Auckland Surf Park Community - Stage 2 Substantive Application Dairy Flat

Integrated Transport Assessment

February 2026

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Project: **Auckland Surf Park Community – Stage 2 Substantive Application**

Title: **Integrated Transport Assessment**

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STATEMENT OF EXPERIENCE

Terry Church Bio

Terry has 25 years' experience and is a recognised leader in the transportation planning, assessment, modelling and economic evaluation field within New Zealand.

He led the Stage 1 Fast Track Consenting of this Surf Park project including liaison with Supporting Growth on the Notices of Requirement being notified at the time, which affected the site.

Terry has a Bachelor of Engineering Technology (Civil) and a Certificate in Engineering (Civil). He is a Chartered Member of Engineering NZ and a Chartered Professional Engineer. He is an Affiliated Member of the Engineering NZ Transportation Group.

He has been responsible for a large number of traffic and transportation projects for a variety of clients. He leads small to large scale development projects, covering private land use developments, plan changes, masterplanning projects and transport elements of large sub regional or regional transport upgrades.

He has a thorough understanding of District Plans and engineering design standards, as they apply to transportation. He has extensive experience writing or reviewing Precinct Provisions and conditions of consent related to transport matters through his role on designation, plan change and resource consent applications.

Terry regularly acts as an expert witness. He regularly attends as a transport expert before Council Hearings, Environment Court mediations and Environment Court Hearings, as well as Boards of Inquiry.

His knowledge and approach to assessing large complex projects gives clients confidence that the project assessment is completed robustly, within a safe pair of hands and provides a successful outcome to both the client and the community in which the project is located.

Elisa Tayler Bio

Elisa has over 9 years' experience in transport planning and traffic engineering for public and private sector land development projects which includes resource consents and Fast Track applications. She led the transport assessment and internal layout design of the Stage 1 Fast Track Consenting of this Surf Park project. She holds a Bachelor of Civil Engineering with Honours and is a Chartered Member of Engineering NZ and a Chartered Professional Engineer.

Elisa is adept with assessing projects for resource consent, having a thorough understanding of the Auckland Unitary Plan and transport engineering design standards. She has been involved in various development and masterplans ranging in nature and scale, including residential subdivisions, light industrial, retirement villages, schools and retail, leading the transport design of these projects.

For resource consent applications, she has completed assessments of traffic effects, reviewed transport assessments by others and has attended a Council Hearing, acting as an expert witness for the applicant.

Elisa is a qualified Safe System Auditor and has been involved in the design of roading infrastructure as well as undertaking safety audits.

Her knowledge and experience ensure that the traffic layout of the development will function safely with sustainable outcomes for the client and all road users.

Nerissa Harrison Bio

Nerissa has over 20 years' experience in a wide variety of transport planning and traffic engineering roles in New Zealand, Australia, Canada and the UK.

She co-authored this Surf Park Integrated Transportation Assessment with Elisa Tayler.

She has a Bachelor of Engineering (Civil), is a Chartered Member of Engineering NZ and is a Chartered Professional Engineer.

She has led transportation assessments for a variety of projects from large infrastructure projects to small developments, including plan changes and resource consent applications. She has a thorough understanding of the Auckland Unitary Plan and relevant engineering design standards as they apply to transportation and the Surf Park site.

Nerissa has been a traffic expert witness before Council Hearings, Environment Court mediations and Environment Court Hearings. She has also acted as a traffic expert reviewing applications submitted under the Fast-Track Approvals Act on behalf of the Environmental Protection Authority.

Environment Court Practice Note 2023

We, Terry Church, Elisa Tayler and Nerissa Harrison of Flow Transportation Specialists confirm that this report which we have prepared, for the Surf Park Fast-track Substantive Application, was prepared in accordance with the Environment Court Practice Note 2023 (Code of Conduct for Expert Witnesses).

SUMMARY OF OUR ASSESSMENT

Flow Transportation Specialists (Flow) has been commissioned by AW Holdings (the Applicant) to assess transport matters relating to a proposal that includes a Surf Park, visitor accommodation, supporting retail, food and beverage activities, a data centre and solar farm (all of which have been approved through the COVID-19 Recovery (Fast-track Consenting) Act 2020), as well as residential, commercial and industrial activities in Dairy Flat, Auckland.

The Surf Park, visitor accommodation, supporting retail, food and beverage activities, solar farm and data centre was granted consent in 2024. The consented Stage 1 development is shown in Figure 1 and includes a new east-west road that intersects with Dairy Flat Highway.

Figure 1: Approved Stage 1 Surf Park Application (baseplan produced by WAM)

Having secured additional land adjacent to the initial site, this application introduces residential, commercial and industrial activities, extends residential component into land neighbouring the initial application and addition of another data centre. To cater for the projected increase in traffic demand associated with further development, the east-west road is proposed to extend through to Postman Road, providing 2 roading access points onto the surrounding roading network.

The above constitutes the Proposal, and the precinct plan of the Site is shown in Figure 2.

Figure 2: Precinct plan (produced by Studio Pacific)

The Stage 2 Proposal includes the following additional development compared with the Stage 1consent

- Hyperscale artificial intelligence (AI) data centre with 1 additional data centre building (total of 2; 1 consented, 1 proposed)
- 4 net additional visitor accommodation units
- 0.92 hectares of additional solar farm (totalling 8.72 hectares)
- 486 residential units across several precincts, including 25 Live-Work units
- 1,210 m^2 GFA commercial within the Surf Village Centre Precinct
- net additional 706 m^2 GFA retail
- an early childhood learning centre
- 899 m^2 GFA wellness centre
- 7,050 m^2 GFA industrial units within the Light Industrial East Precinct
- A water and wastewater treatment plant (WTP)

- The east-west Collector Road is proposed to also connect with Postman Road to the east of the Site. We note that
    - the eastern intersection onto Postman Road has been designed as a single lane roundabout, which fully sits within the Site and the current road reserve. It does not require third party land (outside of that owned by the Applicant or the vested road). This roundabout forms a secondary access point to the Site
    - before the roundabout is constructed, the road is proposed to terminate with a temporary turning head at the eastern end of the Site. We recommend a condition of consent as to when this roundabout is required based on the analysis summarised in this report.

We have prepared this Integrated Transport Assessment (ITA) to support the fast-track consenting application under the Fast-track Approvals Act 2024.

We have assessed the Proposal against all relevant activities and transport standards set out in Chapter E27 Transport) of the Auckland Unitary Plan (AUP) and the Decisions version of Plan Change 79 (PC79) which was notified on 9 August 2024. With the Site currently zoned rural, we have assessed the application against the Chapter E27 matters relevant for that zoning. We conclude that the Proposal has a Restricted Discretionary activity status under the following standards

- E27.6.1 Trip generation
    - (T1) the Proposal exceeds 100 dwellings
    - (T3) the Proposal exceeds 100 visitor accommodation units
    - (T8A) the Proposal exceeds 1,667m^2 of retail GFA
- E27.6.4.1 Vehicle Access Restrictions
    - a vehicle crossing is proposed on Dairy Flat Highway, an arterial road
    - an existing vehicle crossing on Dairy Flat Highway is proposed to be used by vehicles exiting the WTP, which is proposed to be a left-out exit-only
    - a private service lane to the Light Industrial Precinct (assessed as a vehicle crossing) creates an intersecting leg onto a roundabout within the public road reserve, thereby is within 10 m of the intersection
    - Several private roads (vehicle crossings) create an intersecting leg onto local road roundabouts within the public road reserve, thereby are within 10 m of the intersection
    - Vehicle crossings in the Surf Village Centre Precinct and North-West Neighbourhood Precinct are within 10 m of a T-intersection
- E27.6.4.2 Width and number of vehicle crossings
    - the private service lane to the Light Industrial Precinct (assessed as a vehicle crossing) creates a vehicle crossing measuring 10 m, exceeding the permitted 9.0 m maximum width.
    - The separate entry and exit vehicle crossings to the data centre is proposed to be some 3 m apart at the boundary where 6.0 m is the minimum separation distance.

As part of our assessment we

- assessed the proposal against the AUP
- carried forward the network improvements of Stage 1 and added to these to reflect the proposal presented
- assessed the safety of the existing network
- assessed the trip generation for the land use activities proposed
- assessed the performance of the road connections that connect the site to the surrounding road network
- recommended conditions of consent that ensure the safe operation of the network. We have put forward a threshold for a secondary access based on the average peak hour volumes on the new Collector Road for ease of monitoring purposes, flexibility as to construction staging, and conditioning of consent, noting that the industrial units located adjacent to Postman Road and accessed from the roundabout will require the roundabout to be constructed regardless.

We conclude that the Proposal will not adversely affect the safe and efficient operation of the Site nor the surrounding transport network, if the following mitigation measures are provided.

- The proposed northern vehicle crossing on Dairy Flat Highway must be signposted for entry to service vehicles only. Any gate installed must be setback appropriately to allow sufficient distance for a vehicle using the driveway to stop clear of traffic lanes while the gate is closed.
- The southern vehicle crossing on Dairy Flat Highway must be signposted permitting left-out exit movements only onto Dairy Flat Highway.
- Heavy vehicles servicing the village market must be no longer than 12.6 m.
- The consent holder must design and construct the connection of the east-west Collector Road to Postman Road, including the construction of a roundabout at the intersection, when traffic volumes on the east-west Collector Road, measured immediately to the east of its intersection with Dairy Flat Highway, exceed either of the following thresholds:
    - 300 vehicles per hour (two-way) during the morning peak hour (between 7:00am and 9:00am); or
    - 360 vehicles per hour (two-way) during the evening peak hour (between 4:00pm and 6:00pm),

  The traffic volumes must be measured every six months with results provided to the Council. The threshold is deemed to be exceeded when the average weekday peak hour traffic volume meets or exceeds the limits above.

  Engineering Approval plans for the design of the roundabout must be submitted within 6 months of the threshold being exceeded (or as otherwise agreed in writing by Council) and must be in accordance with the requirements of Auckland Transport and applicable engineering standards.

  Construction of the approved roundabout design must be commenced within 6 months of the issue of engineering approval (or as otherwise agreed in writing by Council).

Advice note: The traffic volumes should be measured by a qualified traffic engineer by way of a traffic survey, with results reflecting a 5-day weekday average undertaken over a neutral week (outside public or school holiday periods).

- The consent holder must design and construct the connection of the east-west collector road to Postman Road (including the roundabout) in accordance with the requirements of Auckland Transport and applicable engineering standards. Certification from Auckland Transport that the works have been satisfactorily undertaken must be provided when applying for a certificate under section 224(c) of the RMA for the Light Industrial (East) Precinct if this occurs ahead of the above-mentioned traffic volume thresholds.
- A waste management plan must be submitted to Auckland Council for certification that the servicing requirements of the apartments are adequately provided for.
- A consent notice is placed on the affected lots in the Southern Neighbourhood Precinct, so that any fencing/landscaping are less than 900 mm high, to maintain the required sightlines at the Spine Road/ Collector Road intersection. Refer to the application documents for the condition proposed to this effect.

In our opinion there are no transport planning or engineering reasons to preclude implementation of the Proposal as intended.

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1 INTRODUCTION TO THIS REPORT

Flow Transportation Specialists (Flow) has been commissioned by AW Holdings (the Applicant) to provide traffic engineering and transport planning advice associated with the proposed development of the Site to allow for an increase of retail activities, additional accommodation units, a hyperscale artificial AI data centre (1 additional data centre), a WTP, 486 dwellings and 7,050 m^2 of industrial GFA in Dairy Flat, Auckland.

The Site has an existing Stage 1 consent for a surf park, data centre, solar farm and supporting activities. These elements therefore form part of the receiving environment. This Integrated Transport Assessment report (ITA) considers and assesses the changes proposed from the Stage 1 Consent.

The Site will be the amalgamated addresses of 1320 and 1350 Dairy Flat Highway, 89 and 105 Lascelles Drive, 237 and 253 Postman Road, comprising of approximately 54 hectares. The Site location is shown in Figure 3.

Figure 3: Site location

This ITA addresses the transport planning and traffic engineering matters associated with the proposed development, including

- a description of the Site, current zoning and planning framework applicable to this area of Dairy Flat
- a description of the surrounding transport environment as it relates to the Site including surrounding land use activities, the accessibility of the Site with regard to various transport modes, an assessment of the historic crash record in the vicinity of the Site and planned roading upgrades near the Site
- a description of the Proposal, focusing on the transport related matters including how the proposed road aligns with Auckland Transport's Transport Design Manual (TDM) standards and other relevant design standards
- an assessment of the Proposal in each precinct against the relevant transport standards and provisions contained in Chapter E27 and Decisions version of Plan Change 79 of the Auckland Unitary Plan (AUP) including
    - an assessment of the access arrangements, focusing on the vehicular and pedestrian access associated with the Proposal
    - a parking and loading assessment, including an assessment of the design and adequacy of the parking and loading areas to support the Proposal
- an assessment of traffic effects, including the amount of vehicle trips the Proposal is likely to generate during peak hours, and how the consented intersection will function during the road network peak hours, when a secondary access is needed, and how both intersections will perform at full build-out
- a description of proposed mitigation and who's responsible for delivery
- proposed conditions of consent.

We have also reviewed the following transport planning and strategic matters in this report, and assessed how the Proposal is aligned to them

- Stage 1 Consent
- Dairy Flat Highway Designation 1497
- New Connection between Dairy Flat Highway and Wilks Road Designation 1490
- Rapid Transit Corridor Notice of Requirement (NoR) 1 (Decision 23/01/2025, currently under appeal)
- Auckland Future Urban Land Supply Strategy (July 2017)
- Silverdale West Dairy Flat Industrial Area Structure Plan (April 2020) anticipated land use activities and transport connections
- Private Plan Change 103 (PPC103) Silverdale West Industrial Area

2 LOCATION AND PLANNING CONTEXT OF THE SITE

The Site has frontage to Dairy Flat Highway to the west and Postman Road to the east (Figure 3). The Site is currently undeveloped although earthworks have commenced for Stage 1. The surrounding land uses include

- North Shore Airport is across Postman Road from the Site. Charter flights, aviation training and rescue operations take place from this airport. Their accesses are directly across from the Site
- Light industrial activities are located to the west, on Kahikatea Flat Road and towards the northern end of Postman Road
- Redvale Landfill is located towards the west of the Site, on Horseshoe Bush Road.

Two designations and one Notice of Requirement (NoR) sit within the Site. Details of these are

- Dairy Flat Highway Designation 1497, Auckland Transport. This designation allows for the urbanisation of Dairy Flat Highway along the Site frontage with active modes facilities
- Rapid Transit Corridor (RTC) NoR 1, New Zealand Transport Agency (Waka Kotahi). This notice of requirement is for a Rapid Transit Corridor and active mode provision running north-south through the Site (centrally located)
- New Connection between Dairy Flat Highway and Wilks Road, Designation 1490, Auckland Transport, which forms part of the long term arterial road network.

Two planning documents provide guidance on anticipated land use of the Site and wider Dairy Flat area, being

- The Future Development Strategy, and
- Silverdale West Dairy Flat Industrial Area Structure Plan, both are described below.

Furthermore, a private plan change, PPC103, has been approved through the Council process which proposes to rezone 107ha north of the Site for industrial purposes (1636-1738 Dairy Flat Highway and 193 Wilks Road). The assumptions from this development have been captured in our assessment of the surrounding transport environment.

2.1 Stage 1 Consent

The Site has an existing Stage 1 consent (Figure 4), which is expected to generate 210 vehicles per hour during the peak period. Unlike other developments, given the nature of the activities proposed, we anticipate the peak period to be during the Friday PM peak. A comparison of the Stage 1 consent against this Proposal is in Table 1.

Figure 4: Consented Stage 1 (produced by WAM, labels added)

Table 1: Consented development compared with Proposed development

Stage 1 Consented development (Figure 4)	Stage 2 Proposal (Figure 2)	Change from Consented
Organised sport and recreation - Surf park and ancillary activities	Substantially the same as consented	-
Commercial activities – retail and food and beverage	An increase of retail and commercial activities	+706 m^2 GFA retail and +1210 m^2 GFA commercial
Community facilities -wellness centre (233 m^2 GFA)	New Early Childcare Learning (ECL) and increase of wellness centre	+300 m^2 GFA ECL +830 m^2 GFA Wellness Centre
Residential – visitor accommodation/hotel (134 units, lodge and eco cabins with 908m^2 lodge amenities - reception, wellness, meeting room, etc)	138 visitor accommodation units (57 lodge units and 81 hotel units)	+4 units
Infrastructure – Network utility (1 data centre)	2 Hyperscale AI data centres	1 additional data centre buildings
Infrastructure – electricity generation (7.6 ha solar farm)	8.72 ha solar farm	0.92 ha solar farm

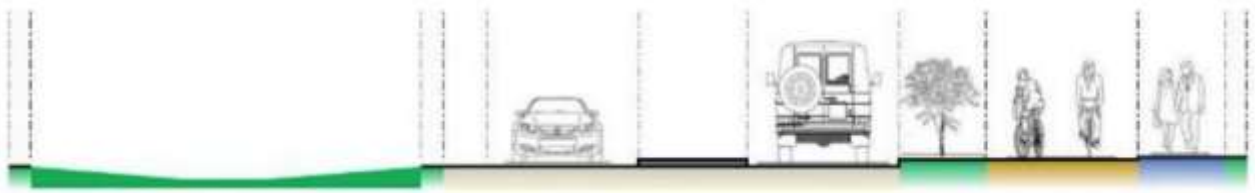
Stage 1 Consented development (Figure 4)	Stage 2 Proposal (Figure 2)	Change from Consented
A new road to be vested running east-west including an intersection with Dairy Flat Highway. A new access onto Dairy Flat Highway.	Consented plus additional roads and access listed in the column to the right.	Postman Road roundabout. An exit-only access to Postman Road. Additional internal roads to be vested.
-	486 residential units across a village centre, three Neighbourhoods, and a Live/Work precinct	486 residential units of which 25 are live/work units
-	7,050 m^2 GFA industrial	7,050 m^2 GFA industrial

2.2 Dairy Flat Highway Auckland Transport Designation 1497

The extent of Designation 1497 in relation to the Site is shown in Figure 5. The Designation encroaches into the western property boundary of the Site, being the frontage to Dairy Flat Highway, with the design of the Site accounting for the Designation and the controls on how this land is used while having a Designation over it.

Figure 5: Dairy Flat Highway Designation 1497 (source: Auckland Council GeoMaps)

Figure 6: Indicative cross section proposed within Designation 1479 along Site frontage on Dairy Flat Highway[1]



As shown in Figure 6, the cross section proposed (shown on the Concept Plan supporting the Designation) includes separated walking and cycling facilities along the Site frontage. The proposed layout also includes a lowering of the speed limit along Dairy Flat Highway from 80 km/h to 60 km/h.

The Proposal has considered this designation by locating the formal car parking spaces and manoeuvring for the surf park clear of the designation corridor. There are some parts within the Designation corridor (that are accessed internal to the Site) that are proposed to be used for informal overflow parking, in anticipation of the busier summer periods. This is subject to approval by Auckland Transport. We note that the Proposal does not include constructing the works associated with the Designation along the Site's western boundary.

2.3 Rapid Transit Corridor Waka Kotahi Notice of Requirement 1

The boundary of the NoR 1 to designate land for a Rapid Transit Corridor (RTC) with walking and cycling facilities is shown in Figure 7. A solar farm is proposed within this designation corridor.

[1] source: Te Tupu Ng`atahi Supporting Growth North Assessment of Transport Effects August 2023

Figure 7: RTC NoR 1 Boundary (source: Auckland Council GeoMaps, site plan by Studio Pacific overlaid and labels added)

The Proposal has considered this NoR by restricting the use of land within the NoR boundary to uses that can easily be removed/altered (ie solar farms) at a later date if and when the RTC is confirmed. The installation of the solar farm and other works within this designation is subject to Waka Kotahi approval.

The Proposal has been assessed without this RTC being operational. If the RTC is operational, it would likely reduce car trips and traffic effects on the surrounding roads from the Site.

2.4 New Connection between Dairy Flat Highway and Wilks Road, Designation 1490

A designation is in place to provide a new east-west connection over the existing northern access of 89 and 105 Lascelles Drive. The connection is between Dairy Flat Highway and Wilks Road and includes space for a potential dual lane roundabout at Postman Road, as shown in the Supporting Growth proposal in Figure 8. This will also connect east to the designation in place on Stage Highway 1 with a new motorway interchange on Wilks Road. There is no committed funding to implement this project,

but if it were to go ahead, it will improve connectivity to the Site. The Proposal has been assessed without this proposed east-west connection and Wilks Road interchange.

