

**Middle Road Project Fast
Track Consent**

Integrated Transport
Assessment

September 2026

flow

TRANSPORTATION SPECIALISTS

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Prepared by: Gerhard van der Westhuizen, Harry Shepherd
Project Manager: Gerhard van der Westhuizen
Reviewed by: Ian Clark

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STATEMENT OF EXPERIENCE

Lukas Gerhard van der Westhuizen

My full name is Lukas Gerhard van der Westhuizen. I am the main author of this report and the project lead. I am a Principal Transportation Engineer at Flow Transportation Specialists Limited. I have held this position since May 2023.

I hold a Bachelor of Engineering (Civil) from the University of Pretoria, South Africa (2017). Before joining Flow, I was employed by Stantec New Zealand from August 2019, where I held a Senior Transportation Engineer position and the acting Team Leader role for Transport Advisory (Auckland). I am a member of the Engineering New Zealand Transportation Group.

I have over 10 years of experience as a transportation planner and engineer in public and private sector land development projects, which includes experience with plan changes, integrated transport assessments, development consenting, and Notices of Requirement.

I have been involved with a number of plan changes, Fast-track and resource consent applications. I provided similar assistance for these planning processes, including review, assessment of transport effects and guidance on the relevant transport planning provisions and reporting, and the conceptual design of roading infrastructure associated with these projects. This work has included

- ◆ The Arataki Road, The Point Mission Bay (retirement village) and the Downtown carpark redevelopment Fast-track projects
- ◆ Plan changes including Private Plan Changes 43, 70, 72 in Auckland; Private Plan Change 81 in Dargaville and Private Plan Change 83 in Mangawhai
- ◆ Resource consent application reviews for the public sector in Whangarei¹, Auckland² and Kaipara³
- ◆ Resource consent applications for the private sector for various developments⁴ in Auckland.

I confirm that, in my capacity as author of parts of this FastTrack Application, I have read and abided by the Environment Court of New Zealand's Code of Conduct for Expert Witnesses Practice Note 2023.

Harry Shepherd

My full name is Harry Shepherd. I am the co-author of this report. I am a Principal Transportation Engineer at Flow Transportation Specialists Limited. I have held this position since May 2023.

¹ 406 Kamo Road (Gull Fuel Station); Sands Road residential subdivision; 54-56a Goerge Street residential subdivision and Kiripaka Road residential subdivision.

² Various residential and billboard resource consents.

³ 28 & 48 Old Waipu Road residential development; Mangawhai Central residential development and 344 SH12 Brynderwyn industrial development.

⁴ Multiple residential developments in Waiata Shores (Te Napi Drive), Takanini; Various industrial developments in the Auckland Airport Precinct (Te Kapua Drive and Maurice Wilson Drive); an industrial development in Favona (Savill Drive) and an industrial development in Wiri (Puaki Drive).

I hold a Bachelor of Engineering (Honours) degree specialising in Civil and Environmental Engineering from the University of Auckland. Before joining Flow, I was employed by Stantec New Zealand (previously TDG) between 2015 to 2019, where I last held the position of Project Transportation Engineer. I am a member of the Engineering New Zealand Transportation Group.

I have 11 years of experience as a transportation planner and engineer in public and private sector land development projects, which includes experience with plan changes, integrated transport assessments and development consenting.

I have been involved in the assessment of several plan changes, resource consent and fast track applications. I provided similar assistance for these planning processes, including review, assessment of transport effects and guidance on the relevant transport planning provisions and reporting associated with these projects. This work has included

- ◆ Expert witness in Council hearings in Auckland and Levin for retirement village developments⁵.
- ◆ Acting for Auckland Council as an expert witness reviewing Private Plan Changes 107 and 109 and other ongoing plan changes in Whenuapai.
- ◆ Acting for Precinct Properties for the Downtown Carpark Redevelopment fast track application
- ◆ Resource consent applications for the private sector for various developments⁶ in Auckland.
- ◆ Motorway upgrade projects for NZTA Waka Kotahi⁷.

I confirm that, in my capacity as author of parts of this Fast Track Application, I have read and abided by the Environment Court of New Zealand's Code of Conduct for Expert Witnesses Practice Note 2023.

Ian Clark

I have over 35 years' experience in transport planning and modelling, in the United Kingdom and New Zealand. I am the reviewer of this report. Over the past 25 years, my work in New Zealand has involved the project management of many different types of traffic and transportation projects, predominantly for local authorities and central government agencies. My experience includes strategic transportation planning, transport and traffic modelling using a variety of modelling suites, traffic operational assessments, and bus, cycle and pedestrian projects. I am often called upon to provide expert evidence at hearings.

⁵ Saint Vincent - Metlifecare Retirement Village and MiLife Levin

⁶ Multiple residential developments including in Riverhead (Coatesville-Riverhead Highway) and Milldale (64 Sidwell Road); various industrial developments in Auckland including Asmuss Steel Warehouse in Drury

⁷ State Highway 1 Papakura to Bombay project

SUMMARY OF OUR ASSESSMENT

CDL Land New Zealand Limited (CDL) has engaged Flow Transportation Specialists Ltd (Flow) to assess the transport planning and traffic engineering matters relating to a Fast Track Application located at Middle Road, Havelock North.

This report is submitted in support of CDL's Substantive Application (Application) to the Environmental Protection Authority (EPA) to authorise the subdivision and development of the application site, located at 92, 108, 148 Middle Road and 139 Te Aute Road in Havelock North, Hawke's Bay (Site).

The proposal, known as the Middle Road Project, will provide for the residential subdivision of the site to enable the development of 317 detached dwellings to contribute additional housing capacity to Havelock North and the Hawke's Bay region. The development will be supported by a local road network, pedestrian accessways, and required infrastructure.

The Middle Road Project will be developed in two phases

- ♦ **Phase 1 – Land Development:** CDL will undertake the subdivision, bulk earthworks, infrastructure, roads, stormwater works, reserves, landscaping and creation of the residential lots
- ♦ **Phase 2 – Dwelling Construction:** CDL's build partners and future landowners will construct dwellings and associated site works in accordance with the consent notices applying the relevant Havelock North General Residential Zone or Medium Density Residential Zone provisions.

Figure S1: Proposed Middle Road Project



The Integrated Transport Assessment, and Planning Overview Report prepared to support the substantive application under the Fast-track Approvals Act (FTAA) provides a full site description. With respect to matters relating to transport the following comments are made about the site.

Zoning and development

- ♦ The Middle Road Project development of Plains Production Zone land is to enable the development of a residential landscape comprising 317 residential lots.

Transport strategy alignment

- ♦ Aligning with relevant transport strategies, the Middle Road Project prioritises the upgrade of Middle Road and Te Aute Road to an urbanised form along the development's frontage. This will create a safer and connected transportation system. This approach incorporates traffic calming measures that facilitate a safer environment for all users, and safe access to land use development. The Middle Road Project also demonstrates a commitment to introducing new active mode facilities, an extended and connected active mode network catering to pedestrians and cyclists, along with improvements to public transport infrastructure to encourage mode shift and reduce emissions.

Public transport and active mode access

- ♦ Providing opportunities for Council to upgrade the existing public transport network in Havelock North, the Middle Road Project emphasises inclusivity and accessibility for both existing and future residents. Furthermore, the Middle Road Project incorporates off-road active mode connections, thereby facilitating a comprehensive active mode network that caters to pedestrians and cyclists of all ages. The internal collector road network has the capability of accommodating future bus routes.

Developer collaboration and Vision Zero safety principles

- ♦ The Middle Road Project provides an opportunity for collaborative efforts between the Hastings District Council and developers. Aligning with Vision Zero principles, the Middle Road Project proposes low speed access roads and urbanisation of existing roads, creating safer urban environments for all users.

Traffic impact assessment

- ♦ The Middle Road Project is predicted to generate a total of 270 trips during both the morning and evening peak hours. The peak hour traffic generation is anticipated to have no significant adverse effects on the wider transportation network. Overall, the predicted traffic level can be accommodated by the surrounding road network.

Additionally, we note that the construction traffic generated during the land development phase can be adequately managed by the implementation of an NZGTTM compliant Construction Traffic Management Plan. This will include mitigation measures to minimise the effects of heavy vehicles on existing residents and road users in the area by directing construction traffic to the rural road connections to the southwest of the development along Te Aute Road whenever possible.

In conclusion, this Integrated Transport Assessment finds no transportation planning or traffic engineering reasons that would impede the implementation of the proposed Middle Road Project.

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1 WHAT THIS REPORT INCLUDES

CDL Land New Zealand Limited (CDL) has engaged Flow Transportation Specialists Ltd (Flow) to assess the transport planning and traffic engineering matters relating to CDL's Substantive Application (Application) to the Environmental Protection Authority (EPA) to authorise the subdivision and development of the application site, located at 92, 108, 148 Middle Road and 139 Te Aute Road in Havelock North, Hawke's Bay (Site).

The proposal, known as the Middle Road Project, will provide for the residential subdivision of the site to enable the development of 317 residential lots to contribute additional housing capacity to Havelock North and the Hawke's Bay region. The development will be supported by a local road network, pedestrian accessways, and required infrastructure.

This Integrated Transport Assessment (ITA) supports the fast-track application for the Middle Road Project and provides the following information.

- ◆ A description of the Middle Road Project, focusing on the transport matters
- ◆ An assessment of the Middle Road Project against the relevant transport planning documents, including the Operative Hastings District Plan (District Plan), the Heretaunga Plains Urban Development Strategy (HPUDS), and the Future Development Strategy (FDS)
- ◆ The provision of background information to provide context to the transport assessment of the Middle Road Project. This information includes
 - ◆ the Site location and immediate surrounding transport network, including traffic volumes
 - ◆ a description and assessment of the historic crash record of the immediate transport network
 - ◆ a description of the private vehicle, public transport, walking and cycling accessibility of the Site
- ◆ An assessment of the Middle Road Project and potential transport effects with regard to
 - ◆ the vehicular and pedestrian access provisions
 - ◆ traffic generation and impacts on the surrounding transport network
 - ◆ safety impacts and upgrades
 - ◆ the location, design and adequacy of the on-site parking and servicing facilities proposed to support the Middle Road Project
 - ◆ active mode and public transport provisions
 - ◆ the transportation rules contained in the District Plan for the adopted zoning
- ◆ Outcomes in relation to the implementation of upgrades, including responsibility for delivering the upgrades

2 WHAT DOES THE MIDDLE ROAD PROJECT INVOLVE?

As shown in Figure 1, the Middle Road Project proposes to provide for the residential subdivision of the Site to enable the development of 317 residential lots. This will contribute additional housing capacity to Havelock North and the Hawke's Bay region. The planning report prepared to support the substantive application under the FTAA provides a full description of the proposal.

Figure 1: Proposed Middle Road Project Structure Plan (Source: Woods)



- ◆ This proposed residential development will be supported by a local road network, pedestrian accessways, and other required infrastructure
- ◆ The development will adopt the residential standards of the District Plan
- ◆ The Middle Road Project will comprise 2 phases of development, outlined below.

2.1 First phase of the Middle Road Project

The first phase of the Middle Road Project will realise the residential subdivision of the land, which will be delivered by CDL. The residential subdivision and bulk earthworks phase will

- ◆ create 317 residential lots
- ◆ create 4 drainage reserves to vest, 13 roads to vest (2 collector roads and 11 access roads), 3 public pedestrian accessways, and 3 Jointly Owned Access Lots (JOALs)
- ◆ provide for a connected, safe and permeable development that connects activities internal and external to the Middle Road Project area through a network of on-street and off-street active mode facilities
- ◆ urbanise Te Aute Road and Middle Road along the frontages of the Site, providing new and safer pedestrian facilities along the site frontages
- ◆ construct a new roading network of collector and local access roads, including new intersections with Middle Road and Te Aute Road, to enable safe public road access to the Middle Road Project area for vehicles and active modes. These roads include
 - Collector Road CR01 – a connector road link between Middle Road and Te Aute Road, with the capability of accommodating future bus routes
 - Collector Road CR02 – a connector road link between CR01 and the land located to the west, allowing for a future extension
 - Access Road AR01 to AR011 – a series of local access roads that serve the development
 - Intersections – 2 new intersections on Middle Road and 1 new intersection on Te Aute Road
- ◆ provide bulk earthworks landform modification, infrastructure provision, buffer planting and external boundary fencing.

2.2 Second phase of the Middle Road Project

The second phase of the Middle Road Project will deliver the residential built form. This phase of development will be delivered by CDL's build partners and will involve house construction on individual lots, including vehicle access, parking, landscaping, and fencing. It is during this phase that it is proposed to complete the additional pedestrian bridge connection on Middle Road.

The planning report prepared to support the substantive application for the Middle Road Project provides a full description of the proposal.

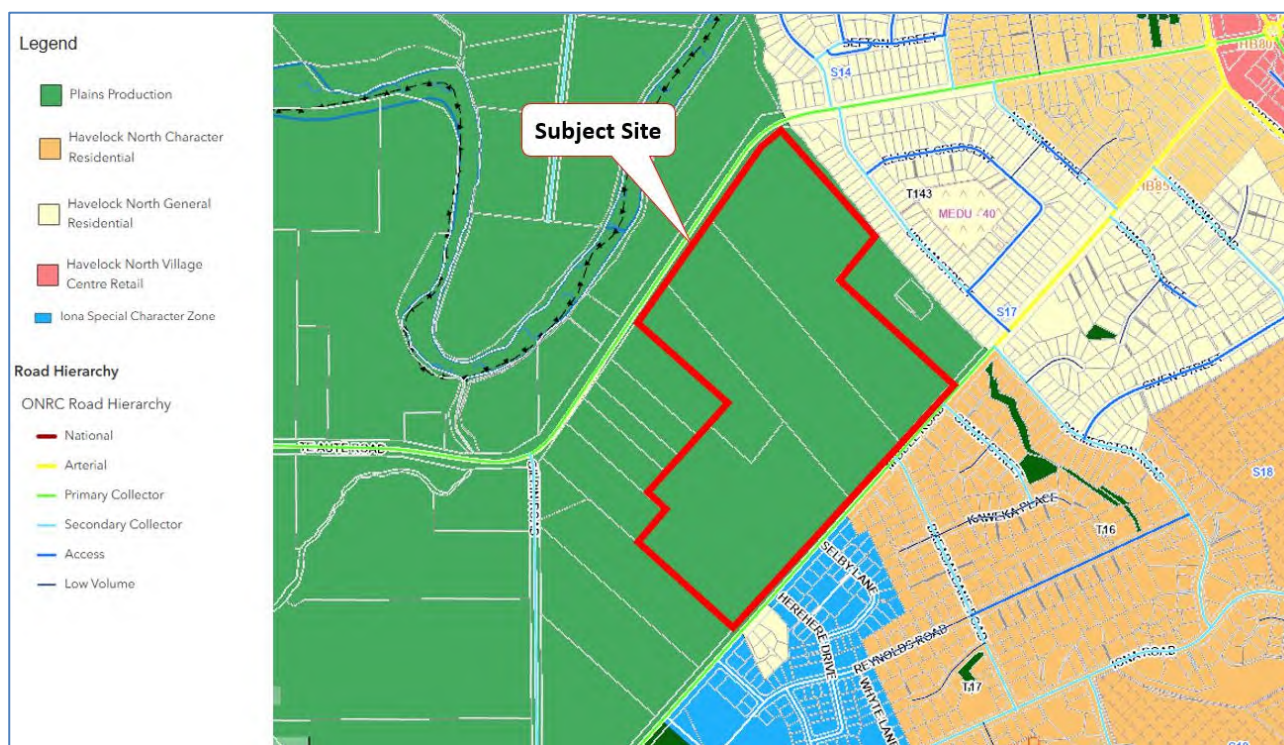
Our report below sets out further details and assessment of the Middle Road Project's transport matters.

3 HASTINGS DISTRICT PLAN TRANSPORT ASSESSMENT

3.1 Site location and Hastings District Plan zoning

As shown in Figure 2, the Site is located on land zoned Plains Production as indicated on the Hastings District Plan (District Plan) zone map.

Figure 2: Middle Road Project District Plan zoning



3.2 Our assessment of District Plan transport matters

The Site is currently zoned Plains Production zone in the District Plan which does not provide for urban residential development. The Middle Road Project seeks approval to establish urban residential development on Plains Production zoned land in accordance with the Fast Track Approvals Act 2024.

While the Site is not zoned for urban residential development, the development will adopt the existing provisions of the Chapter 8.2 Havelock North Residential Environment zone, the Medium Density Residential Zone (MRZ) and Chapter 26.1 Transport and Parking. Consent notices will be applied to individual lots where applicable, to ensure compliance with the District Plan standards.

We have assessed the transport elements of the Middle Road Project against the provisions of Chapter 26.1 (Transport and Parking) of the District Plan, with the detailed assessment included in Appendix A of this report.

This assessment concludes that the Middle Road Project complies with all the transport standards of the District Plan, except Standard 26.1.6A.2, which requires vehicle crossings to be located at least 15.0 m away from an intersection. There are 32 lots proposed to have vehicle crossings, which are located closer to the adjacent intersections. These lots are outlined in Table 1 below.

Table 1: Vehicle crossings located less than 15.0 m from an intersection

Separation distance from intersection	Affected lots	Number of crossings
Directly opposite side of intersection	JOAL 2000, Lots 114, 118, 167, 224, 229, 260, 279, 317	9
opposite side of the intersection 0 – 2.5 m	Lots 168 (1.5 m), 188 (0.7 m), 189 (0.7 m)	3
opposite side of the intersection 2.5 – 5.0 m	Lots 1004 (2.9 m), 115 (4.3 m), 170 (3.9 m), 228 (3.8 m), 259 (3.5 m), 280 (3.6 m)	6
opposite side of the intersection 5.0 – 7.5 m	Lots 169 (6.6 m), 187 (5.5 m)	2
opposite side of the intersection 7.5 – 10.0 m	Lots 130 (7.0 m), 166 (9.5 m), 225 (7.6 m), 278 (8.6 m)	4
opposite side of the intersection 10.0 – 12.5 m	Lots 113 (12.3 m), 117 (11.5 m), 119 (11.6 m), 261 (11.9 m)	4
opposite side of the intersection 12.5 – 15.0 m	Lots 223 (13.9 m), 230 (14.4 m)	2
On intersection approach	Lot 301 (14.0 m), Lot 312 (12.0 m)	2
Total		32

Our assessment of this non-compliance in Section 8.7.2 of our report concludes that these infringements will have negligible effects on the safe and efficient operation of the Site or the surrounding transport network.

4 OUR CONSIDERATION OF RELEVANT TRANSPORT STRATEGIES

4.1 A summary of the relevant transport strategies

Over the past decade, land use and transport planning in New Zealand has increasingly focused on creating integrated, efficient, and safe transport systems that support compact urban development and reduce reliance on private vehicles. While earlier national strategies placed strong emphasis on mode shift and emissions reduction, the Government Policy Statement on Land Transport 2024 (GPS 2024) marks a shift in focus toward supporting economic growth and productivity, improving network resilience, enhancing safety, and ensuring value for money in land transport investment.

Despite this shift, broader central government strategies such as the Emissions Reduction Plan (ERP)⁸ and the National Policy Statement on Urban Development 2020 (NPS-UD)⁹ continue to promote integrated land use and transport planning, sustainable travel choices, and urban forms that support accessibility and reduce car dependency.

Local policy documents, including the Operative Hastings District Plan (OHDP), reinforce these strategic directions through planning provisions that enable more intensive development in appropriate locations and reduce reliance on private vehicle travel by supporting walkable neighbourhoods and mixed-use outcomes.

Key themes across these strategies and plans include

- ♦ reducing reliance on single-occupant vehicles by supporting land use patterns and transport services that reduce the need to travel long distances to access employment, education, and services (GPS 2024, ERP, OHDP)
- ♦ enabling efficient and cost-effective travel choices through improved access to public transport and active modes in urban areas (ERP, OHDP)
- ♦ recognising that mobility should support access to social and economic opportunities, rather than being an end in itself (ERP)
- ♦ improving road safety and reducing deaths and serious injuries across the transport system (GPS 2024, ERP)
- ♦ reducing greenhouse gas emissions and improving public health by encouraging lower-emission travel modes and aligning transport investment with urban development (ERP)
- ♦ supporting growth in well-connected locations, including near centres and rapid transit stations (NPS-UD 2020)
- ♦ removing regulatory barriers to intensification, such as minimum car parking requirements (NPS-UD 2020, OHDP).

Further information and details on these points are included in Appendix B.

⁸ <https://www.hud.govt.nz/our-work/emissions-reduction-plan>

⁹ <https://environment.govt.nz/publications/national-policy-statement-on-urban-development-2020-updated-may-2022/>

4.2 How the Middle Road Project Fast Track Consent aligns with the relevant transport strategies

4.2.1 Government Policy Statement on Land Transport

The Middle Road Project aligns with the direction of the Government Policy Statement on Land Transport 2024 (GPS 2024), which places a strong emphasis on supporting economic growth and productivity, improving resilience and maintenance of the transport network, enhancing safety, and delivering value for money.

- ♦ The full upgrades of Middle Road and Te Aute Road to an urban standard, supports a safer transport system that helps reduce deaths and serious injuries, aligning with GPS 2024's safety objectives
- ♦ New pedestrian and cyclist facilities (including a new pedestrian bridge on Middle Road), along with future-proofing the internal road network for public transport infrastructure, improve access to the site and provide cost-effective travel options that support local productivity and development
- ♦ The project contributes to a reliable and efficient local transport network, helping maintain an acceptable level of service while reducing pressure on surrounding routes
- ♦ The intersection and frontage upgrades have been designed with efficiency and constructability in mind, ensuring optimal use of land and resources, contributing to value for money and supporting long-term resilience of the network.

4.2.2 Operative Hastings District Plan

Hastings District's transportation network is vital for both the community's daily functioning and its economy, supporting the movement of goods and people. While the system relies heavily on roads, it also faces environmental challenges like noise and pollution. The Council aims to manage these issues through long-term planning, a structured roading hierarchy, and promoting sustainable transportation options such as cycling, walking, and public transport. The Council is focused on integrating transportation with urban development to ensure an efficient and environmentally responsible system. The District Plan seeks to support the objectives set out below.

It is anticipated that the following Outcomes will be achieved

- ♦ **TSAO1** The reduced intrusion of unnecessary vehicular traffic into residential streets
- ♦ **TSAO2** The establishment of an effective arterial and collector roading system to manage vehicle flows and provide attractive routes for heavy vehicles and inter-District/region traffic
- ♦ **TSAO3** The establishment of long-term design and environmental standards for roads, and for activity adjoining different types of roads in the network
- ♦ **TSAO4** The improved use and integration of environmentally sustainable transportation forms throughout the urban area and across the Heretaunga Plains.

The following outcomes are also proposed by the District Plan

- ◆ **TPAO1** A safe and efficient District Transport Network
- ◆ **TPAO2** A transportation network that actively encourages alternative transport modes
- ◆ **TPAO3** Vehicle parking, access and loading facilities that are effective, safe and efficient in meeting the needs of individual activities
- ◆ **TPAO4** A transport network that integrates land use and the subdivision process

The Middle Road Project aligns with these outcomes by

- ◆ providing a design that will be accessible to all users, with a focus on creating safe, convenient and accessible pedestrian connections within the Site and extending existing facilities for pedestrians and cyclists
- ◆ providing an internal road layout and road cross sections with a design that is appropriate for the function that they serve
- ◆ providing improvements to the existing Middle Road and Te Aute Road collector road corridors, to an urban standard
- ◆ future-proofing the design of the internal road network to allow for the introduction of a public transport route
- ◆ assessing the safety and operational traffic effects of the proposed development on the existing road environment.

4.2.3 Emissions Reduction Pathway

The Middle Road Project aligns with the ERP by

- ◆ making walking and cycling safer, easier and more accessible with the active mode upgrades along Middle Road and Te Aute Road
- ◆ future proofing the proposed designs to allow for the provision of future public transport infrastructure.

4.2.4 Hawke's Bay Regional Land Transport Plan (RLTP 2025–2035)

The Hawke's Bay Regional Public Transport Plan (RPTP) 2025–2035 establishes the strategic framework for the development and improvement of public transport services and supporting infrastructure in the region. The Plan seeks to provide a safe, accessible and sustainable public transport system that supports a shift away from private vehicle travel. The Middle Road site is generally consistent with the direction of the RPTP by

- ◆ being located within/adjacent to the existing urban area of Havelock North, supporting the integration of future growth with the existing transport network
- ◆ providing opportunities for walking and cycling connections to existing destinations and public transport services
- ◆ supporting access to existing public transport services in Havelock North
- ◆ supporting a more integrated pattern of development, consistent with the RPTP's emphasis on integrating growth planning with transport and infrastructure planning

- ♦ providing the potential for residents to use public transport as an alternative to private vehicle travel, supporting the Plan's objectives around mode shift, accessibility and reduced reliance on single-occupancy vehicles.

4.2.5 National Policy Statement on Urban Development (NPS-UD)

The Middle Road site is well placed relative to the Havelock North town centre, local schools, neighbourhood shops, and existing cycling connections. This supports Objective 3 and Policy 1 by enabling a well-functioning urban environment where people can meet daily needs through short trips, including walking and cycling. The project also aligns with Objective 8, which seeks to reduce greenhouse gas emissions by supporting urban forms that shorten trip lengths and reduce car dependency.

4.2.6 Hastings and Napier Future Development Strategy

Hastings District Council, Napier City Council, the Hawke's Bay Regional Council and iwi and hapū partners have jointly developed the Hastings and Napier Future Development Strategy (FDS). The FDS will guide development across existing urban areas and areas close by across the 2 districts over the next 30 years.

The FDS has been developed in accordance with the NPS-UD and aims to

- ♦ achieve 'well-functioning urban environments' in Napier and Hastings' current and future urban areas.
- ♦ identify the big issues around growth, things like housing, transport, employment, cultural wellbeing, the environment, protection of productive land, climate change and resilience.
- ♦ show the infrastructure needed to support and service that growth, and development constraints.

The Site was identified as a 'New / Expanded Residential Growth Area – and subsequently voted for exclusion by HDC and HBRC' under the FDS. The reasons these were voted for exclusion in the FDS included¹⁰

- ♦ including the sites is contrary to strategic objectives 3 and 6 of the FDS¹¹
- ♦ the inclusion of those sites is not required to provide sufficient development capacity to meet demand
- ♦ the sites would not provide well-functioning urban environments.

From a transportation perspective, the relevant matter for exclusion is a 'well-functioning urban environment', which is one of the objectives of the NPS-UD¹². This matter is being directly addressed by the Middle Road Project.

¹⁰ <https://www.hastingsdc.govt.nz/assets/Document-Library/Strategies/Hastings-and-Napier-Future-Development-Strategy/Summary-of-FDS-amendments.pdf>

¹¹ Objective 3: Our communities and infrastructure are resilient to the effects of climate change and risks from natural hazards

Objective 6: The highly productive land of the Heretaunga Plains is protected for productive uses.

¹² This includes having good accessibility for all people between housing, jobs, community services, natural spaces, and open spaces, including by way of public or active transport; and support reductions in greenhouse gas emissions

The Middle Road Project proposes urban development of the Site, providing the opportunity for residential housing within the Residential Growth Area while also providing the supporting infrastructure needed for future residents. The provision of facilities for both walking and cycling, as well as safe access roads, cater for all users and aim to encourage the accessibility of active modes between the existing town centre area and other attractions in the wider area.

5 A DESCRIPTION OF THE EXISTING ENVIRONMENT

5.1 The Fast Track Consent site and surrounding environment

The application site is located at 92, 108, 148 Middle Road and 139 Te Aute Road in Havelock North (the Site). The Site is held in five separate titles and consists of a combined area of approximately 30.6 hectares (ha). The Site is relatively flat and currently used for rural residential and grazing purposes with four existing dwellings. Figure 4 shows the location of the Site within the context of Havelock North.

