1304 & 603 it is noted that the driveway is currently not located at the lot boundary as far as possible from the intersection and on the approach side of the intersection; therefore, it is a condition of consent that the driveways are shifted to be adjacent to the lot boundary. With the visibility splays in place as noted above, together with shifting the driveways to the lot boundary this will provide ~8m of distance to the intersection.

90. Pages 55 and 56 of the ITA contain recommended conditions of consent for separation between vehicle crossings which are not in the applicant's Appendix 22 recommend conditions of consent. I recommend this is included as a condition of consent.

Overall, all proposed vehicle crossings serving individual lots comply with the AUP dimensional permitted activity requirements and are considered acceptable except for.

- Lots 121/121 (1.13m separation)
- Lots 267/266 (1.93m separation)
- Lot 614 / JOAL 16 (1m separation)
- Lot 634 / JOAL 16 (1.6m separation)
- Lot 902 / JOAL 19 (1.6m separation)
- Lots 860/861 (1.74m separation)
- Lot 782 / JOAL 26 (1.5m separation)

Although these vehicle crossings currently do not comply with the AUP, all vehicle crossings are not located on the boundary and can be shifted; therefore, a **condition of consent** will be that the above vehicle crossings are shifted slightly to allow the 2m separation.

Road Drawings

91. The longitudinal gradients of many of the roads are too steep and will discourage active modes. Anything over 8% is considered to potentially discourage walking as a travel mode, including walking to public transport. Figures 2 and 3 of the 12 June letter from Commute show which roads have gradients over 8%. Large proportions of the development require pedestrians walking to public transport routes to use at least some footpaths with a gradient over 8%. I consider that this will contribute to the overall car dependant nature of the proposal and the associated adverse effects described earlier in this memorandum.
92. It should be noted that Auckland Transport's Engineering Design Code Footpaths and the Public Relam requires a departure from standards from Auckland Transport for footpaths over 8% gradient. This is normally sought during the Engineering Approval stage and the applicant should be cautioned as an advice note that there is no guarantee a departure will be granted.
93. Speed cushions are shown on the drawings. These are not Auckland Transport's preferred traffic calming device type. Ideally horizontal measures (chicanes or similar) should be used on local roads, if this is not possible then speed humps or tables should be used. The exact type of traffic calming device can be left to Engineering Approval stage, but the applicant should be advised to expect changes at Engineering Approval stage.
94. A turning head, in accordance with the standard engineering detail drawings in Auckland Transport's Transport Design Manual should be provided at the end of Road 10. If this is not provided then vehicles, especially heavy vehicles like rubbish trucks, will need to reverse back along Road 10 in order to exit, and this will have both a traffic safety and operational effect.

95. Road 01 will need to be designed to connect to Russell Road in future when the land next to Russell Road is urbanised. The turning head shown in the application drawings at the south end is acceptable for now, but the applicant should be advised that Auckland Transport will require that a specimen design of a future connection to the south showing that that an adequate future connection will be able to be made will be required at Engineering Approval stage and that this may have an impact on road boundaries and levels inside private property.

96. It is important that drivers approaching an intersection where they do not have priority can see the intersection a sufficient distance in advance that they are able to come to a stop before reaching the intersection. Austroads Guide to Road Design refers to this distance as Approach Sight Distance (ASD) and provides a method for checking it. If ASD is not provided on a non-priority approach to an intersection drivers may not have sufficient forewarning to stop in time, which results in a potential road safety effect.

97. The ITA does not assess whether ASD is achieved for all roads. I consider that the following two intersections have a high likelihood of not achieving ASD on the minor road approach;

    a. Road 01 / NOR 6 Road

    b. Road 02 / NOR 6 Road

    The applicant should be advised to check that ASD is achieved at all intersections and cautioned that evidence of this will be requested at Engineering Approval stage. Changes to the road design needed to achieve ASD could potentially have an effect on road levels, levels within private lots, and lot boundaries.

98. The following roads have turning heads which have too steep of a longitudinal gradient for a rubbish truck to use them to turn around safely;

    a. Road 03
    b. Road 08
    c. Road 09
    d. Road 16
    e. Road 21

    This could potentially result in a rubbish truck or other heavy vehicle being unable to turn around in the turning head. This could result in the truck needing to be reversed out of the road, or in a worst case scenario the truck tipping when attempting to turn. In either case this results in effects on road safety and operations.

99. I recommend that Auckland Transport seek a condition of consent which would allow Auckland Transport to require the consent holder to install bus stops along any future bus routes with a decision on the location and whether they are to be provided or not to be made at Engineering Approval stage.