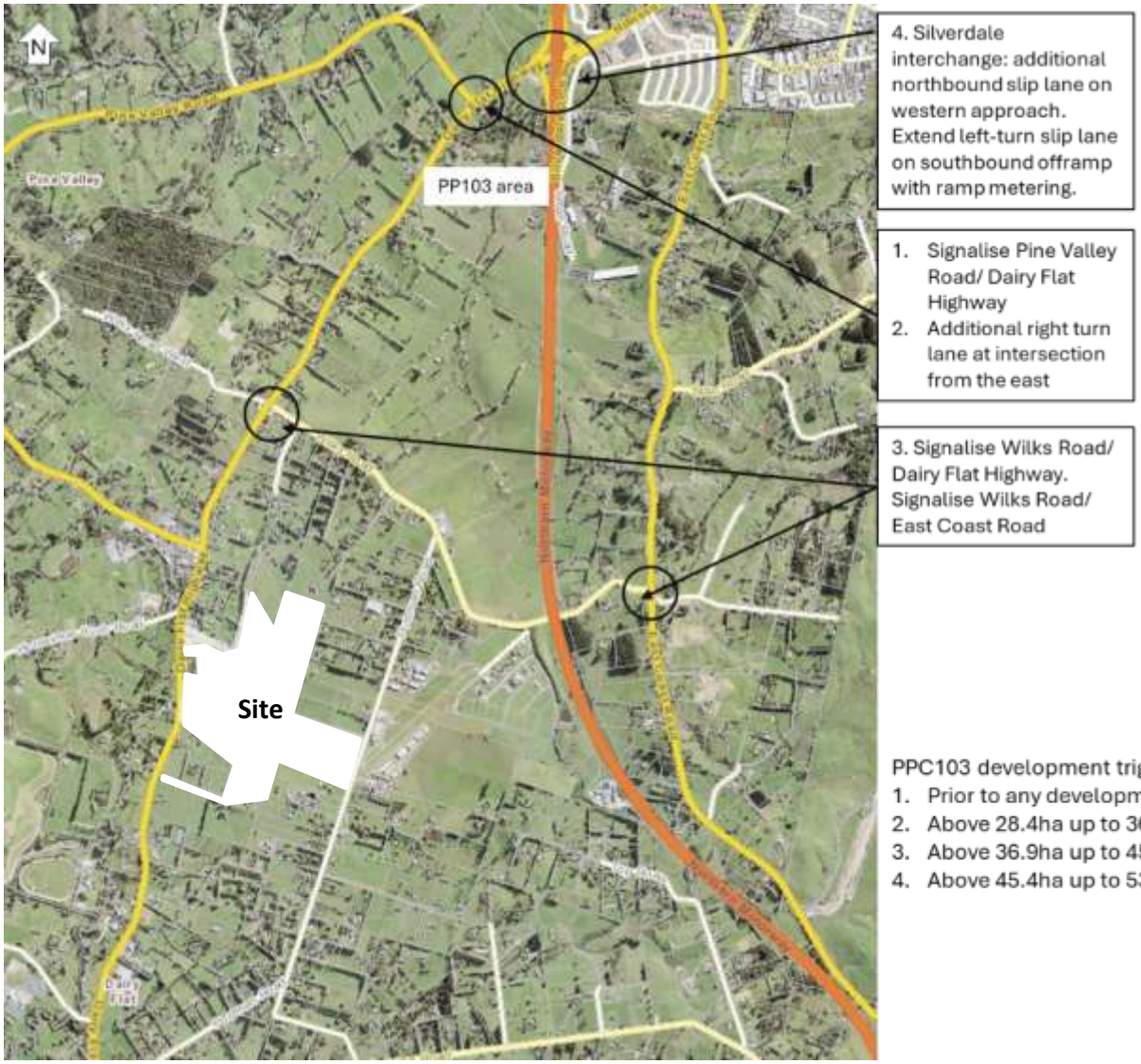
Figure 8: Proposed Design used in NoR for Designation 1490 (source: Supporting Growth)

2.5 Private Plan Change 103

Private Plan Change 103 (PPC103) is located 3 km north of the Site bound by Dairy Flat Highway and SH1. It includes 107 ha to be rezoned to Business – Light Industry zone. PPC103 has recently been approved with the appeals period closing on 11 December 2025. The proposed Precinct rules for PPC103 include a number of relevant roading upgrades triggered by development staging. The roading upgrades relevant to this Surf Park Proposal is shown in Figure 9 numbered according to the proposed development triggers (though not an exhaustive list).

We have reviewed the traffic modelling for Dairy Flat Highway undertaken as part of PPC103 and taken into account the predicted traffic volumes in our modelling for this Proposal, with this being detailed in section 5.3. We have used a 2035 forecast year scenario in our traffic modelling and used the forecasted growth volumes in PPC103 between their modelled 2031 and 2038 years, therefore assuming some level of growth brought about by PPC103 occurring in the network. As assessed in this ITA, the level of traffic generated by this Proposal is consistent with what PPC103 anticipates and will not be required to bring forward any of the upgrades identified by PPC103.

Figure 9: Relevant network upgrades as part of PPC103 and proximity to the Site (boundaries indicative)



2.6 Future Development Strategy

The Future Development Strategy (FDS) anticipates the bulk infrastructure to support development of the Site within Stage 3 about 2035+.

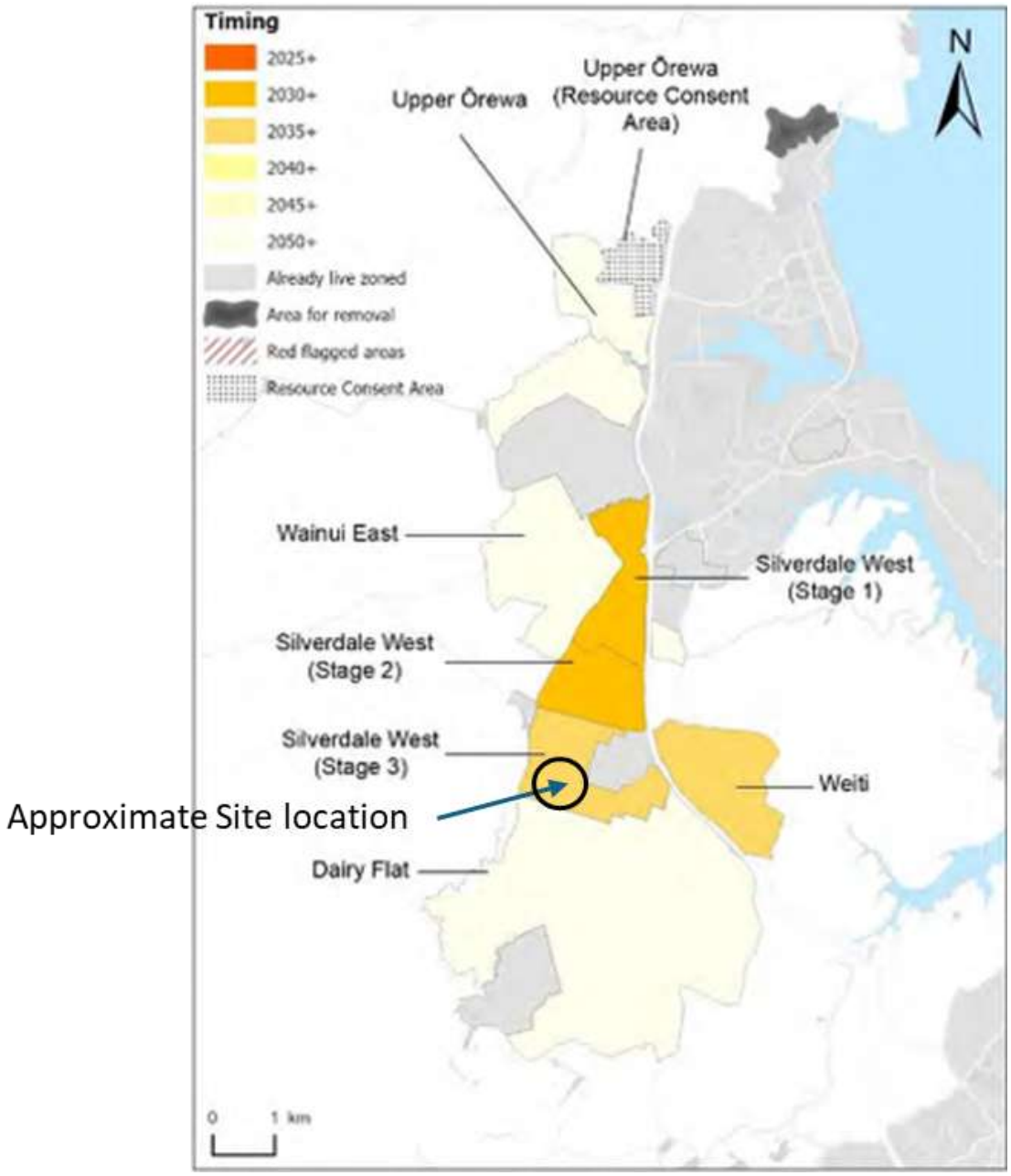
The transport pre-requisites set out in Appendix 6 of the FDS for Silverdale West include

- Dairy Flat Highway upgrade
- Dairy Flat to Redvale Interchange Arterial
- SH1 Interchange upgrades and new interchanges including active modes (Wilks Road, Redvale & Silverdale)
- North Shore Rapid Transit (extension to Milldale).

We note that these upgrades have been assessed to support the full build of the Silverdale West and wider Silverdale area. The FDS has not and does not consider the timing of these individual upgrades according to a land use and transport integration outcome. Our assessment of transport upgrades that

are within the control of the Applicant, which includes new intersections aligned with the Structure Plan, public transport infrastructure and walking and cycling connections, which are addressed throughout this report.

Figure 10: Site in context of Future Urban Areas Sequencing (source: FDS). Site label added

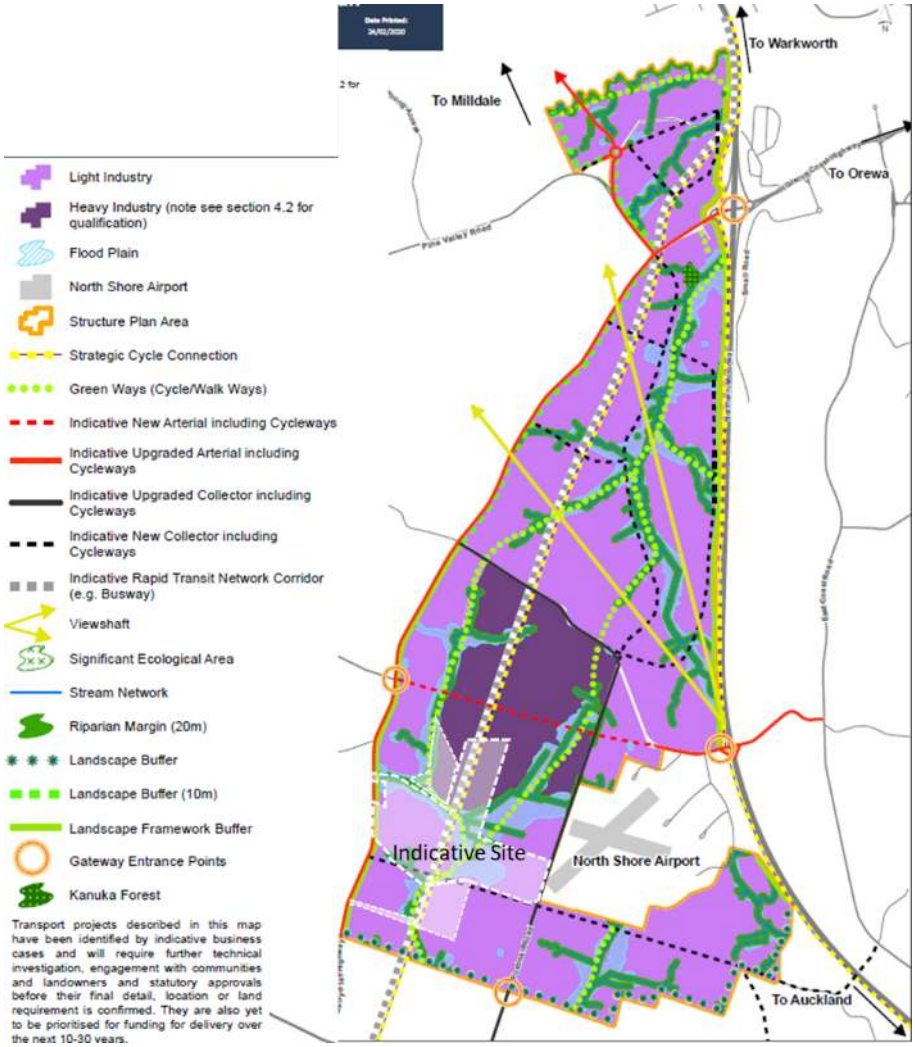


2.7 Silverdale West Dairy Flat Industrial Area Structure Plan (April 2020)

We refer to the Integrated Transport Assessment report by Te Tupu Ngātahi dated March 2019 (Structure Plan ITA) produced to inform the Structure Plan, which gives an indication of land uses and future roading network. The Proposal intends to bring some of the planned roading upgrades forward, namely part of the Collector Road through the Site and shared paths within the Site.

The area is anticipated to be business land to provide local employment, with the Structure Plan indicating the land to be zoned light and heavy industry[2]. The Structure Plan map and the indicative Site location is shown in Figure 11.

Figure 11: Silverdale West Dairy Flat Industrial Area Structure Plan (April 2020). Site indicated in white



With regard to the Site location, the Structure Plan assumes

- the majority of the Site to be light industry zoned with some heavy industry zoning to the north
- bisecting the Site north-south, it is indicated to have
  - a Strategic Cycle connection
  - an indicative RTC corridor (there is a designation in place for this as discussed in Section 2.3)
  - Green Ways (off road shared paths), roughly in the areas of flood plains
- a new east-west collector road is indicated connecting Dairy Flat Highway to the west and SH1.

[2] https://www.aucklandcouncil.govt.nz/plans-projects-policies-reports-bylaws/our-plans-strategies/place-based-plans/Silverdale%20West%20Dairy%20Flat%20Industrial%20Area%20Structu/silverdale-west-dairy-flat-industrial-area-structure-plan-april-2020.pdf

These elements are discussed in subsequent sections further below.

Outside of the Site, the Structure Plan indicates

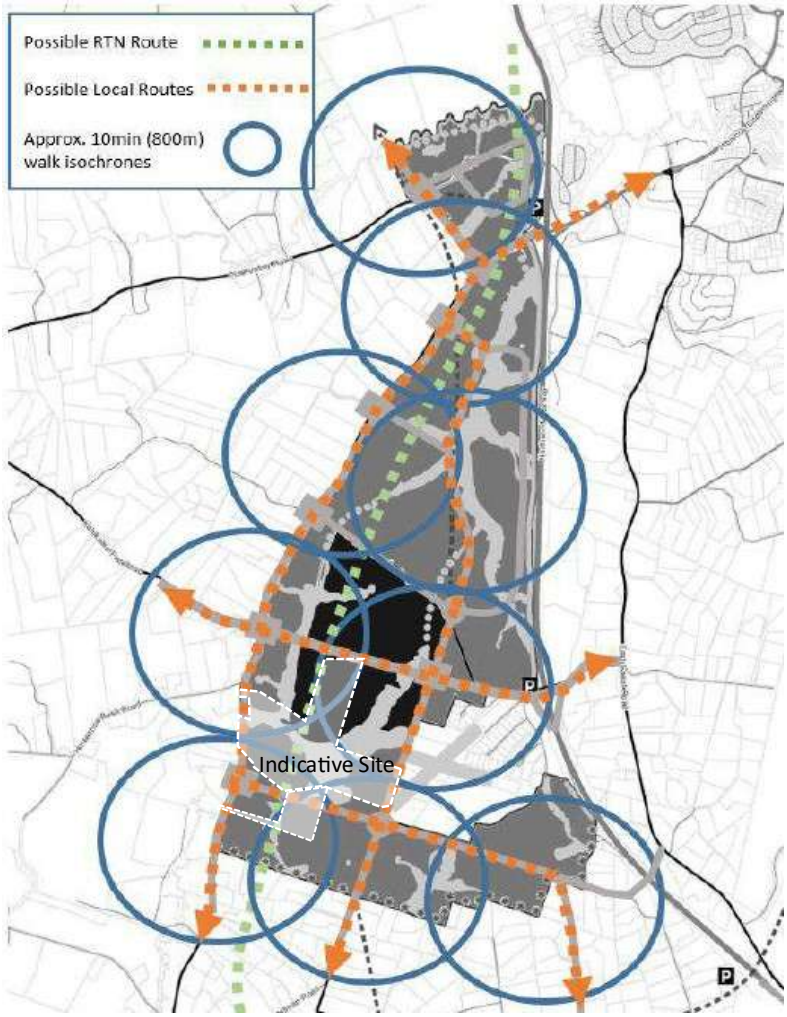
- a new motorway interchange with south facing ramps located at the Wilks Road overbridge (north east corner of the North Shore airport) providing access from SH1. This interchange at Wilks Road will benefit the area with regard to accessibility. The timing of this project is unknown
- a new arterial road running east-west on the northern access of 89 and 105 Lascelles Drive (land forming part of the Site) connecting with Kahikatea Flat Road, under Designation 1490 (Section 2.4).

While there is a designation in place, no funding has been confirmed. As such, any short-term development will need to rely on the current roading network and any mitigation assessed to support development. The current roading network is described further below in Section 3. The transport items the Proposal seeks to bring forward (the east-west Collector Road), is described in Section 4.3.

2.7.1 Structure Plan Proposed Local Bus Routes

In the Structure Plan ITA, Auckland Transport has indicated a number of local bus routes that could potentially support the Structure Plan area, as shown in Figure 12.

Figure 12: Future bus routes (source: Structure Plan ITA by Te Tupu Ngātahi, March 2019). Site indicated in white



The potential bus routes will be an improvement to the existing bus route (described further below in Section 3.3) which currently only travels along Dairy Flat Highway, along the western boundary of the Site at no more than an hourly frequency on weekdays only. The delivery of these bus routes however will depend on the timing of development, delivery of the supporting road network, which as noted earlier will likely be aligned with the development of land and the funding for additional bus services by Auckland Transport.

The Site is adjacent to an existing southbound bus stop, and as part of Stage 1 consent we have identified the need for a northbound bus stop, forming a bus stop pair for the short to medium term. Longer term, the Site will be within a 10-minute walking distance of strategic bus routes once the area and supporting infrastructure is complete, which will connect passengers to bus interchanges, providing transfers and connectivity to the greater Auckland area.

The Stage 1 Consent seeks to bring some of these benefits early, by upgrading the existing bus stop on Dairy Flat Highway. These changes are described in Section 3.6 and are currently being lodged for Engineering Approval.

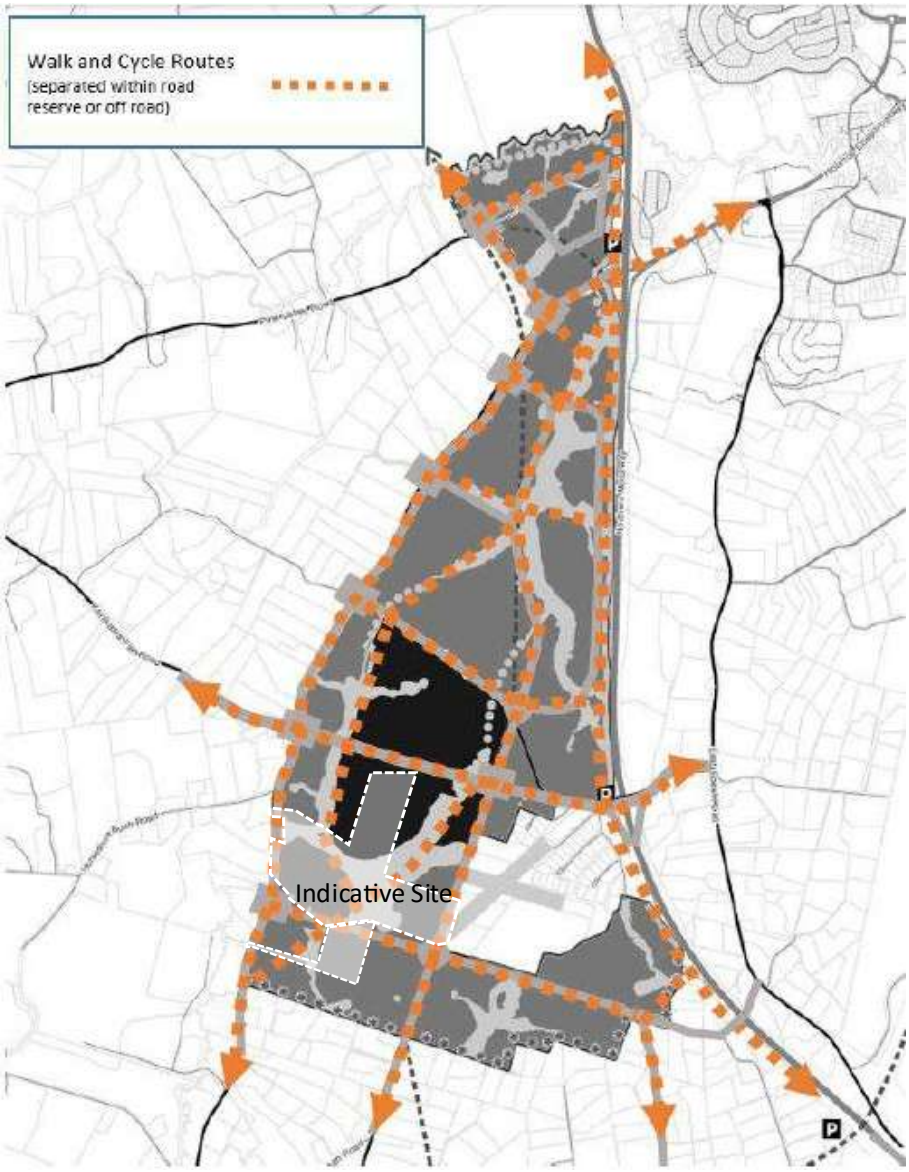
The proposed east-west Collector Road has been designed to allow for a future bus route, as indicated in the Structure Plan. In-lane bus stops can be provided within the 3.5 m carriageway and supporting refuge islands can be provided within the flush median.

2.7.2 Structure Plan Proposed Roading Network and Walking and Cycling Routes

The Structure Plan ITA describes an indicative roading network and hierarchy as well as cross sections. It notes that

- the roading network is indicative only and has not been confirmed with funding. The Arterial Roads are subject to detailed business cases being approved, with both Arterial Roads and other roads being subject to landowners developing their land
    - the Proposal includes the east-west Collector Road with a cross section similar to what the Structure Plan ITA indicates (refer to Section 4.3 for the proposed Collector Road design). We note that the design proposed allows connectivity options further to east, while also considering the existing private accesses and airport access that sits on the east-west alignment. The Proposal therefore provides for an east-west collector alignment consistent with the Structure Plan.
- the flood plain largely dictates the alignment of the proposed road network. Specifically, the walking and cycling paths along the collector road and off-road paths assumes that the flood plains restrict construction and therefore the paths been placed along the flood plains, as shown in Figure 13
    - the Proposal includes a series of cycle paths and shared paths within the Site, consistent with the alignment in the Structure Plan.

Figure 13: Proposed walking and cycling routes (sourced from Structure Plan ITA by Te Tupu Ngātahi, March 2019). Site indicated in white



The Structure Plan ITA has provided indicative cross sections based on anticipated traffic volumes. The cross sections are

- 25 m wide road reserve for Arterial Roads. This comprises of 2 traffic lanes in each direction (of which one appears to be a bus priority lane), separated by a central median with protected cycle lanes and footpaths on both sides
- 21 m wide road reserve for Collector Roads (Postman Road). This comprises of a single lane in each direction with off-road cycle lanes
- The off-road cycle route is indicated to be a two-way cycle lane separated from pedestrians.

The Structure Plan ITA acknowledges that the cross sections and widths are indicative only, but the design intent is to protect cyclists from traffic and separate them from pedestrians. This design intent has been carried forward to the proposed cross section of the Collector Road described in Section 4.3.

2.7.3 Structure Plan Indicative Transport Sequencing

The Structure Plan ITA lists the necessary upgrades to the roading infrastructure, some of which have been carried out already by Auckland Transport, such as key intersection improvements near the Site.