Figure 3: The Site location (outlined in red – Source: Woods)



The adjoining interfaces of the Site can be described as follows

- ♦ Middle Road runs along the southeast boundary of the Site
- ♦ The rear boundaries of the residential properties on Upham Street run along the northeast boundary of the Site
- ♦ Te Aute Road runs partially along the northwest boundary of the site
- ♦ Rural residential properties and a church (Village Baptist Church) interface with the southwest and part of the northeast boundaries of the Site.

The Site is on the southwest side of Havelock North, approximately 900 m south of the town centre, which contains a range of retail and commercial uses. The wider land uses to the north, east and west of the site are predominantly suburban residential in character, with a retirement village to the northwest and larger rural landholdings to the southwest.

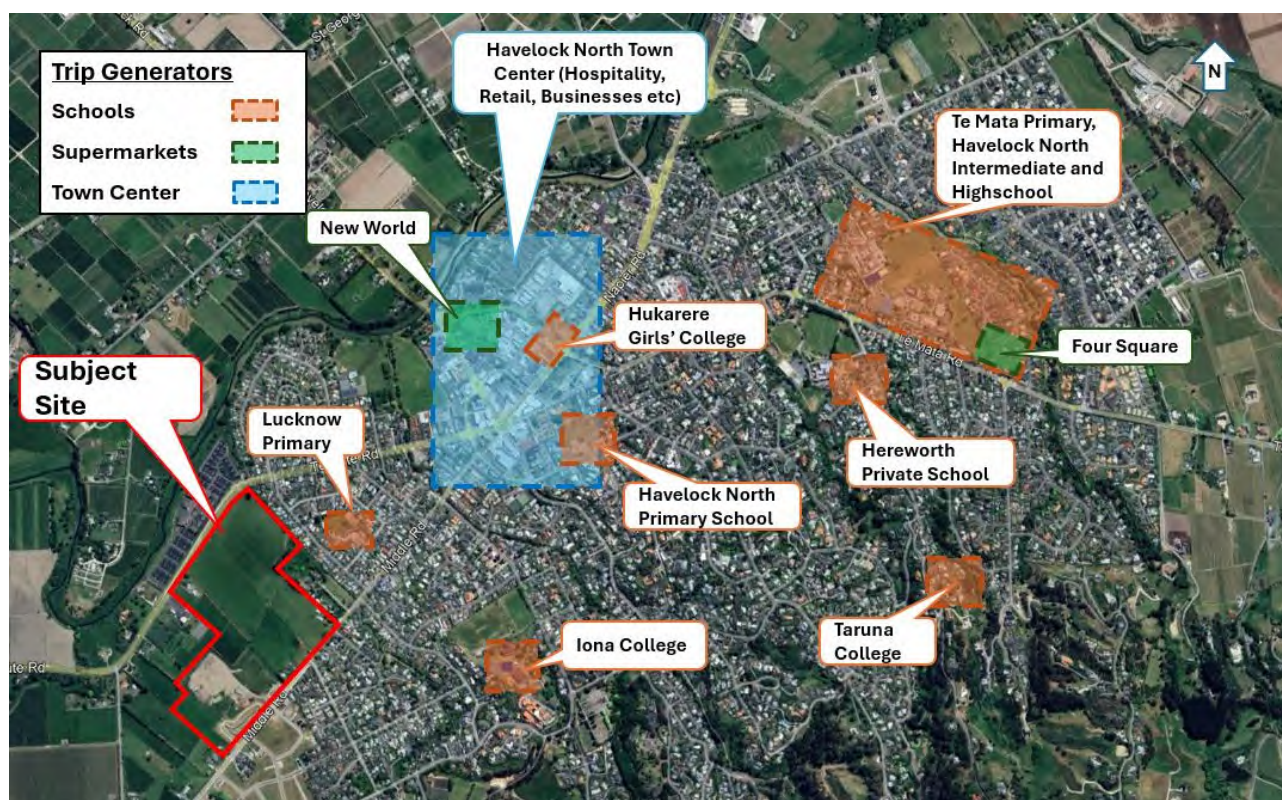
A separate 3.1 ha rural residential landholding at 80 and 84 Middle Road, known as the McKenna Block, is located immediately north-east of the Site adjacent to the Herehere Stream. This landholding is

separately owned and does not form part of the application site. However, given its proximity and relationship to the Site, potential connectivity to the McKenna Block has been considered at a high level as part of the assessment.

The immediate surroundings and trip generators associated with the Middle Road Project area are shown in Figure 4. We note that

- ♦ the existing Havelock North Town Centre is located between 0.9 – 1.6 km northeast of the Site. This contains retail activities, including a New World supermarket
- ♦ a number of schools are located within Havelock North. The closest schools are Lucknow Primary School and Iona College.

Figure 4: The Middle Road Project site and immediate surrounds



5.2 Existing roads

The existing roads in the surrounding area include

- ♦ Middle Road
- ♦ Te Aute Road
- ♦ Gilpin Road
- ♦ Upham Street

These roads are key links between the Middle Road Project area and surrounding land uses such as the Havelock North Town Centre, various schools and local supermarkets.

The Hasting District roading hierarchy of these key roads is shown in Figure 5, and their cross sections are described in Table 2 below.

Figure 5: Middle Road Project road classification

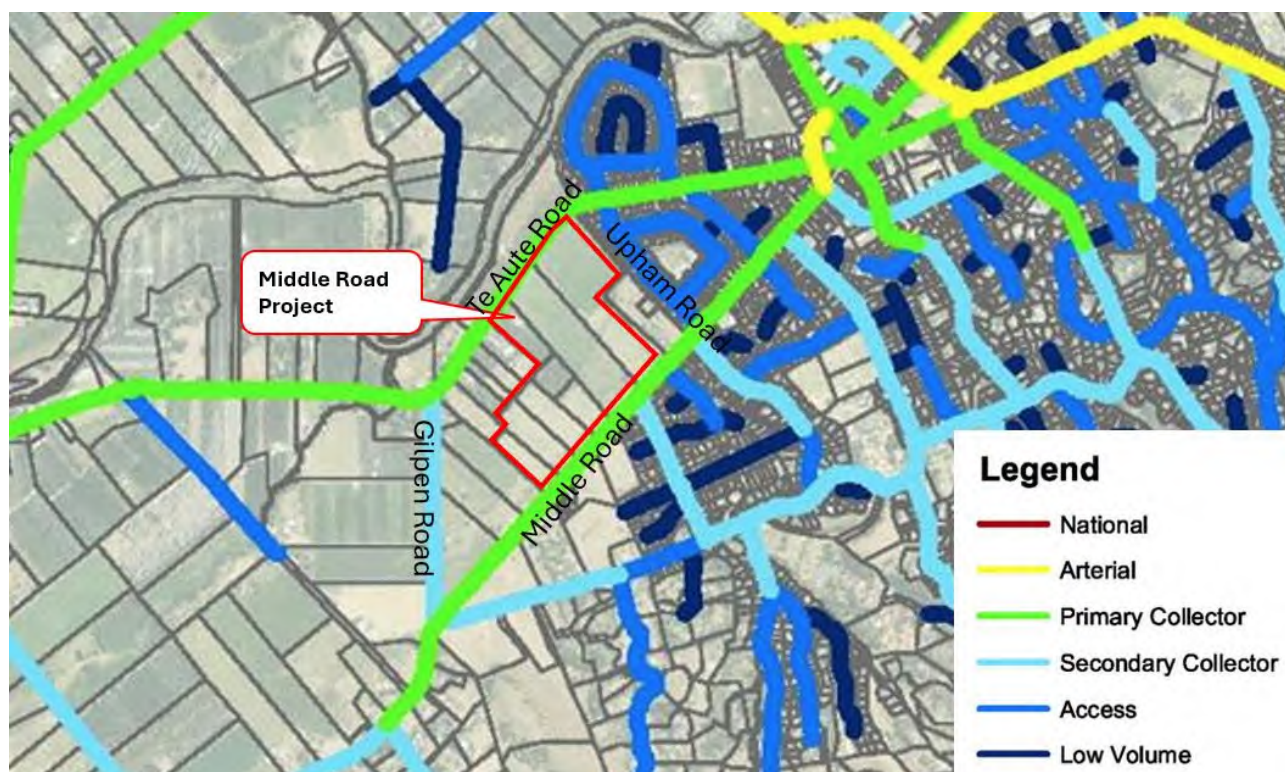


Table 2: Existing transport network

Road	Road type	Connects	Layout
Middle Road – site frontage	Primary Collector	Porter Drive and Patangata	- Two-lane road - Urbanised frontage along the south side with a footpath that widens south of Breadalbane to a shared path, front and back berms - On-road cycle lanes on both sides within the urbanised area (north of Breadalbane Road) - Rural frontage along the Site’s boundary (the northern side of the road) with no footpath

Road	Road type	Connects	Layout
			
Middle Road – urbanised area	Primary Collector	Porter Drive and Patangata	- Two-lane road - Urbanised frontage along both sides with a footpath, front and back berms - On-road cycle lanes on both sides within the urbanised area - On-street parking adjacent to the cycle lanes
			
Te Aute Road – site frontage	Primary Collector	Havelock Road and SH2	- Two lane road - Urbanised frontage along the northern side to (from the Village Baptist Church, continuing east) with a shared path and a kerb and channel - Rural frontage along the Site’s boundary to the east of the Herehere Stream bridge with no footpath and an open swale drain

Road	Road type	Connects	Layout
			
Te Aute Road – urbanised area	Primary Collector	Havelock Road and SH2	- Two-lane road - Urbanised frontage along both sides with a footpath, front and back berms - On-street parking
			
Gilpin Road	Secondary Collector	Te Aute Road and Middle Road	- Two lane road - Rural with no footpath and an open swale on both sides

Road	Road type	Connects	Layout
			
Upham Street	Access	Te Aute Road and Middle Road	- Two-lane road - Urbanised frontage along both sides with a footpath, front and back berms - On-street parking
			

The key intersections include

- ◆ Havelock Road / Porter Drive
- ◆ Porter Drive / Te Aute Road
- ◆ Porter Drive / Middle Road

The key details are summarised in Table 3.

Table 3: Existing key intersections

Intersection	Intersection type	Layout
Havelock Road / Porter Drive	4 leg roundabout	Single lane approaches
		
Porter Drive / Te Aute Road	4 leg roundabout	Single lane approaches
		

Intersection	Intersection type	Layout
Porter Drive / Middle Road	Give-way priority with 3 legs	Porter Drive: single lane approaches with right turn bay and flush median
		Middle Road: two approach lanes (left and right turning lanes)
		

5.3 Existing traffic conditions

5.3.1 Council traffic data

During 2020, Middle Road carried approximately 3,650 vehicles per day (weekday average), with heavy vehicles making up 3 %. We note that Middle Road only recently opened to traffic after upgrades occurred associated with the Iona Project.

During 2020, Te Aute Road carried approximately 3,370 vehicles per day (weekday average), with heavy vehicles making up 6 %.

5.3.2 Traffic survey data

We completed traffic surveys¹³ within the immediate area to confirm traffic movements. These surveys included tube counts, which collect traffic volumes on road sections, as well as intersection counts. These intersections were agreed with Council's traffic expert during consultation.

5.3.2.1 Tube counts

Tube count surveys¹⁴ spanning a 7-day duration collected traffic volumes on Middle Road (between Palmerston Road and Grant Street) and Te Aute Road (just south of Lipscombe Crescent (west)).

In summary,

- ◆ Middle Road recorded

¹³ As undertaken June 2026

¹⁴ As undertaken June 2026

- a 5-day ADT of 4,229 vehicles during the weekdays
 - an average morning peak hour volume of 398 vehicles per hour (in both directions) or 264 vehicles per hour in the peak direction (northbound)
 - an average evening peak hour volume of 410 vehicles per hour (in both directions) or 235 vehicles per hour in the peak direction (southbound)
 - 9.2 % heavy vehicles over the 5-day period. This is attributed to the current construction of the Iona Project that temporarily increases construction traffic on Middle Road
 - From 2020 to 2026, Middle Road experienced an average growth rate of about 2.5% per year. As noted above, the growth rate is affected by the increase in construction vehicles. We also note that 2020 counts may have been affected by Covid-19.
- ◆ Te Aute Road recorded
- a 5-day ADT of 4,736 vehicles during the weekdays
 - an average morning peak hour volume of 456 vehicles per hour (in both directions) with a directional split of about 50/50
 - an average evening peak hour volume of 492 vehicles per hour (in both directions) or 285 vehicles per hour in the peak direction (eastbound)
 - 5.4 % heavy vehicles over the 5-day period. This is attributed to the current construction of the Iona Project that temporarily increases construction traffic on Middle Road
 - From 2020 to 2026, Te Aute Road experienced an average growth rate of about 5.8% per year. We note this large growth rate is mostly attributable to the James Wattie Retirement Village that wasn't constructed at the time (2020). We also note that 2020 counts may have been affected by Covid-19.

5.3.2.2 Intersection turning movement counts

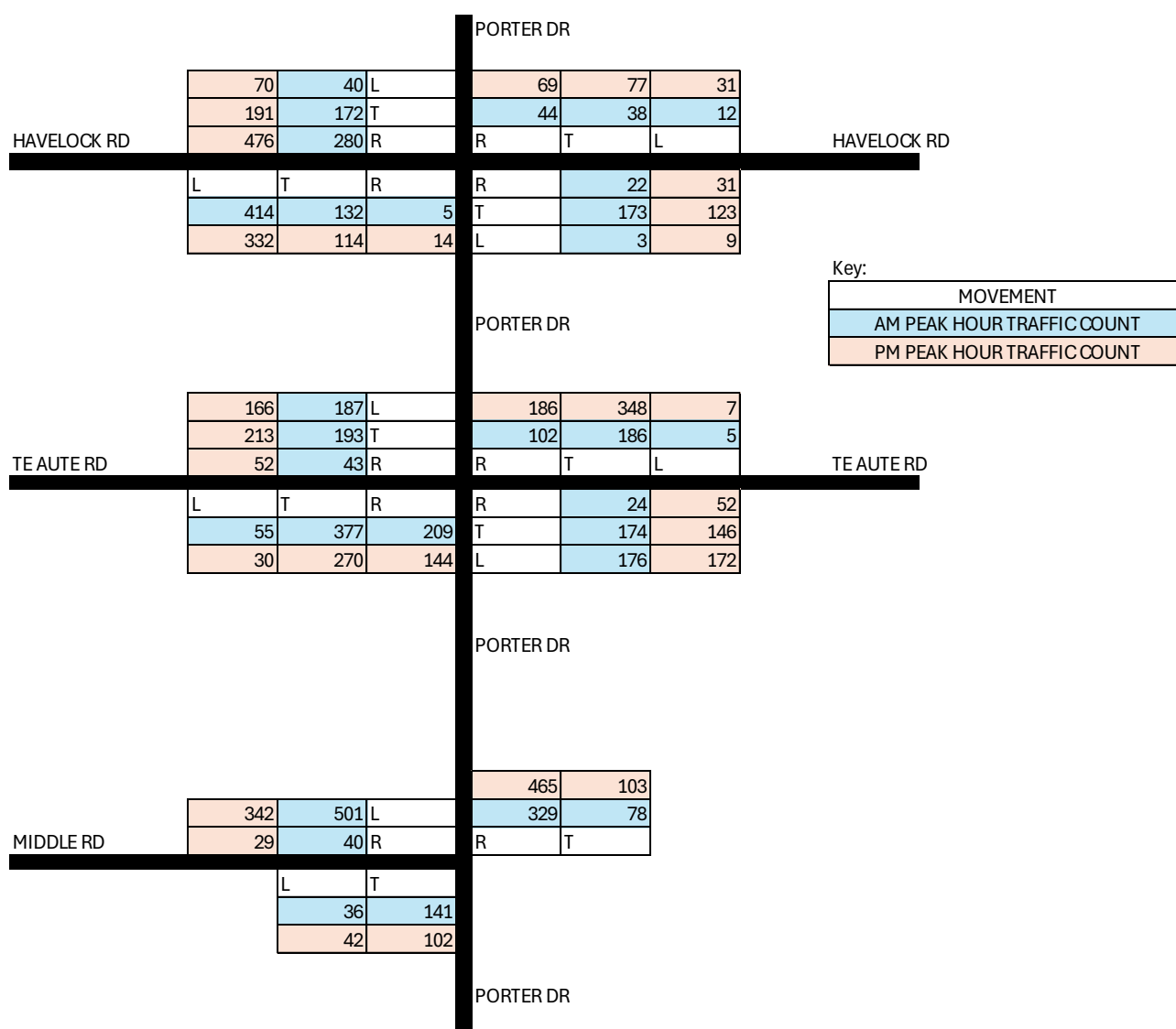
Intersection traffic surveys¹⁵ were undertaken during both the morning and evening peak periods for the following intersections.

- ◆ Havelock Road / Porter Drive roundabout
- ◆ Te Aute Road / Porter Drive roundabout
- ◆ Middle Road / Porter Drive give-way intersection

The results of these surveys are shown in Figure 6 below.

¹⁵ As undertaken June 2026

Figure 6: Existing turning traffic volume counts at intersections



5.3.3 Expected growth within the area

The traffic growth observed within the surrounding area over the past six years has been influenced by specific development-related activities, rather than reflecting general background traffic growth. In particular, the increase in traffic volumes on Middle Road is influenced by construction traffic associated with the Iona Project, while growth on Te Aute Road is largely attributable to the completion and occupation of the James Wattie Retirement Village, which was not operational at the time of the 2020 traffic counts.

Looking ahead, the key contributors to additional traffic growth within the immediate area are expected to be the proposed Middle Road Project and the ongoing development of the Iona Project. Given that the historical traffic growth rates are influenced by these specific activities and are therefore not considered representative of underlying background growth, no general background traffic growth rate has been applied to the existing traffic volumes for the modelling assessment.

Instead, traffic associated with the Middle Road Project and the Iona Project has been explicitly incorporated into the future traffic scenarios. The methodology for incorporating these development-

related trips is outlined further in Section 9, which considers the traffic effects of the Middle Road Project.

5.4 Existing speed limits

The existing speed limits on the roads in the immediate area are as follows

- ◆ The majority of roads in the urban Havelock North area have a posted speed limit of 50 km/hr
- ◆ The Havelock North Town Centre has a posted speed limit of 30 km/hr Outside of the urbanised areas and well past the Site's frontage, Middle Road and Te Aute Road transition to a posted speed limit of 80 km/hr.

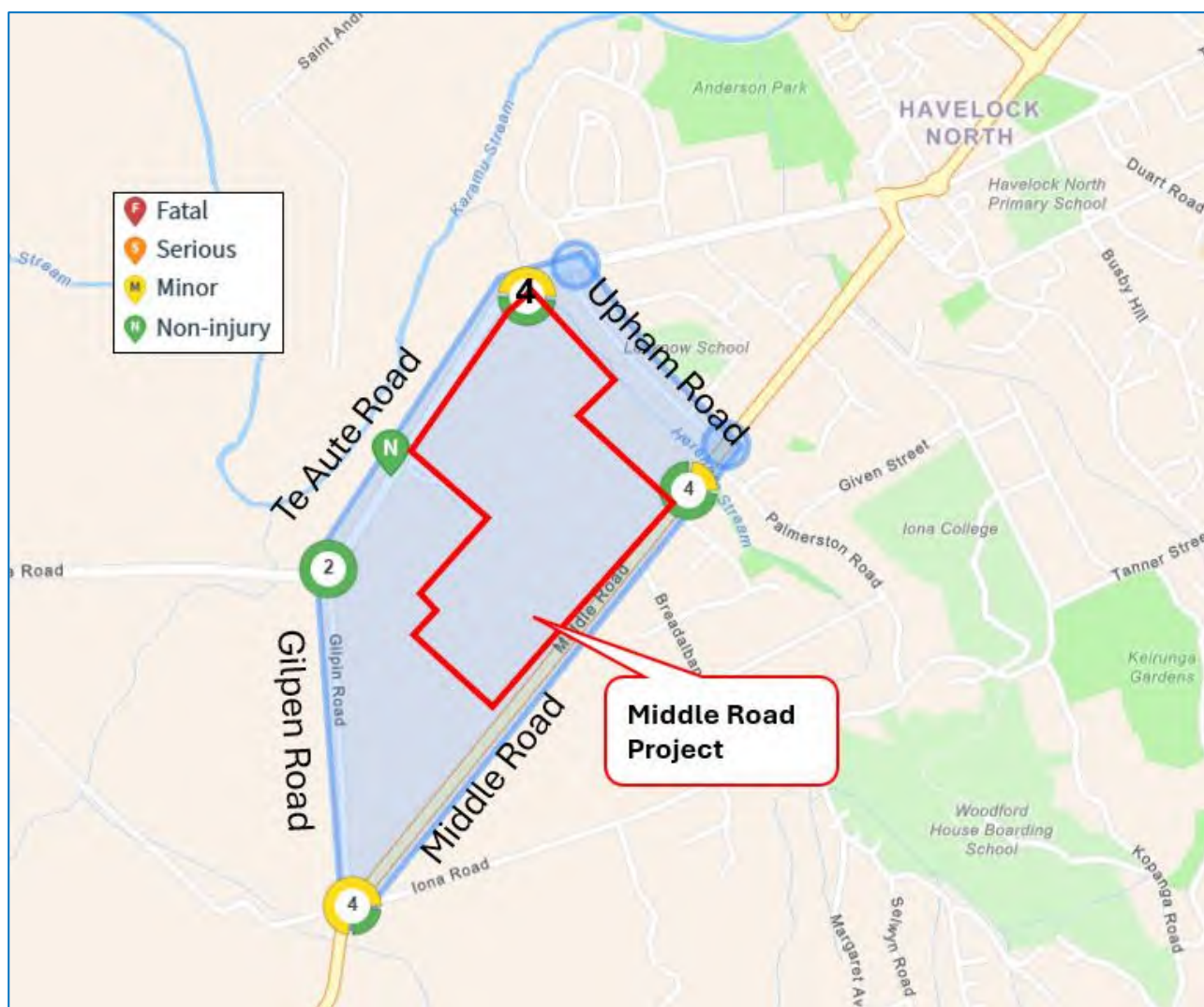
5.5 The existing road safety record

We have completed a thorough historical search of NZTA's Crash Analysis System (CAS) for the 5-year timeframe from 2021 to 2025, as well as all available data for 2026¹⁶. Our objective was to gather information regarding any recorded crashes around the perimeter of the Site. The search area includes the block of Te Aute Road, Upham Street, Middle Road and Gilpin Road, and all intersections within a 50 m radius.

The crash search area and results are shown in Figure 7.

¹⁶ As undertaken July 2026

Figure 7: CAS search area and results



A total of 15 crashes were reported, summarised as follows.

- ♦ 9 non-injury crashes and 6 minor injury crashes
- ♦ There was a mix of crash types
 - 2 loss of control / head on crashes on straight road
 - 4 loss of control / head on crashes on a bend
 - 3 rear end or obstruction crashes
 - 6 crossing or turning crashes
- ♦ The minor injury crashes were reported as follows
 - On Te Aute Road along the site frontage, a speeding driver lost control over their vehicle, crossed over the road and hit the fence by the retirement village
 - At the Te Aute Road / Lipscombe Crescent intersection, a driver had a medical event, and swerved their vehicle at the intersection, and collided with rubbish bins and a tree

- On Middle Road along the site frontage, a vehicle was attempting to overtake a parked bus, which was waiting on yellow no stopping lines. When another vehicle was approaching from the opposite direction, the vehicle pulled in and collided with the bus
 - At the Middle Road / Gilpin Road / Iona Road intersection, three minor injury crashes were reported, which all involved vehicles turning at the intersection. We note that Iona Road has been recently realigned as part of the new residential development, which means that this intersection is now a 3-leg intersection (previously 4-leg intersection). These crashes occurred when the previous layout was operational. The realignment of Iona Road reduces the likelihood of turning crashes, by simplifying the intersection layout
- ◆ For active modes, no crashes involved pedestrians and 1 crash involved a cyclist.

Given that there are no serious crashes and considering the infrequent occurrence and relatively low severity of the reported crashes in this area, there are no discernible concerning crash trends.

5.6 Future Residential Development in Havelock North

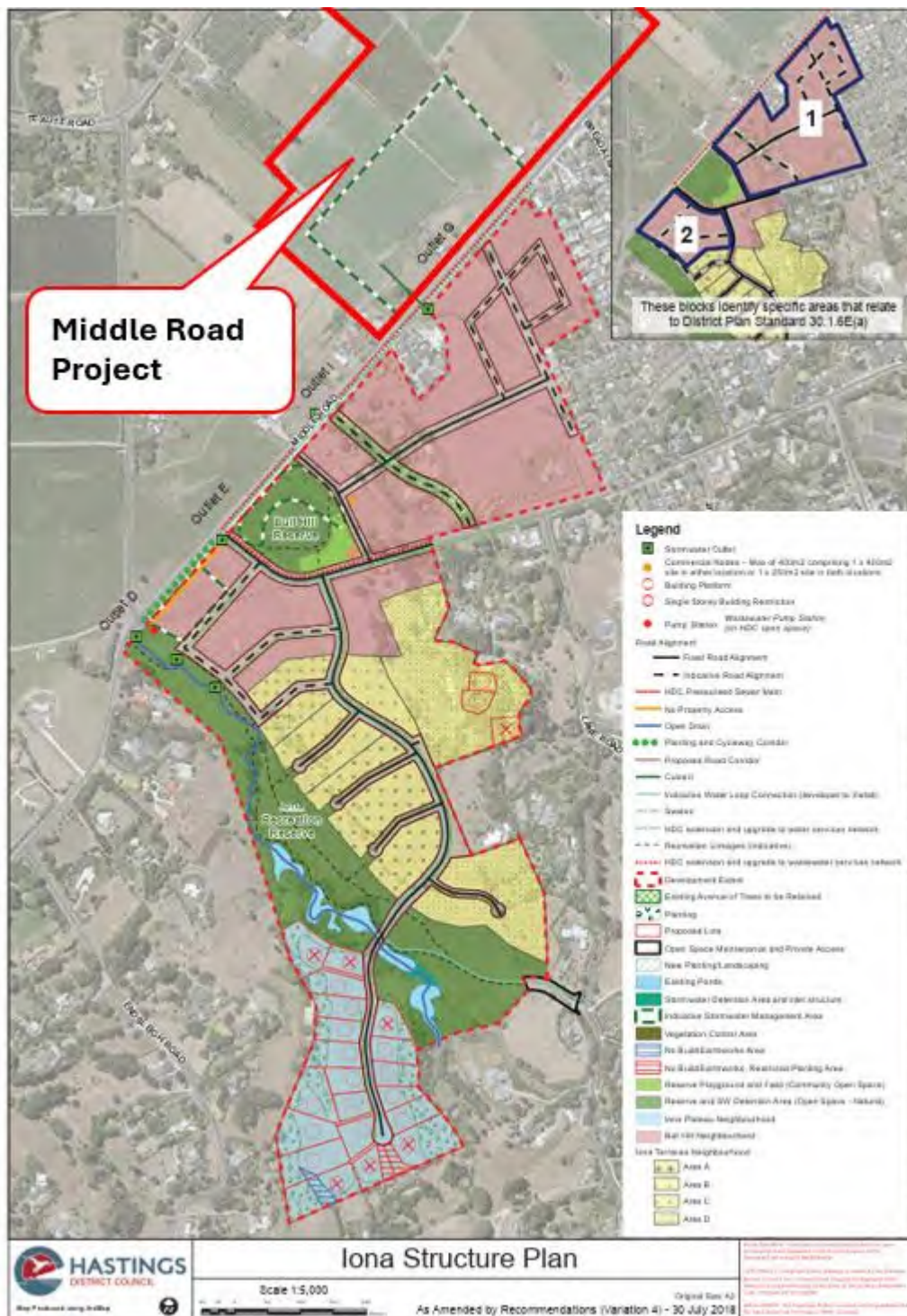
Future residential development is both approved and planned in the wider Havelock North area including the Iona Structure Plan area. The location and extent of this structure plan within the Havelock North area is shown below in Figure 8, with the proposed Middle Road Project being located to the north of this area.