The Structure Plan ITA assumes that transport upgrades are carried out north to south, as shown in Figure 14, since this is in line with wastewater infrastructure upgrades by Watercare. This places the roading upgrades near the Site to be within Stage 3.

Figure 14: Indicative Structure Plan transport sequencing (sourced from Structure Plan ITA by Te Tupu Ngātahi, March 2019). Site indicated in white

The staging above has assumed

- about 70 ha of net developable area (about 20% of the entire Structure Plan area) can be accommodated by the Silverdale Interchange and the upgrades to it carried out by others
- access to State Highways (Wilks Road connection and Penlink) is needed before 70 ha of land is fully developed, but this is subject to further assessments. We note that
    - the Wilks Road connection is indicated to be in Stage 2, which is 2028 to 2038
    - that the current Penlink project focuses on delivering an interchange that connects to the eastern side of State Highway 1 in the short to medium term, but does not preclude a connection to the west in the long term. The Penlink connection is separate from the Wilks Road interchange.
- Stage 3 is indicated to be 2038-2048. This is the Stage that is indicated to directly affect the Site with walking and cycling paths through the Site and an east-west Collector Road through the Site.

The Proposal brings the Collector Road and paths within the Site ahead of the period indicated for Stage 3. As such, when land to the east and south of the site is developed, the proposed roading connections

and facilities located on the southern side of the road can complete the collector road elements consistent with the Structure Plan. We note that no wider mitigation or upgrades to the wider area such as the Wilks Road connection and the rest of the collector roads outside of the Site boundaries is triggered by the Proposal. We discuss the traffic effects in Section 5.

Overall, the Structure Plan has indicated the level of development anticipated in this area. The Proposal has responded to the Structure Plan by bringing employment opportunities to the area along with the necessary infrastructure to mitigate the effects predicted.

2.8 Auckland Unitary Plan

The AUP sets out standards for developments based on its objectives and policies. In terms of the AUP

- the Site is zoned as Future Urban Zone, as such we have assessed the relevant AUP requirements under this zoning, being Rural
- Dairy Flat Highway is identified as an Arterial Road. Postman Road is not an Arterial Road (nor is it planned to be one according to the Structure Plan)
    - this means new vehicle crossings onto Dairy Flat Highway will be a Restricted Discretionary activity. The maximum number of crossings is 1 per 50 m of site frontage or part thereof
    - however, the above does not apply to new public roads. New roads will be subject to Auckland Transport's TDM standards, which we have assessed the future vested road against (refer to Section 4.3).

2.9 Consistency with relevant transport strategies

We have discussed the planning context of the Site contained within the FDS and the Structure Plan. With regard to the Proposal

- the Site is located in Silverdale West (Stage 3). While development is not planned to occur till 2035+ in the FDS, the application has proposed new intersections and infrastructure that mitigate its effects
- the Proposal responds to the Structure Plan and includes some of the indicative roading and walking and cycling routes, thereby providing ready access for various road users and not precluding future connections to be delivered by others
- throughout the project we have taken into account the designations applicable to the Site and how this could impact the Site layout. We have been in liaison with Auckland Transport as part of the Stage 1 consent to ensure the Site and the RTC do not preclude each other
- in the Structure Plan ITA, an east-west Collector Road is indicated. The Proposal seeks to include this Collector Road , with a cross section and design speed reflecting the foreseeable future of the environment. Proposed lane widths will be suitable for a future bus route and vehicles to serve the industrial zoning anticipated for the surrounding areas

- walking and cycling routes are provided off-road within the Site as well as part of the future vested Collector Road and main spine local road thereby providing connectivity and consistent quality for shared path users.

We consider the Proposal is well aligned with the relevant transport strategies. We consider that is also important to outline that a development such as this takes up to 10 years or more to complete in full. As such, the full extent of the development will be realised about the time where development is planned. This aligns with our traffic assessment, which considers the traffic network and anticipated traffic demand about 2035.

3 THE EXISTING ENVIRONMENT AND FUTURE CONTEXT NEAR THE SITE

The Proposal has been assessed against the existing environment, including the Stage 1 Consent (refer to Section 2.1). The Stage 1 Consent has not yet been operationally implemented, so the following existing environment information has not been affected by the Stage 1 Consent.

3.1 How the Site is currently accessed by cars

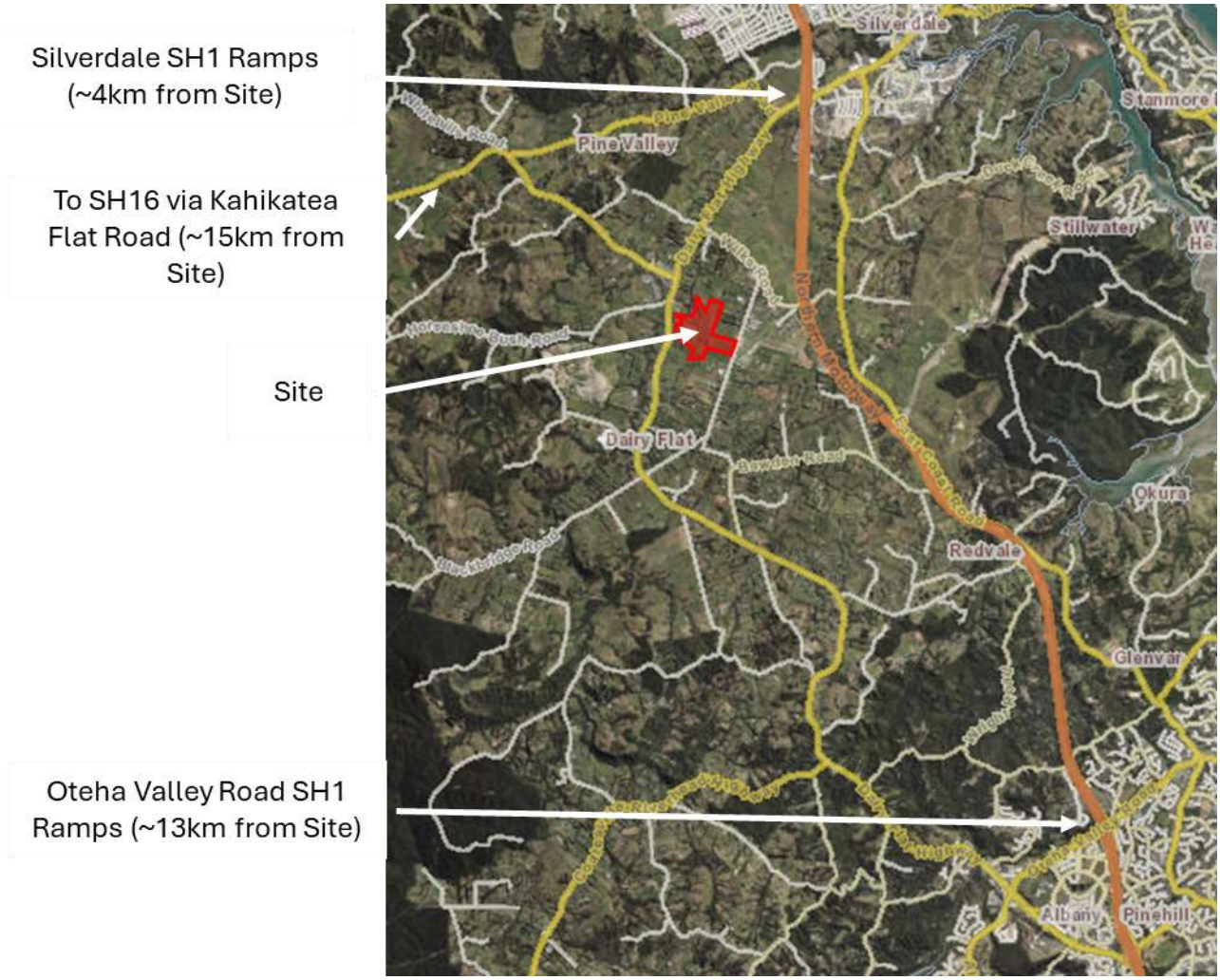
The Site has two road frontages, being Dairy Flat Highway and Postman Road.

- Dairy Flat Highway is an arterial road, as identified in the AUP and connects Albany to Silverdale.
- Postman Road is not an arterial road in the AUP and provides access to North Shore Airport across the road from the Site.

The description of these two roads are provided in Section 3.2.

A number of improvements have been implemented on the surrounding roads and some major projects, such as Penlink, are confirmed. However, the Site remains largely isolated from major road connections, Figure 15 shows the Site and its proximity to the current State Highway interchanges.

Figure 15: Site and surrounding road connectivity



The Site is currently some distance away from the nearest State Highway interchanges until such time as Wilks Road interchange is constructed with south facing ramps, as included in the Structure Plan. The Oteha Valley interchange is about 13 km south of the Site, with the Silverdale interchange some 4 km north of the Site and is where we anticipate most people will likely access the Site.

3.2 What the surrounding roads look like

The two existing roads that front the Site are described below.

Dairy Flat Highway

At present, Dairy Flat Highway

- is an arterial road, as identified in the AUP
- has an 80 km/h posted speed limit along the Site frontage, reducing to 60 km/h about 70 m north of the Site as it approaches the Dairy Flat village. Recent traffic counts (discussed below) captured the operating speed to be 80 km/h in both directions.
- has no footpaths and cycling facilities along the Site frontage. Auckland Transport has a Designation in place along Dairy Flat highway to include widening for a shared path (refer to Section 2.2) however there is no funding and commitment for this in the short to medium term
- includes one bus route which travels along Dairy Flat Highway, route 986, which connects Albany Station and Hibiscus Coast Station in Silverdale. There are bus stops within 600 m of the Site (refer to Section 3.2)
- has a road reserve width of 20 m with one lane in each direction, a wide centreline and shoulders and swales are on both sides.

Traffic data obtained from Auckland Transport indicates the following

- 5-day Average Daily Traffic (ADT) volume of 9,260 vehicles per day (vpd)
- 7-day ADT volume of 8,470 vpd
- 4.1% heavy commercial vehicles (HCV)
- morning peak hour is 8-9 am with recorded traffic volume of 855 vehicles per hour (vph), 55/45 northbound/southbound split
- evening peak hour is 4-5pm with 1,020 vph recorded, with a 35/65 northbound/southbound split
- on the weekend, the peak hour is 11am-12pm on a Saturday with about 670 vph
- the operating speed in both directions were recorded to be 80 km/h.

From the traffic survey data, Dairy Flat Highway carries a low volume of traffic for its arterial function, with capacity to accommodate an increase of traffic in all periods.

Postman Road

On Postman Road, there are no footpaths, cycling facilities nor bus routes operating on this road. The road cross section is similar to Dairy Flat Highway, and also has an 80 km/h posted speed limit. This road provides access to North Shore Airport.

The latest traffic data has been obtained from Auckland Transport with recorded traffic volumes on Postman Road between Dairy Stream Road and Wilks Road, to the north of the Site. The data was collected in March 2025 and recorded

- a 5 day ADT volume of 1,570 vpd
- peak hour volume of 150 vph at 7:45 am and 175 vph at 4:30 pm.

Based on the Auckland Transport data, Postman Road currently carries very low traffic volumes.

3.3 How the Site is currently accessed by public transport

Bus route 986 travels along Dairy Flat Highway, travelling between Albany Station and Hibiscus Coast Station in Silverdale. Route 986 provides 10 services per day on weekdays between 7am and 7:30pm. The bus does not run on weekends.

While the current southbound bus stop (travelling to Albany Station) is about 75 m from where the Collector Road intersection and the northbound bus stop (travelling to Hibiscus Coast Station) is some 600 m away from its pair, upgraded bus stops are proposed as part of the Stage 1 Consent.

The Stage 1 Consent places the southbound bus stop within proximity of the new east-west collector road intersection with a new northbound bus stop, crossing facilities and connecting footpaths located on the opposite site of the road. The Engineer Approval plan has been lodged with Auckland Transport for these upgrades. As a result of the Stage 1 Consent, the Site will have good access to public transport services.

3.4 How the Site is currently accessed by active modes

Currently, there are no footpaths nor cycling infrastructure along the full length of the Site frontages on both Dairy Flat Highway and Postman Road, which have a posted speed limit of 80 km/h.

The Stage 1 Consent however provides safe footpath connections to upgraded and new bus stops.

The existing environment, while having good connectivity to public transport bus stops, has very poor facilities for pedestrians and cyclists to access the Site from the wider area given its rural environment.

As discussed in Section 2, the Dairy Flat Highway designation proposes separated walking and cycling facilities along the Site frontage and the NoR for the RTC also proposes separated walking and cycling facilities. Neither of these projects has been committed for construction. The Proposal has been assessed considering the existing (which includes consented) environment only.

3.5 The road safety records of the Site

A historical search of New Zealand Transport Agency's Crash Analysis System has been completed for the five-year period of 2020 to 2024, plus available records for 2025, inclusive. The search area includes the frontage of the Site on Daily Flat Highway and Postman Road extending north and south of the Site boundaries, as shown below in Figure 16. A total of 5 crashes were recorded during the search period, 3 on Dairy Flat Highway and 2 on Postman Road, one of which was a fatal crash.

Figure 16: CAS search area and results within vicinity of the Site

The 3 crashes recorded on Dairy Flat Highway include

- Two crashes that resulted in a minor injury. One was a rear-end crash due to an intoxicated driver. One was a minor injury crash involving a turning movement from a driveway from the eastern side of Dairy Flat Highway. The driver, turning right to head northbound, failed to see an oncoming southbound car resulting in a turning collision.
- One non-injury crash because of a southbound driver losing control. Driver factor was stated as a factor of the crash.

The 2 crashes recorded on Postman Road include

- One fatal crash involving a car turning into a driveway and colliding with a motorcyclist. The report stated licensing factors and drug-related causes.
- One non-injury crash involving a driver encountering horses on the road.

The crash history does not suggest an apparent pattern that indicates an underlying road safety issue. Rather, the majority of crashes reported state driver factors involving fatigue, licensing, alcohol or drugs.

The Proposal includes new access points on both Dairy Flat Highway and Postman Road and safety assessments have been carried out with mitigations proposed, as follows

- A new intersection on Dairy Flat Highway (consented as part of Stage 1) with 'slow' pavement markings to provide awareness at this high-speed road.
- The vehicle crossing proposed on Dairy Flat Highway will be located to meet visibility requirements (refer to section 7.1.1) with the use of the vehicle crossing being restricted to servicing vehicles only, rather than the general car park users.
- The vehicle crossing on Dairy Flat Highway towards the southern end of the Site is proposed to be used for vehicles associated with the WTP, of a frequency of twice a week, and is proposed to only permit left-turn exit-only.
- Accordingly, the vehicle crossings on Dairy Flat Highway will have very low use and is considered safe.
- A new roundabout is proposed on Postman Road which will help decrease speed for vehicles travelling along Postman Road as well as those turning into and out of the new collector road. We expect additional lighting will be required at the new intersection, which will further improve visibility, thus improving the safety of this rural road.
- The vehicle crossing proposed on Postman Road is proposed to be exit-only and has been located where visibility requirements can be met. The vehicle tracking included in Appendix I shows that large semi-trailer trucks will not need to cross the centreline.

Because of these reasons, we expect the Proposal provides a safe roading network.

3.6 Consented upgrades to Dairy Flat Highway

The Stage 1 Consent (section 2.1) includes

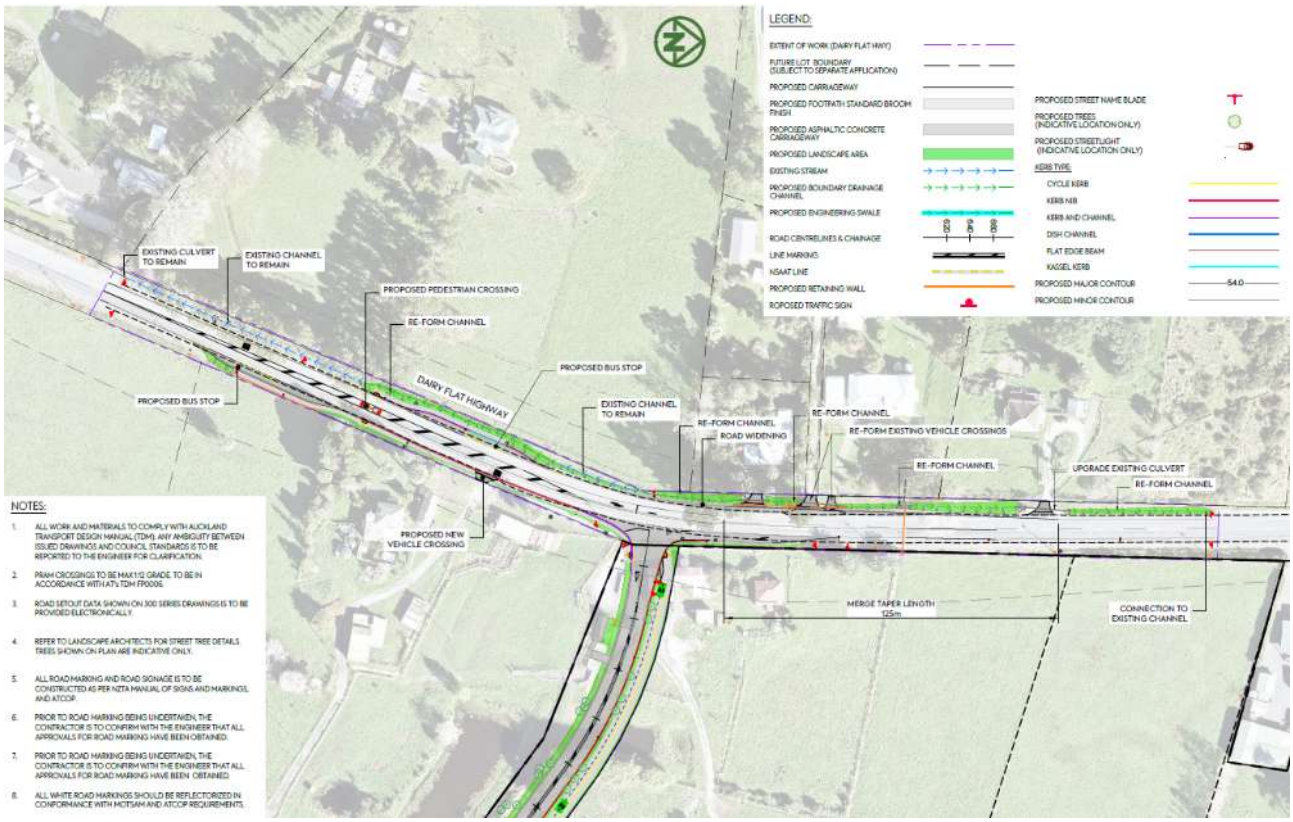
- a T-intersection at the intersection of the Collector Road with a right turn bay on Dairy Flat Highway.
- Bus stop upgrades on Dairy Flat Highway including a new northbound bus stop.
- Pedestrian refuge islands on Dairy Flat Highway.
- 'Slow' pavement markings on both approaches of the refuge islands.
- Footpath connections to the Collector Road.

The upgrades proposed for Dairy Flat Highway is currently lodged for Engineering Approval. No fundamental changes are proposed to the consented intersection form aside from a longer deceleration

taper on Dairy Flat Highway to better cater for the expected Site traffic volumes, in particular the increase in large trucks resulting from the industrial activities and WTP proposed and through connection of the road.

The intersection design is shown in Figure 17.

Figure 17: Dairy Flat Highway improvements (plan produced by McKenzie & Co for Engineering Approval)



4 WHAT IS PROPOSED

4.1 The proposed Stage 2 development

A substantial component of the Proposal is already consented under Stage 1 which includes a surf park, accommodation, ancillary land uses as well as the new intersection on Dairy Flat Highway. There are changes proposed to the Stage 1 Consent with regard to vehicle accesses, car parking layout and location of activities. A breakdown of the land use activities, consented activities, proposed activities and therefore changes to the Stage 1 Consent are set out in

Table 2. The development has been broken into precincts and are shown in Figure 18.

Figure 18: The Proposal Precincts

Table 2: Consented and proposed activities within each precinct

Precinct	Activity	Consented	Proposed areas/units	Difference
Surf Lagoon and Amenity Precinct (WAM)	Organised sport and recreation - Surf park	22,000 m^2 of lagoon, 2,019 m^2 GFA of office and other accessory (including surf rental, wellness and surf club)	2,490m^2	+749 m^2
	Organised sport and recreation - Clubrooms	131 m^2 GFA Members Club	N/A	-131 m^2 GFA
	Retail – food and beverage	728 m^2 restaurant (lagoon restaurant and farm-to-table)	620 m^2 (bar and lagoon restaurant)	-108 m^2 GFA
	Residential – Visitor accommodation and amenities	63 units (17 eco cabins and 46 lodge units 908m^2 lodge amenities (reception, wellness, meeting room, etc)	81 room hotel	+18 units
	Retail	249 m^2 (retail)	255m^2	+6 m^2 GFA
Accommodation Precinct (SPA)	Residential – Visitor accommodation	51 units (eco cabins)	57 units (villas)	+6 units
	Organised sport and recreation - Clubrooms	N/A	974 m^2 GFA	+974 m^2 GFA
Stream Park Precinct (SPA)	Residential – Visitor accommodation	20 units (20 eco cabins)	N/A	-20 units
Surf Village Centre	Residential - Apartments	N/A	120	+120
	Retail – food and beverage	368m^2 Farm to Table Restaurant	420m^2	+52 m^2 F&B
	Retail	334 m^2 market	1090m^2 village market	+756 m^2 retail
	Commercial	334m^2 Multifunction Building	1,544 m^2	+1210 m^2
	Community - Early Childhood Learning (ECL) Centre	N/A	300 m^2 ECL	+300 m^2 ECL
	Community - Wellness Centre	N/A	830 m^2	+830 m^2

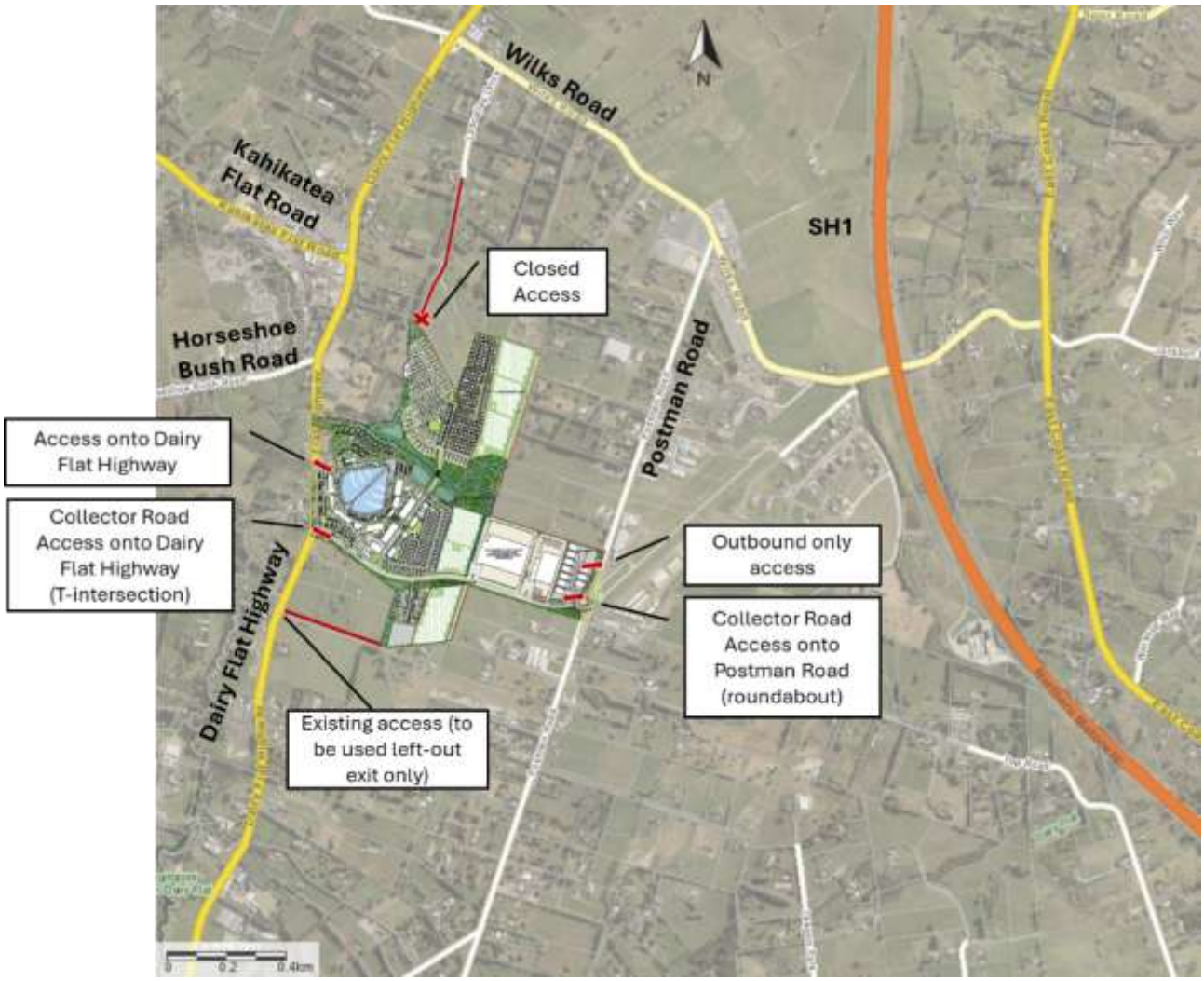
Precinct	Activity	Consented	Proposed areas/units	Difference
Neighbourhood Precinct (North-West)	Residential – mixed dwellings	N/A	82 units	+82 units
Neighbourhood Precinct (North-East)	Residential – mixed dwellings	N/A	178 units	+178 units
Neighbourhood Precinct (South)	Residential – mixed dwellings	N/A	81 units	+81 units
Live/Work Precinct	Residential – Live-work units	N/A	25 units	+25 units
Solar Farm Precinct	Infrastructure - Electricity generating facility	7.8 ha	8.72 ha	+0.92 ha
Hyperscale Artificial Intelligence (AI) Data Centre Campus Precinct (SPA)	Infrastructure - Network utility	1 data centre, 29,000 m^2 building coverage	Hyperscale AI data centre with 2 buildings, a total of 41,640 m^2 building coverage	+1 data centre with 12,640 m^2 building coverage
Light Industrial	Industrial – light industrial	N/A	7,050 m^2 GFA	+7,050 m^2 GFA
Other	The Proposal includes ancillary activities that have been assumed to not generate traffic additional to the activities above. These include stormwater ponds, car parking, roads, landscaping, parks and gardens, and a WTP.			

4.2 Site access

Five vehicle accesses are proposed onto the existing road network, with multiple vehicle crossings proposed along the new east-west collector road (to be vested) that provide access to car parking for the surf park, Village Centre and data centres, a private road to the Live/Work Precinct and a local spine road that is to be vested.

An existing vehicle access located to the south of the Site connects to Dairy Flat Highway from the Live/Work Precinct. It is proposed to be used for left turn exit-only for the WTP. There is one existing vehicle access to the Site which is not proposed to be used to serve the development, to the north of the Site from the Neighbourhood Precinct (North-West), at Lascelles Drive. While not being relied on for the proposed development, wider connectivity from this point to adjacent land is not precluded should future development allow.

Figure 19: Site accesses onto external road network



Two of the vehicle accesses proposed from Dairy Flat Highway are part of the Stage 1 Consent

- a new east-west road (discussed in Section 4.3 below) which will require a right turn bay on Dairy Flat Highway (discussed in 3.6). A concept plan showing this intersection design, currently lodged for Engineering Approval, is shown in Figure 17.
- a vehicle crossing towards the north of the Site for access into the Surf Park car park (discussed in Section 7.1.1).

Since Dairy Flat Highway is an arterial road, vehicle accesses on this road is a Restricted Discretionary activity as defined in the AUP and we provide our assessment in Section 7.1.1.

The two vehicle accesses at Postman Road are additional to the Stage 1 consent

- The roundabout on Postman Road (see Section 4.4, Figure 21) is to be implemented at either

  (a) the East-West Collector Road traffic volume (measured immediately to the east of Dairy Flat Highway) exceeds 300 vph (two-way) in the morning peak hour (between the hours of 7am and 9am) or 360 vph (two-way) in the evening peak hour (between the hours of 4pm and 6pm), or

  (b) prior to s224c being issued for the Light Industrial (East) precinct if this occurs ahead of the traffic volume thresholds (see Section 5.6 for assessment of traffic effects), prior to that trigger

level the internal east-west road will terminate at a temporary turning head with all traffic accessing the Site from Dairy Flat Highway.

- The exit-only private access lane onto Postman Road will be implemented with the Light Industrial lots. This will take the form of a vehicle crossing.
- A substation within the Light Industrial Precinct (refer to Section 14) is separate to this Proposal and could have an interim vehicle crossing onto Postman Road prior to the rest of this precinct being developed. Resource consent for substation (network utility) has been applied for separately.

4.3 Proposed changes to Collector Road

The Stage 1 Consent includes a 24 m wide Collector Road running east-west from Dairy Flat Highway and terminating at a turning head prior to Postman Road. The Proposal's Collector Road differs from the Stage 1 Consent by the following

- a 20.1 m to 20.7 m wide road reserve, reduced from consented 24 m road reserve. This better matches the indicative width from the Structure Plan, which indicates that the Collector Roads are to be 21 m wide and comprising of a single lane in each direction with off-road cycle lanes.
- a 1.8 m wide footpath and 2.6 m wide bi-directional cycle paths on the northern side of the Collector Road, previously consented as a shared path. We note that
    - This is the cycling provision that is currently being lodged for Engineering Approval.
    - This is consistent with the provision indicated on Dairy Flat Highway under Designation 1497 (refer to Section 2.2) and the same provision will continue around to the main spine local road (see Section 4.5), creating a fully connected bi-directional cycle path from the residential Neighbourhood Precincts, through the Village Centre precinct and the future Dairy Flat Highway provision.
    - In providing a bi-directional cycle lane, when the southern land is developed by others, no additional cycling facilities would be required.
- the extent of the wider flush median is extended east to provide turning bays for side roads and vehicle accesses.
- the Collector Road now connects to Postman Road via a roundabout (see Section 4.4).

Similar to the Stage 1 Consent, the Proposal's Collector Road will provide access to the car parking areas of the Surf Park, the data centres, and side roads of which one will be vested (the northern spine road).

The future Collector Road hierarchy status has been used to guide the cross section elements and setting the speed limit. We note that

- the posted speed limit of this road is anticipated to be 60 km/h, on the basis that this rural area will be urbanised with walking and cycling facilities and vehicle accesses, and responds to the future speed limit of 60 km/h on Dairy Flat Highway
- a design speed of 70 km/h has been used to design the horizontal and vertical alignments of the road and to meet sight distance requirements

- The posted speed limit of this road can be lowered to 50 km/h and the current design of the road and internal intersection can accommodate that, noting that sight distance requirements can be met for a design speed of 70 km/h and therefore no fundamental changes to the road nor boundaries would be required if a lower speed limit is implemented.

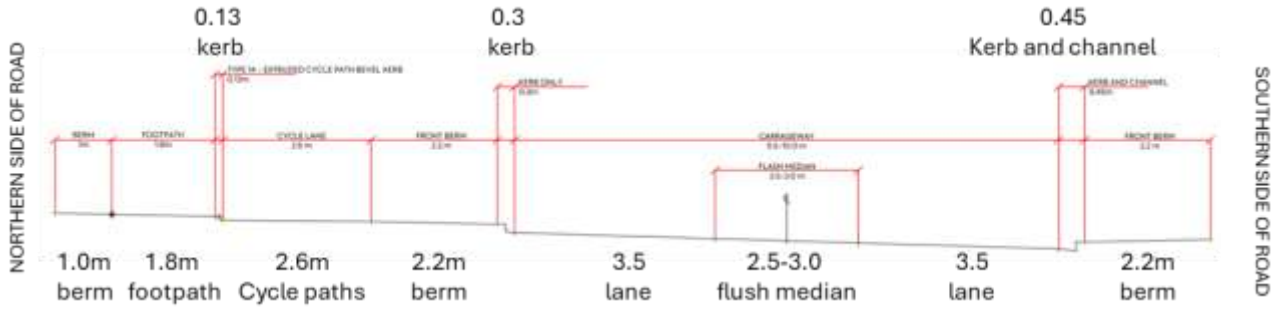
We have kept in mind that the Structure Plan anticipates this area to be zoned as Industrial. The proposed cross section of this Collector Road is shown in Figure 20 and includes

- 20.1 m to 21 m wide road reserve.
- 1.8 m footpath and a 2.6 m wide bi-directional cycle path on the northern side of the road (Site frontage), as previously discussed.
- 3.5 m wide traffic lanes (one in each direction).
- 2.5 m to 3.0 m wide flush median. The flush median is proposed to be 2.5 m wide at the western end, fronting the car park accesses and the main spine road intersection. A wider 3.0 m median is provided on the eastern section fronting the data centres and the Light Industrial precinct. This width is needed to cater for the large semi-trailer trucks accessing these precincts.
- kerb and channel on both sides of the road.

Aside from the proposed Live/Work Precinct on the southern side of the Collector Road, there is no other activity fronting the southern side of the road, therefore only a swale and berm is proposed. When the rest of the southern land is developed, we expect the landowner to provide the appropriate frontage and access(es) onto their land, which will include berms and footpath. By providing a bi-directional cycle lane, the southern side of the road does not need to construct additional cycling facilities.

A refuge island is proposed towards the west of the Live/Work Precinct private road, to provide a crossing facility across the Collector Road. The visibility plan at this crossing point is shown in Appendix E.

Figure 20: Collector Road Typical Cross Section



The proposed cross section will allow for the footpath and cycle path to connect to the future paths on Dairy Flat Highway and along the RTC. The Collector Road has been designed to be at-grade, therefore requiring the RTC to be grade separated, as agreed with Waka Kotahi.

The Collector Road design can accommodate a future local bus route if required, with in lane bus stops and space within the front berm for bus infrastructure, such as a hardstand and shelter.

We consider that the proposed Collector Road will accommodate not only the immediate needs of the Proposal, but also the foreseeable long-term environment and uses in this area as it develops.

4.4 Postman Road roundabout

The Stage 1 Consent terminated the Collector Road at a turning head in front of the data centre, with no connection provided between the Site and Postman Road. The Proposal differs from the Stage 1 Consent with a roundabout connecting the Site with Postman Road as a secondary access point. A roundabout is proposed, where the design

- does not require third-party land
- does not impact access to the North Shore Airport car park on Postman Road. This car park encroaches into the road reserve so any change to Postman Road outside the car park (eg widening for a right turn bay) will affect the carpark and this has been avoided
- does not impact other nearby property accesses
- provides a safe access for expected traffic volumes, while also providing speed calming on this stretch of road.

The concept design of this roundabout is included in Appendix B.

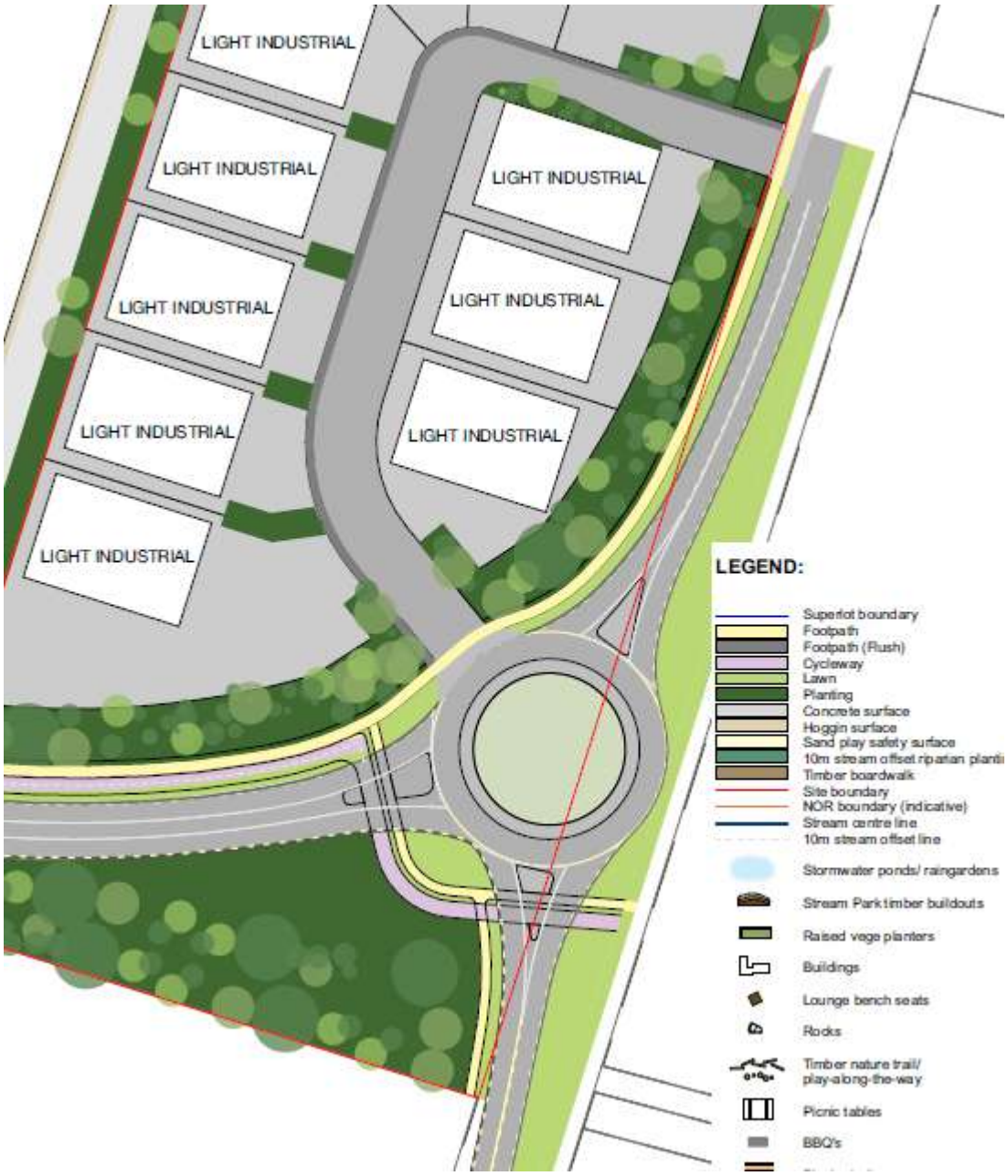
Implementation of the roundabout is to be triggered by either

a) the east-west Collector Road traffic volume (measured immediately to the east of Dairy Flat Highway) exceeds 300 vph (two-way) in the morning peak hour (between the hours of 7am and 9am) or 360 vph (two-way) in the evening peak hour (between the hours of 4pm and 6pm), or

b) prior to s224c being issued for the Light Industrial (East) precinct if this occurs ahead of the traffic volume thresholds.

Prior to the above triggers the Site will have access solely off Dairy Flat Highway, with the Collector Road terminating at a turning head prior to Postman Road.

Figure 21: Intersection with Postman Road (source: Studio Pacific)



4.5 Proposed internal roads

Figure 22 Road typologies map (source: Studio Pacific)

Six internal road cross sections are proposed. They include

- Collector Road to be vested (see section 4.3)
- Spine Road to be vested (21 m wide), running north-south through the Surf Park Village Centre. This was previously consented as a private road and is now proposed to be upgraded and vested
- Local Road 1 and 2 to be vested (16.3 m to 17.3m wide) within the North-west and South Neighbourhood precincts, bounded by the dashed lines in Figure 22 showing the vested extents
- Industrial private road (13.4 m wide), serving the Live/Work precinct
- Industrial private service lane (13.0 m wide), serving the Light Industrial (East) Precinct
- Private residential lane / jointly-owned access lot (JOAL) (8.4 m to 12 m wide) for access to dwellings.

Maintenance and access roads for the solar farm, data centre, Village Centre and private roads in the North-East Neighbourhood Precinct are discussed separately as part of access and car parking assessment for each precinct.

The Collector Road, Spine Road, and local road typologies will be suitably designed to be vested as local roads. All other internal roads are expected to remain in private ownership, either designed as a private road, service lane or JOALs.

Figure 23: Proposed internal road layouts to be vested

The back berm on the Spine Road is proposed to be 0.875 m and falls short of the minimum 1 m back berm in the Auckland Transport – Transport Design Manual (TDM), requiring a Departure from Standard at Engineering Approval. We have mitigated the effects of a narrower back berm by minimising the number of access points from this road (2 vehicle crossings on the western side of the road only, refer

to Section 7.1.2), having a speed hump on the exit approach, and ensuring that visibility splays can be provided at all vehicle crossings fronting this road.

Throughout the vested local roads, speed calming devices have been indicated and will be confirmed as part of subsequent Engineering Approval stage, and will be designed for a 30km/h speed environment. These could be in the form of raised tables, raised crossings, speed humps or surface materiality treatments. Two compact roundabouts are proposed on the north-south spine road situated in between the North-West and North-East Neighbourhood Precincts.

Figure 24: Private residential lane/ JOAL in the Neighbourhood Precincts

Figure 24 is the proposed cross section for the JOAL within the Neighbourhood Precincts, featuring either

- an 8.4 m wide cross section comprising a 5.5 m wide lane with a 1.4 m wide footpath
- a 10-12 m wide cross section comprising a 3.7 m wide lane with regular passing bays with a 1.4 m wide footpath.

5 TRAFFIC EFFECTS

The following section addresses

- how much traffic is expected to be generated by the Proposal at full buildout
- at what stage does the roundabout on Postman Road need to be constructed, and prior to this, how much traffic can be safely accommodated on Dairy Flat Highway intersection. We have put forward a threshold based on the average peak hour volumes on the new Collector Road for ease of monitoring purposes, flexibility as to construction staging, and conditioning of consent, noting that the industrial lots located adjacent to Postman Road and accessed from the roundabout will require the roundabout to be constructed regardless
- at full buildout, can the intersections on Dairy Flat Highway and Postman Road perform safely and efficiently
- with all the above, the traffic growth predicted for PPC103 has been accounted for.

5.1 Trip generation

The Stage 1 Consent included up to 210 vph generated by the consented activities in the evening (PM) peak hour. We have updated the traffic modelling for this Proposal with

- linked trips assumed for the retail and accommodation activities, with the associated primary trips being surf park lagoon and residential activities
- the latest traffic counts available from Auckland Transport on Dairy Flat Highway and Postman Road, both recorded in 2025
- consideration of PPC103 and the assumed rate of development and therefore background traffic growth.

We have assessed how much traffic could be generated by the proposed activities on Site using the following

- '*Guide to Transport Impact Assessment'* version 1.1 by Transport for New South Wales (GTIA). This has superseded the Roads and Traffic Authority 2002 '*Guide to Traffic Generating Developments'*
- '*Institute of Transport Engineers Trip Generation Manual*' 12th Edition August 2025 (ITE Guide)
- where no standard rates in the above are applicable, we have used first principles based on the number of people anticipated, this is applicable for the surf lagoon and the Early Childhood Learning Centre (ECL).

To estimate how much traffic the Site contributes to the surrounding road network during the peak hour, we have based our assessment on the following assumptions, which are **similar to that applied to the Stage 1 consent**.

- The surf park in Melbourne, also operated by the Applicant, is open 7 days a week 6am-10pm in the summer and 7am-6pm in the winter. The same opening hours have been assumed for this surf park.

- Though the peak time of the surf park is likely to be over a weekend, for the purpose of a robust assessment we have assumed that it could also occur on a weekday evening peak eg. Friday evening. Accordingly, this assesses a worst-case scenario than what we expect to occur on a normal weekday. We assume only 20% of the surf park peak trips occur during the morning peak hour.
- The surf lagoon has a maximum occupancy of 84 people. We've assumed all visitors arrive by car. There will be visitors not occupying the lagoon that also arrive by car, but with the average car occupancy ranging between 1.2-1.6 people per car, the resulting car trips is assumed to be equivalent to 1 visitor in lagoon = 1 vehicle trip.
- The surf lagoon is expected to have some 45 staff, based on overseas sites. We've assumed 80% of staff travel during peak times and only 25% of the staff trips contribute to the weekday evening peak. This is because of our assumption above for the opening hours and visitors; that it will overlap with the evening peak hour and therefore it is less likely that staff turnover will coincide with the peak hour of the activity. But for a robust assessment we have assumed some turnover could occur, being 25%.
- There is a small component of retail within the Surf Park Lagoon which we expect will be ancillary to the surf park activity itself (eg. sales of surfing accessories), therefore we have accounted for these within the surf lagoon trips.
- The proposed restaurants will support the accommodation and surf park activities, and as such will generally have a low trip rate due to shared trips. We've applied a lower rate than what is specified in the GTIA. Restaurants are not expected to generate traffic in the morning peak hour.
- The nature of a solar farm is unlikely to generate vehicle trips in the peak hour, with peak trips associated with this activity only generated during the construction of the farm. Regular trips would only be by a small number of employees, such as for maintenance and operation, and is assumed to only generate 1 vehicle trip during the peak hours for the all of the separate solar farms.
- For a worst-case scenario we have assumed no reduction in trips via public transport though as part of mitigation, a private shuttle is proposed with coach bus bays provided on Site and upgrades to the existing bus stop infrastructure to improve public transport access to the Site.
- We have assumed no pass-by nor diverted/rerouted trips.