The Iona Structure Plan will facilitate residential development in land of around 55 hectares in size. This includes the following components¹⁷

- ◆ **Iona Special Character Zone** – adoption of the three distinct neighbourhood areas - Bull Hill, Iona Plateau and Iona Terraces each with different District Plan provisions acknowledging their distinct features and to manage environmental effects.
- ◆ **Roading, Walkways and Cycleways** – some roads are indicative and others fixed to assist in managing how the neighbourhoods are developed and promote good connections. Central to the Plateau and Terraces is the spine road, which has been positioned in the saddle of the central ridge to reduce visibility. This road is to retain a more rural feel and treatment.
- ◆ **Public Open Space** – two new reserves are intended, Bull Hill Reserve within the Iona triangle which is to include a playground and the other across the road within the hill area. Walking loop circuits through the reserves are intended to further enhance recreational opportunities.
- ◆ **Infrastructure** – existing ponds will be used along with additional land set aside for stormwater management and detention to ensure stormwater neutrality is achieved. Central water and wastewater are also shown, including a new wastewater pump station on Iona Road within a reserve area.

¹⁷ <https://www.hastingsdc.govt.nz/services/district-plan/changes/iona-residential-rezoning/>

Figure 8: Iona Structure Plan



6 TRANSPORT ACCESSIBILITY OF THE MIDDLE ROAD PROJECT

6.1 Public transport accessibility

A map of the wider area public transport network in the vicinity of the Middle Road Project area is shown in Figure 9.

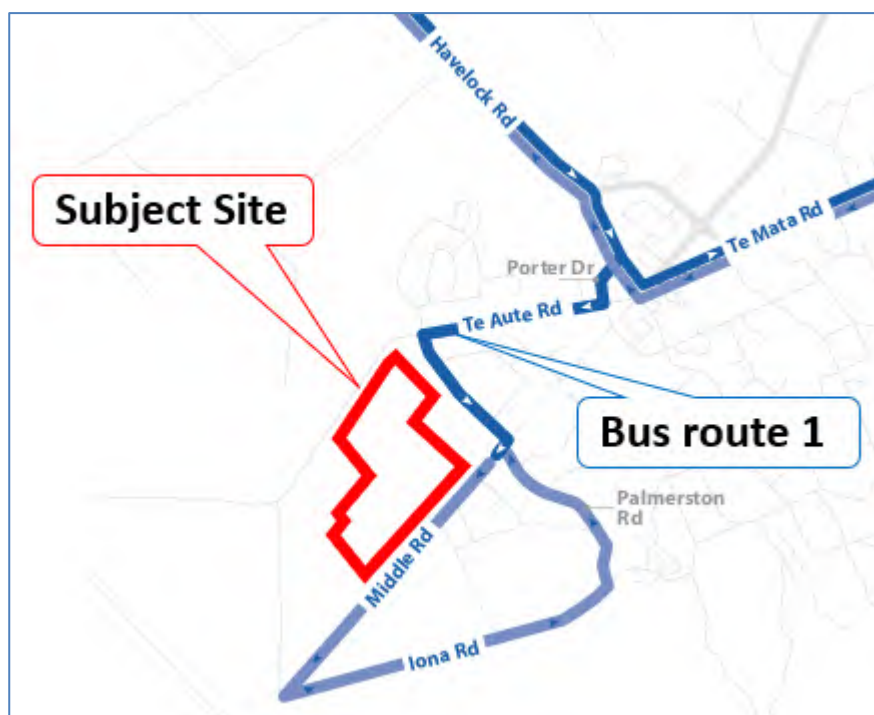
The neighbouring area is served by Route 1 (It is now an extension of the previous Route 21, and came into effect on 25 January 2026), which provides scheduled public transport between Napier, Hastings and Havelock North. The service operates on weekdays, weekends, and public holidays (with the Saturday timetable applying on public holidays, and no services operating on Christmas Day or Good Friday).

On weekdays, services operate from approximately 6:15 am to around 6:05 pm, with buses generally running every 30 minutes through most of the day, providing a relatively frequent connection between Napier, Hastings and Havelock North.

The route travels from Dalton Street in Napier, generally following Raffles Street, Wellesley Road, Kennedy Road, Gloucester Street, Lee Road, Waiohiki Road, Links Road, the Hawke's Bay Expressway, Evenden Road, Percival Road, Lyndhurst Road, Nottingham Road and Omahu Road, before continuing through Hastings via Heretaunga Street West, Nelson Street North, St Aubyn Street, Market Street North, Queen Street East, Russell Street, and Eastbourne Street. From Hastings the service continues to Havelock North via Hastings Street South, Heretaunga Street East, Havelock Road and Te Aute Road, before circulating through the Havelock North area via Porter Drive and Te Mata Road, with buses alternating every second trip between the Arataki Road corridor and the Middle Road / Iona Road corridor.

On Saturdays, services operate approximately hourly between around 7:40 am and 5:40 pm from Napier, following the same general alignment between Napier, Hastings and Havelock North. On Sundays, services operate at reduced frequency, with approximately six trips per day between the centres.

Figure 9: Public transport network in the wider area near the Middle Road Project area



6.2 Walking and cycling accessibility

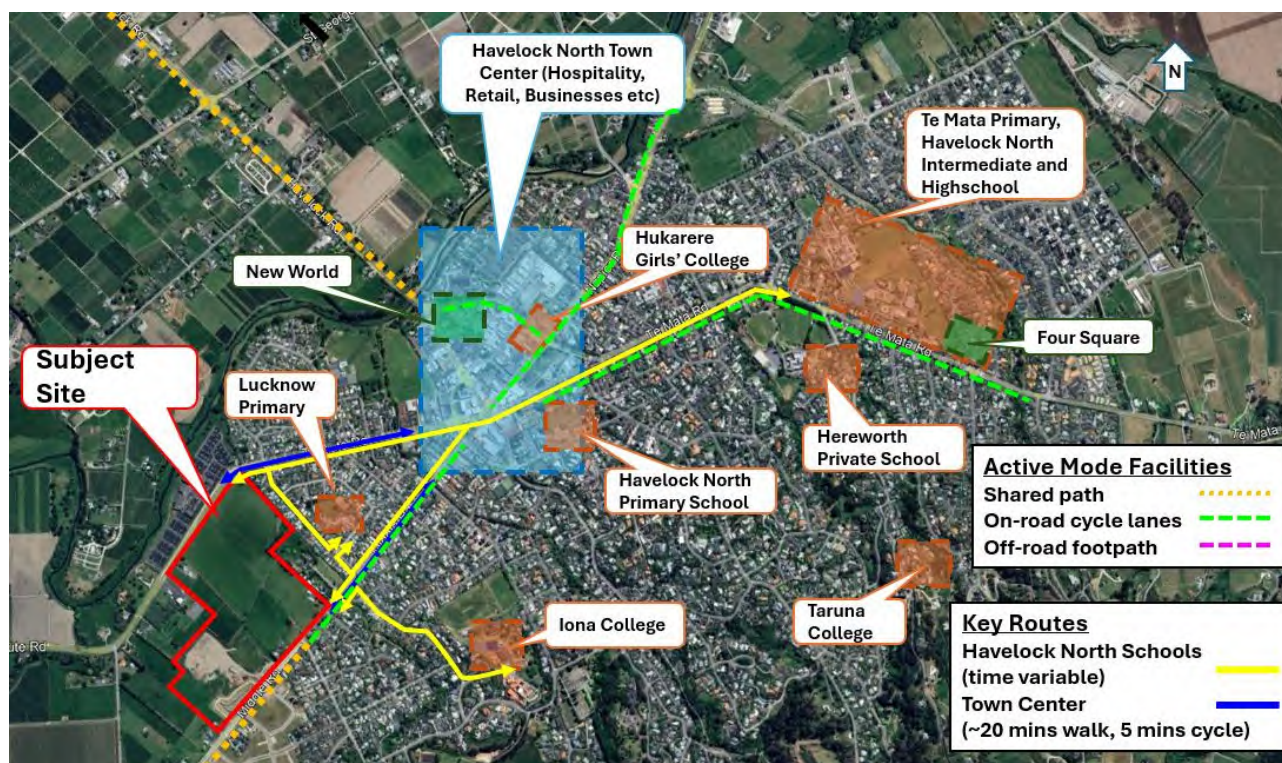
Walking and cycling facilities immediately fronting the Site are currently limited, reflecting the area's rural character. Notwithstanding this, Te Aute Road includes a kerbed shared path on the opposite side of the carriageway, which connects into the wider footpath network just north of the Site and provides continuous access to the town centre.

Middle Road has recently been upgraded to an urban cross-section between Breadalbane Road and Gilpin Road, now providing kerb and channel on both sides of the road, together with a shared path on the opposite side to the Site. North of Breadalbane Road, the corridor remains urbanised, with kerb and channel, on-street cycle lanes, and a footpath on the opposite side of the road. From the intersection with Upham Street towards the town centre, Middle Road provides footpaths on both sides.

There are informal public walking tracks alongside the Herehere Stream, both north and south of the Site, that also connect through to the Karamū Stream.

The active mode network surrounding the Middle Road Project area is shown in Figure 10 below.

Figure 10: Middle Road Project location in the active modes network



For pedestrian accessibility in the vicinity of the Middle Road Project area, we note that

- ♦ All roads in Havelock North typically have footpaths on both sides of the road. The notable exceptions are the Site frontages on Middle Road and Te Aute Road.

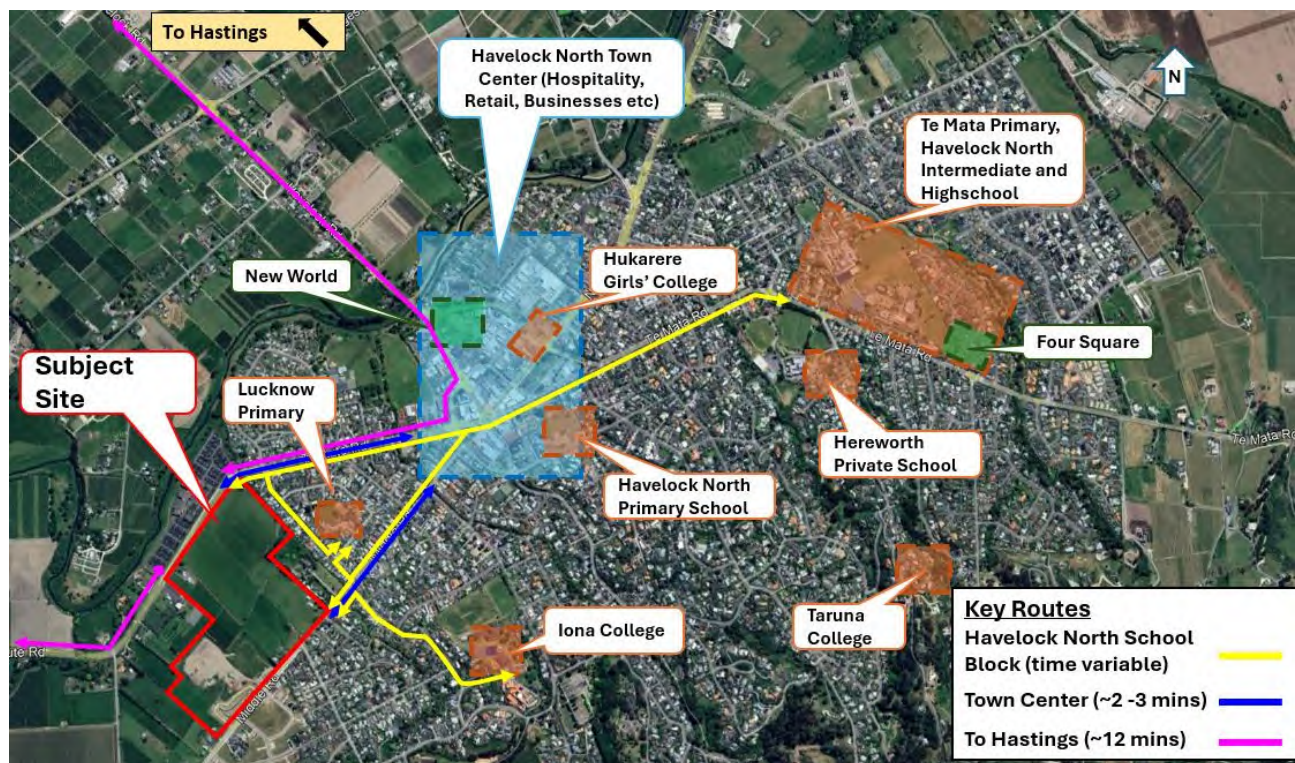
For cycling accessibility, we note that

- ♦ various on and off-road cycle lanes are provided along key roads in the network, including
 - on-road cycle lanes are provided on Middle Road, which connect to the Town Centre. These on-road lanes transition to a shared path on the south side only, west of Breadalbane Road
 - other on-road cycle lanes are provided on other key routes in Havelock North including Te Mata Road and Napier Road
 - Havelock Road provides off-road shared path facilities on both sides, which connects to Hastings to the north.

6.3 Private vehicle accessibility

The Middle Road Project area is well-located with respect to providing vehicle accessibility to the local road network, as shown in Figure 11.

Figure 11: Middle Road Project location in the local transport network



The vehicle road network is summarised as follows.

- ♦ Te Aute Road and Middle Road provide accessibility to the Havelock North town centre within 2 to 3 minutes
- ♦ Travel to nearby schools is variable depending on the school, although most schools within Havelock North are accessible within 6 minutes
- ♦ Hastings is accessible within 12 minutes. Routes are available via Havelock Road to the northeast, or via Te Aute Road and Longlands Road E to the northwest.

7 FUTURE TRANSPORT NETWORK

7.1 iWay and the Hawke's Bay Regional Cycle Plan

The iWay programme is an active modes development initiative run by the collaboration of the Hawke's Bay, Napier, and Hastings Councils to create an extensive combined shared walking and cycling network in Hawke's Bay. These walking and cycling routes are intended to be safe active mode routes that provide commuters with an alternative to the existing vehicle routes and link various communities.

The iWay network map showing the various walking and cycling routes available in Havelock North is shown in Figure 12.

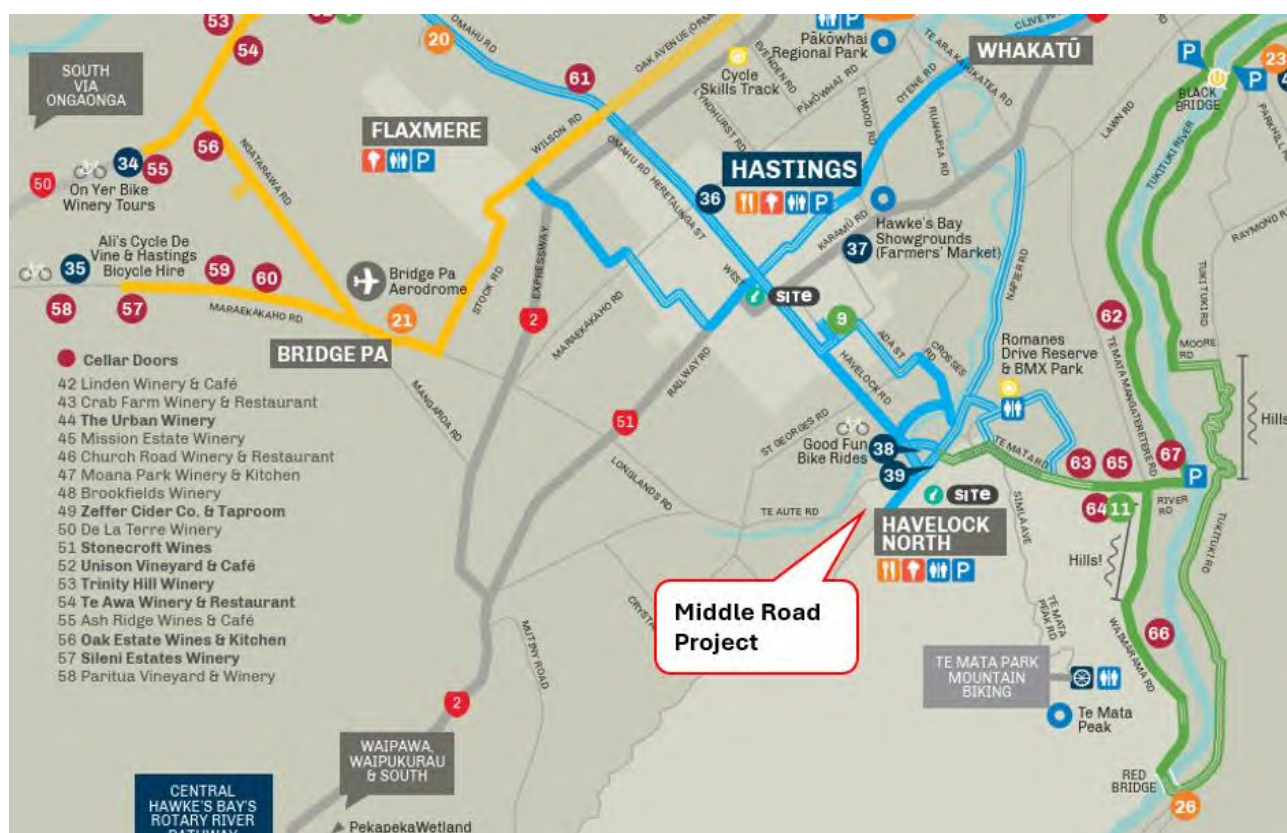
Figure 12: iWay Network Map



The Hawke's Bay Regional Cycle Plan seeks to build on the existing and planned iWay network within the Hastings and Napier districts. A map of the Havelock North area included in this plan is shown in Figure 13. The priorities of this plan include:

- ♦ investigate improvements to connectivity between towns in the region, in particular Havelock North to Waipawa
- ♦ promote cycling in schools, including any necessary infrastructure improvements for safe routes to school
- ♦ promote cycling as an option for transport, particularly commuting
- ♦ correct safety issues on existing networks
- ♦ maintain existing networks to a high standard and maximise use through effective promotion
- ♦ cycle tourism.

Figure 13: Hawke's Bay Regional Cycle Plan 2015



Middle Road, in the vicinity of the Middle Road Project is identified as a cycle-friendly and on-road cycle path route that leads to the Havelock North town centre and an off-road cycle path leading towards the southwest.

7.2 Future public transport upgrades

Hawke's Bay Regional Council has adopted the Regional Public Transport Plan 2025–2035, which sets out a new bi-directional bus network for Hastings and Havelock North. The network is scheduled for roll-out from January 2026, though initial service levels are likely to be comparable to current services, with frequency or span increases only possible if and when additional funding and infrastructure become available.

Accordingly, any proposed public transport services for new developments (such as the Middle Road Project, or along Te Aute Road / Middle Road) remain subject to confirmation (their feasibility depends on demonstrated demand and completion of necessary infrastructure). The Middle Road Project is likely to be a catchment that will be addressed by future public transport routes, with Middle Road or Te Aute Road as a key road for buses. The design of the Middle Road Project's roads considers future public transport opportunities.

7.3 Iona Development project

The Iona Development is a major greenfield residential growth area on the south-western edge of Havelock North, led by CDL under a Council-approved structure plan (refer to Section 5.6). The project delivers a mix of low-, medium- and large-lot residential neighbourhoods supported by new transport, three-waters, and open-space infrastructure. As part of the development, new road connections have been constructed, with rural road frontages being urbanised, supported by upgraded carriageways, footpaths, and services. This includes upgrades on Middle Road.

Given its proximity to the Site, the design of the Middle Road Project considers and integrates with the Iona Development, ensuring alignment with the established road hierarchy, pedestrian and cycling links, and the emerging urban character along the Iona Road corridor.

8 THE PROPOSED TRANSPORT ELEMENTS OF THE MIDDLE ROAD PROJECT

8.1 Design philosophy

To assist with the design and development of the Middle Road Project, we have used several guiding documents to form the overall design philosophy for the road network. These include the Vision Zero principles.

8.1.1 Vision Zero

Vision Zero is an ethics-based transport safety approach. The responsibility for safety is placed on people who design and operate the transport system. The goal is to provide a safe system which accommodates human beings. It acknowledges that people in the transport system make mistakes, and people are vulnerable to high-impact forces in a crash. The Vision Zero system looks at the whole system to ensure everything works together to protect road users from forces that can cause traumatic injury.

As transport system designers and operators, reducing the likelihood and severity of serious injury crashes from occurring aligns with the goals of Vision Zero. Measures to align with Vision Zero include speed limit reductions, as road users are much less likely to sustain serious injuries at lower speeds. It also encourages designs and intersections that minimise crash likelihood and severity, such as using roundabouts at intersections, which reduce the likelihood of head-on crashes.

The Middle Road Project provides the opportunity to make both Middle Road and Te Aute Road a safer place for all road users by adopting Vision Zero principles. The roading upgrades propose to achieve this outcome external to the development, with the layout and functions of roads internal to the development presenting safe outcomes for all road users.

8.2 Existing road frontage upgrades

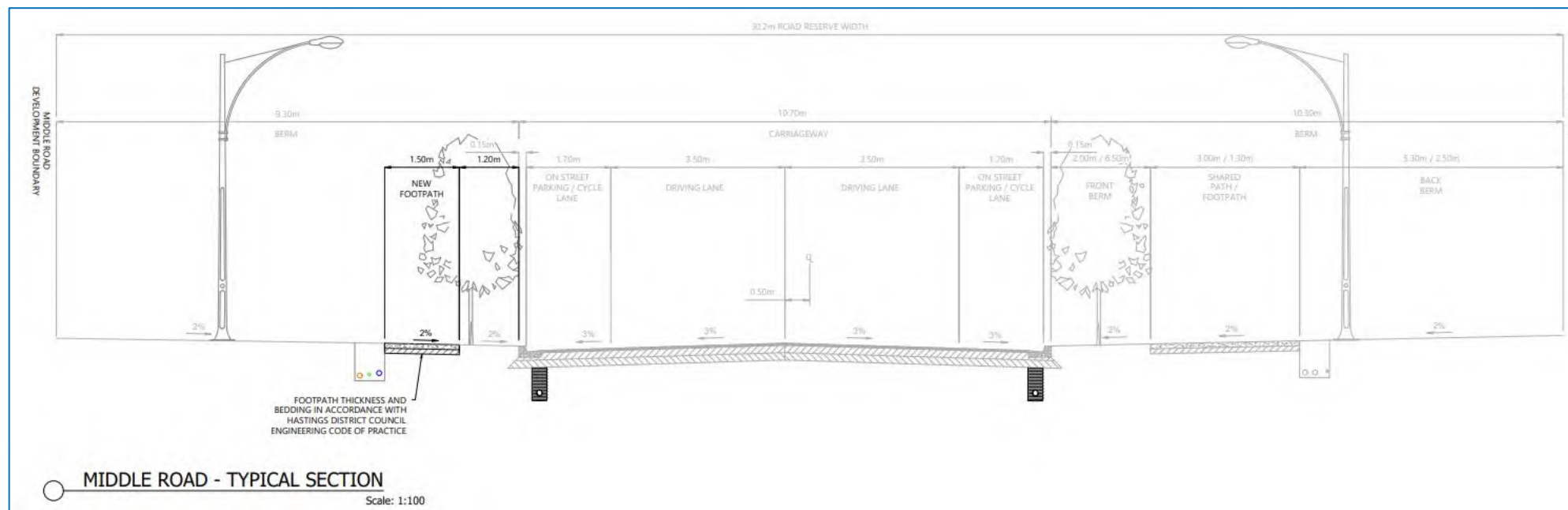
The details of the road design are shown and form part of the civil engineering drawing package undertaken by Woods.

The detailed layout for each road will be subject to future Engineering Approval stages, where final engineering details such as road marking and signage and exact form of pedestrian crossing facilities will be further considered in cooperation with Council.

8.2.1 Middle Road upgrade

As part of the Middle Road Project, it is intended to upgrade the frontage of Middle Road to provide the following cross-section along the Site frontage, as shown in Figure 14 below.

Figure 14: Middle Road upgrade



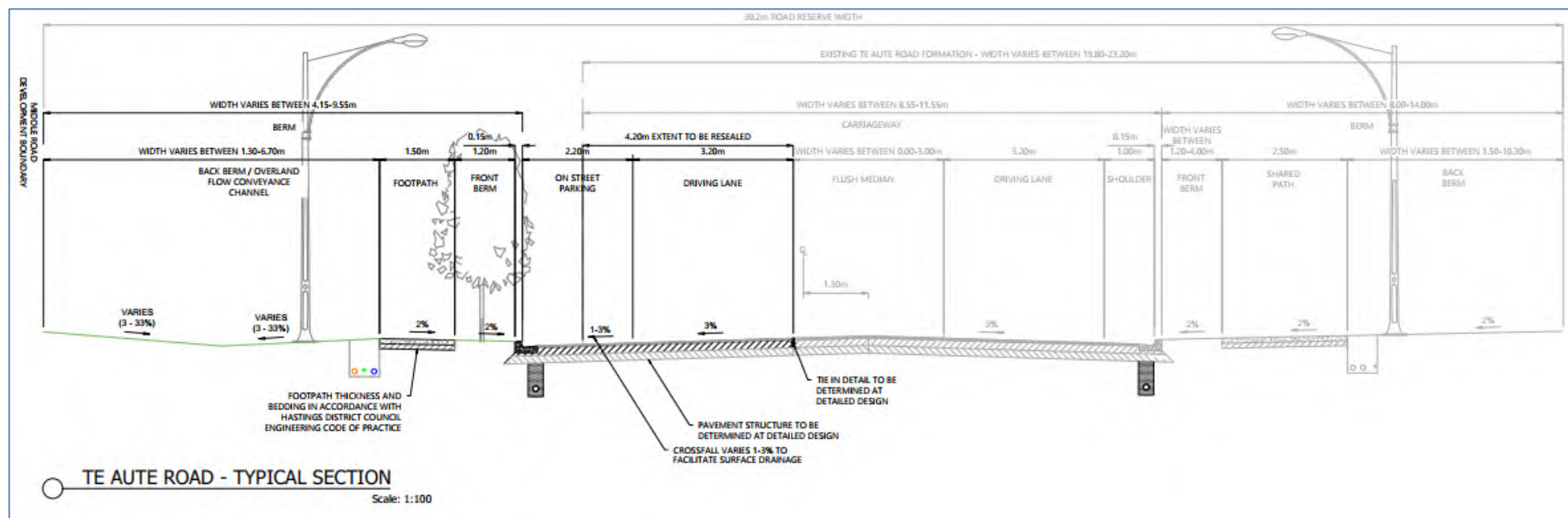
The Middle Road upgrade includes the following elements

- ◆ A minimum 1.2 m front berm allowing street tree planting
- ◆ A 1.5 m footpath
- ◆ A total berm of 9.3 m (including footpath and front berm)
- ◆ A zebra crossing near the proposed collector road intersection
- ◆ Retention of the existing carriageway width which includes on-street cycle lanes (east of the Breadalbane Road intersection)
- ◆ The existing on-street cycle lanes will transition to the existing shared path on the south side of Middle Road, in the area between Breadalbane Road and the new internal collector road intersection
- ◆ The addition of a second pedestrian bridge on Middle Road across the Herehere Stream towards the town centre.