The above is consistent with our approach for Stage 1. As part of this application, the following assumptions are made, which **differs from what our Stage 1 assessment contained**

- because of the larger Village Centre precinct proposed, the different type of accommodation proposed (hotel, additional to the consented cabins), and the new residential areas proposed, we have assumed some linked/multi-visitation trips associated with the activities in this precinct. The primary trip generators to these trips, being the surf park itself and residential, have been assessed as primary trips and have not been applied a linked trip.
- The data centre (consented portion) is similar to a warehouse; covering a large area with a small number of people on site. In the Stage 1 consent, our assessment was based on some 50 people being on site over the whole day (staff and visitors), as understood by the operators of the site,

with 80% of people assumed to arrive/leave during the peak hour, contributing to 40 vph in both peak hours.

- The additional data centre proposed is of smaller scale than the consented Stage 1, about half the building coverage. The number of staff is unknown at this stage.
- We have re-evaluated our trip generation assumptions for the 2 data centres combined using the standard data centre rate in the ITE manual, which is specified to generate 0.05 vph per 100 m^2 GFA in the PM peak. For the combined building coverage of some 42,000 m^2 (including outdoor plants), the peak trips generated by the 2 data centres combined is 21 vph. While this is considerably less than our initial assessment, we have assumed 50 vph in total for a robust assessment, which is sense-checked against the 40-50 car parking spaces provided for each data centre.
- The WTP is expected to be serviced once or twice a week and will not generate traffic during the peak hours.
- We note that our proposed consent condition is based on a traffic volume threshold, hence the traffic effects will be mitigated once it reaches this threshold, regardless of accuracy of trip estimates.

The additional traffic generated by the new activities proposed are summarised in Table 3 below.

Table 3: Peak hour vehicle trip rates of new activities proposed

Proposed Activity	Peak hour trip rates	Source	Linked trip applied
Dwellings	0.9 vph per unit	This is slightly higher than the rates specified in GTIA, which are 0.77 to 0.84 vph per unit for low density residential dwellings. Higher rate is used due to low access to frequent public transport and largely undeveloped surrounding land uses with low walkability	No linked trips applied; assumed as primary generator
Apartment units	0.65 vph per unit	This is lower than the rate for dwellings above as we understand some could be accommodation units	No linked trips applied; assumed as primary generator
Live/work units	0.5 vph per unit	This is lower than the rate for dwellings above due to low commute trips in the peak hour. Some visitor/external staff trips accounted for in the rate	No linked trips applied; assumed as primary generator
Commercial	1.3 vph per 100 m^2 GFA	According to the architectural design report, the commercial spaces are described as 'maker spaces' and smaller vendor outlets. These are likely to have a similar ratio of people	80% linked trips due to mix of land uses in the Village Centre

Proposed Activity	Peak hour trip rates	Source	Linked trip applied
		per area as an office space. ITE – 710 general office = 1.3 vph per 100 m^2 GFA.	
Wellness centre	1.5 vph per 100 m^2 GFA	ITE – 918 hair salon/spa.	80% linked trips due to mix of land uses in the Village Centre
Food market retail	AM peak: 3.2 vph per 100 m^2 GFA PM peak: 9.5 vph per 100 m^2 GFA	ITE - 850 supermarket. This rate is likely to be on the conservative end, as the activity proposed is likely to be similar to a local produce shop rather than a large chain supermarket	70% linked trips due to mix of land uses in the Village Centre and proximity to dwellings in the area
Hyperscale AI data centre	50 vph total	ITE – data centre and based on number of people and car parks	No linked trips applied
Early Childhood Learning Centre	20 people (including staff)	First principles based on the proposed 2 small classrooms and 300 m^2 GFA	50% linked trips due to proximity to dwellings in the area
Light industrial	0.5 vph per 100 m^2 GFA	GTIA for warehousing less than 10,000 m^2 GFA	No linked trips applied
WTP	0	Information provided, estimated to be serviced once or twice a week.	

The proposed activities, associated AM and PM road network peak hour trip rates and linked trips applied are summarised in Table 4 separated by precinct.

Table 4: AM and PM road network peak hour trips

Precinct	Land Use	Proposed	Peak trip rate	peak hour trip (vph)	Linked trips	AM Peak Hour Trips				PM peak hour trip			
						Total trips	Inbound / Outbound Split	Inbound	Outbound	Total trips	Inbound / Outbound Split	Inbound	Outbound
Surf lagoon + Amenity Precinct	Surf lagoon including associated retails	84 Capacity	1 per person	84	0%	17	70% / 30%	12	5	84	20% / 80%	17	67
		45 Staff	0.8 per staff	36	0%	36	80% / 20%	29	7	9	20% / 80%	2	7
	Hotel rooms	81 rooms	0.4 per unit	32	90%	3	50% / 50%	2	2	3	50% / 50%	2	2
	Food and beverages	620 m^2	5 per 100 m^2	31	100%	0	100% / 0%	0	0	0	67% / 33%	0	0
Total for Surf Lagoon and Amenity				**183**		**56**				**96**			
Surf Village Centre Precinct	Commercial Space	1544 m^2	1.3 per 100 m^2	20	80%	4	50% / 50%	2	2	4	50% / 50%	2	2
	Village market	1090 m^2	3.2 per 100 m^2 (AM) 9.5 per 100m^2 (PM)	35	70%	10	59% / 41%	6	4	31	50% / 50%	16	16
	bars and assumed lagoon rest	420 m^2	5 per 100 m^2	21	80%	0	100% / 0%	0	0	4	67% / 33%	3	1
	Apartments	120 units	0.65 per unit	78	0%	78	25% / 75%	20	59	78	62% / 38%	48	30
	Commercial Wellness centre	830 m^2	1.5 per 100m^2	12		2	100% / 0%	2	0	2	50% / 50%	1	1
	Early Childhood	20 children	0.5 per child	10	50%	5	50% / 50%	3	3	5	50% / 50%	3	3
Total for Village Centre				**176**		**100**				**125**			
Accommodation precinct	Villas	57 units	0.4 per unit	23	90%	2	50% / 50%	1	1	2	50% / 50%	1	1
	Clubhouse	974 m^2	2.06 per 100 m^2	20	100%	0	50% / 50%	0	0	0	50% / 50%	0	0
Total for Accommodation Precinct				**43**		**2**				**2**			
Live/Work Precinct	Live & work units	25	0.5 per unit	13	0%	13	72% /28%	9	4	13	43% / 57%	5	7
	Water Treatment Plant (WTP)	N/A	N/A	0		0		0	0	0		0	0
Total for Live/Work Precinct				**13**		**13**				**13**			
Solar farm Precinct	Solar farm	3 Solar Farms	1 for all solar farms	1	0%	1	80% / 20%	1	0	1	20% / 80%	0	1
Data Centre Precinct	Data Centre	2 Data Centres	50 peak hour trips	50	0%	50	55% / 45%	28	23	50	30% / 70%	15	35
Light Industrial (East) Precinct	Industrial	7050 m^2	0.5 per 100 m^2	35	0%	35	77% / 23%	27	8	35	28% / 72%	10	25
Total for solar farms, data centres and Light Industrial Precincts				**86**		**86**				**86**			
Neighbourhood Precinct North west	Residential	82	0.9 per unit	74	0%	74	25% / 75%	18	55	74	62% / 38%	46	28
Neighbourhood Precinct North east	Residential	178	0.9 per unit	160	0%	160	25% / 75%	40	120	160	62% / 38%	99	61
Neighbourhood Precinct South	Residential	81	0.9 per unit	73	0%	73	25% / 75%	18	55	73	62% / 38%	45	28
Total for residential in Neighourhood Precincts				**307**		**307**				**307**			
Total for full buildout of Proposal				**808**		**564**				**629**			

The full build out of Proposal is predicted to generate some 560 vph in the morning peak hour and 630 vph in the evening peak hour.

We focus our assessment of traffic effects on the road network peak, being the morning (AM) and evening (PM) peak hours of Dairy Flat Highway, being 8am-9am and 4pm-5pm. At present, Dairy Flat Highway carries (two-way) in the order of 900 vph and 1,000 in the AM and PM peak hours respectively, with the weekend peak having 65% of the weekday PM peak volume (refer to Section 3.2).

5.2 Trip distribution

The trip distribution during both morning and evening peak hours of the road network is also outlined in the Table 4 above, using an inbound/outbound split provided in the ITE manual.

5.3 Assumed growth and base year

We have taken into account the assumed growth in traffic on Dairy Flat Highway predicted by PPC103 (Section 2.5) which was recently approved and is under appeal until 11 December 2025.

PPC103 includes 2031 and 2038 forecast scenarios and includes modelling of the Dairy Flat Highway/Wilks Road intersection. While this intersection sits 1.5 km north of the Site and has 2 other major intersections in between, Kahikatea Flat Road and Horseshoe Bush Road, which provides access to SH16, Kaukapakapa and Helensville to the west, we have used the predicted volumes on Dairy Flat Highway at Wilks Road intersection to indicate the level of future growth past the Site. This results in a robust and conservative approach to our assessment.

Similarly with the Postman Road/Wilks Road intersection, as assessed as part of PPC103 for the year 2038, the volumes on Postman Road indicate a growth of 20-35% annually, which has been assumed in our modelling. Presently Postman Road carries very low traffic volumes, with a two-way volume of 1,500 vpd recorded (Section 3.2).

Table 5 below outlines the annual growth per direction for the AM and PM peak, calculated from PPC103 2038 volumes and the 2025 counts. We have assumed a percentage growth to background traffic passing the site as outlined in Table 5.

Table 5: Annual growth in PPC103 and assumed growth

		Annual growth calculated between 2025 counts and 2038 PPC103 volumes		Assumed growth for our modelling	
Road name	Peak	Northbound	Southbound	Northbound	Southbound
Dairy Flat Highway	AM Peak	6%	3%	2%	2%
	PM peak	2%	6%	2%	4%
Postman Road	AM Peak	20%	35%	25%	25%
	PM peak	25%	32%	25%	25%

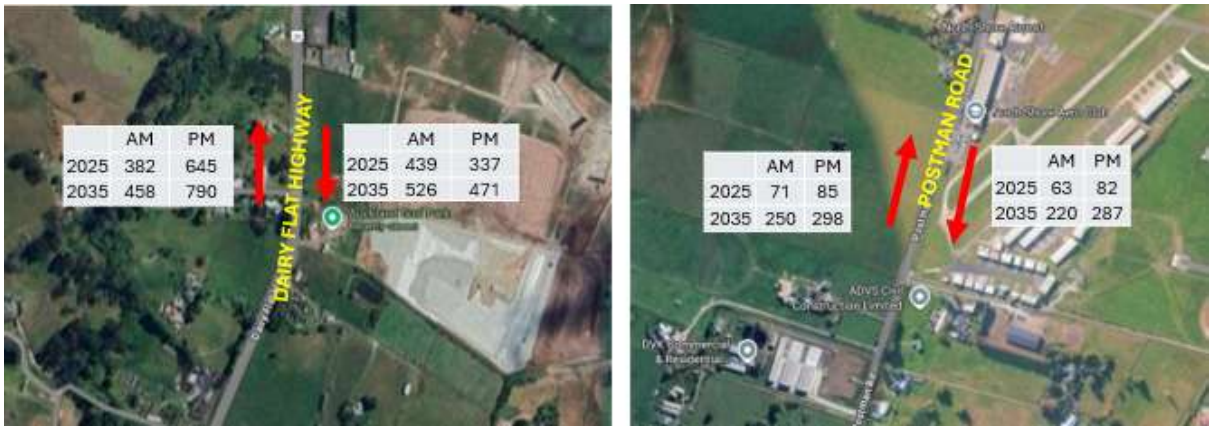
For our traffic assessment, we have assessed a 2035 forecast year, ie. assuming that the full effects of the Proposal will occur in 10 years' time. In relation to PPC103, which considers a 2031 forecast, it has assumed that

- some 37ha of land to be available for development and 960 dwellings in Milldale North
- this is the trigger for the signalisation of Wilks Road/Dairy Flat Highway intersection and Wilks Road/East Coast Road intersection
- Penlink is operational (currently being constructed).

It can be reasonably assumed that the 2031 and 2038 years as part of PPC103 assessment has accounted for a level of development in the area surrounding the Site, of which this Proposal contributes to. Furthermore, it is likely that parts of the Proposal will commence to be operational prior to 2035, where background traffic will be reduced to than assumed in 2035. Accordingly, our traffic assessment is weighted on the conservative side.

The surveyed 2025 and resulting 2035 traffic volumes which we have used as the baseline for our assessment are shown in Figure 25.

Figure 25: AM and PM peak hour traffic volumes on DFH and Postman Road for 2025 and forecasted 2035



5.4 How much traffic can be accommodated solely on Dairy Flat Highway intersection

We have assessed the performance and capacity of the consented (Stage 1) Dairy Flat Highway intersection to determine when a secondary access would be needed, being the connection to Postman Road. We have used the traffic volumes on the new Collector Road as a threshold for the purpose of putting forward a consent condition for ease of monitoring purposes and give flexibility as to the construction staging. We note that the Light Industrial lots are accessed off the Postman Road roundabout and will require the Postman Road roundabout to be constructed regardless.

For the purpose of testing the threshold based on traffic volumes, we have tested the following mix of land uses.

- Because earthworks for the Stage 1 consent have commenced, we have assumed that the proposed activities within the Surf Park Lagoon and Amenity Precinct, the Accommodation

Precinct and the data centres (ie. the activities that were consented in Stage 1, in part) will be built first.

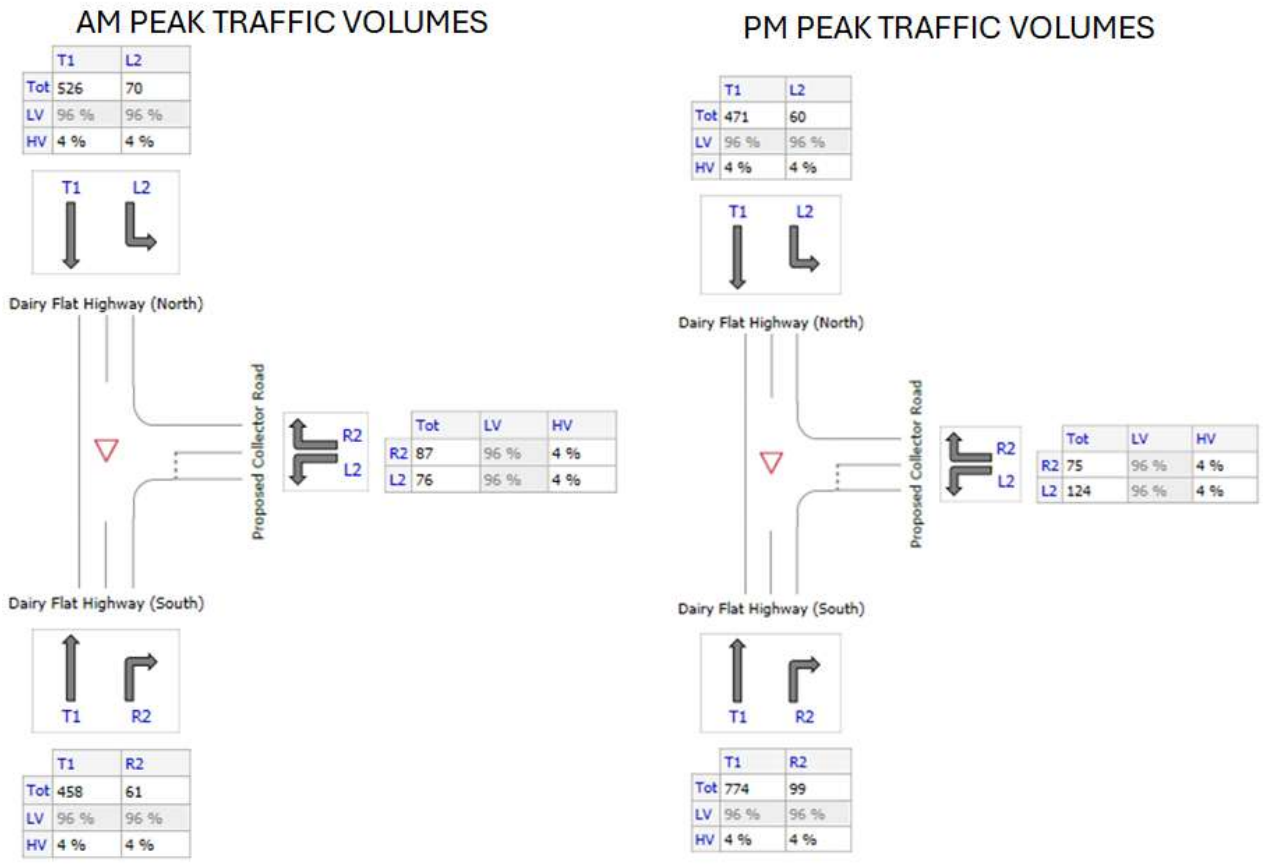
- Within these precincts there are 120 apartment units and we have added on 80 dwellings (totalling 200 residential units) which could represent either the Northwest or South Neighbourhood precincts, each with 82 and 81 dwellings respectively. The resulting peak hour volumes are summarised in Table 6.

Table 6: Peak hour volumes for Scenario 1

	AM Peak			PM Peak		
	Total	**Inbound**	**Outbound**	**Total**	**Inbound**	**Outbound**
Surf lagoon + Amenity Precinct	56	42	14	96	20	76
Surf Village Centre Precinct	100	33	67	125	72	52
Data Centres	50	28	23	50	15	35
Accommodation Precinct	2	1	1	2	1	1
Live/Work Precinct	13	9	4	13	5	7
Neighbourhood Precinct Northwest or South (represents approximately 80 dwellings)	74	18	55	74	46	28
Total	**295**	**131**	**164**	**360**	**159**	**199**

The above peak hour trips have been distributed at the intersection of Dairy Flat Highway according to the northbound/southbound split. For example, if the traffic data indicate 65% of traffic coming from the north on Dairy Flat Highway, we have assumed 65% of the inbound and outbound traffic will be coming and going to the north, for this peak period. The above volumes include 4% heavy vehicles, as was recorded on Dairy Flat Highway in the 2025 counts.

Figure 26: Modelled turning counts AM and PM peak



We have modelled the proposed intersection on Dairy Flat Highway using SIDRA Intersection 9.0 to test how the proposed intersection performs during the morning and evening peak hours. The full SIDRA movement summary for both morning and evening peak hours is included in Appendix B. Table 7 shows the summary of delays (rounded to nearest second), the level of service (LOS) and 95th percentile back of queue for each movement.

Table 7: SIDRA intersection results for morning and evening peak hours

Approach	Movement	AM peak			PM peak		
		Delay (sec)	Level of Service	95th %ile queues (m)	Delay (sec)	Level of Service	95th %ile queues (m)
Dairy Flat Highway South	Through	0	A	0	0	A	0
	Right	8	A	5	8	A	5
Proposed Collector Road	Left	8	A	5	7	A	5
	Right	18	C	10	35	D	10
Dairy Flat Highway North	Left	5	A	0	5	A	0
	Through	0	A	0	0	A	0

As can be seen in Table 7

- the intersection is predicted to perform well with LOS D, which means it has capacity to absorb more traffic and is not expected to be saturated
- the worst performing movement is the right turn out of the Collector Road, with a delay of 35 seconds in the evening peak. However, the 95th percentile queue is only 2 cars in the PM peak. This level of delay is considered acceptable for a give-way controlled intersection, which will not result in unsafe behaviour of motorists.

This scenario includes 295 vph and 360 vph in the morning and evening peak hours, respectively. Beyond this threshold, the Postman Road connection and roundabout needs to be constructed and operational to cater for additional traffic generated by development within the Site.

We note that our modelling scenario includes a mix of land uses and up to 200 dwellings. Each land use will have a different inbound/outbound distributional split which will influence the intersection performance. However for the purpose of putting forward clear thresholds that is easily measurable, and to remain flexible for construction staging, we consider that the threshold we have put forward and the conservative assumptions we have made, have allowed for the effects of these variations.

The peak traffic of a recreational activity, being the surf park, will occur during the weekend. The weekend traffic volumes on Dairy Flat Highway is about 65% of the weekday PM peak volume (refer to Section 3.2). Because of the considerably lower weekend volumes, we consider that the peak time of the surf park will result in no worse effects than the PM peak scenario that we have already modelled.

5.5 How both intersections will perform at full build-out

At full build-out, we assume a 60/40 split between Dairy Flat Highway and Postman Road. This assumption is based on the Dairy Flat Highway being an arterial road, whereas Postman Road is not an arterial and carries significantly lower traffic volumes, but will provide a more direct route depending on where motorists are based in the development or travelling to beyond the Site. Postman Road also provides a connection between the Site, Silverdale and Long Bay, bypassing SH1 and Dairy Flat Highway via East Coast Road.

Table 8 and Table 9 summarise the predicted delays and LOS from SIDRA for the full buildout scenario, for Dairy Flat Highway and Postman Road intersections respectively. The full SIDRA movement summary is included in Appendix B.

Table 8: SIDRA intersection results for morning and evening peak hours (Dairy Flat Highway Intersection)

Approach	Movement	AM peak			PM peak		
		Delay (sec)	Level of Service	95th %ile queues (m)	Delay (sec)	Level of Service	95th %ile queues (m)
Dairy Flat Highway South	Through	0	A	0	0	A	0
	Right	8	A	5	8	A	5
Proposed Collector Road	Left	8	A	5	8	A	5
	Right	19	C	10	34	D	10
Dairy Flat Highway North	Left	5	A	0	5	A	0
	Through	0	A	0	0	A	0

Table 9: SIDRA intersection results for morning and evening peak hours (Postman Road Intersection)

Approach	Movement	AM peak			PM peak		
		Delay (sec)	Level of Service	95th %ile queues (m)	Delay (sec)	Level of Service	95th %ile queues (m)
Postman Road North	Through	4	A	10	4	A	15
	Right	10	A	10	10	A	15
Proposed Collector Road	Left	5	A	5	5	A	5
	Right	11	B	5	11	B	5
Postman Road South	Left	4	A	10	4	A	15
	Through	4	A	10	4	A	15

While both intersections are predicted to operate with LOS A across all movements, the right turn out from the collector road onto Dairy Flat Highway during the PM is predicted to operate at LOS D. Given the conservative assumptions applied in our assessment, we consider the intersection to operate satisfactorily.

5.6 Summary of traffic effects

The Proposal will generate traffic in what is currently a largely undeveloped area. Because of the land uses nearby, the current public transport provision and State Highway connections, we anticipate that there will be a high percentage of trips by private car until neighbouring land uses are developed and public transport frequencies increased. Our modelling has taken this into account by assuming a heavy reliance on private vehicle trips with no reduction to reflect public transport or walking and cycling trips. No pass-by and diverted trips have been assumed, thereby assuming trips are new to the network.

As discussed, the Dairy Flat Highway intersection as consented will be able to cater for the level of traffic anticipated with the Surf Lagoon Precinct, Accommodation Precinct, Surf Village Centre Precinct, Live/Work Precinct, data centres and up to 200 residential dwellings across the whole development with no adverse impacts predicted during the morning and evening peak hours.

The roundabout at Postman Road will be required when either

(a) the East-West Collector Road traffic volume (measured immediately to the east of Dairy Flat Highway) exceeds 300 vph (two-way) in the morning peak hour (between the hours of 7am and 9am) or 360 vph (two-way) in the evening peak hour (between the hours of 4pm and 6pm), or

(b) prior to s224c being issued for the Light Industrial (East) precinct if this occurs ahead of the traffic volume thresholds.

We recommend conditions of consent to this effect.

In the full-buildout scenario, we assume a 60/40 split between Dairy Flat Highway and Postman Road, where we have assessed each intersection can perform acceptably.

We propose no change to the mitigations in the Stage 1 Consent to mitigate traffic effects, being improvements to bus stops on Dairy Flat Highway and a private shuttle service. We note that the Proposal does not rely on these mitigation measures, as the traffic effects can be managed, as demonstrated by the traffic modelling of the intersections.

6 AUP ASSESSMENT

For ease of reference, we have assessed each Precinct separately within the subsequent sections. The Stage 1 Consent lies across 3 separate precincts and have been combined in one section.

Appendix A contains the assessment against the AUP, including PC79. Appendices D to I contains the vehicle tracking figures and key dimensions of transport matters.

The overall Proposal infringes the following AUP standards

- **E27.6.1 Trip generation**
  - The Proposal includes more than 100 dwellings, more than 100 visitor accommodation, and retail exceeding 1,667 m^2 GFA.
- **E27.6.4.1 (3) Vehicle Access Restrictions**
  - A vehicle crossing is proposed on Dairy Flat Highway, an arterial road. This was consented as part of Stage 1 but has been relocated and serves a different use, so has been reassessed for this application.
  - An existing vehicle crossing on Dairy Flat Highway, is proposed to be used by vehicles associated with the water treatment plant, which is proposed to be a left-out exit-only
  - Several private roads/accessways (assessed as vehicle crossings) are within 10 m of the intersection. These are
    - accesses to 2 JOALs within the North-East Neighbourhood Precinct, 3 residential properties within the North-West Neighbourhood Precinct, and 1 residential properties within the South Neighbourhood Precinct,
    - the private service lane to the Light Industrial precinct, which is provided directly from the roundabout on Postman Road
    - a vehicle crossing in the Surf Village Centre Precinct
- **E27.6.4.2 Width and number of vehicle crossings**
  - the private service lane to the Light Industrial Precinct (assessed as a vehicle crossing) creates a vehicle crossing of over 10 m wide, exceeding the permitted 9.0 m maximum width.
  - The separate entry and exit vehicle crossings to the data centre is proposed to be about 3 m apart at the boundary where 6.0 m is the minimum separation distance.

7 SURF LAGOON AND AMENITY, ACCOMODATION AND SURF VILLAGE CENTRE PRECINCTS

The changes within the Surf Lagoon and Amenity Precinct, the Accommodation Precinct, and the Surf Village Centre Precinct are

- 4 additional visitor accommodation units (lodges/hotel accommodation) within the Accommodation Precinct and the Surf Lagoon and Amenity Precinct[3]
- 120 residential units (apartments) within the Surf Village Centre
- an increase of retail and community facilities, including a small village market and an Early Childhood Education Centre (ECE)
- changes to the layout of the parking areas, circulation and access points
- the northern vehicle crossing onto Dairy Flat Highway which was previously consented is now proposed to be relocated further north, connecting to the rest of the car parking area and used by service vehicles only with the design amended accordingly (section 7.1.1).

The changes proposed to the northern vehicle crossing onto Dairy Flat Highway, an arterial road, triggers a Restricted Discretionary activity and has been reassessed. We recommend a condition of consent relating to the limited use of this access to mitigate the effects.

[3] This includes consideration of the Stream Park, which has 20 fewer visitor accommodation units than the consent.

Figure 27: Surf Lagoon and Amenity Precinct, Accommodation Precinct, and Surf Village Centre Precinct

The activities within each precinct are as follows

- The Surf Lagoon and Amenity Precinct provides a lagoon pool and supporting amenities including retail, hotel, and car parking spaces that serve both the Surf Lagoon and Amenities Precinct and the Accommodation Precinct.
- The Accommodation Precinct is proposed to have a members' clubhouse and 60 villas. It is proposed to have a drop-off area outside the clubhouse and parking will be in the main parking area in the Surf Lagoon and Amenity Precinct.
- The Surf Village Centre Precinct is proposed to have 3,054 m^2 GFA of retail and commercial (food and beverage, village market, retail, and small village market), a wellness centre, 120 apartment units, and an Early Childhood Education Centre.

The vehicle tracking for these precincts and visibility plans are included in Appendix D.

7.1 Vehicle crossings and accesses

7.1.1 Access to the Surf Lagoon and Amenities Precinct and Accommodation Precinct

There are 3 vehicle crossings proposed to the main car parking area in these two precincts

- 2 vehicle accesses[4] leading directly into the car parking area via the Collector Road for the Surf Lagoon and Amenities Precinct and the Accommodation Precinct .
- 1 secondary vehicle access onto Dairy Flat Highway at the northern end of the precinct for service vehicles only, while also providing a secondary carpark access (if needed) for the carpark during large events.
    - This vehicle crossing has been designed to the Auckland Transport rural high-speed vehicle crossing standard, with a wider exit splay to cater for larger trucks. The access is wide enough to use as an overflow secondary exit, to relieve traffic off the Collector Road/Dairy Flat Highway intersection during busy periods, if needed. This access will be signposted and gated to discourage the public from using it. We recommend a condition of consent relating to the use of this access (refer to Section 17).
    - A concept of the proposed vehicle crossing with splays to suit the turning path of large vehicles is shown in Appendix D.

All vehicle crossing widths onto the Collector Road comply with the standards in E27.

In terms of the AUP, Dairy Flat Highway is identified as an arterial road, therefore the Proposal triggers a Restricted Discretionary activity status for the proposed vehicle crossing. While the access is already part of the Stage 1 Consent there are changes to the proposed use and location of this vehicle crossing.

The vehicle access infringement is reasonable because

- visibility requirements can be met, refer to Appendix D for a plan showing that the minimum Safe Intersection Sight Distance (SISD) requirement under Austroads of 181 m based on a speed of 80 km/h can be achieved
- there is adequate spacing to intersections and other accesses, with the nearest access being more than 20 m to the north
- there are no pedestrian connections or connections to bus stops across this access, with these connections to the Site provided at and south of the Collector Road intersection with Dairy Flat Highway
- this access is proposed as a secondary access to the main car park, mainly used by servicing vehicles, as such will not have a lot of traffic. This is proposed to minimise service vehicles mixing with customer traffic in the main car park. We recommend a condition of consent relating to the use of this access (refer to Section 17).

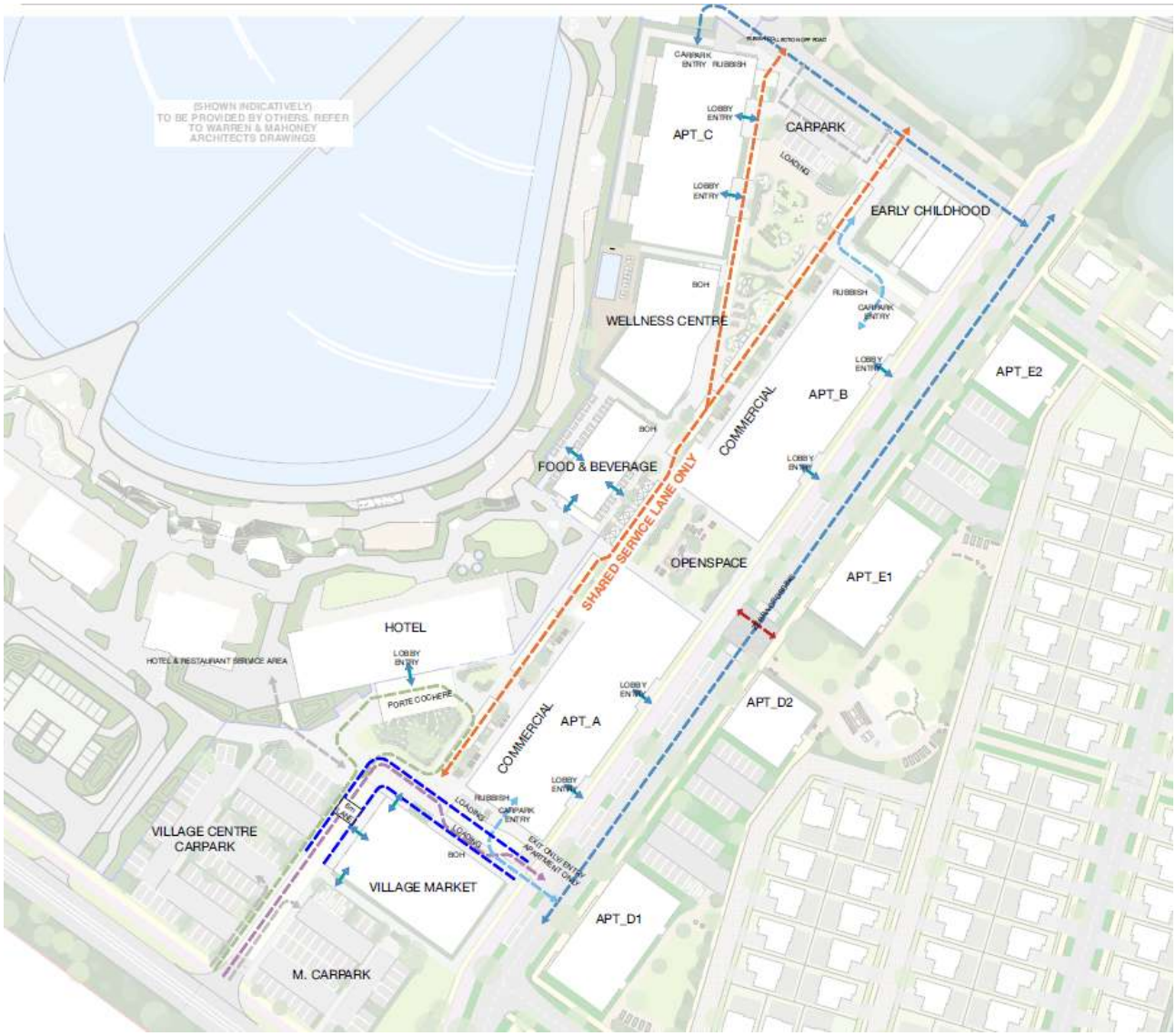
[4] A third access onto the Collector Road to the car parking area serves the Surf Village Centre Precinct and the hotel within the Surf Lagoon and Amenities Precinct

The remaining accesses within the precincts are all consistent with the Stage 1 Consent and will comply with AUP requirements, these include

- The intersection between Dairy Flat Highway and the Collector Road, which is assessed in Section 3.6 and has not significantly changed from the Stage 1 Consent
- The accesses between the car parking areas and the Collector Road, which comply with AUP standards, including spacing, widths, and gradients
- Access for coach buses through the car park to the drop-off area will be retained, this will be a one-way loop
- The accessway within the Accommodation Precinct will have two-way width and leads to the drop-off area outside the clubhouse. The accessway leading to each villa will only be for buggies, and no vehicles, with customer vehicles parking in the main parking area in the Surf Lagoon and Amenity Precinct. There is provision for fire truck access through this precinct.

7.1.2 Access to the Surf Village Centre Precinct

Figure 28: Village Centre access arrangement



Vehicle access to the Village Centre Precinct and the hotel within the Surf Lagoon Precinct is identified by the dashed lines in Figure 28

- a two-way car park access provided off the east-west Collector Road (Figure 27). A speed hump is proposed to slow down exit speeds prior to adjoining the Collector Road
- an access from the north-south main Spine Road, in between the village market and the apartment A building. This is intended as two-way access to the apartment car park only and allows exit from the village centre car park.
- a private road at the northernmost end of the precinct, leading to a car parking area, apartments B and C and the staff parking at the BOH surf park loading area.

The accesses from the Village Centre Precinct to the Collector Road and the Spine Road have been designed to comply with the AUP standards at a maximum of 6.0 m wide, more than 10 m from intersections, and more than 6 m separation between vehicle crossings. . An exception to this is the private road at the northernmost end of the precinct connects with the Spine Road less than 10m from the local road intersection serving the Neighbourhood Precinct (south). The design of all accesses will be confirmed at Engineering Approval, where a focus will be to ensure safe operation between vehicle and footpath/cycle path users

The vehicle tracking for this precinct and visibility plans are included in Appendix G.

7.2 Parking provision and layout

The Stage 1 Consent included 381 car parking spaces for the surf park and ancillary activities. No minimum nor maximum parking rates apply to the proposed activities.

The Proposal includes the following car parking provision.

Table 10: Surf lagoon and amenities, Accommodation, and Surf Village centre precincts car parking provision

Location	No. of spaces (total, including accessible)	No. of accessible spaces
Main surf park car park (excluding accommodation)	157 + 40 overflow	7
Clubhouse and accommodation	38	-
At the rear of the surf park, for use by staff	56	-
Village Centre and the small village market	115	3
Car park on the northernmost private road, for use by the ECL and the public	16	2
Apartment buildings	120	10 (1 in each of building A and B, 4 in building C, 2 adjacent to each buildings D and E)
TOTAL	502+ 40 overflow	22

All car parking spaces will be designed to comply with dimensions suitable for casual users (if used by the public) or regular users where allocated, such as apartments and staff parking.

Accessible car parking for non-residential land uses has been calculated as per PC79 requirements using the theoretical parking demand guideline in Appendix 23 contained in PC79, and the accessible parking requirement based on the greater of the theoretical number vs proposed total number.

This calculation for the 3 precincts are outlined in Table 11.

Table 11: Theoretical parking demand to calculate accessible parking requirement as per PC79 Appendix 23

PC79 Appendix 23 Parking Demand		**Surf Lagoon Precinct**		**Accommodation Precinct**		**Village Centre Precinct**	
		Proposed	Theoretical parking	Proposed	Theoretical parking	Proposed	Theoretical parking
Visitor accommodation	1 per unit	81 hotel rooms	81	57 villas	57	0	0
Commercial services	1 per 25 m^2 GFA	-	-	-	-	1,544 m^2 multifunction building	61.8
Retail (all other including food and beverage)	1 per 25 m^2 GFA	875 m^2	35	-	-	1,510 m^2 village market	60.4
Care centre	0.10 per child plus 0.5 per FTE employee	-	-	-	-	Assumed 20 people (15 children and 5 staff)	4
Healthcare facility	1 per 20 m^2 GFA	-	-	-	-	830 m^2 wellness centre	41.5
Land used for organised sport and recreation	12.5 per ha	22,000 m^2 lagoon and 2,490 m^2 of amenities	30.6	974 m^2 clubrooms	1.2		0.0
Total theoretical parking demand		**-**	**147**	**-**	**58**	**-**	**168**
Total car parking spaces proposed		**213**		**38**		**131**	
Accessible parking required		5		3		4	
Accessible parking proposed		7 in main surf park car park				5 in market and northern car park area	

Accessible parking is provided at a total rate (12 spaces) compliant with the requirements in PC79 and distributed throughout the different car parking areas.

PC79 requires all new semi-detached dwellings (ie. the proposed apartments and terrace houses) that provide covered car parking to enable provision for Electric Vehicle (EV) Supply Equipment. The apartments within the Surf Village Centre Precinct will have covered parking to comply with the PC79 EV requirement.

Furthermore 12 car parking spaces within the main surf park car park will be for EV charging that can be used by the public.

7.3 Loading and servicing

The Stage 1 Consent included 6 loading spaces associated with the surf park and ancillary activities. These are proposed to be retained with changes to some of the locations.

Table 12: Surf Lagoon and Amenities Precinct, Accommodation Precinct, and Surf Village Centre Precinct AUP loading requirements

AUP activity	Minimum rate	Proposal	Loading requirement
(T116) all other activities where located in rural zones	No loading required	4 additional visitor accommodation units 120 additional residential units (apartments) 404m^2 additional commercial/retail 843 m^2 additional clubrooms 898 m^2 additional wellness Centre 300 m^2 ECL	None

Within the Surf Lagoon and Accommodation Precincts, the loading spaces now proposed include

- a servicing area in the Accommodation Precinct next to the clubhouse
- 4 spaces within the main car park, nearest to the ticketing building, suitable for courier vans. These will be at least 6.4 m long and 3.5 m wide to comply with small loading space dimensions in PC79
- a shared servicing area for the hotel and restaurant, accessed through the main car park

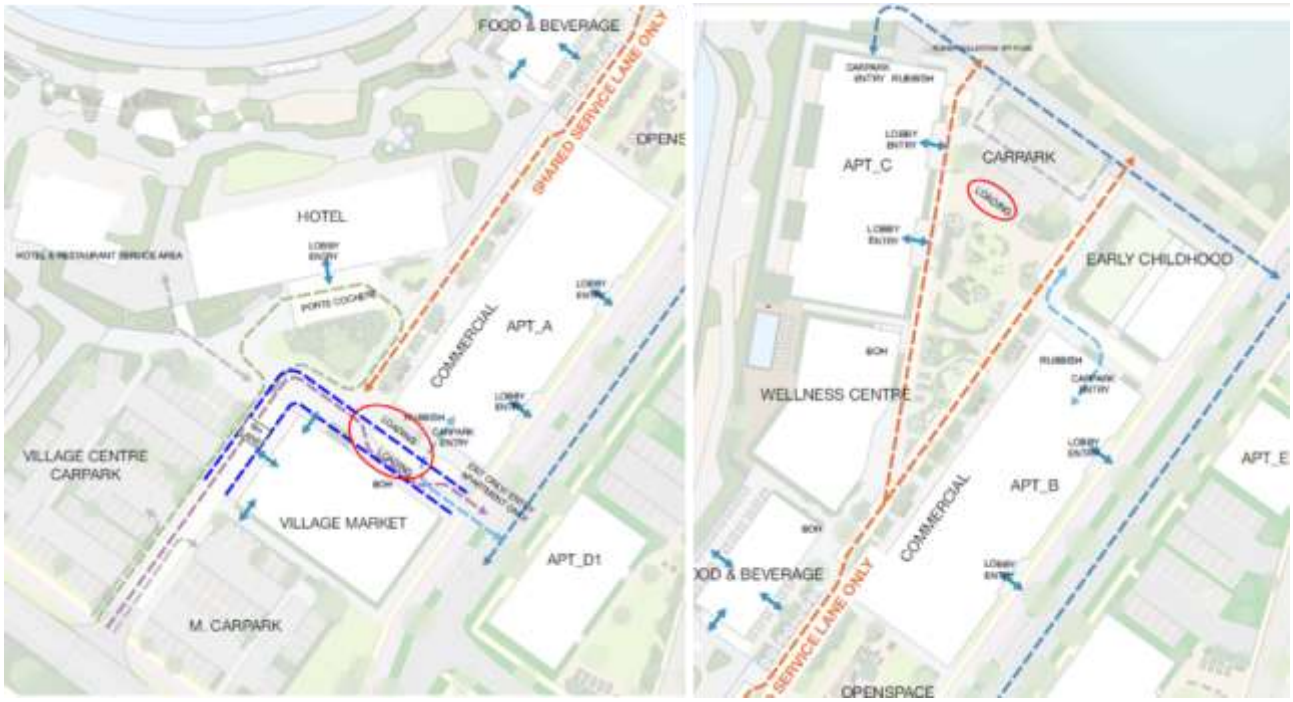
Within the Village Centre Precinct, the loading spaces proposed are

- 1 loading bay at the rear of the village market. A new condition is proposed to restrict use of this loading bay by a truck no longer than a 12.6 m long because of the small size of the village market and the limited size of the circulating.
- 1 loading bay to the south of apartment block A
- 1 loading space adjacent to the northernmost car park
- Each apartment block will have rubbish storage on the ground floor, however no trucks are expected to enter the building; they would be able to collect the rubbish either from the laneway or the loading space in the car park. We recommend a condition of consent requiring the apartment blocks to have a certified Waste Management Plan to manage rubbish collection.

- Furthermore, the shared service lane and the hotel porte cochere provides suitable informal drop-off areas.

The above complies with the minimum loading spaces required. The formalised loading bays in this precinct are identified in Figure 29 below.

Figure 29: Dedicated loading spaces within the Village Centre Precinct (circled red)



7.4 Bicycle parking provision

The AUP specifies minimum bicycle parking to provide for visitors and long-stay. The bicycling parking requirements for the additional activities beyond what is consented (ie the additional 24 visitor accommodation units, 120 residential units, 404 m^2 retail/commercial, 843 m^2 clubrooms, 898.7 m^2 wellness centre, and 300 m^2 ECL) is outlined in Table 13.