8.2.2 Te Aute Road upgrade

It is intended to upgrade the northern frontage of Te Aute Road to provide the following cross-section along the Site frontage, as shown in Figure 15 below

Figure 15: Te Aute Road upgrade



The Te Aute Road upgrade includes the following elements

- ♦ A minimum 1.2 m front berm allowing street tree planting
- ♦ A 1.5 m footpath
- ♦ A back berm of minimum 1.3 m
- ♦ A 2.2 m on-street parking bay

- ♦ A zebra crossing and pram crossing on either side of the vehicle access point into the retirement village
- Removal of the existing raised median chicane island, and replacement with a flush median turning lane..

8.3 Middle Road Project road layout

The Middle Road Project includes a series of vested internal access roads, public pedestrian accessways and JOALs that will serve the proposed lots.

There are 8 types of internal roads, public pedestrian accessways and JOALs, namely

- ◆ Collector Road (20 m)
- ◆ Access Road Type 1 (16 m)
- ◆ Access Road Type 2 (18 m)
- ◆ Access Road Type 3 (18 m)
- ◆ Access Road Type 4 (13.3 m)
- ◆ Public pedestrian accessway (10 m)
- ◆ JOAL type 1 (4 m)
- ◆ JOAL type 2 (6 m).

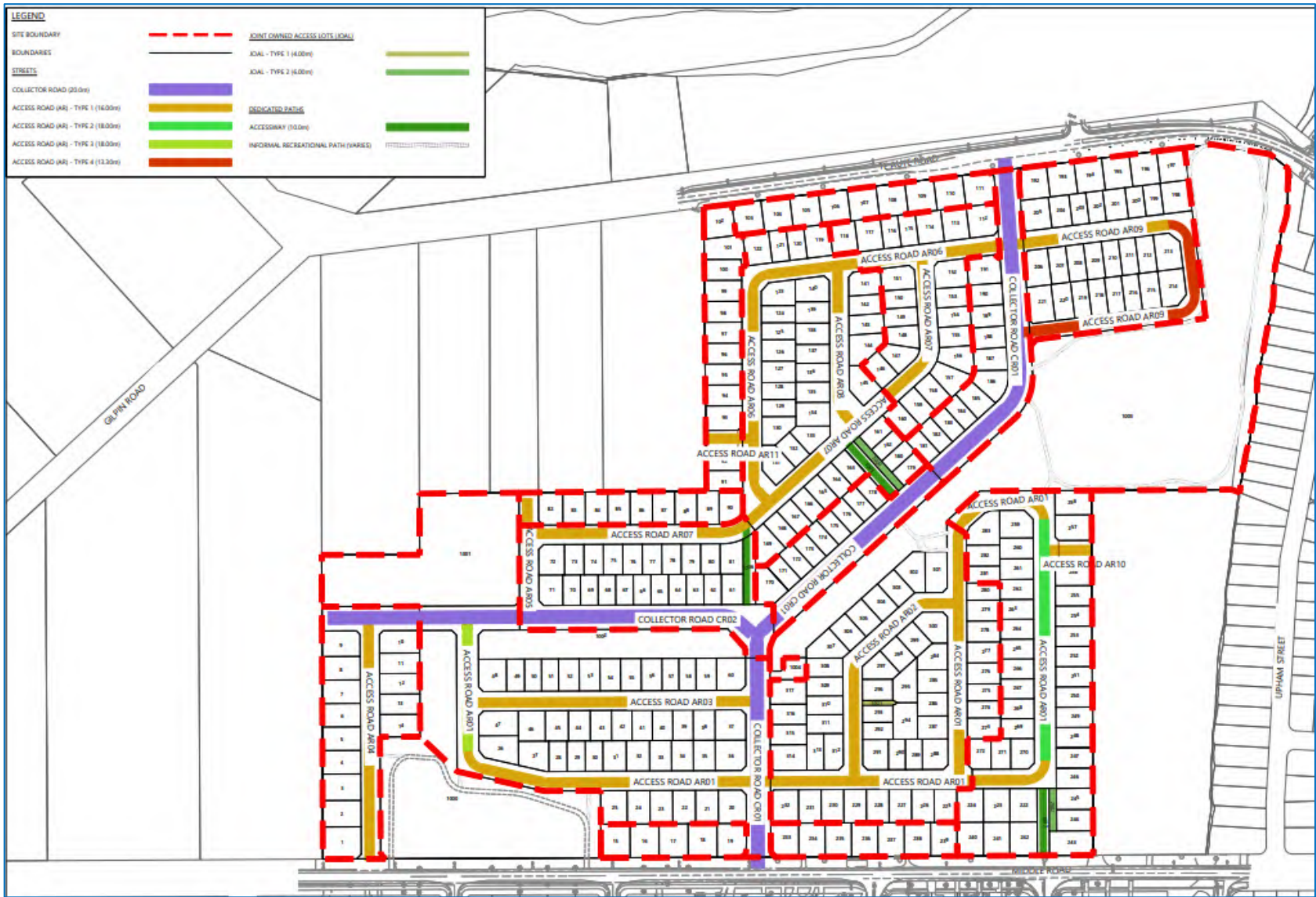
The network of these road types is shown in Figure 16 overleaf.

While the design details of these different roads and JOALs are provided in the Woods Civil Engineering Plans, we provide below a cross-section plan and brief description of each type of road, public pedestrian accessway and JOAL.

The detailed layout for each road will be subject to future Engineering Approval stages, where final engineering details such as road marking and signage and exact form of pedestrian crossing facilities will be further considered in cooperation with Council.

.

Figure 16: Middle Road Project: Internal road layout



8.3.1 Collector Road (CR)

The proposed collector roads will be designed to achieve the most appropriate posted speed limit at the time of urban development (likely a speed limit of 50 km/h), providing a safe environment for all road users. Collector roads will accommodate front and back berms, footpaths and two-way vehicle movement.

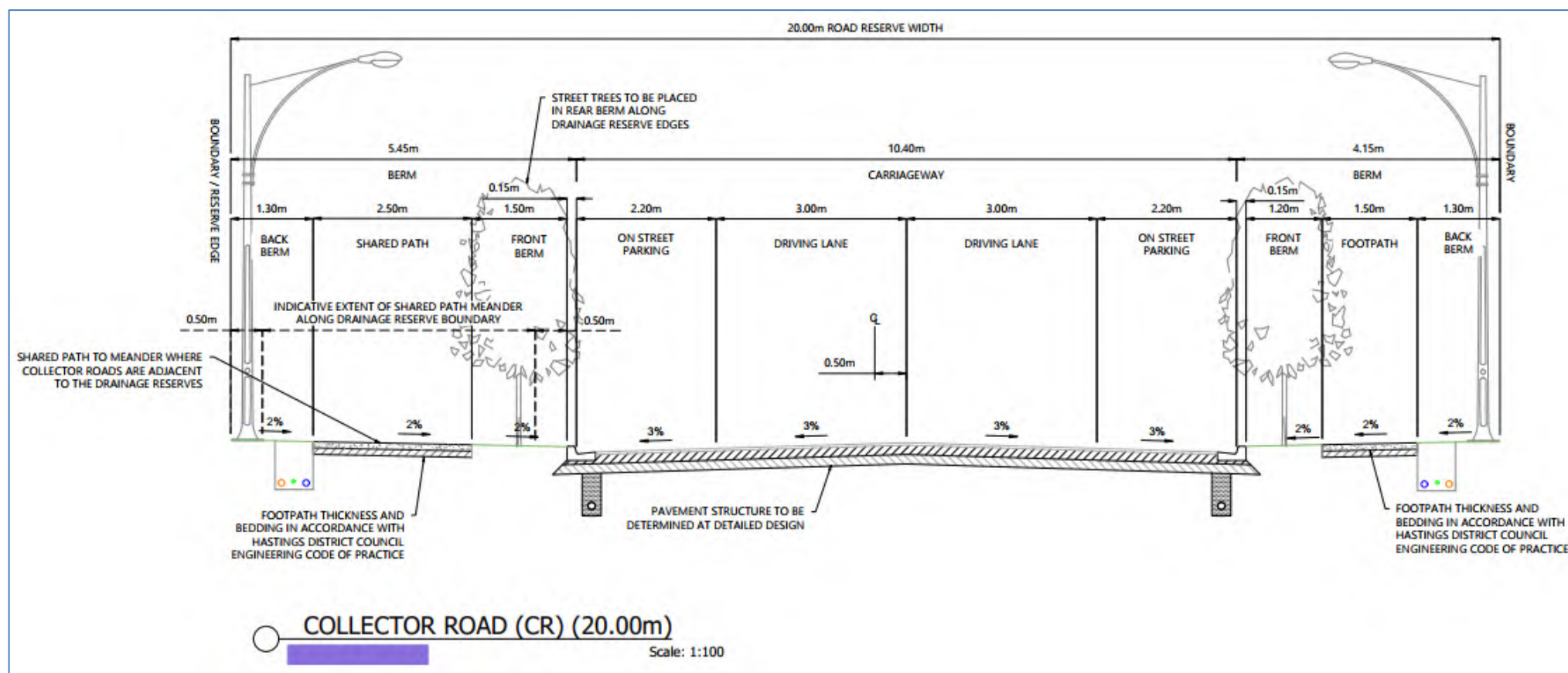
- ◆ These roads will be vested
- ◆ Cyclists need not share the roadway with motorists, as a shared path will be provided along these roads
- ◆ The ability to accommodate future bus routes and future bus stops will be enabled by the design.

Collector Roads will have road reserve widths of 20.0 m, which is consistent with collector roads as set out in the Hastings Engineering Standards. The cross-section of the Collector Road is shown in Figure 17 and will have the following features

- ◆ 10.4 m carriageway width providing for two-way movement with 3.0 m wide driving lanes
- ◆ 2.2 m on-street parking on both sides, which can be converted to bus facilities
- ◆ 1.5 m footpath on one side of the road, and a 2.5 m shared path on the other side.
- ◆ 1.3 m back berm to allow for services
- ◆ 1.2 m front berm on the side of the 1.5 m footpath and 0.5 m to 1.5 m front berm on the side of the 2.5 m shared path. The shared path will meander where the Collector Roads are adjacent to the drainage reserve.

There will be two collector roads, Collector Road CR01 and Collector Road CR02.

Figure 17: Collector Road cross-section



8.3.2 Local Access Roads (AR)

Local access roads will be designed to achieve the most appropriate posted speed limit at the time of urban development (likely a speed limit of 30 km/h), providing a safe environment for all road users. Local access roads will accommodate front and back berms, footpaths and two-way vehicle movement.

- ♦ The proposed alignments of these access roads encourage these low speeds, with build-outs provided at pedestrian crossing points and horizontal curves
- ♦ These roads will be vested

- ♦ With a design speed of 40 km/hr, there is no requirement for dedicated cycle facilities to be provided on these roads
- ♦ Access road volumes will generally be very low, with most access roads for this development serving residential traffic only.

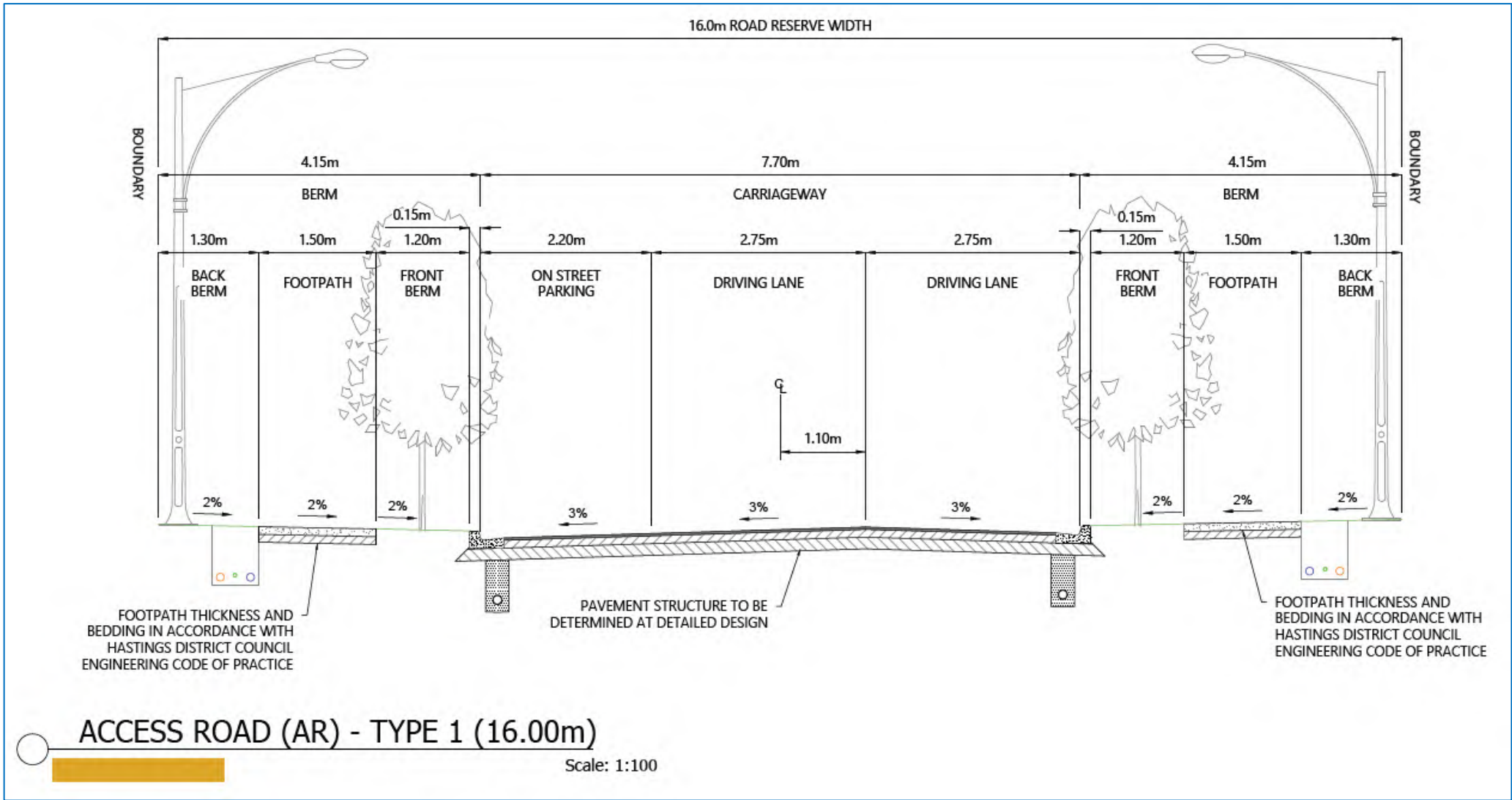
8.3.2.1 Type 1 Access Road

Type 1 access roads will have road reserve widths of 16.0 m, which is consistent with access roads as set out in the Hastings Engineering Standards. The cross-section of the Type 1 access road is shown in Figure 18 and will have the following features

- ♦ Legal width of 16.0 m
- ♦ 7.7 m carriageway width providing for two-way movement with 2.75 m wide driving lanes
- ♦ 2.2 m on-street parking lane
- ♦ 1.2 m front berm and 1.3 m back berm to allow for services
- ♦ 1.5 m footpath on both sides of the road.

Access Road AR02, Access Road AR03, Access Road AR04, Access Road AR05, Access Road AR06, Access Road AR07 Access Road AR08, Access Road AR10, Access Road AR11, and sections of Access Road AR01 is proposed to be Type 2 or Type 3 and Access Road AR09 is proposed to be Type 4 access roads.

Figure 18: Type 1 Access Road cross-section



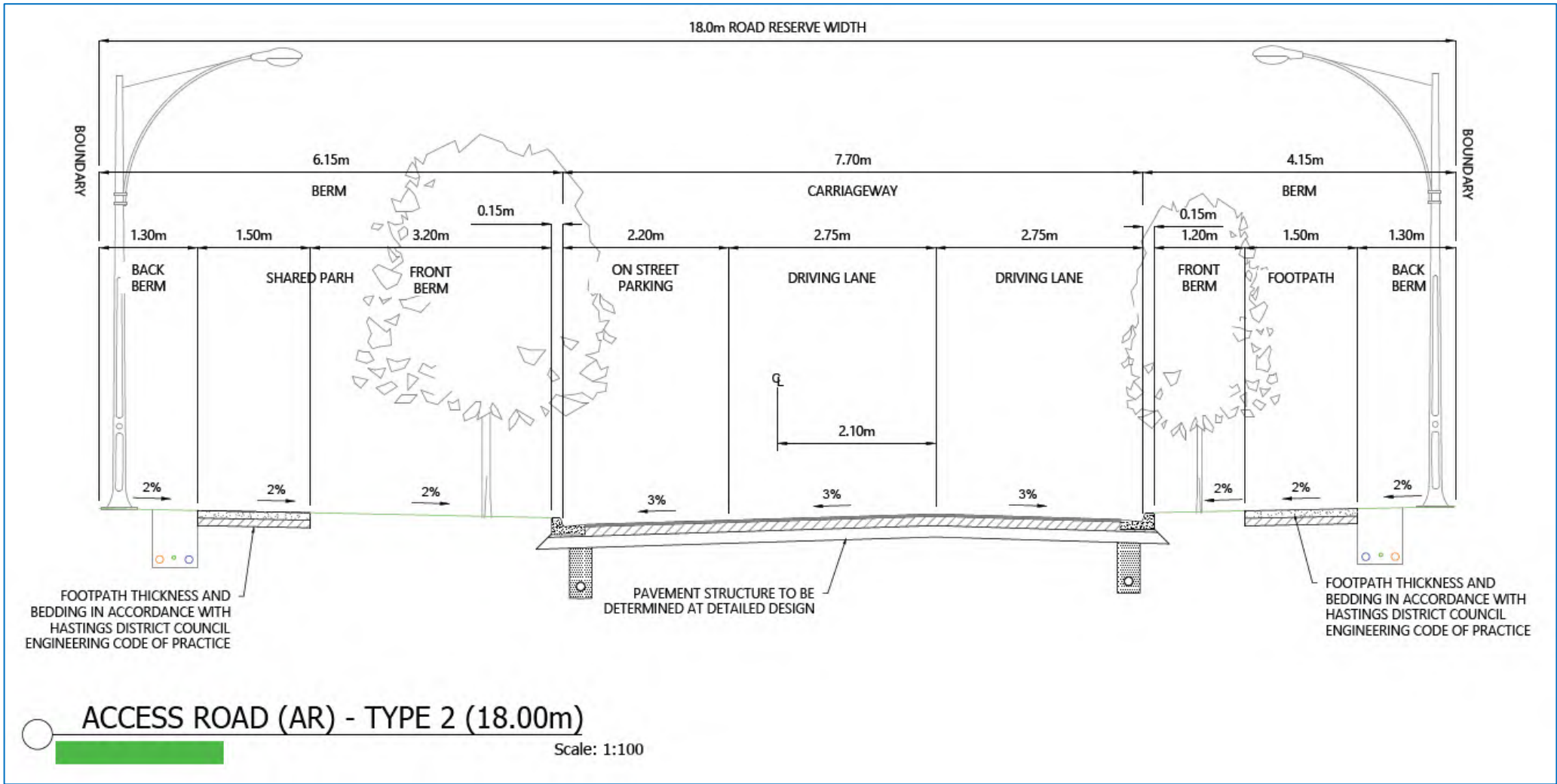
8.3.2.2 Type 2 Access Road

The cross-section of the Type 2 access road is shown in Figure 19 and will have the following features

- ◆ Legal width of 18.0 m
- ◆ 7.7 m carriageway width providing for two-way movement with 2.75 m wide driving lanes
- ◆ 2.2 m on street parking lane
- ◆ 3.2 m front berm and 1.3 m back berm on its eastern side to allow for services
- ◆ 1.2 m front berm and 1.3 m back berm on its western side to allow for services
- ◆ 1.5 m footpath on both sides of the road.

One section of Access Road AR01 will have a road reserve width of 18 m, forming Type 2 of local access road.

Figure 19: Type 2 Access Road cross-section



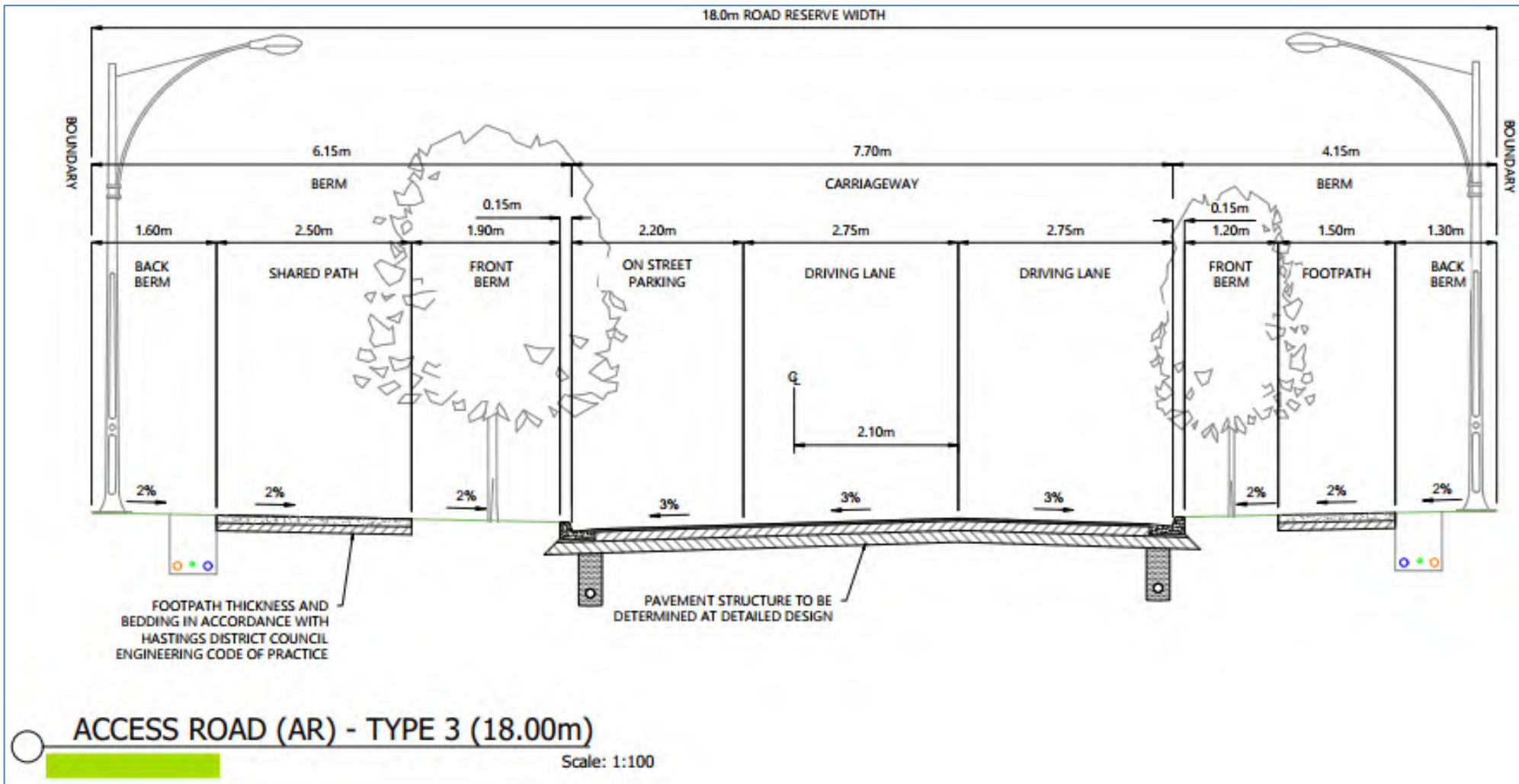
8.3.2.3 Type 3 Access Road

The cross-section of the Type 3 access road is shown in Figure 20 and will have the following features

- ♦ Legal width of 18.0 m
- ♦ 7.7 m carriageway width providing for two-way movement with 2.75 m wide driving lanes
- ♦ 2.2 m on street parking lane
- ♦ 1.9 m front berm and 1.6 m back berm on its western side to allow for services
- ♦ 1.2 m front berm and 1.3 m back berm on its eastern side to allow for services
- ♦ 2.5 m shared path on the west side
- ♦ 1.5 m footpath on the east side.

One section of Access Road AR01 will have a road reserve width of 18 m, forming Type 3 of local access road.

Figure 20: Type 3 Access Road cross-section



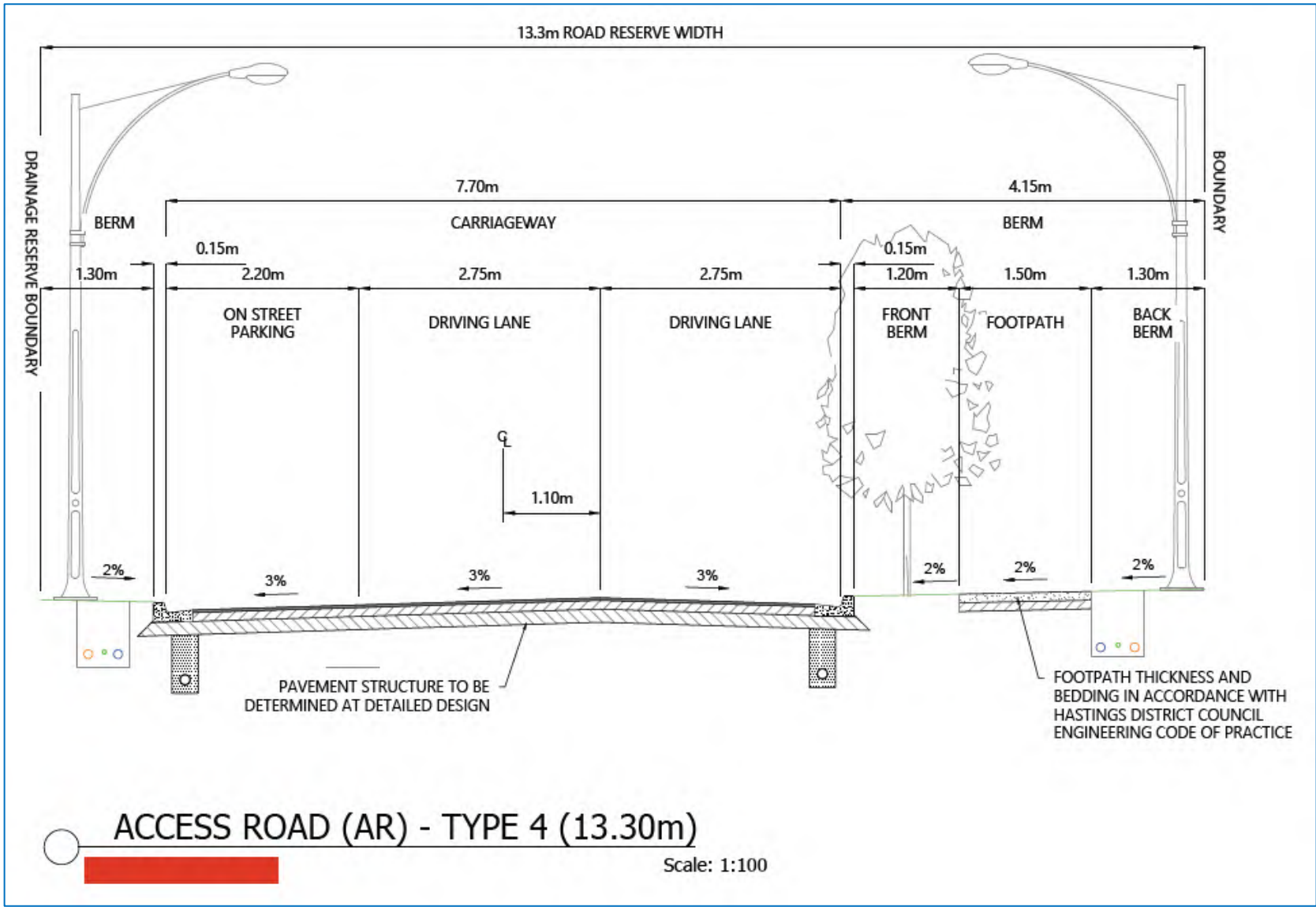
8.3.2.4 Type 4 Access Road (park edge)

The cross-section of the Type 4 access road is shown in Figure 21 and will have the following features

- ♦ Legal width of 13.3 m
- ♦ 7.7 m carriageway width providing for two-way movement with 2.75 m wide driving lanes
- ♦ 2.2 m on street parking lane
- ♦ 1.2 m front berm and 1.3 m back berm on its western side to allow for services
- ♦ 1.3 berm on its eastern side to allow for services
- ♦ 1.5 m footpath on the west side only.