Table 13: Surf Lagoon and Amenities Precinct, Accommodation Precinct, and Surf Village Centre Precinct Bicycle parking

AUP activity	Proposal	Visitor minimum rate	Long-stay minimum rate	Minimum required visitor spaces	Minimum required long-stay spaces
(T81) Residential PC79	72 apartments with covered car parking	1 per 20 dwellings	1 per dwelling without a garage or covered parking	6	0
	48 apartments with uncovered car parking				48
(T82) Visitor accommodation and boarding houses	4 units additional to consented	1 space + 1 space per 20 rooms/beds	1 per 10 FTE employees	1	0
(T88) Retail F&B - greater than 350m^2 GFA	620m^2 (bar and lagoon restaurant in Surf Lagoon Precinct)	1 per 350m^2 GFA	1 per 300m^2 GFA	2	2
	420m^2 (in Village Centre)			1	1
(T89) Retail Other - up to 500m^2 GFA	255m^2 retail in surf lagoon precinct	Nil required	1 per 300m^2 GFA of office	0	0
(T90) Retail Other - greater than 500m^2 GFA up to 5000m^2 GFA	1090 m^2 market	1 per 500m^2 GFA	1 per 300m^2 GFA of office	2	0
	1,544 m^2 commercial			3	0
	830 m^2 wellness centre			2	0
(T93) care centres	300m^2 ECL	1 space plus 1 space per 50 people to be accommodated	1 space per 10 FTE employees	1	1
(T103) Organised sport and recreation	2490m^2 surf park 974m^2 clubrooms	3 per hectare distributed in groups of 3-5 racks	1 per hectare	1	0
			TOTAL required	19	52
				71	
			Total proposed	120 for residential and 91 distributed across the 3 precincts	

The Stage 1 Consent had an oversupply of bicycle parking spaces, where 68 spaces were proposed[5] and the requirement was 35 spaces (17 for visitors and 18 long-stay spaces) for the surf park and ancillary activities. This oversupply of 33 bicycle parking spaces is anticipated to be sufficient to cater for the additional requirements resulting from the increase of consented activities in these precincts.

A total of 211 bicycle racks is proposed, with

- 17 bicycle racks within the Surf Village Centre, with some indoors to meet the requirements of staff bicycle parking
- 120 bicycle racks within the Surf Village Centre residential units, complying the AUP requirements to provide for dwellings at a rate of 1 per apartment unit
- 20 covered bicycle racks for Surf Lagoon staff
- 30 bicycle racks near the Surf Lagoon ticketing and retail buildings
- 20 bicycle racks near the hotel and bar
- 4 bicycle rack outside the clubhouse within the Accommodation Precinct, including 2 indoors for staff

7.5 End of trip facilities

End-of-trip facilities are required for offices, educational facilities and hospitals. While the offices in this precinct are not standalone; they are ancillary to the recreational activity, there are end-of-trip facilities available for staff to use within the surf park.

[5] 68 bicycle parks were proposed within the surf park area, with an additional 7 at the data centre. Therefore, a total of 75 were consented.

8 LIVE/WORK PRECINCT

The Live/Work Precinct is a new addition from the Stage 1 Consented (Section 2.1). Within this precinct, it is proposed to have 25 live/work units and a water and wastewater treatment plant (WTP). Access is via a private industrial road connecting to the Collector Road with an exit-only for the WTP onto Dairy Flat Highway via the existing vehicle crossing. This private industrial road also provides access to the southern solar farm via an easement through one of the Live-Work car park areas.

The vehicle tracking for this precinct and visibility plans are included in Appendix E.

Figure 30: Live/Work Precinct

8.1 Vehicle accesses

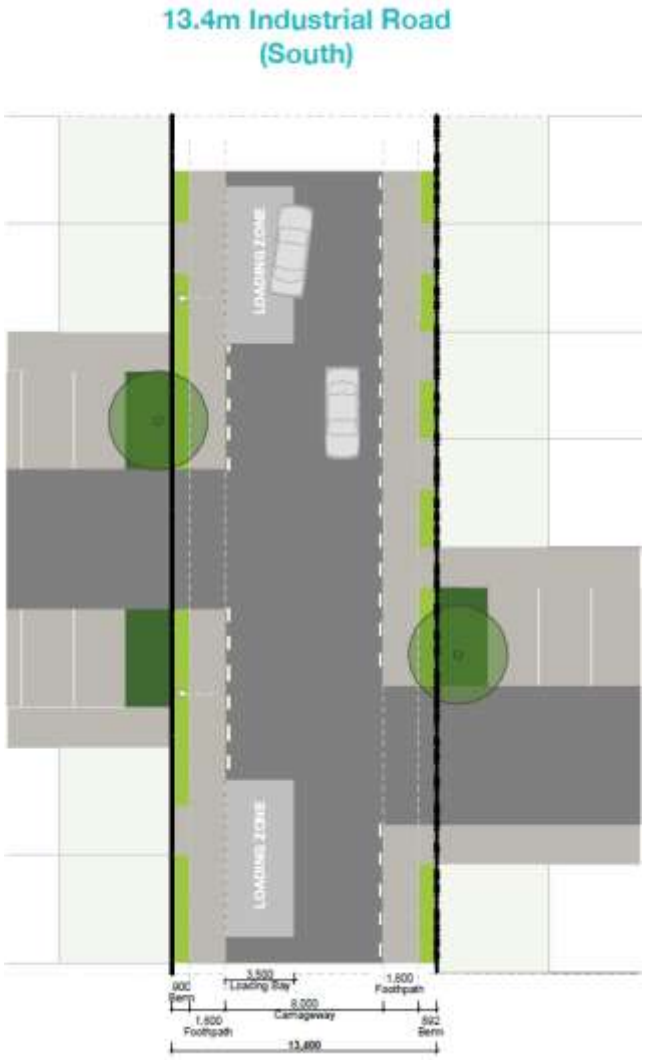
The Live/Work Precinct will be accessed from the private industrial road T-intersection with the Collector Road. The intersection has been designed to suit the tracking of the largest vehicle, being a 19 m long truck and trailer used by the WTP (see Appendix E).

The vehicle crossing onto the Collector Road is

- a maximum of 9.0 m wide, as is permitted for vehicle crossings serving heavy vehicles in rural zones
- more than 10 m from intersections
- more than 2 m separation from neighbouring vehicle crossings.

The cross section of this private road is shown in Figure 31, comprising of an 8 m wide carriageway, 1.8 m wide footpaths on both sides and space for kerbside loading zones (indicatively shown in Figure 31).

Figure 31: Industrial private road cross section



The private road also provides access to the solar farm via an easement through the south-eastern Live-Work car park areas.

Four accesses are proposed off the private road serving car parking areas belonging to the adjacent Live/Work units and an access at the southernmost end for the WTP.

The property has an existing vehicle crossing onto Dairy Flat Highway connecting to the south-west corner of the property, which will be used by the Proposal as a left turn exit-only access. We propose a condition of consent to signpost this restriction.

The vehicle crossing onto Dairy Flat Highway has sufficient SISD, with over 181 m sight distance to the north (the minimum SISD requirement for 80 km/h speeds). This visibility diagram is shown in Appendix E.

8.2 Parking provision and layout

According to the AUP, no minimum or maximum parking rates apply. On-site parking will be provided within the Live/Work precinct and designed to comply with AUP requirements. No dedicated parking spaces are provided for the WTP as there is ample space within this lot for informal parking.

Table 14: Live/work precinct car parking provision

Location	No. of spaces (total, including accessible)	No. of accessible spaces
Live/work units	67	6

No accessible parking is required for the proposed activities in this rural zone. Notwithstanding that, for the total of 67 car parking spaces in this precinct, 6 accessible car parking spaces are proposed.

8.3 Loading and servicing

No loading spaces are required under E27 for the Live/Work component. Notwithstanding that 2 loading bays are proposed on the private road to service the live/work units.

The WTP has space in its lot to accommodate its largest vehicle to undertake its loading. Refer to Appendix E for the vehicle tracking plans.

8.4 Bicycle parking provision

The AUP specifies minimum bicycle parking for visitors and long-stay. This is outlined in Table 15.

Table 15: Live/Work Precinct Bicycle parking

AUP activity	Proposal	Visitor minimum rate	Long-stay minimum rate	Minimum required visitor spaces	Minimum required long-stay spaces
(T81) PC79	25 dwellings	1 per 20 dwellings	1 per dwelling without a garage	1	25
			TOTAL required	1	25

The Live/Work units are proposed to have a secure area for bicycle storage for both visitors and residents. The proposed bicycle parking provision meets the minimum AUP requirements.

9 NEIGHBOURHOOD PRECINCT (NORTH-WEST)

The Neighbourhood Precinct (North-West) is a new addition from the Stage 1 Consent (Section 2.1) and is proposed to have 82 single dwellings accessed from local roads to be vested with 2 private lanes proposed.

The local roads will be designed for a 30km/h speed environment, speed calming devices have been indicated and will be confirmed as part of the subsequent Engineering Approval stage.

This precinct technically has an existing vehicle access from Lascelles Drive. The connection however is proposed to be closed, with the new local road terminating at a cul-de-sac head. The layout however does not preclude a future connection north should adjacent properties to the north be developed.

The vehicle tracking for this precinct and visibility plans are included in Appendix F.

Figure 32: Neighbourhood Precinct (North-West)

9.1 Vehicle crossings and accesses

A local road runs through the precinct terminating at a cul-de-sac head and is proposed to be vested (refer to Section 4.5). As mentioned previously, while this precinct technically has an existing vehicle access from Lascelles Drive, it does not rely on this and is proposed to terminate at a cul-de-sac head instead. This does not preclude a future connection north should adjacent properties to the north be developed.

Three vehicle crossings at the top of the northern T-intersection are situated within 10 m of this intersection, thus infringing the AUP minimum setback distance. Given the design of the street and focus on managing speeds, we consider this infringement to be acceptable from a safety and operational perspective since

- it only affects a single vehicle crossing to one lot each which is expected to have very low traffic volumes at peak
- the intersection is a local to local road intersection with the north-west end being a cul-de-sac, and is not expected to carry high traffic volumes
- sightlines can be met from the vehicle crossing to the intersection, as such inter-visibility between drivers can be achieved.

Vehicle crossings will comply with all other AUP vehicle crossing and access requirements being

- one vehicle crossings per individual lot
- width of vehicle crossings are a minimum of 3.0 m for single vehicle crossings and maximum 6.0 m for the JOALs
- vehicle crossings are separated 2 m apart from adjacent lots' vehicle crossings.

9.2 Parking provision and layout

According to the AUP, no minimum or maximum parking rates apply. The parking provided within this precinct includes a car parking space for each unit located within each lot and on-street parking spaces within the vested local road. All on-site car parking spaces will be designed to comply with E27 standards.

No accessible parking is required for residential activities in this rural zone. Notwithstanding that, each driveway or garage has been designed to accommodate a 3.5 m by 5.0 m long car parking space, compliant with the standards for accessible parking. Accessible parking requirements set out in PC79 are therefore achieved.

PC79 requires all new semi-detached dwellings that provide covered car parking to enable provision for EV Supply Equipment. All of the dwellings within this precinct are detached therefore PC79 EV charging standard does not apply.

9.3 Loading and servicing

According to the E27 (T116), no minimum loading is required. No dedicated on-street loading spaces are proposed. Rubbish will be collected via public kerbside collection. The cul-de-sac JOAL will not require truck access because rubbish collection will be at the end of the JOALs at the local road.

9.4 Bicycle parking provision

The AUP specifies minimum bicycle parking to provide for visitors and long-stay. This is outlined in Table 16.

Table 16: Neighbourhood Precinct (North-West) Bicycle parking

AUP activity	Proposal	Visitor minimum rate	Long-stay minimum rate	Minimum required visitor spaces	Minimum required long-stay spaces
(T81) PC79	82 dwellings	1 per 20 dwellings	1 per dwelling without a garage or covered parking	4	None
			TOTAL required	4	0

Each dwelling will have a garage or secure space sheltered from the weather that can store bicycles securely. Visitors arriving by bicycle would be able to store their bicycles within each individual dwelling. The proposed bicycle parking provision meets the minimum AUP requirements.

10 NEIGHBOURHOOD PRECINCT (NORTH-EAST)

The Neighbourhood Precinct (North-East) is a new addition from the Stage 1 Consent (Section 2.1).

The Neighbourhood Precinct (North-East) is proposed to have 178 dwellings; a mix of single dwellings and duplex each with their own garage or car parking space.

There is a vested road proposed running north-south terminating at roundabouts at both ends. This vested road will be designed for a 30km/h speed environment, speed calming devices have been indicated in the form of compact roundabouts and speed humps/tables and the detailed design of these will be confirmed as part of the subsequent Engineering Approval stage.

The 2 vehicle crossings for the private road onto the roundabout on the vested road technically does not comply with the E27 requirement, being less than a 10 m intersection setback distance. We consider that this is a technical infringement, as it will function as an intersecting leg at the roundabout, with materiality changes to delineate public and private ownership.

The vehicle tracking for this precinct and visibility plans are included in Appendix F.

Figure 33: Neighbourhood Precinct (North-East)

10.1 Vehicle crossings and accesses

A local road runs north-south through the precinct terminating at a roundabout and is proposed to be vested (refer to Section 4.5). The rest of the precinct is accessed via a private road or JOAL with 5.5 m wide carriageway with a 1.4 m wide footpath on one side.

A total of 5 vehicle crossings for the private roads are proposed on the spine road, 2 of which are directly onto a roundabout which have been designed to be compact with a mountable central island.

The 2 vehicle crossings onto the roundabouts do not technically comply with the E27 requirement, being less than the 10 m intersection setback distance. We consider that this is a technical infringement, as it will function as an intersecting leg at the roundabout.

The vehicle crossings onto the spine road will comply with all E27 vehicle crossing standards being

- widths are a minimum of 3.0 m for single vehicle crossings and maximum 6.0 m for the private roads
- one vehicle crossing per individual lot
- separated by at least 2 m from adjacent lots' vehicle crossings.

A series of different pavement texturing are proposed every 20-30 m spacing and on every intersection on all private roads, as speed calming devices.

10.2 Parking provision and layout

According to the AUP, no minimum or maximum parking rates apply.

The parking provided within this precinct includes a car parking space for each unit located either in a garage or at-grade car parking within the JOAL, which would be allocated to individual units. All on-site car parking spaces will be designed to comply with E27 standards.

No accessible parking is required for residential activities in this rural zone. Notwithstanding that, each driveway fronting individual units or garage have been designed to accommodate a minimum 3.5 m by 5.0 m long car parking space, compliant with the standards for accessible parking.

PC79 requires all new semi-detached or terrace dwellings that provide covered car parking to enable provision for Electric Vehicle Supply Equipment. Each garage for semi-detached or terrace dwellings will be future-proofed for EV charging.

10.3 Loading and servicing

According to the E27 (T116), no minimum loading is required. No dedicated on-street loading spaces are proposed. Rubbish will be collected either via public kerbside collection or private collection from the JOALs. The cul-de-sac JOALs have been provided a turning head for trucks to turn around.

- The southernmost JOAL will have a turning head within the adjacent wastewater treatment lot, accessed via easement.

- One of the cul-de-sac JOALs will not have a turning head. This section of JOAL only serves 4 dwellings and rubbish collection for these units can be achieved on-street, which is only 20 m from the endmost unit and is considered a short and acceptable distance to wheel bins.

10.4 Bicycle parking provision

The AUP specifies minimum bicycle parking to provide for visitors and long-stay. This is outlined in Table 17.

There are 29 dwellings without a garage which will have a shed in each lot that can store bicycles. Visitors arriving by bicycle would be able to store their bicycles within each individual lot/dwelling. The proposed bicycle parking provision meets the minimum AUP requirements.

Table 17: Neighbourhood Precinct (North-East) Bicycle parking

AUP activity	Proposal	Visitor minimum rate	Long-stay minimum rate	Minimum required visitor spaces	Minimum required long-stay spaces
(T81) PC79	178 dwellings, 29 without garages	1 per 20 dwellings	1 per dwelling without a garage	9	29
			TOTAL required	9	29

11 NEIGHBOURHOOD PRECINCT (SOUTH)

The Neighbourhood Precinct (South) is a new addition from the Stage 1 Consent (Section 2.1).

The Neighbourhood Precinct (South) is proposed to have 81 single dwellings with a loop road to be vested and a series of JOALs and individual vehicle crossings accessed from the vested local road loop.

The vested local road will be designed for a 30km/h speed environment, speed calming devices have been indicated and will be confirmed as part of the subsequent Engineering Approval stage.

The vehicle tracking for this precinct and visibility plans are included in Appendix G. We note that the required sightline at the spine road/ Collector Road intersection partially crosses over the property boundaries of some of the southernmost lots bordering the Collector Road. A consent condition is proposed for these affected lots to have fencing/vegetation of no higher than 900 mm, in order to achieve the required sightlines.

Figure 34: Neighbourhood Precinct (South)

11.1 Vehicle crossings and accesses

A local road provides a loop through the precinct connecting to the spine road at two give-way controlled intersections. The loop road is proposed to be vested (refer to Section 4.5). The precinct also includes JOALs (refer to Section 4.5) and vehicle crossings to individual lots. No vehicle crossings are proposed from the Collector Road nor from the local spine road.

One vehicle crossings to a corner lot is situated within 10 m of an intersection, thus infringing the AUP minimum setback distance. We consider this infringement to be acceptable from a safety and operational perspective since

- it only affects a single vehicle crossing to one lot which is expected to have very low traffic volumes at peak
- the intersection is a local to local road intersection and is not expected to carry high traffic volumes at peak
- sightlines can be met from the vehicle crossing to the intersection, as such inter-visibility between drivers can be achieved.

Vehicle crossings will comply with all other AUP vehicle crossing and access requirements being

- widths are a minimum of 3.0 m for single vehicle crossings and maximum 6.0 m for the private roads
- One vehicle crossing per individual lot
- separated by at least 2 m from adjacent lots' vehicle crossings.

11.2 Parking provision and layout

According to the AUP, no minimum or maximum parking rates apply.

The parking provided within the Neighbourhood Precinct (South) includes a car parking space for each unit located within each lot and on-street parking spaces within the vested local road. All on-site car parking spaces will be designed to comply with E27 standards.

No accessible parking is required for residential activities in this rural zone. Notwithstanding that, each driveway or garage has been designed to accommodate a 3.5 m by 5.0 m long car parking space, compliant with the standards for accessible parking.

PC79 requires all new semi-detached or terrace dwellings that provide covered car parking to enable provision for Electric Vehicle Supply Equipment. Each garage for semi-detached or terrace dwellings will be future-proofed for EV charging.

11.3 Loading and servicing

According to the E27 (T116), there are no loading spaces required. No dedicated on-street loading spaces are proposed. Public rubbish collection is expected to take place within the traffic lanes with bins located within the berms, as is standard practice on local roads within residential neighbourhoods. Rubbish collection can also be undertaken from the JOALs. We provide vehicle tracking using Auckland

Transport's 10.3 m long truck to represent the largest rubbish truck used for public collection, this is shown in Appendix G.

11.4 Bicycle parking provision

The AUP specifies minimum bicycle parking for visitors and long-stay, this is outlined in Table 18.

Table 18: Neighbourhood Precinct (South) Bicycle parking

AUP activity	Proposal	Visitor minimum rate	Long-stay minimum rate	Minimum required visitor spaces	Minimum required long-stay spaces
(T81) PC79	81 dwellings	1 per 20 dwellings	1 per dwelling without a garage	4	None (all dwellings will have a garage)
			TOTAL required	4	0

Each dwelling will have a garage that can store bicycles securely. Visitors arriving by bicycle would be able to store their bicycles within each individual lot/dwelling. The proposed bicycle parking provision meets the minimum AUP requirements.

12 SOLAR FARMS

The Solar Farm Precinct has been revised from the Stage 1 Consent (Section 2.1), with an 8.72 ha solar farm proposed, an increase of 0.92 ha from the 7.8 ha already consented. The solar farm has also been split into 3 separate areas.

The proposed solar farms fall within the Notice of Requirement land under NOR 1 for a RTC (refer to Section 2.3) and as such will require approval from Waka Kotahi.

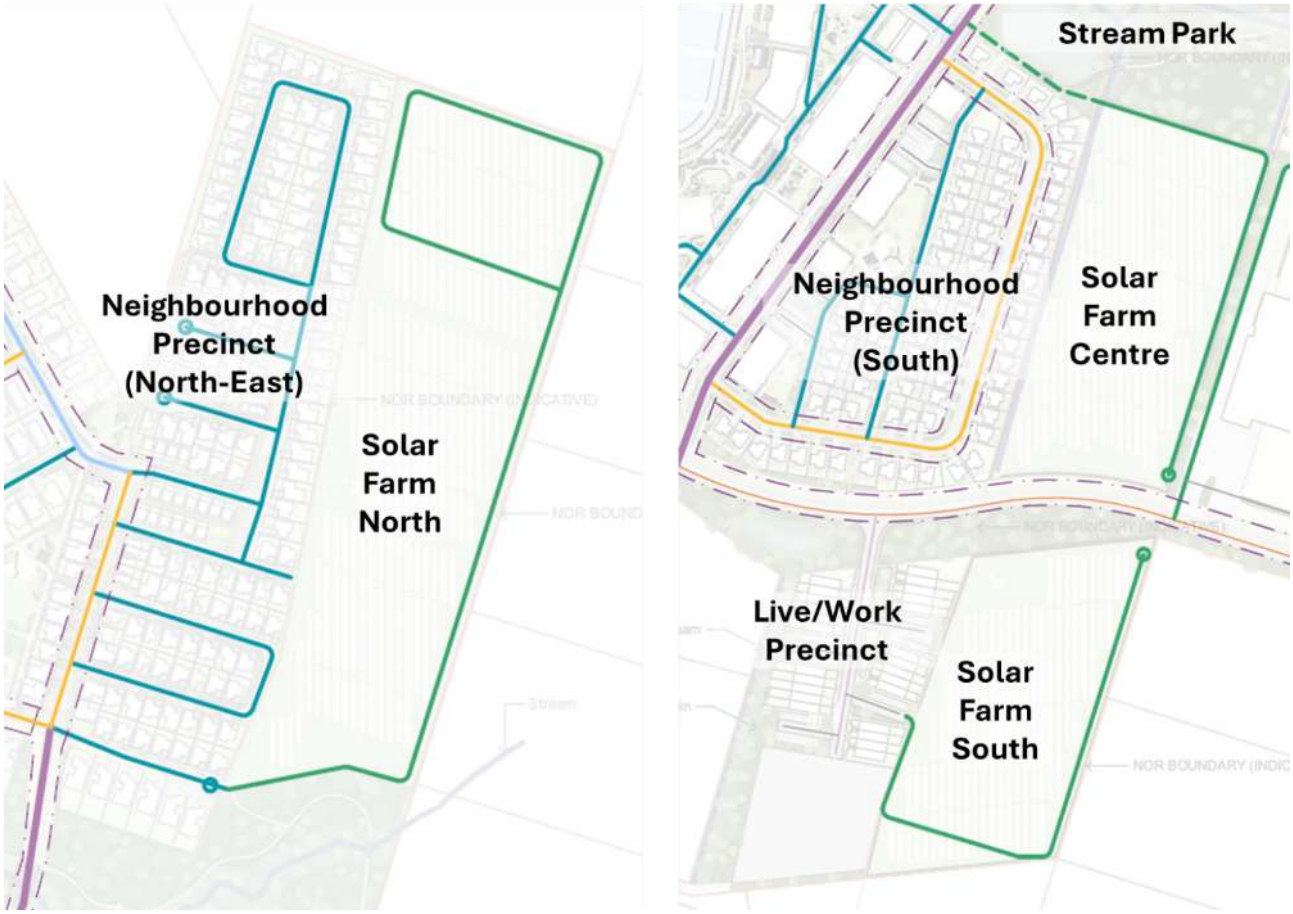
12.1 Vehicle crossings and accesses

The solar farms are split into 3 areas, each with their own separate access

- Solar Farm North has access via easement from a private road within the Neighbourhood Precinct (North-East)
- Solar Farm Centre has an access from the Stream Park walkway. The walkway will be designed to accommodate the infrequent Solar Farm vehicles and allow access via removable bollards
- Solar Farm South has an access via easement from the private industrial road within the Live/Work Precinct.