One section of Access Road AR09 will have a road reserve width of 13.3 m, forming Type 4 of local access road.

Figure 21: Type 4 Access Road cross-section

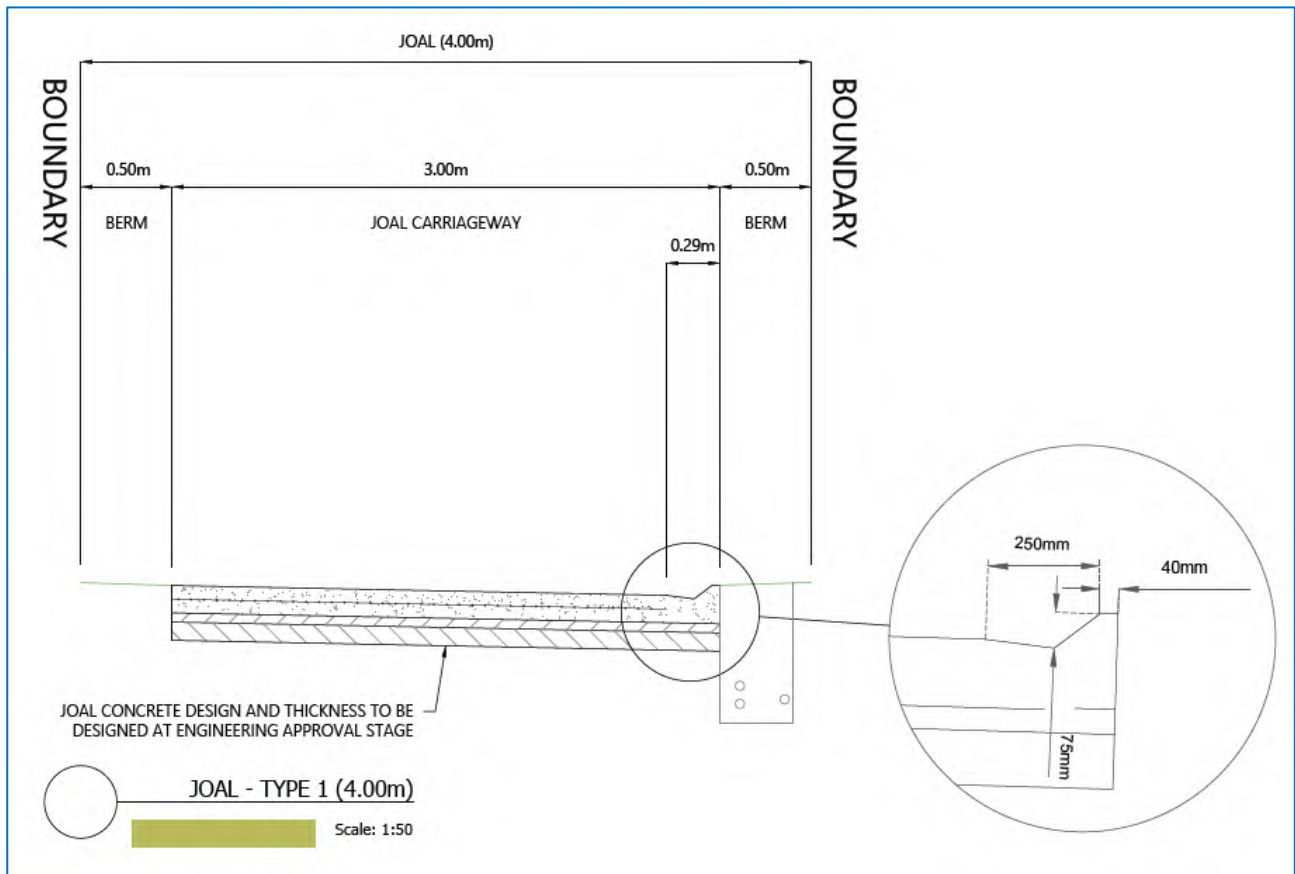


8.3.3 JOAL Type 1

The cross-section of the Type 1 JOAL is shown in Figure 22 and will have a 4.0 m legal access width providing for one-way traffic movement at a time to be shared with pedestrians.

One Type 1 JOAL is proposed off Access Road AR02 and will serve lots 294 and 295.

Figure 22: Type 1 JOAL cross-section



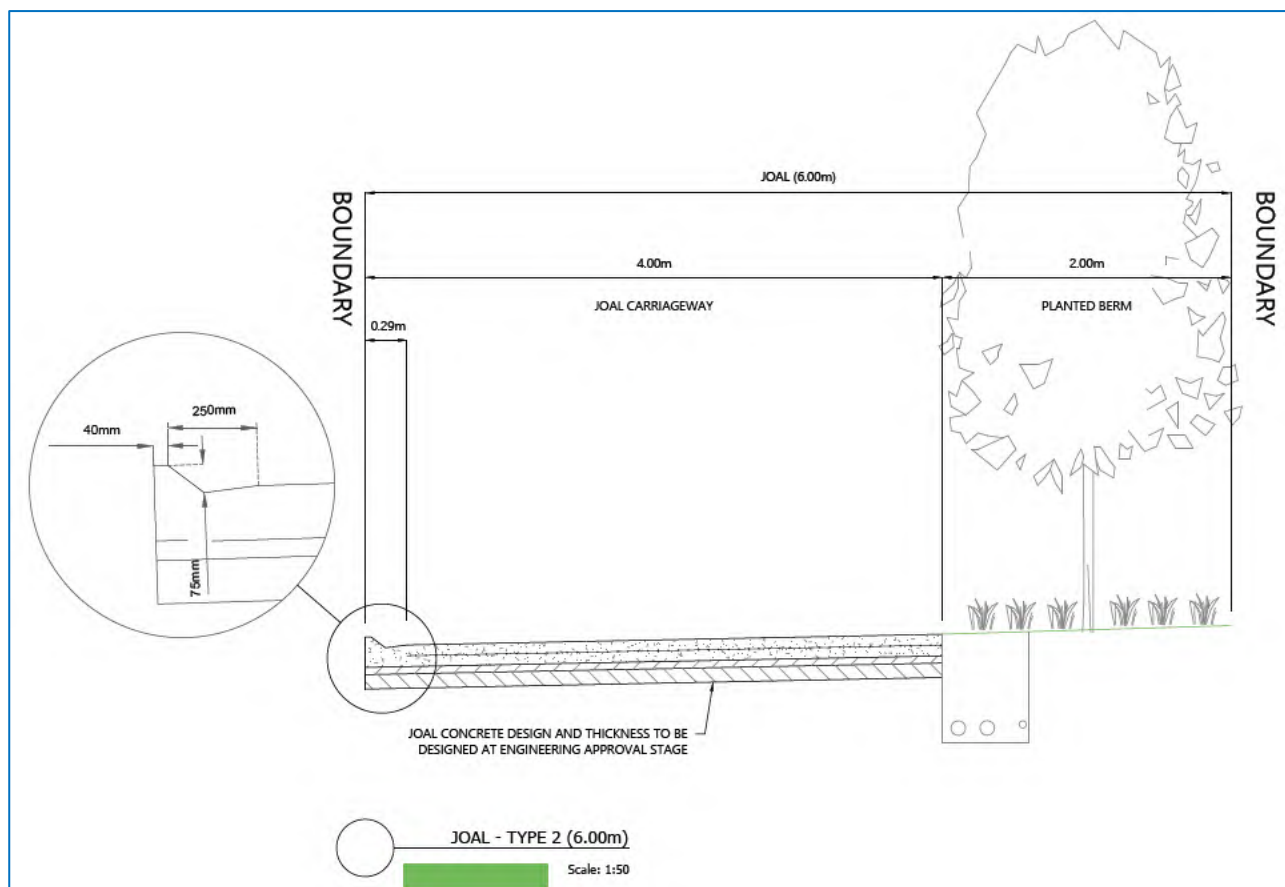
8.3.4 JOAL Type 2

The cross-section of the Type 2 JOAL is shown in Figure 23 and will have a 6.0 m legal access width, providing for one-way movement at a time.

Two Type 2 JOAL are proposed

- ◆ LOT 2000 off Access Road AR07 and will serve lots 161, 162, 179, 180.
- ◆ LOT 2002 off Access Road AR01 and will serve lots 243 to 245.

Figure 23: Type 2 JOAL cross-section



8.3.5 Public Pedestrian Accessway

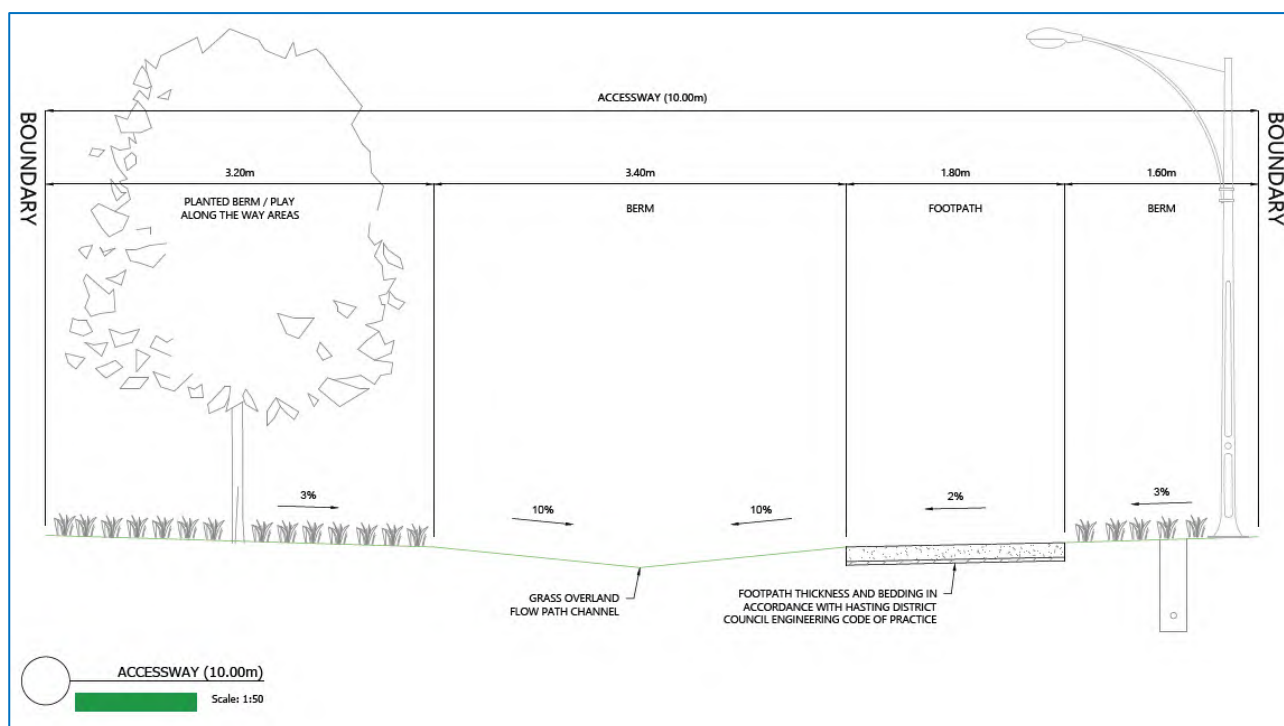
The cross-section of the public pedestrian accessway is shown in Figure 24 and will have the following features

- ◆ 10.0 m legal width
- ◆ 3.2 m planted berm
- ◆ 3.4 m central berm
- ◆ 1.8 m footpath
- ◆ 1.6 m back berm
- ◆ No provision for vehicles.

Three public pedestrian accessways are proposed on the Site.

- ◆ The first (LOT 1005) will connect CR01 and AR07, and is located adjacent to LOT 2000
- ◆ The second (LOT 1006) will connect CR01 and AR07
- ◆ The third (LOT 1007) will connect AR01 and Middle Road, and is located adjacent to LOT 2002.

Figure 24: Public Pedestrian Accessway cross-section



8.3.6 Internal traffic calming measures

A variety of traffic calming measures will be used throughout the Site to manage speeds and deliver a slow-speed environment. These include

- ◆ Central pedestrian refuge islands at the main intersections with Te Aute Road and Middle Road
- ◆ Flush surface treatments on all intersections with Middle Road and Te Aute Road
- ◆ Flush surface treatments through a change in materiality at the new intersections with the collector roads, where the shared path crosses the intersection approach
- ◆ A mountable urban roundabout in the centre of the Site where the proposed collector roads intersect
- ◆ A mixture of kerb buildouts, flush road markings and central pedestrian refuge island on Te Aute Road, Middle Road and the proposed collector road where pedestrian crossings will be located, providing safe opportunity to cross the new roads as well as Middle Road and Te Aute Road
- ◆ Where possible, long straight sections of roads were avoided to create curves and shorter road sections in the Middle Road Project area to limit vehicle speeds.

These measures will help to manage speeds throughout the Site, on Middle Road and Te Aute Road and will also help to communicate the residential environment internal to the Site.

8.4 Intersections and Curved sections

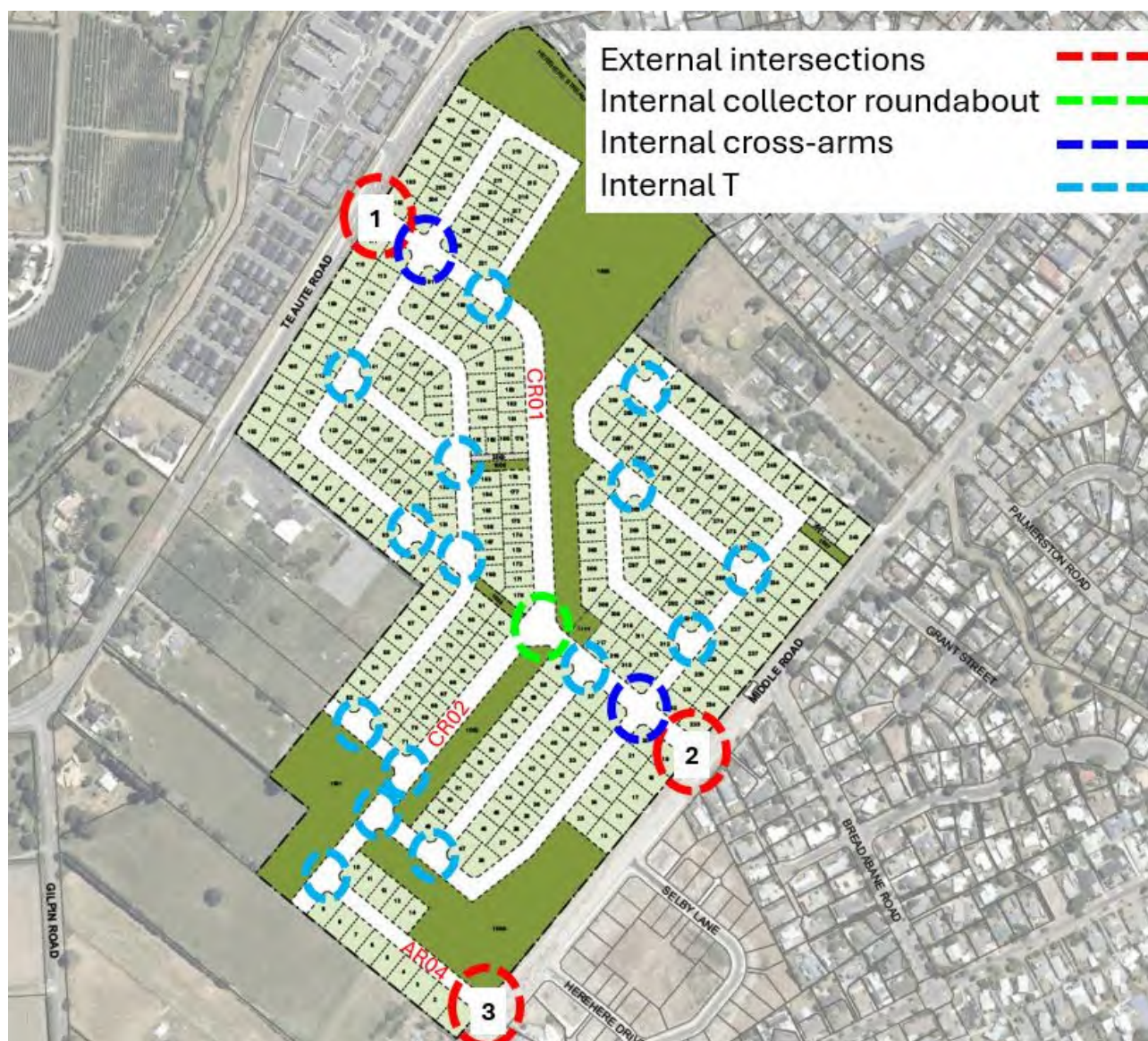
As shown in Figure 25, the Middle Road Project proposes 3 new external intersections from Te Aute Road and Middle Road. These will all be in the form of priority-controlled intersections.

- ♦ On Te Aute Road, there are no nearby intersections with public roads. The new intersection will have a spacing of around 60 m from the access point into the retirement village
- ♦ On Middle Road, intersection 3 is separated from the existing intersection with Herehere Drive by approximately 65 m. Intersection 2 is separated from Breadalbane Road by around 95 m, and Selby Lane by around 120 m
- ♦ On street parking along Middle Road, Te Aute Road and all new proposed intersections will be restricted to allow clear sight lines from intersections; the precise extent of yellow lines can be confirmed through engineering approval.

There will be a series of new intersections within the internal road network:

- ♦ An urban roundabout is proposed at the intersections of the two collector roads
- ♦ Two internal intersections form cross-arm intersections on CR01
- ♦ All other internal intersections will form give-way T-intersections.

Figure 25: Middle Road Project location of intersections



We have liaised with Hastings District Council and Hawke's Bay Regional Council transport representatives, where we note that the Council transport engineers are supportive of these proposed intersections and their locations.

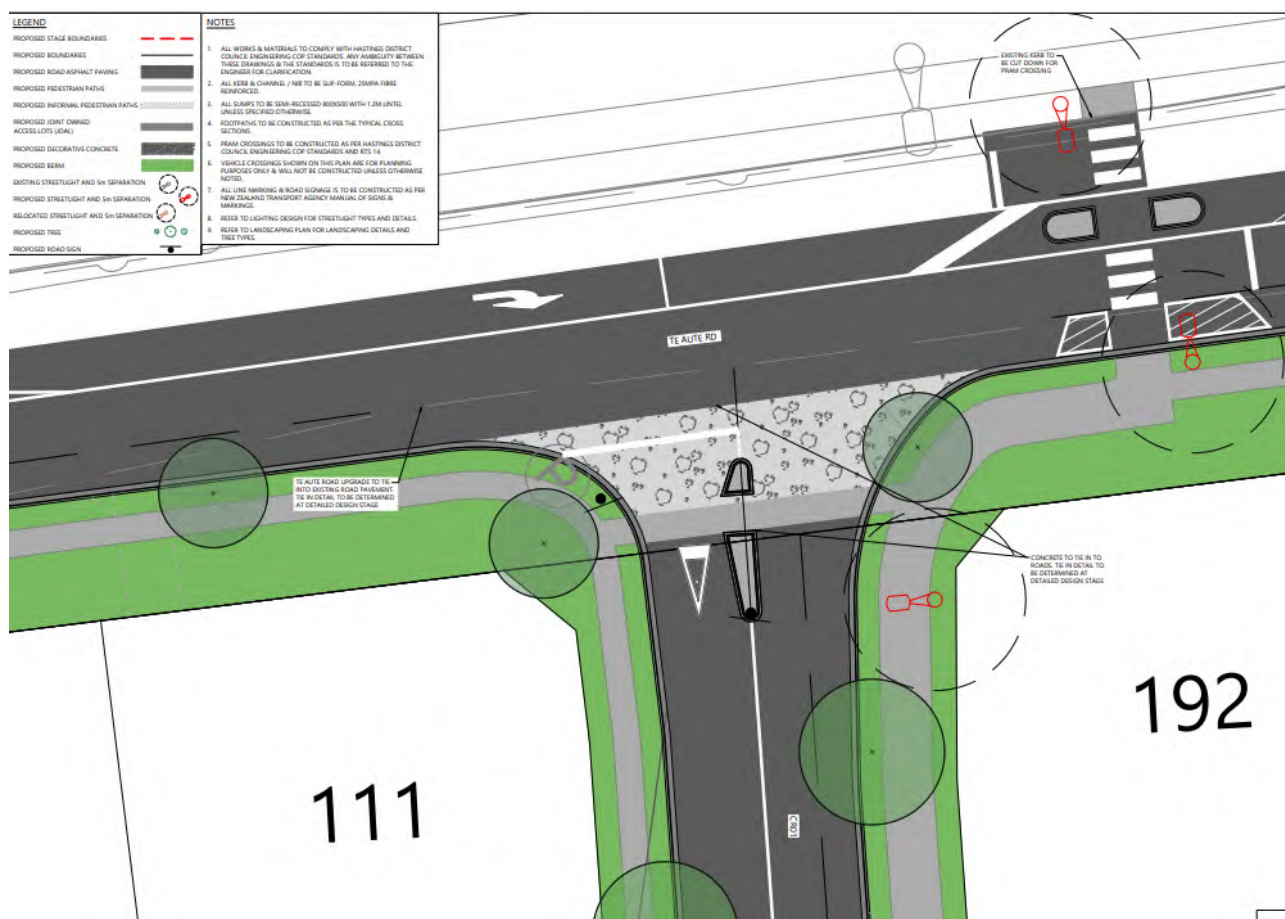
8.4.1 Te Aute Road / CR01 intersection (Intersection 1)

We note the following details of the proposed design of the Te Aute Road / CR01 intersection shown in Figure 26.

- ♦ A design speed of 60 km/hr has been used
- ♦ Adequate sightlines of about 123 m for safe intersection sight distance (SISD) to the intersection are provided, as shown in the sight distance plans provided by Woods. The existing horizontal geometry of the roads does not impede the sight distance
- ♦ As shown in Appendix D, the intersection accommodates vehicle tracking for a 12.6 m bus / 13.5 m bus, to allow the provision of future bus routes

- ♦ The existing raised median chicane island will be replaced with a flush median, which will accommodate a right turn bay into CR01
- ♦ A zebra crossing is provided on the east approach of Te Aute Road, which allows pedestrians to cross between the Site and the retirement village. We consider a zebra crossing at this position to be appropriate because it connects the shared path on Te Aute Road with the internal shared path network on CR01.

Figure 26: Proposed layout of the Te Aute Road / CR01 intersection (Intersection 1)



8.4.2 Middle Road / CR01 intersection (Intersection 2)

We note the following details of the proposed design of the Middle Road / CR01 intersection, as shown in Figure 27.

- ♦ A design speed of 60 km/hr has been used
- ♦ Adequate sightlines of about 123 m for safe intersection sight distance (SISD) to the intersection are provided, as shown in the sight distance plans provided by Woods. The existing horizontal geometry of the roads does not impede the sight distance
- ♦ As shown in Appendix D, the intersection accommodates vehicle tracking for a 12.6 m bus / 13.5 m bus, to allow the provision of future bus routes
- ♦ A zebra crossing is provided on the east approach of Middle Road, which allows pedestrians to cross Middle Road. There are currently no crossing facilities in the vicinity. Due to existing vehicle

crossings and intersections, there are limited feasible locations where this zebra crossing can be located, whilst also accommodating pedestrian desire lines travelling from the Site. We consider a zebra crossing at this position to be appropriate because it connects the shared path on Middle Road with the internal shared path network on CR01. Furthermore, we also do not consider it appropriate that the proposed pedestrian/cycle crossing should be relocated to a point midway between CR01 and Breadalbane Road. The preferred crossing location should reflect the established pedestrian and cyclist desire lines, particularly the connection between the east-west shared path along CR01 and the shared path along Middle Road. Relocating the crossing further north would move it away from this direct desire line and could encourage pedestrians and cyclists to cross at a less convenient location or to deviate from the intended route.

- ◆ No turning bays on Middle Road are proposed, nor are they considered necessary.
 - We do not consider that a right-turn bay is necessary or justified based on the anticipated traffic demands and the assessment undertaken
 - The traffic volumes at the intersection are relatively low, and the vehicle tracking assessment demonstrates that there is sufficient space for buses to turn into and out of CR01 without requiring a dedicated right-turn bay. Accordingly, the provision of a right-turn bay would provide limited operational benefit relative to the additional impacts associated with widening the carriageway
 - In particular, providing a right-turn bay would require the removal of a greater amount of existing on-street parking along Middle Road. This parking is actively used by the existing residents, with several private and work vehicles observed parked in this location during site visits. The removal of this parking would therefore have a meaningful impact on the existing residents and should only be pursued where there is a clear transport or safety justification.
 - A right-turn bay would also increase the width of the carriageway and, consequently, the distance over which pedestrians would need to cross Middle Road. Given the relatively low traffic volumes and the ability for buses to manoeuvre within the existing intersection arrangement, we do not consider that this additional pedestrian crossing distance is warranted.