The vehicle crossings will comply with AUP requirements, being a maximum of 3.5 m wide, located more than 10 m from intersections, and more than 2 m separation from adjacent sites.

Figure 35: Solar Farm accesses



12.2 Parking provision and layout

According to the AUP, no minimum or maximum parking rates apply.

No parking demand is expected for the solar farms because the only vehicles accessing the solar farms will be maintenance vehicles. Traffic generation is expected to be low enough that should maintenance vehicles need to park, they will be able to do so safely within the maintenance tracks without disrupting the operation of the solar farms.

12.3 Loading and servicing

According to the AUP (T116), no minimum loading is required.

Loading and servicing will be provided through use of the maintenance tracks, as loading will only be required as part of maintenance activities. For the most part, the vehicles accessing the solar farm will be utes and the largest vehicle that will need to access the site is a HIAB of similar size to a 10.3 m truck, there is plenty of manoeuvring space in each solar farm for these vehicles.

12.4 Bicycle parking provision

No bicycle parking is required nor provided for the solar farms.

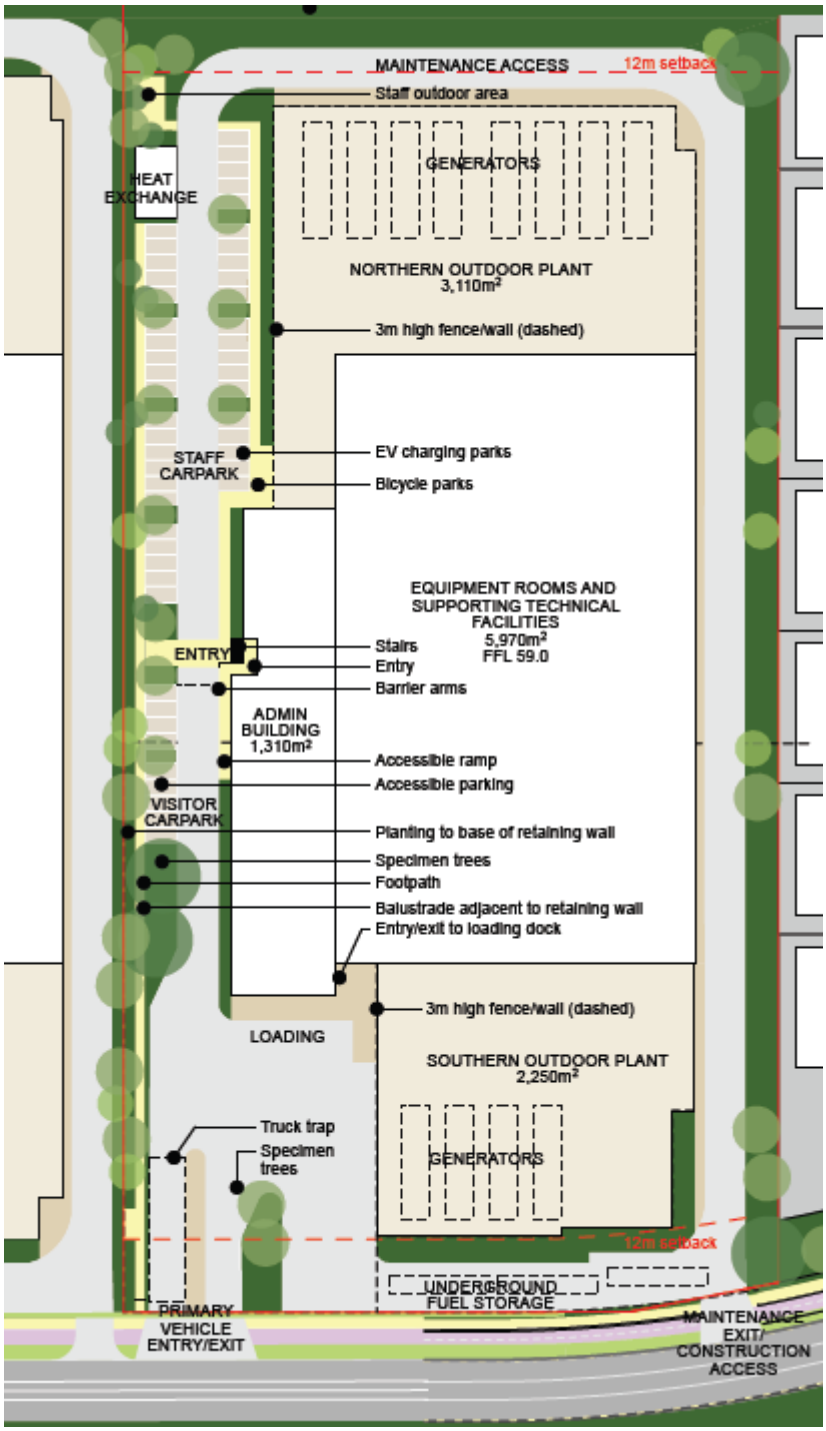
13 DATA CENTRE PRECINCT

The data centre as consented in Stage 1 (Section 2.1) is proposed to remain as consented with no changes to the vehicle accesses and circulation. One additional data centre is proposed in this precinct, directly adjacent to the east of the consented data centre and is proposed to have the same vehicular and circulation arrangement.

Table 19: Data Centre Precinct consented vs proposed

	Consented	Proposed	Difference
Data Centre	1 building of 29,000 m^2 building coverage	Hyperscale AI data centre with 2 buildings, a total of 41,640 m^2 building coverage	+1 data centre with 12,640 m^2 building coverage

Figure 36: Proposed Data Centre



13.1 Vehicle crossings and accesses

The proposed data centre has approximately 110 m^2 of frontage onto the Collector Road and is permitted 1 vehicle crossing per 25 m of frontage; 4 vehicle crossings are permitted and 3 are proposed.

The proposed vehicle crossings and access arrangement are the same as the data centre consented as part of Stage 1, being

- 3 vehicle crossings designed for semi-trailers and the occasional truck-and-trailer to access the Site

- A main entrance at the western end with an entry and exit lane separated by a central island
    - 6.5 m wide entry only
    - 6.0 m wide exit only
    - Approximately 3 m wide island between them
- More than 2 m separation between the vehicle crossing of the adjacent data centre
- An exit-only at the eastern end, 7.7 m wide

The proposed main entrance for the data centre is proposed to be a separate entry and exit, about 3 m apart at the boundary separated by a central island, which does not comply with the AUP standard of 6.0 m separation for crossings serving the same site. This central island is provided so it can allow for a future gate house. To provide a compliant 6.0 m separation will be too large for a gate house and will reduce the manoeuvring area in front of the loading docks, impacting the operation of the site.

A security gate is proposed and located set back into the site so that a semi trailer will not encroach the shared path upon queueing.

Vehicle tracking at the accesses has been checked for a semi-trailer, included in Appendix H.

A plan showing the minimum SISD which at the proposed exit-only vehicle crossings is provided in Appendix H, based on an operating speed of 60 km/h. SISD can be met from both approaches. Any fencing at the boundary will be visually permeable. The vehicle crossings will be designed with materiality changes to maintain priority to pedestrians and cyclists.

13.2 Parking provision and layout

A total of 51 car parking spaces are provided within the data centre lot.

Under PC79, no theoretical parking demand applies for network utility infrastructure in rural zones. For a total of 50 car parking spaces, 2 accessible parking spaces are required within the lot and will be provided to comply.

All car parking spaces will be designed to comply with AUP requirements.

13.3 Loading and servicing

No loading spaces are technically required under E27 for the data centre given that the activity is infrastructure.

On-site loading is proposed at the front of data centre building and has been designed to accommodate articulated vehicles, as such under E27 (T139) a minimum of 18 m by 3.5 m wide loading space is required, which can be complied with.

The layouts have been designed such that no reverse manoeuvres from or onto the public road will be required. Manoeuvres within the loading dock will not encroach into the car parking area, thus ensuring safety for all site users.

13.4 Bicycle parking provision

The AUP specifies minimum bicycle parking for visitors and long-stay, this is outlined in Table 20 for the additional proposed data centre.

Table 20 Data Centre Precinct Bicycle parking

AUP activity	Proposal	Visitor minimum rate	Long-stay minimum rate	Minimum required visitor spaces	Minimum required long-stay spaces
(T85) Offices greater than 200 m^2 up to 10,000 m^2	Admin building of 1,300 m^2	1 space plus 1 space per 1,000 m^2 above 1,000 m^2	1 per 300 m^2 GFA of office	1	4
			TOTAL required	1	4
			Total proposed	5	

A bicycle rack is proposed near the admin building and there will be plenty of space inside the building to store bicycles for staff, as such the minimum requirements can be complied with.

14 LIGHT INDUSTRIAL LOTS

The Light Industrial Lots are additional to the Stage 1 Consent (Section 2.1) and comprise 10 lots with a total 7,050 m^2 GFA of industrial. Subdivision consent for the substation (network utility) is being sought separately.

Within this precinct, the following infringements have been identified

- the vehicle crossing onto the roundabout is less than 10 m from the intersection (technical infringement, as it will create and function as a fourth leg onto the roundabout)
- the vehicle crossing onto the roundabout is proposed to be 10 m wide at the boundary, whereas the maximum width permitted in E27 for vehicle crossings used by large heavy vehicles is 9.0 m.

Figure 37: Light Industrial lots

14.1 Vehicle crossings and accesses

The current layout in this precinct means that all lots are reliant on access from the roundabout, as such the development of these lots will require the roundabout to be built.

Vehicle access to the industrial lots will be provided via the private service lane as a fourth leg to the proposed Postman Road roundabout, leading to an exit-only access onto Postman Road at the northern end of the lots. Refer to Section 4.4 for details about the proposed roundabout and Section 4.5 for the private (industrial) road cross-section.

The vehicle crossing onto the roundabout will infringe the following E27 standards

- Less than 10 m intersection setback distance
- proposed to be 10 m wide at the boundary, whereas the maximum 9.0 m width permitted in E27 for vehicle crossings used by large heavy vehicles

This vehicle crossing infringement is reasonable because

- vehicles exiting the private service lane will be able to see towards the footpath and vehicles approaching the roundabout. Any fencing proposed will maintain visual permeability
- the vehicle crossing will be constructed with materiality to maintain priority to pedestrians
- the wider vehicle crossing is proposed to cater for simultaneous semi-trailer entering at the same time as a medium rigid truck is stopped at the give-way line. This is required to ensure that the operation of the roundabout is not blocked by a truck needing to stop to give way.
- the vehicle crossing width is not wider than it needs to be (see tracking included in Appendix I).

The exit-only vehicle crossing onto Postman Road will require wider splays than the Auckland Transport TDM standards for rural vehicle crossings, to accommodate the turning path of semi-trailers without crossing the centreline on Postman Road.

A plan showing the minimum SISD which at the proposed exit-only vehicle crossing on Postman Road is provided in Appendix I. The visibility plans at the proposed roundabout are included in Appendix I. For the SISD calculations of the Postman Road vehicle crossing we have used an operating speed of 80 km/h for the southbound approach on Postman Road and 50 km/h on the northbound approach, as vehicles will be travelling slower as they exit the roundabout. Postman Road is straight and relatively flat in both approaches and SISD can be met from both approaches.

Vehicle tracking and a visibility plan is included in Appendix I.

14.2 Parking provision and layout

According to the AUP, no minimum or maximum parking rates apply. On-site parking will be provided within each lot and will be designed to comply with AUP requirements.

Sufficient accessible parking spaces will be provided on-site to comply with the PC79 accessible parking requirement.

14.3 Loading and servicing

On-site loading is proposed within each lot, complying with the E27 requirement under (T108-T111) for industrial activities. Each lot is designed to accommodate articulated vehicles, as such under E27 (T139) a minimum of 18 m by 3.5 m wide loading space is required, which can be complied with.

The lots have been designed such that no reverse manoeuvres from or onto the public road will be required.

14.4 Bicycle parking provision

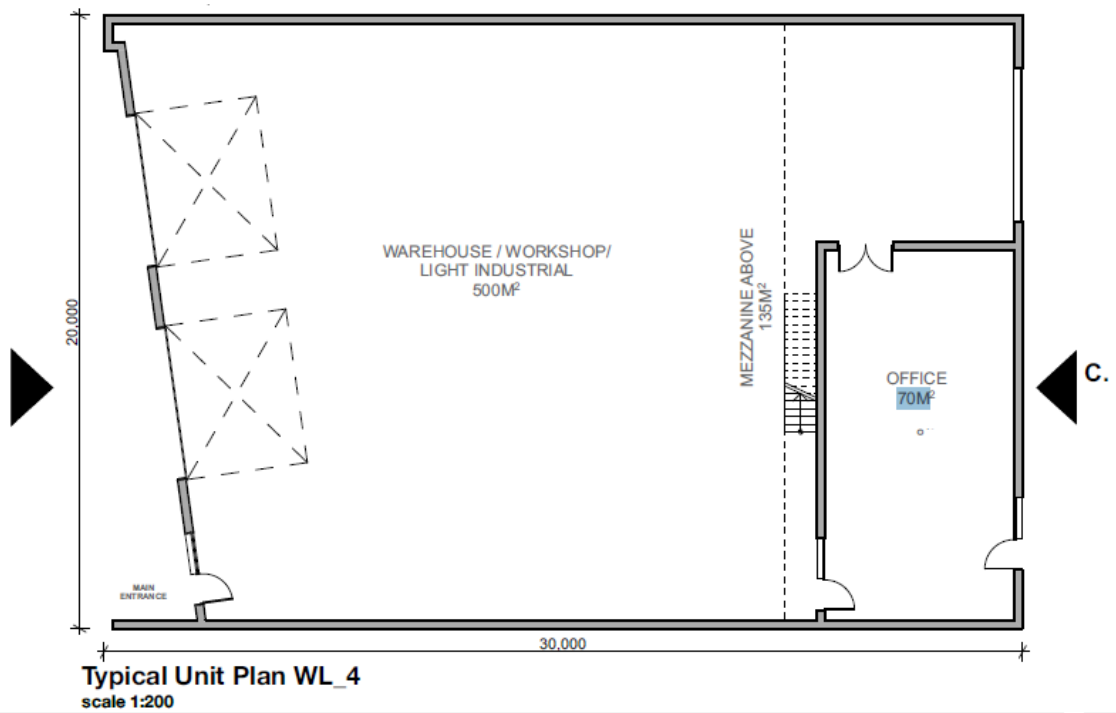
The AUP specifies minimum bicycle parking to provide for visitors and long-stay. This is outlined in Table 21.

Table 21: Light Industrial Lots bicycle parking to provide

AUP activity	Proposal	Visitor minimum rate	Long-stay minimum rate	Minimum required visitor spaces	Minimum required long-stay spaces
(T92) Industrial activities and storage and lockup facilities	7,050 m^2 total GFA of industrial with 70 m^2 office in each lot	1 space plus 1 space per 750 m^2 GFA of office space	1 space per 300 m^2 GFA of office	1 each lot	0
			TOTAL required	0	0

Each unit will have 70 m^2 office space, requiring 1 visitor bicycle parking and there is sufficient space to provide bicycle parking in each lot, as can be seen in the plan showing a typical unit in Figure 38.

Figure 38: Light industrial typical unit



15 PROPOSED MITIGATION MEASURES

The Stage 1 Consent already includes the following mitigation measures which are proposed to be remain as part of this Proposal

- a private shuttle between the Site and Hibiscus Coast Station for use by staff and visitors
- an new intersection on Dairy Flat Highway
- bus stop upgrades and new bus stop pair with crossing facility and connecting footpaths on Dairy Flat Highway.

Additionally, we propose the following mitigation measures in Table 22, when they should be implemented and who will be responsible for delivering the measures. These are proposed as conditions of consent.

Table 22: What upgrades and mitigation are required and by whom

Mitigation Measure	When should these works be undertaken	Comment	Who will deliver the measure
Postman Road intersection	Either (a) the East-West Collector Road traffic volume (measured immediately to the east of Dairy Flat Highway) exceeds 300 vph (two-way) in the morning peak hour (between the hours of 7am and 9am) or 360 vph (two-way) in the evening peak hour (between the hours of 4pm and 6pm), or (b) prior to s224c being issued for the Light Industrial (East) precinct if this occurs ahead of the (a) traffic volume thresholds.	Required as a secondary access point to the Site. We have included a concept plan of a single-lane roundabout on Postman Road which does not include third-party land nor impact the property accesses across the Site.	Applicant
Signpost the northern vehicle crossing on Dairy Flat Highway for service vehicles only	Prior to the operation of the Surf Park car park	All public access to the surf park car park will be from the vehicle crossings on the Collector Road, directing traffic to use the Dairy Flat Highway intersection. The vehicle crossing on Dairy Flat Highway is proposed as secondary access, for service vehicles only. We propose signage to communicate that only service vehicles may enter from this vehicle crossing.	Applicant
Signpost the existing vehicle crossing on Dairy Flat Highway (to be used by WTP only) with a no-right turn exit sign onto Dairy Flat Highway	Prior to the operation of the WTP	This existing vehicle crossing is proposed to be an exit-only for WTP vehicles. We propose signage within the site to communicate that only left-turns out onto Dairy Flat Highway are permitted from this vehicle crossing.	Applicant

16 ASSESSMENT OF CONSTRUCTION EFFECTS

The consented activities include a condition of consent requiring the implementation of a Construction Traffic Management Plan (CTMP) prior to any works on the site. The additional development as part of this Proposal will not result in effects beyond what the condition relating to the CTMP will already address. Therefore, we propose to retain condition 11 relating to the CTMP in order to manage traffic effects relating to construction.

17 PROPOSED CONDITIONS OF CONSENT

The Stage 1 consent has the following transport conditions of consent that we propose are retained

- (12) Construction Traffic Management Plan
- (71) All access, parking and manoeuvring areas must be formed, and sealed with an all-weather surface, marked out, sign-posted and drained in accordance with the approved plans
- (72) Parking areas must be marked out in accordance with the approved site plan to ensure appropriate parking supply, access, signage, directions, and vehicle manoeuvring. This includes the allocation of specific parking spaces to each unit/dwelling where relevant.
- (73) All new vehicle crossings must be designed and formed in accordance with the Auckland Code of Practice for Land Development and Subdivision Chapter 3: Transport (ACoP: T), or as set out in the approved plans or provide justification for any necessary change.
- (89) The Consent Holder must operate a shuttle service between the Hibiscus Coast bus station and Silverdale that can be utilised by staff and visitors to and from the site. The shuttle must operate in perpetuity or until as agreed to by the Consent Authority.

We recommend the following additional conditions of consent

- The proposed northern vehicle crossing on Dairy Flat Highway must be signposted for entry to service vehicles only. Any gate installed must be setback appropriately to allow sufficient distance for a vehicle using the driveway to stop clear of traffic lanes while the gate is closed.
- The existing southern vehicle crossing on Dairy Flat Highway must be signposted permitting left-out exit movements only onto Dairy Flat Highway.
- Heavy vehicles servicing the village market must be no longer than 12.6m. The consent holder must design and construct the connection of the East-West Collector Road to Postman Road, including the construction of a roundabout at the intersection, when traffic volumes on the East-West Collector Road, measured immediately to the east of its intersection with Dairy Flat Highway, exceed either of the following thresholds:
    - 300 vehicles per hour (two-way) during the morning peak hour (between 7:00am and 9:00am); or
    - 360 vehicles per hour (two-way) during the evening peak hour (between 4:00pm and 6:00pm),

  The traffic volumes must be measured every six months with results provided to the Council. The threshold is deemed to be exceeded when the average weekday peak hour traffic volume meets or exceeds the limits above.

  Engineering Approval plans for the design of the roundabout must be submitted within 6 months of the threshold being exceeded (or as otherwise agreed in writing by Council) and must be in accordance with the requirements of Auckland Transport and applicable engineering standards.

  Construction of the approved roundabout design must be commenced within 6 months of the issue of engineering approval (or as otherwise agreed in writing by Council).

Advice note: The traffic volumes should be measured by a qualified traffic engineer by way of a traffic survey, with results reflecting a 5-day weekday average undertaken over a neutral week (outside public or school holiday periods).

- The consent holder must design and construct the connection of the east-west collector road to Postman Road (including the roundabout) in accordance with the requirements of Auckland Transport and applicable engineering standards. Certification from Auckland Transport that the works have been satisfactorily undertaken must be provided when applying for a certificate under section 224(c) of the RMA for the Light Industrial (East) Precinct if this occurs ahead of the above-mentioned traffic volume thresholds.
- A waste management plan must be submitted to Auckland Council for certification that the servicing requirements of the apartments are adequately provided for.
- A consent notice is placed on the affected lots in the Southern Neighbourhood Precinct, so that any fencing/landscaping are less than 900 mm high, to maintain the required sightlines at the Spine Road/ Collector Road intersection. Refer to the application documents for the condition proposed to this effect.

18 CONCLUSIONS

Based on our assessment, we are satisfied that potential transport effects due to the additional Proposal activity compared with the Stage 1 consent will be appropriately mitigated through the proposed mitigation measures and conditions of consent.

The Proposal is

- aligned with the Structure Plan
- consistent with the level of traffic anticipated as part of PPC103
- designed such that development in the Designation areas will not preclude the Designation works from occurring
- designed such that works proposed on Postman Road will not impact third-party land and specifically will not impact the operation of the North Shore Airport

The effects of non-compliances to E27 are acceptable from a transport perspective and will not result in adverse safety nor operational effects.

We recommend additional conditions of consent over that already consented as listed in Section 17 above.