LEGEND

- PROPOSED STAGE BOUNDARIES
- PROPOSED BOUNDARIES
- PROPOSED ROAD ASPHALT FINISH
- PROPOSED PEDESTRIAN PATHS
- PROPOSED INFORMAL PEDESTRIAN PATHS
- PROPOSED JOINT OWNED ACCESSLOPS (JOA)
- PROPOSED DECORATIVE CONCRETE
- PROPOSED SEAM
- EXISTING STREETLIGHT AND SW SEPARATION
- RELOCATED STREETLIGHT AND SW SEPARATION
- PROPOSED TREE
- PROPOSED ROAD SIGN

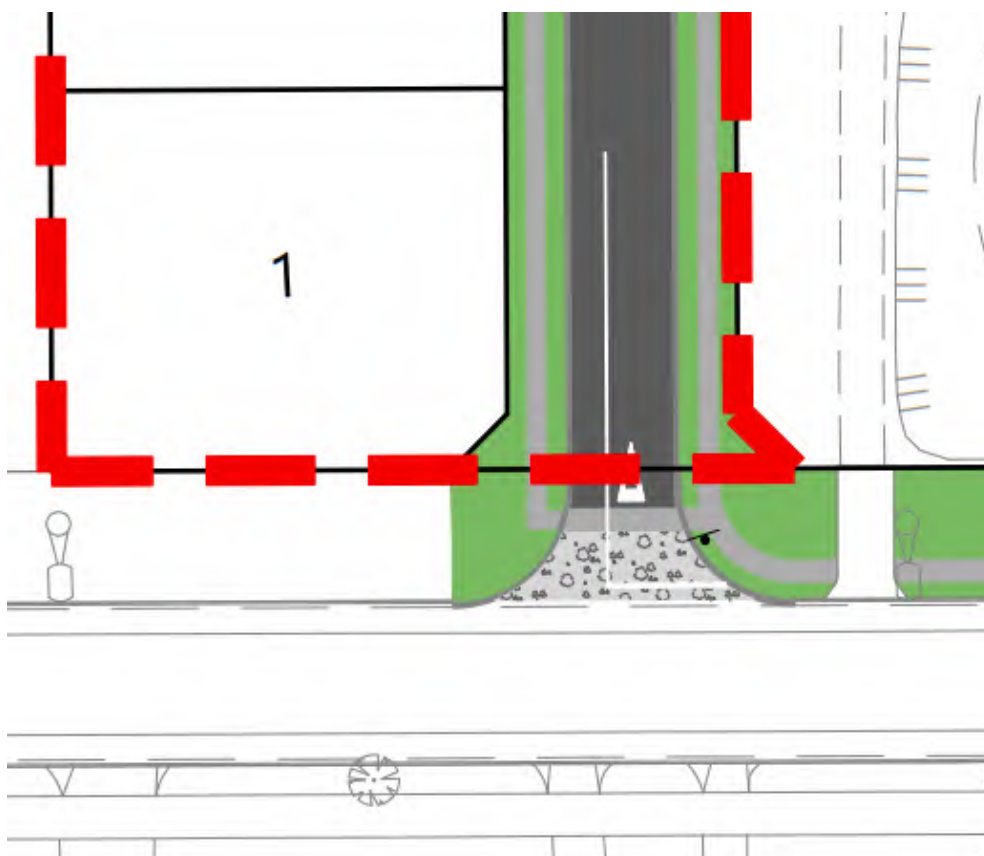
NOTES

1. ALL WORKS & MATERIALS TO COMPLY WITH HASTINGS DISTRICT COUNCIL ENGINEERING COP STANDARDS. ANY AMBIGUITY BETWEEN THESE DIMENSIONS & THE STANDARDS IS TO BE REFERRED TO THE ENGINEER FOR CLARIFICATION.
2. ALL KERB & CHANNEL / NEW TO BE SLIP FORM, DOWNSIDE REINFORCED.
3. ALL DUMPS TO BE GEAR PROTECTED BOXES WITH 1.2M LIMITS UNLESS OTHERWISE NOTED.
4. FOOTPATHS TO BE CONSTRUCTED AS PER THE TYPICAL CROSS SECTIONS.
5. PAVEMENT CROSSINGS TO BE CONSTRUCTED AS PER HASTINGS DISTRICT COUNCIL ENGINEERING COP STANDARDS & ITS V&I.
6. VEHICLE CROSSINGS SHOWN ON THIS PLAN ARE FOR PLANNING PURPOSES ONLY & WILL NOT BE CONSTRUCTED UNLESS OTHERWISE NOTED.
7. ALL LINE MARKING & ROAD SIGNAGE IS TO BE CONSTRUCTED AS PER NEW ZEALAND TRANSPORT AGENCY MANUAL OF SIGNS & MARKINGS.
8. REFER TO LIGHTING DESIGN FOR STREETLIGHT TYPES AND DETAILS.
9. GOED TO LANDSCAPING PLAN FOR LANDSCAPING DETAILS AND TREE TYPES.

We note the following details of the proposed design of the Middle Road / AR04 intersection, as shown in Figure 28.

- ◆ A design speed of 50 km/hr has been used
- ◆ Adequate sightlines of about 97 m for safe intersection sight distance (SISD) to the intersection are provided as shown in the sight distance plans provided by Woods. The sight distance is not impeded by the existing horizontal geometry of the roads
- ◆ As shown in Appendix D, the intersection accommodates vehicle tracking for a 8.8 m medium rigid truck
- ◆ A pram crossing is provided on Middle Road on the east approach of the intersection.

Figure 28: Proposed layout of Middle Road / AR04 intersection (Intersection 3)

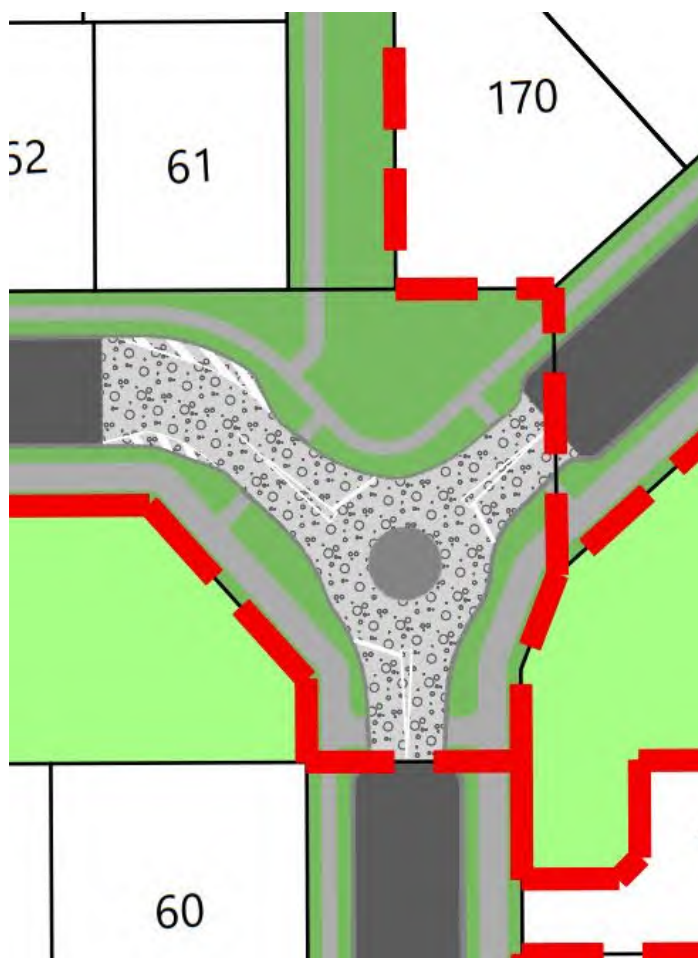


8.4.4 CR01 / CR02 urban roundabout

We note the following details of the proposed design of the CR01 / CR02 intersection shown in Figure 29.

- ♦ The proposal includes an urban roundabout that will form an intersection for the two internal collector roads
- ♦ A design speed of 30 km/hr has been used for sight lines
- ♦ The proposed roundabout will include the following features
 - A 7 m diameter mountable central island
 - A 4.5 m wide circulation lane
 - Separated footpaths are provided on all three approaches to the roundabout. The approaches to the roundabout are narrowed, to provide speed calming for vehicles and to reduce crossing distance for pedestrians.
- ♦ We have checked visibility through the proposed roundabout to ensure there is adequate visibility between vehicles using the roundabout and vehicles approaching the roundabout as per Austroads. These are shown in the sight distance plans provided by Woods
- ♦ As shown in Appendix D, the intersection accommodates vehicle tracking for 6.4 m vans to circulate around the central island. Larger vehicles (including 12.6 m and 13.5 m buses) can safely track over the mountable central island.

Figure 29: Proposed layout of the CR01 / CR02 intersection



8.4.5 CR01 cross-arm intersections

Two internal cross-arm intersections are proposed at CR01 / AR09 / AR06 and CR01 / AR01. These have the following features

- ◆ Vehicles give-way on the minor Access Road approaches
- ◆ A design speed of 50 km/hr has been used
- ◆ Adequate sightlines of about 97 m for safe intersection sight distance (SISD) to the intersection are provided, as shown in the sight distance plans provided by Woods. The existing horizontal geometry of the roads does not impede the sight distance
- ◆ As shown in Appendix D, these intersections accommodate vehicle tracking for a design vehicle of an 8.8 m medium rigid truck.

8.4.6 All other intersections – T-intersections

All other remaining internal intersections are designed as T-intersections.

- ◆ Where there is an intersection between a Collector Road and an Access Road, vehicles give-way on the minor Access Road approach
- ◆ A design speed of 50 km/hr has been used on collector roads and 40 km/hr on access roads

- ♦ Adequate sightlines of about 97 m (50 km/hr) / 73 m (40 km/hr) for safe intersection sight distance (SISD) to the intersection are provided, as shown in the sight distance plans provided by Woods. The existing horizontal geometry of the roads does not impede the sight distance
- ♦ As shown in Appendix D, these intersections accommodate vehicle tracking for a design vehicle of a 6.3 m van. The intersections also accommodate an 8.8 m medium rigid truck as a check vehicle, which is permitted to cross the centreline when turning at Access Roads.

8.4.7 Curved sections

While not classified as 'intersections', we have also assessed the design for curved sections of roads.

As shown in Appendix D, the roads accommodate the following vehicle types

- ♦ CR01 accommodates two-way movement for a 12.6 m bus (at a 15 km/hr design speed)
- ♦ Access Roads accommodate two-way movement for a 6.3 m van.

8.5 Lot vehicle access assessment

The Middle Road Project provides indicative vehicle access locations along each of the proposed roads. It is proposed that each lot has a single vehicle crossing.

8.5.1 Vehicle crossing widths

The District Plan requirements for residential zoning vehicle crossing widths are

- ♦ for vehicle crossings serving 1 to 2 household units, the District Plan specifies a minimum legal width of 3.0 m, and a maximum vehicle crossing width of 4.4 m at the boundary
- ♦ for vehicle crossings serving 3 household units, the District Plan specifies a minimum legal width of 3.6 m, and a maximum vehicle crossing width of 4.8 m at the boundary
- ♦ for vehicle crossings serving 4 to 6 household units, the District Plan specifies a minimum legal width of 4.5 m, and a maximum vehicle crossing width of 4.8 m at the boundary
- ♦ for vehicle crossings serving 7 and more household units, the District Plan specifies a minimum legal width of 6.0 m, and a maximum vehicle crossing width of 6.0 m at the boundary.

The design of the proposed vehicle crossings complies with these District Plan requirements.

- ♦ Vehicle crossings serving individual lots are 3.0 m wide
- ♦ JOAL 2000 serves 4 dwellings, has a legal width of 6.0 m, and a vehicle crossing width of 4.0 m
- ♦ JOAL 2002 serves 3 dwellings, has a legal width of 6.0 m, and a vehicle crossing width of 4.0 m. The vehicle crossing within the road reserve also serves Lot 246, which does not access the JOAL directly. Even when accounting for this lot, the crossing meets the District Plan standards
- ♦ JOAL 2001 serves 2 dwellings, has a legal width of 4.0 m, and a vehicle crossing width of 3.0 m.

8.5.2 Vehicle crossing locations

The District Plan requirements for the location of vehicle crossings in a residential zone are

- ♦ the distance of a vehicle access to any property will be a minimum of 15.0 m or the extent of the property boundary from any Access Road intersection
- ♦ where there are 2 adjacent accesses, vehicle crossings will be offset from the legal property boundary by 1.5 m
- ♦ vehicle access to any property will not be located within 30 m of an intersection of a State Highway.

For vehicle crossings onto Collector Roads:

- ♦ Spacing of vehicle crossings from intersections is not specified. However, we have assessed crossings onto collector roads on the basis of the 15.0 m separation standard for Access Roads
- ♦ The District Plan standards (26.1.6A 2(a)) state that the following:
 - *Vehicle access in relation to Collector or Arterial Road intersections as defined in the Roding Hierarchy in Appendix 69 shall be subject to Road Safety Audit as deemed necessary by the Road Controlling Authority.*

Most vehicle crossings comply with these District Plan standards. However, the following (as outlined in Table 4) vehicle crossings are located less than 15.0 m from an intersection. Although each crossing has been located at the end of their respective proposed property boundaries to maximise the distance to the intersection, they still do not meet the requirements. The distance between the vehicle crossing and the adjacent intersection is given in brackets.

Table 4: Vehicle crossings located less than 15.0 m from an intersection

Separation distance from intersection	Affected lots	Number of crossings
Directly opposite side of intersection	JOAL 2000, Lots 114, 118, 167, 224, 229, 260, 279, 317	9
opposite side of the intersection 0 – 2.5 m	Lots 168 (1.5 m), 188 (0.7 m), 189 (0.7 m)	3
opposite side of the intersection 2.5 – 5.0 m	Lots 1004 (2.9 m), 115 (4.3 m), 170 (3.9 m), 228 (3.8 m), 259 (3.5 m), 280 (3.6 m)	6
opposite side of the intersection 5.0 – 7.5 m	Lots 169 (6.6 m), 187 (5.5 m)	2
opposite side of the intersection 7.5 – 10.0 m	Lots 130 (7.0 m), 166 (9.5 m), 225 (7.6 m), 278 (8.6 m)	4
opposite side of the intersection 10.0 – 12.5 m	Lots 113 (12.3 m), 117 (11.5 m), 119 (11.6 m), 261 (11.9 m)	4
opposite side of the intersection 12.5 – 15.0 m	Lots 223 (13.9 m), 230 (14.4 m)	2
On intersection approach	Lot 301 (14.0 m), Lot 312 (12.0 m)	2
Total		32

We consider the proposed separation distances to be appropriate for the following reasons:

- ◆ The vehicle crossings in question are low-volume and serve only a single lot each
- ◆ Operating speeds within the residential development are expected to be low, and this low-speed environment is supported by traffic calming measures such as intersection surface treatments
- ◆ As outlined in Section 8.5.3, all vehicle crossings will achieve adequate sight distances
- ◆ As discussed in Section 8.4, all proposed intersections will also achieve adequate sight distances
- ◆ The traffic volumes expected at the affected intersections are low, particularly as development-related trips will be dispersed across a network of internal roads
- ◆ Vehicle crossings onto collector roads have been designed safely
 - Where practical, the number of crossings onto the collector roads (Middle Road, Te Aute Road and CR01 and CR02) have been minimised, especially over the proposed shared path
 - All crossings serve a single dwelling, and no JOALs with multiple dwellings access a collector road. This means each crossing will have very low vehicle volumes
 - Crossings onto Middle Road and Te Aute Road will have consent notices to ensure that on-site manoeuvring is provided, such that direct reversing onto the road reserve is not necessary
 - Crossings onto collector roads have good visibility.
 - For a potential Road Safety Audit
 - As outlined above, we consider the vehicle crossing on these collector roads to be appropriate and that no Road Safety Audit will be required
 - This was not raised as an issue or requirement during consultation with HDC.

8.5.3 Vehicle crossing visibility

Most of the vehicle crossings are located on a straight section of road/JOAL where there will be no obstructions to sight lines.

- ◆ We note that vehicle access and intersections have been located to ensure that safe sightline distances are maintained
- ◆ For vehicle accesses, we have assessed visibility against the RTS6 guidelines and HDC Engineering COP
- ◆ Proposed intersections have been evaluated with SISD, as described in the sections above.

We consider that all vehicle crossings will be provided with sufficient visibility.

8.5.4 JOAL gradients

The District Plan specifies a maximum sealed vehicle access of 1:5 (20 %) for both rural and urban zoning. The Middle Road Project will comply with this requirement.

8.6 Parking and servicing assessment

8.6.1 Number of car parking spaces

The District Plan specifies no minimum or maximum parking rate for residential activities within the applicable zone.

- ◆ Future dwellings will have their garages and/or outdoor parking spaces within their properties that can accommodate parking
- ◆ As per the proposed cross sections for the new access roads, on street parking is proposed along one side of the road. Collector roads can accommodate parking on both sides
- ◆ On street parking will be restricted in some areas to ensure clear sightlines are achieved. We note that this will be dealt with during detailed design during the engineering approval process.

8.6.2 Car parking space dimensions and manoeuvring

Parking is compliant with the District Plan dimensions.

- ◆ Parking spaces for residential activities in any Residential zone have the minimum internal dimensions of 3.0 m (width) by 5.0 m (length)
- ◆ All parking spaces and access and manoeuvring areas, including ramps, will be of sufficient size and suitable layout to accommodate a passenger vehicle" as defined in the "Austroads Design Vehicles and Turning Path Templates Guide"¹⁸.

While no on-site parking is proposed as part of the Middle Road Project, consent notices will be issued to the following lots, to ensure that on-site manoeuvring is provided. This will ensure that no reversing onto the road reserve is necessary.

- ◆ Access onto existing collector roads:
 - Middle Road: Lot 1, 15 to 19, 233 to 242
 - Te Aute Road: Lots 102 to 111 and 193 to 197
- ◆ Lots with longer accessways
 - Lot 243
 - Lots 294 and 295 (LOT 2002)
- ◆ Lots with a curved access configuration
 - Lot 101.

Vehicle tracking of the above lots is provided in Appendix D.

8.6.3 Bicycle parking requirements and assessment

The District Plan requires the following minimum bicycle parking where on-site parking is required.

- ◆ 1 bicycle stand per 5 spaces that are required

¹⁸ AP-G34-13, Austroads, 2013

It is considered that all future dwellings are likely to have garages that could accommodate bicycle parking on-site.

End-of-trip facilities are not required as the development is for detached residential dwellings.

8.6.4 Servicing and loading assessment

The Middle Road Project proposes residential activities, and the District Plan does not require any loading spaces for residential activities.

Notwithstanding this, we note the following

- ♦ The collection of waste and residents moving in and out are activities that can be accommodated through the proposed local road network
- ♦ Trucks and vehicles needing to turn around can do so via minimal reverse manoeuvring and using the public road network, which do not require reversing
- ♦ The typical truck used by waste collection services is an 8.8 m rigid truck.
- ♦ Tracking of an 8.8 m truck through all the relevant areas of the proposed development is shown in Appendix D. This demonstrates that this sized truck can access all the dwellings for loading and servicing and turn around as needed.

As per the specific performance standards and terms in the District Plan, the following is required in residential zones:

- ♦ a 5 m long Vehicle Standing Bay shall be located within the Vehicle Access to all garages and carports and notional garage spaces.

Compliant vehicle standing bays will be provided within the lots to ensure all loading and unloading will be carried out within the property without obstructing footpaths and road reserves. A condition will be applied for future lot developers to comply with the District Plan standards.

The pump station on Lot 1004 will also require maintenance vehicle access. The vehicle tracking is shown in Appendix D and illustrates that a truck can turn around within the site.

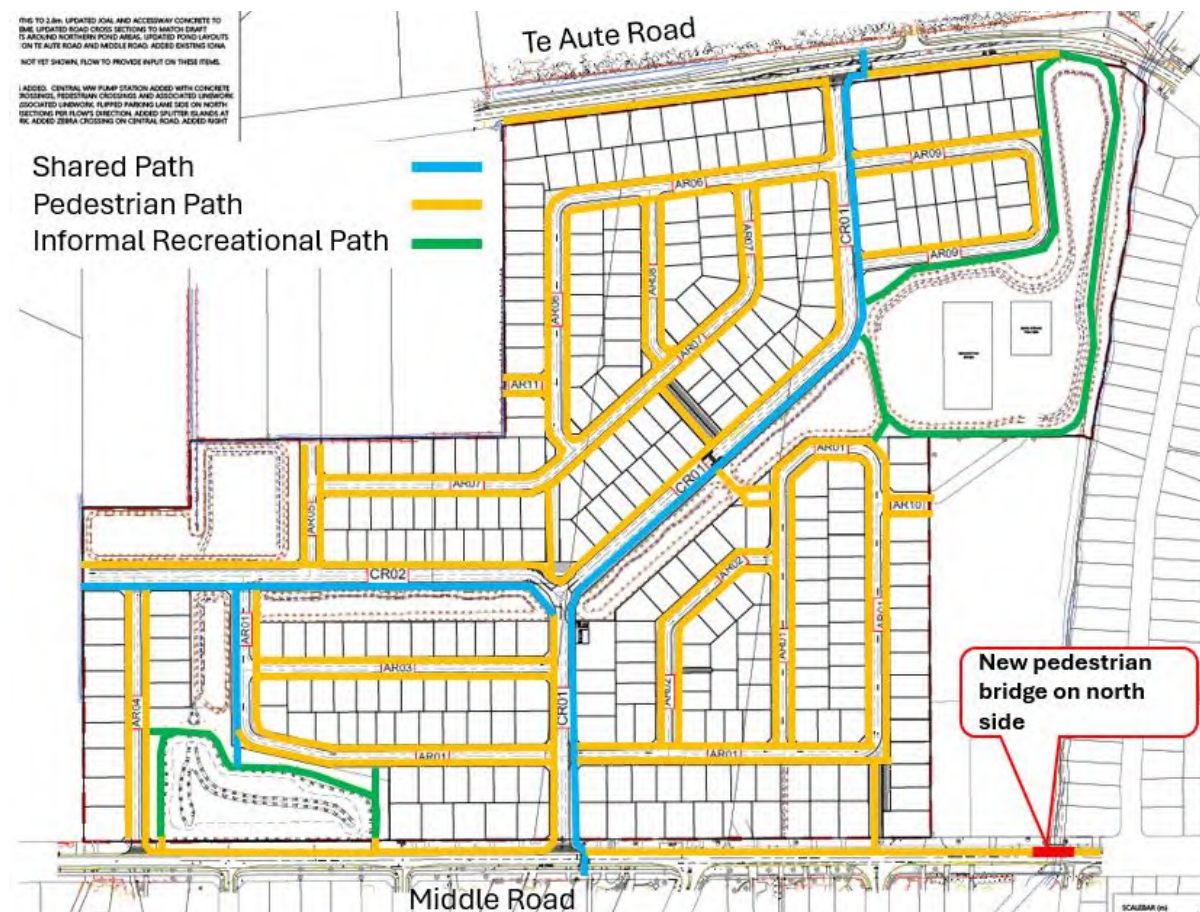
8.7 Pedestrian and cyclist access and connectivity

The proposed pedestrian footpath network within the Site is shown in Figure 30.

- ♦ A shared path is provided on the east side of CR01, which provides a primary north-south route for pedestrians and cyclists, as well as a shared path on the south side of CR02 that provides connection to the stormwater device's paths as well as enabling future shared path connectivity towards the south if that area is ever to be developed
- ♦ Internal roads primarily provide footpaths on both sides of the road
- ♦ There are two stormwater areas which provide informal recreational paths
- ♦ Within the Site, cyclists will share the internal low speed and low-volume roads with general traffic, or use the primary shared path

- ♦ The minimum width of the paths internal to the Site is 1.5 m, which is sufficient for mobility scooter/wheelchair users
- ♦ Crossing points are provided where the paths cross the internal roads
- ♦ Kerb buildouts are provided at crossing points.

Figure 30: Middle Road Project proposed pedestrian and cycle network



8.7.1 External pedestrian network

As shown in Figure 30, the following external upgrades are to be provided on existing roads

- ♦ On Te Aute Road, the site frontage (south side) is to be upgraded to provide a footpath. A zebra crossing is east of the CR01 intersection to provide a crossing point towards the retirement village. There will also be a pram crossing with a central refuge island to the north
- ♦ On Middle Road, the site frontage (north side) is to be upgraded to provide a footpath. A zebra crossing is east of the CR01 intersection to provide a crossing point towards the existing shared path on the south side of Middle Road. There will also be pram crossings on either end of the Site to provide crossing opportunities for pedestrians.

A new (second) pedestrian bridge will be provided on the north side of Middle Road, which crosses the Herehere Stream. The footpath will be extended along Middle Road in the road reserve frontage of the McKenna Block and through to connect with the existing footpath at the Upham Street / Middle Road intersection

- ◆ We confirmed through consultation with Hastings District Council that the pedestrian bridge is considered necessary to support the development. During this consultation, Council acknowledged that a similar bridge connection on Te Aute Road is not considered necessary and we understand that Council themselves are investigating this in the future when funding is available. One of Council's main concerns was maintenance; however, we understand that this infrastructure maintenance could be included in their long term plan
- ◆ It was also acknowledged that funding associated with the proposed bridge connection could be investigated further at the engineering approval stage, as this bridge connection will ultimately benefit the wider community, while also addressing the needs of this Project
- ◆ This is required in order to provide pedestrian connectivity to the existing footpath network to the east
- ◆ We consider it appropriate to deliver the bridge after the footpath infrastructure north of the proposed main intersection with Middle Road has been delivered with staging that will provide access off Middle Road. At the time of writing, exact staging of the development has not been finalised yet. While we consider this an appropriate trigger to implement the bridge, we note that there will also be other crossing points on Middle Road that could support the initial stages of development, if the bridge is not yet constructed.

8.8 Public transport access

An opportunity exists to provide a new bus route or an extension of the existing routes (potentially Route 1) to better serve the development and the residential areas in west Havelock North. This will enable users of the Middle Road Project site to have closer access to public bus services.

The proposed Collector Road CR01 allows for the provision of bus stops within the Site. Figure 31 presents the concept plan of the potential future bus stop positions. There is sufficient space to accommodate a zebra crossing, to allow pedestrians to cross CR01 near the bus stops.

Figure 31: Collector Road CR01 potential bus stop locations



The increased catchment of residents enabled by the Middle Road Project will also support public transport by potentially increasing demand for services, which could result in services becoming more frequent in the future if additional funding becomes available and supported by Hawke's Bay Regional Council.

9 TRAFFIC ASSESSMENT

9.1 Traffic assessment methodology

We have used SIDRA intersection models to analyse the performance of key intersections in the surrounding transport network. SIDRA software enables isolated intersection modelling to understand the network capacity, predicted level of service (LOS) and anticipated queue lengths. The following key intersections were analysed:

- ◆ Existing Havelock Road / Porter Drive roundabout
- ◆ Existing Te Aute Road / Porter Drive roundabout
- ◆ Existing Middle Road / Porter Drive give-way intersection
- ◆ Proposed Middle Road / Collector Road intersection
- ◆ Proposed Te Aute Road / Collector Road intersection

We have provided an assessment of 3 traffic volume scenarios, which include

- ◆ **Base:** Existing traffic volume based on the surveyed data
- ◆ **Scenario 1:** Base plus the Iona Project traffic
- ◆ **Scenario 2:** Scenario 1 plus the Middle Road Project traffic.

We have also reviewed the proposed intersections internal to the Middle Road Project area. Given that each intersection has a relatively small residential catchment area, we have not assessed each intersection's capacity and considered that these intersections will operate efficiently as priority controlled intersections.

9.1.1 Trip generation enabled by the Middle Road Project

The peak hour vehicle trip rate was derived from the New South Wales Roads and Maritime Services Guide to Traffic Generating Developments (RMS guide, previously the RTA¹⁹).

The weekday daily and peak hour vehicle trip generation for the Middle Road Project is summarised in Table 5.

Table 5: Trip Generation Summary of the Middle Road Project – weekday daily and peak hours

Activity	Size	Peak hour vehicle trip rate			Trip generation		
		Morning	Evening	Daily	Morning (vph)	Evening (vph)	Daily (vpd)
Residential – Dwelling Houses (RTA)	317 dwellings	0.85/dwelling	0.85/dwelling	9/dwelling	270	270	2,853
Total					270	270	2,853

¹⁹ Road and Traffic Authority of New South Wales (RTA), *Guide to Traffic Generating Developments, Version 2.2*

Overall, the Middle Road Project is predicted to generate a total of 270 trips during both the morning and evening peak hours, and 2,853 trips per day.

9.1.2 Trip distribution and assignment

We have applied peak period trip distribution ratios derived from the ITE Parking Generation Manual²⁰. Based on the ITE trip generation for residential Single-Family Detached Housing (single-family detached home on an individual lot), we have assumed:

- ♦ A 25% / 75% inbound outbound split for the morning peak period
- ♦ A 65% / 35% inbound outbound split for the evening peak period.

Our assumptions regarding the directional trip assignment for the morning and evening peak hours are as follows:

- ♦ 40% of traffic will travel to and from Havelock Road (to and from Hastings)
- ♦ 15 % will travel to and from the south side of Te Aute Road (to and from the south with routes to Hastings and SH 2 possible)
- ♦ 10 % will travel to and from the south side of Middle Road (to and from the south with routes to Hastings and SH 2 possible)
- ♦ 25 % will travel to and from the north side of Te Aute Road (to and from the town centre area)
- ♦ 10 % will travel to and from the east side of Porter Drive (to and from the wider Havelock North area).

9.1.3 Iona Project trip generation and distribution

We have also summarised the weekday daily and peak hour vehicle trip generation for the Iona Project in Table 6. We consider that only about 70% of the total trips generated by the Iona Project will have an impact on the key intersections, being

- ♦ About 60% of the total Iona Project traffic will utilise Middle Road
- ♦ About 10% of the total Iona Project traffic will utilise Te Aute Road

The trips have then been distributed the same as for the Middle Road Project.

Table 6: Trip Generation Summary of the Iona Project – weekday daily and peak hours

Activity	Size	Peak hour vehicle trip rate			Trip generation		
		Morning	Evening	Daily	Morning (vph)	Evening (vph)	Daily (vpd)
Residential – Dwelling	396 dwellings	0.85/dwelling	0.85/dwelling	9/dwelling	337	337	3,564

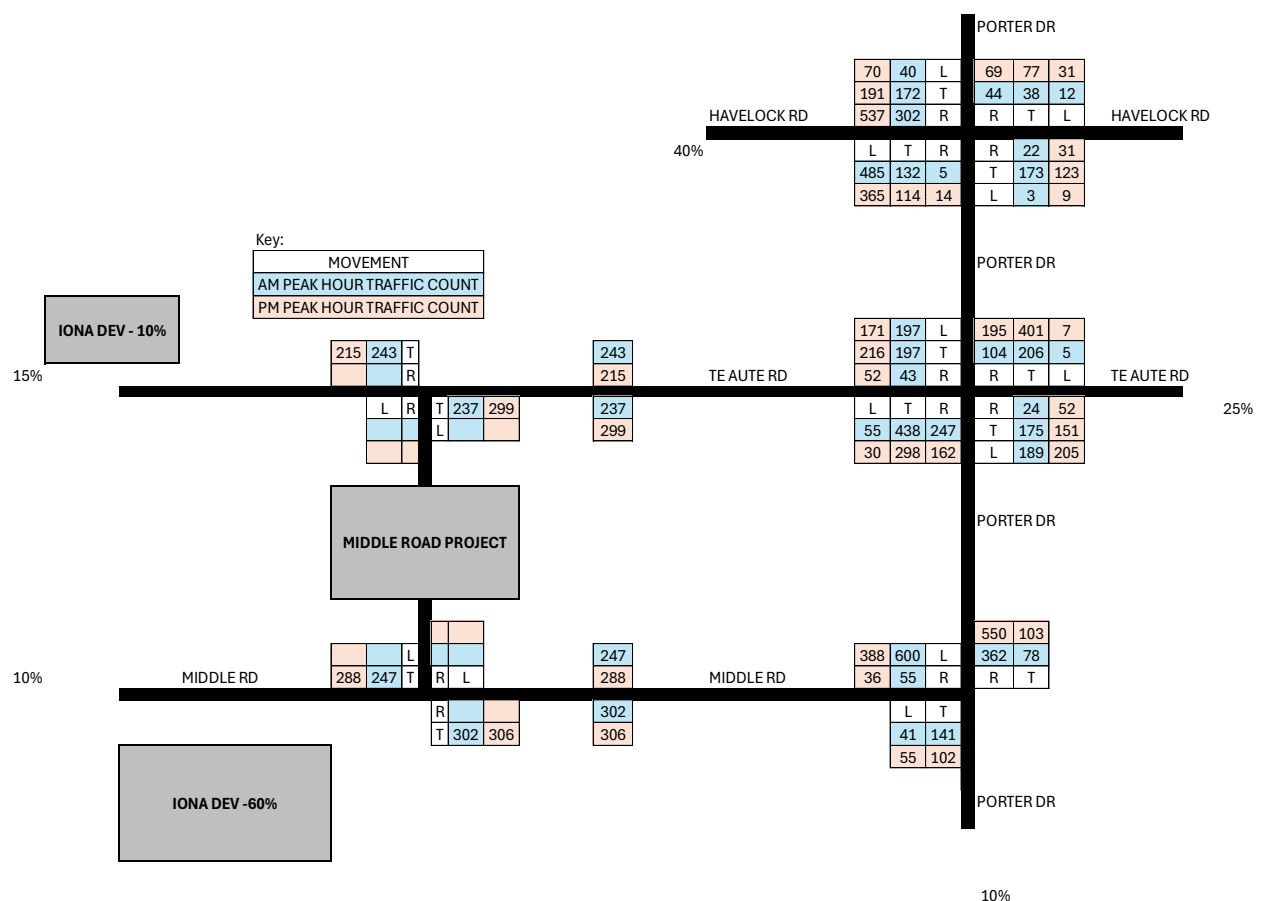
²⁰ Institute of Transportation Engineers, Trip Generation Manual, 10th Edition, September 2017.

Activity	Size	Peak hour vehicle trip rate			Trip generation		
		Morning	Evening	Daily	Morning (vph)	Evening (vph)	Daily (vpd)
Houses (RTA)							
On Middle Road (60%)					202	202	2,138
On Te Aute Road					34	34	356

9.1.4 Traffic Volumes

As illustrated in Figure 32 and Figure 33, applying the above trip generation and distribution results in the following turning traffic volumes within the key intersection.

Figure 32: Scenario 1 traffic volumes



Key:

MOVEMENT

15% HOUR TRAFFIC COUNT

40% HOUR TRAFFIC COUNT

25% HOUR TRAFFIC COUNT

IONA DEV - 10%

15%

25%

10%

IONA DEV - 60%

PORTER DR

HAVELOCK RD

40%

PORTER DR

TE AUTE RD

25%

PORTER DR

MIDDLE RD

10%

PORTER DR

MIDDLE ROAD PROJECT

70 40 L 69 77 31

191 172 T 44 38 12

608 329 R R T L

L T R R 22 31

566 132 5 T 173 123

403 114 14 L 3 9

215 243 T 350

26 10 R 264

209 278 L 265 401 7

228 222 T 131 206 5

52 43 R R T L

L T R R 24 52

30 106 L 35 92 273

391

55 438 272 T 184 173

30 298 174 L 197 227

9 21

18 7 L 20 46 292

288 247 T R L 309

400 625 L 370 78

46 75 R R T

R 15 39 317

T 302 306 346

L T

48 141

73 102

A summary of the SIDRA analysis²¹ for the 3 scenarios of the existing key intersections is outlined in Table 7 and Table 8 below, with the detailed SIDRA outputs shown in Appendix C.

For the Base Case and Scenario 1, a peak flow factor (PFF) of 0.95 was adopted, consistent with the default SIDRA value. For Scenario 2, the PFF was increased to 1.0 to represent a busier, or flatter, peak period resulting from the higher traffic demands. A PFF of 1.0 assumes that the modelled peak-hour demand is distributed relatively evenly throughout the peak hour, rather than being concentrated into a shorter period, and therefore provides a more conservative representation of the network under increased demand.

Table 7: SIDRA summary for morning peak

Intersection	Approach	Base			Scenario 1			Scenario 2		
		Average Delay (sec)	95 th % queue (m)	LOS	Average Delay (sec)	95 th % queue (m)	LOS	Average Delay (sec)	95 th % queue (m)	LOS
Existing Havelock Road / Porter Drive roundabout	Porter Drive (southwest)	5	31	A	6	39	A	7	53	A
	Havelock Road (southeast)	6	9	A	6	10	A	6	10	A
	Porter Drive (northeast)	8	5	A	10	5	A	10	5	A
	Havelock Road (northwest)	6	18	A	6	19	A	7	21	A
Existing Te Aute Road / Porter Drive roundabout	Porter Drive (south)	8	43	A	10	63	A	12	78	B
	Te Aute Road (east)	6	19	A	6	21	A	6	23	A
	Porter Drive (north)	8	16	A	8	18	A	9	21	A
	Te Aute Road (west)	11	41	B	17	59	B	44	159	D
Existing Middle Road / Porter Drive give-way intersection	Porter Drive (south)	1	0	A	1	0	A	1	0	A
	Porter Drive (north)	4	9	A	4	10	A	5	10	A
	Middle Road (west)	6	15	A	6	19	A	6	20	A

Proposed Te Aute Road / Collector Road intersection	Collector Road (south)							8	6	A
	Te Aute Road (east)							1	0	A
	Te Aute Road (west)							0	0	A
Proposed Middle Road / Collector Road intersection	Middle Road (east)							0	1	A
	Collector Road (north)							6	2	A
	Middle Road (west)							0	0	A

Table 8: SIDRA summary for evening peak

Intersection	Approach	Base			Scenario 1			Scenario 2		
		Average Delay (sec)	95 th % queue (m)	LOS	Average Delay (sec)	95 th % queue (m)	LOS	Average Delay (sec)	95 th % queue (m)	LOS
Existing Havelock Road / Porter Drive roundabout	Porter Drive (southwest)	5	24	A	5	26	A	5	30	A
	Havelock Road (southeast)	8	10	A	9	12	A	10	13	B
	Porter Drive (northeast)	10	13	A	11	15	B	12	17	B
	Havelock Road (northwest)	7	30	A	7	35	A	7	41	A

Existing Te Aute Road / Porter Drive roundabout	Porter Drive (south)	8	25	A	8	32	A	11	42	B
	Te Aute Road (east)	10	31	A	12	44	B	20	71	B
	Porter Drive (north)	9	41	A	11	55	B	15	80	B
	Te Aute Road (west)	8	30	A	9	35	A	11	47	B
Existing Middle Road / Porter Drive give-way intersection	Porter Drive (south)	1	0	A	2	0	A	2	0	A
	Porter Drive (north)	4	13	A	5	17	A	5	18	A
	Middle Road (west)	6	9	A	6	10	A	6	10	A
Proposed Te Aute Road / Collector Road intersection	Collector Road (south)							9	3	A
	Te Aute Road (east)							1	0	A
	Te Aute Road (west)							1	1	A
Proposed Middle Road / Collector Road intersection	Middle Road (east)							1	3	A
	Collector Road (north)							6	1	A
	Middle Road (west)							0	0	A

The SIDRA assessment indicates the following

- ♦ All intersections are predicted to continue operating at acceptable levels of service under all assessment scenarios. The majority of approaches are predicted to remain at LOS A, with a limited number of approaches operating at LOS B and one approach at the Te Aute Road / Porter Drive roundabout (westbound Te Aute Road) operating at LOS D during the morning peak under Scenario 2
- ♦ The highest average delay is predicted to be 44 seconds on the westbound Te Aute Road approach during the morning peak in Scenario 2. This reflects the busy commuter peak and is limited to a relatively short period of the day. During the evening peak, the same approach continues to operate at LOS B with an average delay of 11 seconds
- ♦ The longest predicted 95th percentile queue is predicted to be 159 m on the westbound Te Aute Road approach during the morning peak in Scenario 2. While this represents the longest queue within the network, it occurs only during the busiest commuter period and is not expected to persist throughout the day. The remaining approaches are predicted to generally experience considerably shorter queues while continuing to operate at acceptable levels of service
- ♦ Average delays across the remainder of the network are predicted to remain low, with most approaches increasing by only 1 to 4 seconds between the Base and future development scenarios, indicating that the proposed development will have only a minor effect on intersection performance
- ♦ The proposed Collector Road / Te Aute Road and Collector Road / Middle Road intersections are both predicted to operate at LOS A with very low delays and queues, demonstrating that they will comfortably accommodate the forecast traffic demand
- ♦ It is also noted that the surrounding road network provides multiple route options for travel between Havelock North and Hastings (including via Middle Road, Te Aute Road, Havelock Road and other connecting routes). As the wider network develops, drivers are expected to naturally distribute across these alternative routes, reducing reliance on any single corridor and providing additional resilience beyond that reflected in the SIDRA assessment.

Overall, the results indicate that the surrounding transport network will continue to operate satisfactorily with the additional traffic generated by the proposed Middle Road development. Although queues are predicted to increase on the westbound Te Aute Road approach during the morning commuter peak, these are confined to a relatively short peak period, with the wider network continuing to operate efficiently and providing sufficient capacity to accommodate future growth.

9.2 Traffic effects summary

The Middle Road Project, once fully occupied, is predicted to generate a total of 270 trips during both the morning and evening peak hours. The peak hour traffic generation is anticipated to have no significant adverse effects on the wider transportation network.

Overall, the predicted traffic level can be accommodated by the surrounding road network.

10 TRANSPORT SAFETY ASSESSMENT

The Middle Road Project will not generate any adverse safety effects on the surrounding road network.

- ◆ There is no evidence of any existing crash trends, and the volume of additional vehicle traffic will not create any new issues
- ◆ The proposed intersections and vehicle crossings have been designed to have adequate visibility and will be able to carry the volumes of predicted traffic
- ◆ The proposed intersections will have surface treatments and localised narrowing to convey the low speed and residential nature of the Middle Road Project
- ◆ Within the Middle Road Project area, the proposed roads will provide a low-speed, low-volume traffic environment that supports safe and comfortable movement for residents and visitors, while also having the capability to accommodate future bus routes
- ◆ The urbanisation of the full width of Middle Road and Te Aute Road will improve the safety of the existing facilities on these collector roads
- ◆ Footpaths are proposed to be separated from the roads with a front berm, and there is connectivity throughout the Middle Road Project area to the external network
- ◆ Our SIDRA intersection assessment indicates that the key intersections surrounding the Middle Road Project will continue to operate efficiently. The trip generation associated with the Middle Road Project is not expected to have any adverse effect on the wider transportation network.

11 CONSULTATION

We have consulted with transport representatives from the local Councils²² during this project, with consultation expected to continue as the development of the Middle Road Project and initial stages are developed.

11.1 Key discussion points

We have summarised the key topics raised in these meetings to date and how the Middle Road Project addresses these topics. A detailed summary of consultation can be found in the planning report. The key topics were as follows

- ◆ Intersection positions on Middle Road and Te Aute Road
- ◆ External road network capacity
- ◆ Development design layout
- ◆ Pedestrian connectivity on Middle Road and Te Aute Road
- ◆ Public transport
- ◆ Pedestrian crossing positions and forms.

11.2 Outcome of consultation

All key transport-related matters raised during consultation have been considered. These have informed the consent conditions, and the design of internal road networks within the Middle Road Project.

²² Hastings District Council and Hawkes Bay Regional Council

12 ASSESSMENT OF CONSTRUCTION EFFECTS

The effects of construction traffic on the environment will need to be managed to ensure that, from a transport point of view, the surrounding road network operates safely for all modes of travel. A detailed Construction Traffic Management Plan (CTMP) will be prepared prior to the commencement of the land development phase of the project.

A CTMP will address the following key elements.

- ◆ A description of the construction site and a programme and scope of the works
- ◆ Routes to be used by construction traffic to access and egress the site and the adoption of any measures on these routes to ensure a safe environment for all road users, including existing residents and pedestrians, to ensure that the surrounding road network will continue to operate efficiently
- ◆ The amount of construction traffic expected during each phase of construction
- ◆ Access for construction vehicles onto the road network from the site and measures to be adopted at these access points to ensure a safe traffic environment for other road users, especially pedestrians
- ◆ Parking for contractor vehicles on the development site and its effects on the transport network are minimised.

The implementation of the CTMP will be included as a condition of consent for the development.

Overall, it is anticipated that the effects of construction traffic will be safely managed through the preparation and adherence to a comprehensive CTMP.

13 PROPOSED MITIGATION MEASURES & CONDITIONS OF CONSENT

We recommend that the following matters be included in the conditions of consent for the Middle Road Project to address transport-related effects. These are not the wording of the conditions themselves, but rather a summary of the key matters that the conditions should address.

13.1 Developer conditions

13.1.1 Construction Traffic Management Plan (CTMP)

The condition should require the preparation of a detailed Construction Traffic Management Plan (CTMP) by a suitably qualified person, in consultation with Hastings District Council. The CTMP should be submitted for Council certification prior to construction commencing. The CTMP should address the following matters

- ◆ Management of the transport network to minimise congestion and delays during construction
- ◆ Public communication about traffic management throughout the construction period
- ◆ Safe passage of pedestrians and cyclists, including school children
- ◆ Minimise construction traffic during school drop-off and pick-up times, including avoidance of routes past schools during these periods
- ◆ Maintenance of pedestrian access to private property at all times
- ◆ Retention of vehicle access to private property wherever practicable
- ◆ Management of traffic effects from construction yards on adjacent properties
- ◆ Identification of any road closures, detours or traffic restrictions required and their duration
- ◆ Management of construction material and equipment deliveries, including site-specific Traffic Management Plans (TMPs)
- ◆ Provision for safe, clearly identified pedestrian and cyclist access adjacent to works, with attention to minimising detours, particularly for mobility-impaired users
- ◆ Monitoring measures to track traffic impacts and adjust traffic management as needed to address safety or operational issue
- ◆ Site access arrangements, particularly where two-way traffic is not feasible, to minimise reversing and road blockage
- ◆ Availability of contractor parking, including on-street/off-street assessment and measures to reduce demand on public parking
- ◆ Maintenance of public refuse collection services for all affected properties.

The CTMP should also:

- ◆ be consistent with the New Zealand guide to temporary traffic management (NZGTTM) (or any equivalent documentation that supersedes this at the time of construction)
- ◆ include measures to ensure any damage to the road corridor caused by construction traffic is promptly repaired within an agreed timeframe.

13.1.2 Avoidance of Damage to Public Assets

The condition should clarify that no damage to public roads, footpaths, berms, kerbs, drains, reserves, or other public assets is permitted unless specifically authorised. Any damage that does occur must be reported to Council within 24 hours and promptly repaired at the consent holder's expense.

13.1.3 Middle Road Bridge construction

The condition should require the delivery of a pedestrian bridge across the Herehere Stream on the north side of Middle Road to provide pedestrian connectivity to the existing footpath network east of the stream. The timing of the bridge construction should be linked to an appropriate stage of the development. The pedestrian bridge should be delivered after the footpath infrastructure north of the proposed main intersection with Middle Road has been delivered, with staging that will provide access off Middle Road.

The final design details of the bridge are to be agreed with Council through the engineering approval process.

13.1.4 On-site parking provision

On-site vehicle standing bays of 5 m to be provided in front of garage spaces.

13.1.5 Consent Notices

On Lots 1, 15 to 19, 101 to 111, 193 to 197, 233 to 243, 294, 295, a requirement that on-site vehicle manoeuvring is undertaken that enables forward entry and forward exit movements onto the accessways (or public road directly) to avoid extended reverse manoeuvres onto the public roads.

13.2 Adopted Residential Zoning

While the Site is not zoned for urban residential development, the development will adopt the existing provisions of the Chapter 8.2 Havelock North Residential Environment zone, the Medium Density Residential Zone (MRZ) and Chapter 26.1 Transport and Parking. These provisions will be applied through Consent Notices. Consequently, the General Transport Standards of the District Plan should also be applied to the residential lots through the Consent Notices.

13.2.1 The general transport standards

The general transport standards purpose is to ensure safe, efficient, and well-integrated vehicle access and parking while minimising impacts on pedestrian safety and the public realm. These general transport standards are summarised below.

13.2.1.1 Access

- ◆ One vehicle crossing per site
- ◆ Access to be from the lower order road where multiple frontages exist
- ◆ Safe access required from road edge to lot boundary
- ◆ Minimum legal access widths

- 1–2 households: 3.0 m
 - 3 households: 3.6 m
 - 4–6 households: 4.5 m
 - 7+ households: 6.0 m
- ◆ Maximum vehicle crossing widths
 - 1–6 households: 4.8 m
 - 7+ households: 6.0 m
- ◆ Maximum crossing gradient: 20 %
- ◆ Minimum formed lane width: 2.75 m (excluding shoulders).

13.2.1.2 Vehicle Access Distance from Intersections

- ◆ Minimum 15 m from an Access Road intersection (or to the site boundary, whichever is less). While not directly specified, this is also assumed to apply to Collector Road intersections
- ◆ Adjacent accesses to be offset 1.5 m from side boundaries.

13.2.1.3 Parking

- ◆ No minimum or maximum parking requirements
- ◆ Minimum parking space size: 3.0 m (width) by 5.0 m (length).

14 CONCLUSION

Based on the analysis described in this report, we conclude that the Middle Road Project will deliver a residential development that can operate safely and efficiently from a transportation perspective. We conclude that the transport effects of this Fast Track application are appropriate. In particular,

- ♦ the proposed new road intersections will operate well, and the new intersections will not have any adverse safety or operational effects
- ♦ within the development area, there is appropriate traffic calming and the new road cross sections encourage a low speed, predominantly local road environment
- ♦ an internal collector road has the capability of accommodating future bus routes
- ♦ the design of roads promotes a low-speed, pedestrian and cycle-friendly environment with strategic use of changes in materiality at intersections, kerb buildouts and staggered on-street parking to calm traffic. Pedestrian and cycle connectivity is well integrated, with footpaths and road crossings throughout the site and strong connections to the external network
- ♦ the proposed vehicle access design is generally compliant with District Plan requirements and is anticipated to operate well. Where there are non-compliances identified, no adverse effects are expected
- ♦ the proposed application aligns with local and national policies
- ♦ the additional peak hour traffic volumes generated by the Middle Road Project can be accommodated on the surrounding road network
- ♦ the transport design aspects of the Middle Road Project will function safely and efficiently and any infringements with the transport design requirements of the District Plan will be less than minor in nature
- ♦ The adopted residential zone provisions include the proposed transportation / design standards for future buildings on the site which ensure appropriate transport design outcomes
- ♦ There are no existing road safety concerns on the roads surrounding the Middle Road Project, and we anticipate that the Middle Road Project will not create any new road safety issues.

Additionally, we note that the construction traffic likely to be generated can be adequately managed by a Construction Traffic Management Plan. This will include the implementation of mitigation measures to minimise the effects of heavy vehicles on existing residents and road users in the area.

We conclude that the Middle Road Project results in negligible effects relating to the function, capacity, and safety of the surrounding transport network.

APPENDIX A District Plan assessment tables

PART 2 – DISTRICT-WIDE MATTERS - TRANSPORT ASSESSMENT

Transport Standards

26.1.6 GENERAL PERFORMANCE STANDARDS AND TERMS	Assessment
26.1.6A Access	
1. Access to Property	
a) Every owner or occupier shall provide a legal, safe and effective vehicular access to any activity undertaken on a site, and required parking or loading areas from an existing, formed legal road, to enable vehicles to enter the site, except where the site has Designated Retail Frontage (see Appendix 30) or where the site is within the Flaxmere Commercial Zone. b) There shall be a maximum of one vehicle crossing per property within the Residential Zone. Where a property is bordered by 2 or more the vehicle access to the property shall be from the lower category road. The category of the road will be determined by its Road Hierarchy status in Appendix 69 or traffic volumes when hierarchy status is equal c) The minimum legal widths for private access are contained in Table 26.1.6.1-1 below. Private access to properties shall allow the safe passage from the edge of the road to the legal boundary of the lot for a single site or household unit. For two or more sites or household units or for any Right of Way, formation of the access to the activity undertaken on the site is required in compliance with Table 26.1.6.1-1. d) A property access which crosses the rail network does not constitute legal access. Sites which adjoin the railway line or designation shall provide an alternative access to a legal road which does not require a crossing of the railway line or designation. For a locality servicing 3 households, • Target operating speed of 10km/hr • Minimum Legal Access Width – 3.6 m • Maximum width of vehicle crossing – 4.8m • Max grade – 20% • Pedestrian – Shared (in movement lane) • Passing parking, loading, and shoulder – Allow for passing every 50m • Cyclists - Shared (in movement lane) Minimum formed movement lane – 2.75m For a locality servicing 4-6 households, • Target operating speed of 10km/hr • Minimum Legal Access Width – 4.5m • Maximum width of vehicle crossing – 4.8m • Max grade – 20% • Pedestrian – Shared (in movement lane) • Passing parking, loading, and shoulder – Allow for passing every 50m • Cyclists - Shared (in movement lane) • Minimum formed movement lane – 2.75m	Complies The proposed accesses to properties are compliant with the standards. There shall be a maximum of one vehicle crossing per property within the Residential Zone
2. Distance of Vehicle Accesses from Road Intersections	

a) Residential, Industrial and Commercial Zones The distance that a vehicle access to any property may be sited from any Access Road intersection as defined in the Roding Hierarchy in Appendix 69, shall be a minimum of 15m or the extent of the property boundary whichever is the least. Where there are two adjacent accesses, vehicle crossings shall be offset from the legal property boundary (side boundary) by 1.5 metres. Vehicle access to any property shall not be sited within 30 metres of an intersection of a State Highway. Note: Vehicle access in relation to Collector or Arterial Road intersections as defined in the Roding Hierarchy in Appendix 69 shall be subject to Road Safety Audit as deemed necessary by the Road Controlling Authority. b) Rural Residential, Rural, Plains Production and Special Character Zones Vehicle access to any property shall be sited a minimum of 100 meters from an intersection of a State Highway.	Does not comply Refer to Section 8.5.2. Where there are two adjacent accesses, vehicle crossings are offset from the legal property boundary (side boundary) by more than 1.5 metres.
26.1.6B SAFE SIGHTLINE DISTANCES	
1. Intersections shall be located to ensure that Safe Sightline Distances are maintained. Note: For vehicle accesses fronting an Access, Collector or Arterial Route (as defined in the Roding Hierarchy in Appendix 69) compliance with Austroads Standards is deemed an acceptable means of compliance. For vehicle accesses and intersections fronting a State Highway, compliance with the NZ Transport Agency's standards for entrance/access ways is deemed an acceptable means of compliance. 2. All existing and new accesses that cross the rail network via a level crossing must be maintained in accordance with the sight triangles provided in Appendix 78 (Railway Level Crossing Sight Triangles and Explanations) with the exception that existing buildings associated with existing accesses will not have to meet the sight triangles.	Complies Intersections have been assessed to ensure that Safe Intersection Sight Distance is provided. These are compliant and have been provided in the Woods Civil Drawings set.
26.1.6C LOADING	
1) All Activities except Residential Activities a. Provision of Loading Spaces (i) Every owner or occupier who proposes to construct or substantially alter, reconstruct or add to a building on any site, or change the activity carried out on the site shall provide a Loading Space. The Loading Space shall provide for the suitable or efficient accommodation of any loading or fuelling of vehicles which are likely to arise from the use of any building or activity carried out on the site, except where a service lane is designated or provided, or where the site has Designated Retail Frontage (see Appendix 30). Separate Loading Spaces shall be provided for each occupier of the site if there are more than one. The Loading Space shall be additional to the parking required in {Link,19762,Table 26.1.6.1-4}. (ii) Every Loading Space, together with access, shall be designed so that it is not necessary to reverse vehicles either on to or off the street. The Loading Space shall not be stacked or located within vehicle manoeuvring areas. (iii) The provision of a Loading Space in respect of any site may be made as part of the side and/or rear yard space, but not as part of the front yard space of that site. (iv) The method of loading shall ensure that the footpath or access to adjacent properties shall remain clear at all times and ensure traffic safety is maintained on the roads. b. Design of Loading Spaces The design of Loading Spaces and the layout adopted will depend on the area and shape of the land available, the purpose for which loading is required, and the functional design of the building. The layout shall be of sufficient size to accommodate the following design vehicles: (i) Activities requiring loading facilities or servicing from heavy vehicles: A "Single Unit Bus / Truck" as defined in the "Austroads Design Vehicles and Turning Path Templates Guide" AP-G34-13, Austroads, 2013 - refer to Appendix 72 for the dimensions of this vehicle.	Complies No loading space is required as residential activities are proposed. There are no loading spaces proposed.

(ii) Where articulated vehicles or trucks and trailers are anticipated: A "Prime Mover and Semi-Trailer" as defined in the "Austroads Design Vehicles and Turning Path Templates Guide" AP-G34-13, Austroads, 2013 - refer to Appendix 72 for the dimensions of this vehicle. (iii) The following minimum dimensions are provided as a means of compliance: Warehouses, Transport depots, bulk stores and similar must have a minimum length of 20 metres and a minimum width of 3 metres. Retail activities, offices, manufacturing premises and similar must have a minimum length of 8.5 metres and a minimum width of 3 metres. Non-residential activities such as day care centres and similar must have a minimum length of 5.5 metres and a minimum width of 3 metres.									
26.1.6D PARKING									
1. Provision of On-Site Parking The District Plan no longer contains provisions that require on-site vehicle parking, with exception to those included in the general and specific performance standards of this section of the Plan. Note: For guidance on the number of parking spaces for activities, refer to the Hastings Parking Guide 2. Parking Spaces for People with Disabilities a) A minimum of accessible car parking spaces shall be provided according table below: <table border="1" data-bbox="133 932 1038 1146"> <thead> <tr> <th>Total Number of Car Parks</th><th>Number of Accessible Spaces</th></tr> </thead> <tbody> <tr> <td>1-20</td><td>Not less than 1</td></tr> <tr> <td>21-51</td><td>Not less than 2</td></tr> <tr> <td>For every additional 50 car park spaces</td><td>Not less than 1</td></tr> </tbody> </table> 3. Design and Construction of Parking Areas (a) Vehicle Dimensions All parking spaces and access and manoeuvring areas, including ramps shall be of a sufficient size and suitable layout to accommodate a passenger vehicle" as defined in the "Austroads Design Vehicles and Turning Path Templates Guide" AP-G34-13, Austroads, 2013 - refer to Appendix 72 for the dimensions of this vehicle. (b) Parking Spaces for Residential Activities Parking spaces for Residential Activities in any Residential zone shall have a minimum internal dimension of 3.0 m (width) by 5.0 m (length). (c) General Design and Construction Details All public and required parking areas, and any outdoor display areas (such as car, caravan or boat sales yards) shall comply with the following general requirements: (i) Parking areas in any Commercial or Industrial Zone shall be formed and sealed with an all-weather surface. (ii) Parking areas shall be designed and constructed to ensure that stormwater runoff from the parking area does not adversely affect adjoining properties. (iii) Parking areas, together with access and turning space, shall be designed to ensure that vehicles negotiate the parking area at a safe speed and are not required to reverse either on to or off a street, provided that this requirement shall not apply in any Residential Zone where a single accessway serves not more than two residential buildings. Vehicles using the parking area shall only enter or leave the site by the accessway.	Total Number of Car Parks	Number of Accessible Spaces	1-20	Not less than 1	21-51	Not less than 2	For every additional 50 car park spaces	Not less than 1	Will Comply While there are no lot car parks proposed, it is considered that future dwellings can comply.
Total Number of Car Parks	Number of Accessible Spaces								
1-20	Not less than 1								
21-51	Not less than 2								
For every additional 50 car park spaces	Not less than 1								

(iv) Where a public or non-residential parking area is within or adjoins a Residential Zone, a 1.8 metre high, fully enclosed screen shall be erected or a landscape strip of a minimum width of 5 metres adjoining the boundary or the Residential Zone shall be provided. These requirements may be reduced or waived with the consent of the adjoining neighbour. (v) A reservoir space shall be provided within public carparks to prevent vehicles queuing on the street. (vi) Provision shall be made for the illumination of access drives and pedestrian areas within public carparks. Such illumination is to be directed away from adjoining residentially zoned sites. (vii) Non-residential parking spaces required to be sealed by standard 26.1.6.D.5(c)(i) shall be marked out and where there is a separate requirement for staff parking such spaces shall be clearly identified.	
26.1.7A ACCESS	
1. Vehicle Standing Bay (a) Residential Zones In all Residential Zones, a 5 metre long Vehicle Standing Bay shall be located within the Vehicle Access to all garages and carports and notional garage spaces.	Will Comply We consider that future dwellings will provide the required vehicle standing bays
26.1.7B INFRASTRUCTURE TO SUPPORT ALTERNATIVE TRANSPORT MODES	
1. Bicycle Spaces Where on-site car parking is required provision shall also be made for purpose built bicycle stands on site. These shall be provided at a rate of 1 bicycle stand per 5 carpark spaces that are required except for supermarket where the ratio shall be 1 bicycle stand per 20 carpark spaces that are required. The bicycle stands shall meet the following requirements: (a) They shall be securely attached to a wall or the ground and shall support the bicycle frame. (b) Each cycle stand shall be adequately spaced to allow a cyclist to manoeuvre and attach a bicycle to the stand. (c) They shall allow the bicycle to be secured. (d) They shall be visible and signposted. 2. Bicycle End of Journey Facilities Commercial or Industrial Activities which employ more than 15 FTE staff members shall provide one male and one female shower and changing facilities for staff to encourage the use of alternative transport modes. 3. Exemptions Renewable Energy Generation Activities are exempt from the provisions of standard 26.1.7B	Will Comply Bike Parking will be provided within lots.

Assessment Criteria – Restricted Discretionary and Discretionary Activities

26.1.8 ASSESSMENT CRITERIA - RESTRICTED DISCRETIONARY AND DISCRETIONARY ACTIVITIES	
26.1.8A GENERAL	Assessment
26.1.8B ACTIVITIES WHICH DO NOT COMPLY WITH THE SETBACK DISTANCE FROM INTERSECTION STANDARD 26.1.6A.2	
a) Whether the dimensions of the site or the location of buildings or other physical features of land or buildings preclude a reasonable compliance with the minimum standard for distance from the road intersection. b) The current and expected traffic volume of the street which the property fronts, and whether the proposed location of the vehicle access and the expected traffic generated from the activities on the property will have no significant effect on the safety or efficient operation of the road intersection over and above that which is permitted. <i>Note: A Design Safety Audit and Intersection Performance Assessment undertaken by a suitably qualified Transport Engineer may be required to ascertain the effects of the proposal on the safety and efficiency of the intersection.</i>	a) These crossings are proposed at the end of their respective proposed property boundaries. b) The traffic volumes on the adjacent roads are expected to be low. Each vehicle crossing will only serve one residential lot, as such, volume and frequency of vehicle crossing use is very low. The intersections have been designed with traffic calming in mind, as such, operating speeds are expected to be low. We expected the proposed intersections and vehicle crossings to operate safely and effective. All affected vehicle crossings will have good visibility onto the public road reserve, to ensure that vehicles can enter and exit safely without compromising the safety or efficiency of the intersections.

APPENDIX B Relevant central and local policy guidance

Relevant central and local policy and guidance

Government Policy Statement on Land Transport

The Government Policy Statement on Land Transport 2024 (GPS 2024) sets out the Government's priorities for transport investment over the next decade, with a strong emphasis on supporting economic growth and productivity. It directs funding toward improving road maintenance and resilience, enhancing safety, and delivering value for money. GPS 2024 reintroduces the Roads of National Significance (RoNS) programme and establishes new Roads of Regional Significance (RoRS), while also committing substantial investment in public transport services and infrastructure. The statement marks a shift in emphasis from previous versions, signalling a renewed focus on core transport infrastructure and network efficiency.

<https://www.transport.govt.nz/assets/Uploads/Government-Policy-Statement-on-land-transport-2024-FINAL.pdf>

Hastings and Napier Future Development Strategy

Hastings District Council, Napier City Council, the Hawke's Bay Regional Council and iwi and hapū partners have jointly developed the Hastings and Napier Future Development Strategy (FDS). The FDS will guide development across existing urban areas and areas close by across the two districts over the next 30 years. The FDS study area is shown in Figure 34. The draft FDS has been developed in accordance with the NPS-UD and aims to

- ♦ achieve 'well-functioning urban environments' in Napier and Hastings' current and future urban areas.
- ♦ identify the big issues around growth, things like housing, transport, employment, cultural wellbeing, the environment, climate change and resilience.
- ♦ Show the infrastructure needed to support and service that growth, and Development constraints.

Figure 34: Hastings and Napier FDS Study Area



<https://www.hastingsdc.govt.nz/hastingsnapierfuturedevelopment/>

APPENDIX C

SIDRA modelling results

MOVEMENT SUMMARY

▼ Site: 101 [Baseline AM (Site Folder: Middle Rd/Porter Dr)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Porter Dr														
1	L2	36	3.0	38	3.0	0.098	4.6	LOS A	0.0	0.0	0.00	0.11	0.00	48.8
2	T1	141	3.0	148	3.0	0.098	0.0	LOS A	0.0	0.0	0.00	0.11	0.00	49.3
Approach		177	3.0	186	3.0	0.098	1.0	NA	0.0	0.0	0.00	0.11	0.00	49.2
North: Porter Dr														
8	T1	78	3.0	82	3.0	0.043	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
9	R2	329	3.0	346	3.0	0.232	5.3	LOS A	1.2	8.6	0.34	0.56	0.34	45.6
Approach		407	3.0	428	3.0	0.232	4.3	NA	1.2	8.6	0.28	0.45	0.28	46.4
West: Middle Rd														
10	L2	501	3.0	527	3.0	0.373	5.3	LOS A	2.0	14.5	0.33	0.55	0.33	45.8
12	R2	40	3.0	42	3.0	0.076	9.2	LOS A	0.3	2.0	0.57	0.77	0.57	43.6
Approach		541	3.0	569	3.0	0.373	5.6	LOS A	2.0	14.5	0.34	0.56	0.34	45.6
All Vehicles		1125	3.0	1184	3.0	0.373	4.4	NA	2.0	14.5	0.27	0.45	0.27	46.4

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

MOVEMENT SUMMARY

▼ Site: 101 [Baseline PM (Site Folder: Middle Rd/Porter Dr)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Porter Dr														
1	L2	42	3.0	44	3.0	0.080	4.6	LOS A	0.0	0.0	0.00	0.16	0.00	48.6
2	T1	102	3.0	107	3.0	0.080	0.0	LOS A	0.0	0.0	0.00	0.16	0.00	49.1
Approach		144	3.0	152	3.0	0.080	1.4	NA	0.0	0.0	0.00	0.16	0.00	48.9
North: Porter Dr														
8	T1	103	3.0	108	3.0	0.057	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
9	R2	465	3.0	489	3.0	0.317	5.3	LOS A	1.8	13.0	0.33	0.55	0.33	45.6
Approach		568	3.0	598	3.0	0.317	4.3	NA	1.8	13.0	0.27	0.45	0.27	46.4
West: Middle Rd														
10	L2	342	3.0	360	3.0	0.245	5.0	LOS A	1.2	8.5	0.24	0.52	0.24	46.0
12	R2	29	3.0	31	3.0	0.068	11.1	LOS B	0.2	1.7	0.64	0.83	0.64	42.6
Approach		371	3.0	391	3.0	0.245	5.5	LOS A	1.2	8.5	0.27	0.54	0.27	45.7
All Vehicles		1083	3.0	1140	3.0	0.317	4.3	NA	1.8	13.0	0.23	0.44	0.23	46.5

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

MOVEMENT SUMMARY

▼ Site: 101 [Scenario 1 AM (Site Folder: Middle Rd/Porter Dr)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Porter Dr														
1	L2	41	3.0	43	3.0	0.101	4.6	LOS A	0.0	0.0	0.00	0.12	0.00	48.8
2	T1	141	3.0	148	3.0	0.101	0.0	LOS A	0.0	0.0	0.00	0.12	0.00	49.3
Approach		182	3.0	192	3.0	0.101	1.1	NA	0.0	0.0	0.00	0.12	0.00	49.2
North: Porter Dr														
8	T1	78	3.0	82	3.0	0.043	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
9	R2	362	3.0	381	3.0	0.256	5.4	LOS A	1.4	9.7	0.35	0.56	0.35	45.6
Approach		440	3.0	463	3.0	0.256	4.4	NA	1.4	9.7	0.29	0.46	0.29	46.3
West: Middle Rd														
10	L2	600	3.0	632	3.0	0.446	5.4	LOS A	2.6	18.9	0.35	0.55	0.35	45.7
12	R2	55	3.0	58	3.0	0.111	9.9	LOS A	0.4	2.9	0.59	0.81	0.59	43.2
Approach		655	3.0	689	3.0	0.446	5.7	LOS A	2.6	18.9	0.37	0.57	0.37	45.5
All Vehicles		1277	3.0	1344	3.0	0.446	4.6	NA	2.6	18.9	0.29	0.47	0.29	46.3

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

MOVEMENT SUMMARY

▼ Site: 101 [Scenario 1 PM (Site Folder: Middle Rd/Porter Dr)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Porter Dr														
1	L2	55	3.0	58	3.0	0.088	4.6	LOS A	0.0	0.0	0.00	0.19	0.00	48.4
2	T1	102	3.0	107	3.0	0.088	0.0	LOS A	0.0	0.0	0.00	0.19	0.00	48.9
Approach		157	3.0	165	3.0	0.088	1.6	NA	0.0	0.0	0.00	0.19	0.00	48.7
North: Porter Dr														
8	T1	103	3.0	108	3.0	0.057	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
9	R2	550	3.0	579	3.0	0.380	5.4	LOS A	2.3	16.5	0.37	0.56	0.37	45.6
Approach		653	3.0	687	3.0	0.380	4.5	NA	2.3	16.5	0.31	0.47	0.31	46.2
West: Middle Rd														
10	L2	388	3.0	408	3.0	0.278	5.0	LOS A	1.4	9.9	0.25	0.52	0.25	46.0
12	R2	36	3.0	38	3.0	0.101	13.0	LOS B	0.4	2.5	0.70	0.87	0.70	41.7
Approach		424	3.0	446	3.0	0.278	5.7	LOS A	1.4	9.9	0.29	0.55	0.29	45.6
All Vehicles		1234	3.0	1299	3.0	0.380	4.6	NA	2.3	16.5	0.26	0.46	0.26	46.3

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

MOVEMENT SUMMARY

▼ Site: 101 [Scenario 2 AM (Site Folder: Middle Rd/Porter Dr)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Porter Dr														
1	L2	48	3.0	51	3.0	0.105	4.6	LOS A	0.0	0.0	0.00	0.14	0.00	48.7
2	T1	141	3.0	148	3.0	0.105	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	49.2
Approach		189	3.0	199	3.0	0.105	1.2	NA	0.0	0.0	0.00	0.14	0.00	49.0
North: Porter Dr														
8	T1	78	3.0	82	3.0	0.043	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
9	R2	370	3.0	389	3.0	0.264	5.4	LOS A	1.4	10.1	0.36	0.57	0.36	45.6
Approach		448	3.0	472	3.0	0.264	4.5	NA	1.4	10.1	0.30	0.47	0.30	46.3
West: Middle Rd														
10	L2	625	3.0	658	3.0	0.465	5.4	LOS A	2.8	20.1	0.36	0.55	0.36	45.7
12	R2	75	3.0	79	3.0	0.154	10.2	LOS B	0.6	4.1	0.61	0.83	0.61	43.1
Approach		700	3.0	737	3.0	0.465	5.9	LOS A	2.8	20.1	0.39	0.58	0.39	45.4
All Vehicles		1337	3.0	1407	3.0	0.465	4.8	NA	2.8	20.1	0.30	0.48	0.30	46.2

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

MOVEMENT SUMMARY

▼ Site: 101 [Scenario 2 PM (Site Folder: Middle Rd/Porter Dr)]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Porter Dr														
1	L2	73	3.0	77	3.0	0.098	4.6	LOS A	0.0	0.0	0.00	0.23	0.00	48.2
2	T1	102	3.0	107	3.0	0.098	0.0	LOS A	0.0	0.0	0.00	0.23	0.00	48.7
Approach		175	3.0	184	3.0	0.098	1.9	NA	0.0	0.0	0.00	0.23	0.00	48.5
North: Porter Dr														
8	T1	103	3.0	108	3.0	0.057	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
9	R2	572	3.0	602	3.0	0.402	5.5	LOS A	2.5	17.7	0.40	0.57	0.40	45.5
Approach		675	3.0	711	3.0	0.402	4.7	NA	2.5	17.7	0.34	0.48	0.34	46.1
West: Middle Rd														
10	L2	400	3.0	421	3.0	0.287	5.0	LOS A	1.4	10.3	0.25	0.52	0.25	46.0
12	R2	46	3.0	48	3.0	0.136	13.8	LOS B	0.5	3.4	0.73	0.88	0.73	41.3
Approach		446	3.0	469	3.0	0.287	5.9	LOS A	1.4	10.3	0.30	0.56	0.30	45.5
All Vehicles		1296	3.0	1364	3.0	0.402	4.7	NA	2.5	17.7	0.28	0.47	0.28	46.2

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

MOVEMENT SUMMARY

 Site: 102 [Baseline AM (Site Folder: Te Aute Rd/Porter Dr)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Porter Dr														
1	L2	55	3.0	55	3.0	0.622	6.7	LOS A	6.0	42.9	0.74	0.75	0.80	44.7
2	T1	377	3.0	377	3.0	0.622	6.7	LOS A	6.0	42.9	0.74	0.75	0.80	45.6
3	R2	209	3.0	209	3.0	0.622	10.6	LOS B	6.0	42.9	0.74	0.75	0.80	45.6
Approach		641	3.0	641	3.0	0.622	8.0	LOS A	6.0	42.9	0.74	0.75	0.80	45.5
East: Te Aute Rd														
4	L2	176	3.0	176	3.0	0.392	5.5	LOS A	2.7	19.3	0.63	0.65	0.63	45.7
5	T1	174	3.0	174	3.0	0.392	5.6	LOS A	2.7	19.3	0.63	0.65	0.63	46.7
6	R2	24	3.0	24	3.0	0.392	9.5	LOS A	2.7	19.3	0.63	0.65	0.63	46.7
Approach		374	3.0	374	3.0	0.392	5.8	LOS A	2.7	19.3	0.63	0.65	0.63	46.2
North: Porter Dr														
7	L2	5	3.0	5	3.0	0.337	6.2	LOS A	2.2	15.5	0.67	0.72	0.67	44.9
8	T1	186	3.0	186	3.0	0.337	6.3	LOS A	2.2	15.5	0.67	0.72	0.67	45.8
9	R2	102	3.0	102	3.0	0.337	10.2	LOS B	2.2	15.5	0.67	0.72	0.67	45.8
Approach		293	3.0	293	3.0	0.337	7.6	LOS A	2.2	15.5	0.67	0.72	0.67	45.8
West: Te Aute Rd														
10	L2	187	3.0	187	3.0	0.594	10.9	LOS B	5.7	41.1	0.91	1.01	1.13	43.2
11	T1	193	3.0	193	3.0	0.594	10.9	LOS B	5.7	41.1	0.91	1.01	1.13	44.0
12	R2	43	3.0	43	3.0	0.594	14.8	LOS B	5.7	41.1	0.91	1.01	1.13	44.0
Approach		423	3.0	423	3.0	0.594	11.3	LOS B	5.7	41.1	0.91	1.01	1.13	43.6
All Vehicles		1731	3.0	1731	3.0	0.622	8.3	LOS A	6.0	42.9	0.75	0.79	0.82	45.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

 Site: 102 [Baseline PM (Site Folder: Te Aute Rd/Porter Dr)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
South: Porter Dr														
1	L2	30	3.0	30	3.0	0.481	6.2	LOS A	3.5	24.9	0.70	0.73	0.71	44.9
2	T1	270	3.0	270	3.0	0.481	6.3	LOS A	3.5	24.9	0.70	0.73	0.71	45.8
3	R2	144	3.0	144	3.0	0.481	10.2	LOS B	3.5	24.9	0.70	0.73	0.71	45.7
Approach		444	3.0	444	3.0	0.481	7.6	LOS A	3.5	24.9	0.70	0.73	0.71	45.7
East: Te Aute Rd														
4	L2	172	3.0	172	3.0	0.508	8.9	LOS A	4.2	30.5	0.86	0.92	0.97	44.1
5	T1	146	3.0	146	3.0	0.508	9.0	LOS A	4.2	30.5	0.86	0.92	0.97	44.9
6	R2	52	3.0	52	3.0	0.508	12.9	LOS B	4.2	30.5	0.86	0.92	0.97	44.9
Approach		370	3.0	370	3.0	0.508	9.5	LOS A	4.2	30.5	0.86	0.92	0.97	44.5
North: Porter Dr														
7	L2	7	3.0	7	3.0	0.600	8.1	LOS A	5.7	40.7	0.80	0.86	0.92	44.2
8	T1	348	3.0	348	3.0	0.600	8.1	LOS A	5.7	40.7	0.80	0.86	0.92	45.0
9	R2	186	3.0	186	3.0	0.600	12.0	LOS B	5.7	40.7	0.80	0.86	0.92	45.0
Approach		541	3.0	541	3.0	0.600	9.4	LOS A	5.7	40.7	0.80	0.86	0.92	45.0
West: Te Aute Rd														
10	L2	166	3.0	166	3.0	0.514	7.6	LOS A	4.2	30.1	0.79	0.83	0.86	44.8
11	T1	213	3.0	213	3.0	0.514	7.6	LOS A	4.2	30.1	0.79	0.83	0.86	45.7
12	R2	52	3.0	52	3.0	0.514	11.6	LOS B	4.2	30.1	0.79	0.83	0.86	45.7
Approach		431	3.0	431	3.0	0.514	8.1	LOS A	4.2	30.1	0.79	0.83	0.86	45.4
All Vehicles		1786	3.0	1786	3.0	0.600	8.7	LOS A	5.7	40.7	0.79	0.83	0.86	45.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

 Site: 102 [Scenario 1 AM (Site Folder: Te Aute Rd/Porter Dr)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Porter Dr														
1	L2	55	3.0	55	3.0	0.715	8.2	LOS A	8.7	62.8	0.83	0.83	0.97	44.1
2	T1	438	3.0	438	3.0	0.715	8.2	LOS A	8.7	62.8	0.83	0.83	0.97	45.0
3	R2	247	3.0	247	3.0	0.715	12.2	LOS B	8.7	62.8	0.83	0.83	0.97	45.0
Approach		740	3.0	740	3.0	0.715	9.5	LOS A	8.7	62.8	0.83	0.83	0.97	44.9
East: Te Aute Rd														
4	L2	189	3.0	189	3.0	0.416	5.8	LOS A	2.9	21.0	0.67	0.68	0.67	45.7
5	T1	175	3.0	175	3.0	0.416	5.8	LOS A	2.9	21.0	0.67	0.68	0.67	46.6
6	R2	24	3.0	24	3.0	0.416	9.7	LOS A	2.9	21.0	0.67	0.68	0.67	46.6
Approach		388	3.0	388	3.0	0.416	6.0	LOS A	2.9	21.0	0.67	0.68	0.67	46.1
North: Porter Dr														
7	L2	5	3.0	5	3.0	0.376	6.7	LOS A	2.5	17.9	0.71	0.76	0.71	44.7
8	T1	206	3.0	206	3.0	0.376	6.7	LOS A	2.5	17.9	0.71	0.76	0.71	45.6
9	R2	104	3.0	104	3.0	0.376	10.6	LOS B	2.5	17.9	0.71	0.76	0.71	45.6
Approach		315	3.0	315	3.0	0.376	8.0	LOS A	2.5	17.9	0.71	0.76	0.71	45.6
West: Te Aute Rd														
10	L2	197	3.0	197	3.0	0.706	16.1	LOS B	8.3	59.4	1.00	1.20	1.45	40.7
11	T1	197	3.0	197	3.0	0.706	16.1	LOS B	8.3	59.4	1.00	1.20	1.45	41.4
12	R2	43	3.0	43	3.0	0.706	20.1	LOS C	8.3	59.4	1.00	1.20	1.45	41.4
Approach		437	3.0	437	3.0	0.706	16.5	LOS B	8.3	59.4	1.00	1.20	1.45	41.1
All Vehicles		1880	3.0	1880	3.0	0.715	10.2	LOS B	8.7	62.8	0.82	0.88	0.98	44.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

📍 Site: 102 [Scenario 1 PM (Site Folder: Te Aute Rd/Porter Dr)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Porter Dr														
1	L2	30	3.0	30	3.0	0.538	7.1	LOS A	4.4	31.9	0.75	0.79	0.81	44.6
2	T1	298	3.0	298	3.0	0.538	7.1	LOS A	4.4	31.9	0.75	0.79	0.81	45.5
3	R2	162	3.0	162	3.0	0.538	11.1	LOS B	4.4	31.9	0.75	0.79	0.81	45.5
Approach		490	3.0	490	3.0	0.538	8.4	LOS A	4.4	31.9	0.75	0.79	0.81	45.4
East: Te Aute Rd														
4	L2	205	3.0	205	3.0	0.611	11.9	LOS B	6.1	43.7	0.94	1.06	1.20	42.6
5	T1	151	3.0	151	3.0	0.611	11.9	LOS B	6.1	43.7	0.94	1.06	1.20	43.4
6	R2	52	3.0	52	3.0	0.611	15.8	LOS B	6.1	43.7	0.94	1.06	1.20	43.4
Approach		408	3.0	408	3.0	0.611	12.4	LOS B	6.1	43.7	0.94	1.06	1.20	43.0
North: Porter Dr														
7	L2	7	3.0	7	3.0	0.681	9.8	LOS A	7.7	55.1	0.87	0.95	1.09	43.3
8	T1	401	3.0	401	3.0	0.681	9.9	LOS A	7.7	55.1	0.87	0.95	1.09	44.1
9	R2	195	3.0	195	3.0	0.681	13.8	LOS B	7.7	55.1	0.87	0.95	1.09	44.1
Approach		603	3.0	603	3.0	0.681	11.1	LOS B	7.7	55.1	0.87	0.95	1.09	44.1
West: Te Aute Rd														
10	L2	171	3.0	171	3.0	0.552	8.7	LOS A	4.9	35.1	0.84	0.90	0.96	44.2
11	T1	216	3.0	216	3.0	0.552	8.7	LOS A	4.9	35.1	0.84	0.90	0.96	45.1
12	R2	52	3.0	52	3.0	0.552	12.7	LOS B	4.9	35.1	0.84	0.90	0.96	45.1
Approach		439	3.0	439	3.0	0.552	9.2	LOS A	4.9	35.1	0.84	0.90	0.96	44.8
All Vehicles		1940	3.0	1940	3.0	0.681	10.3	LOS B	7.7	55.1	0.85	0.92	1.01	44.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

📍 Site: 102 [Scenario 2 AM (Site Folder: Te Aute Rd/Porter Dr)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Porter Dr														
1	L2	55	3.0	55	3.0	0.766	10.1	LOS B	10.8	77.8	0.90	0.95	1.15	43.1
2	T1	438	3.0	438	3.0	0.766	10.2	LOS B	10.8	77.8	0.90	0.95	1.15	43.9
3	R2	272	3.0	272	3.0	0.766	14.1	LOS B	10.8	77.8	0.90	0.95	1.15	43.9
Approach		765	3.0	765	3.0	0.766	11.6	LOS B	10.8	77.8	0.90	0.95	1.15	43.8
East: Te Aute Rd														
4	L2	197	3.0	197	3.0	0.448	6.0	LOS A	3.2	23.3	0.71	0.71	0.71	45.5
5	T1	184	3.0	184	3.0	0.448	6.1	LOS A	3.2	23.3	0.71	0.71	0.71	46.5
6	R2	24	3.0	24	3.0	0.448	10.0	LOS B	3.2	23.3	0.71	0.71	0.71	46.5
Approach		405	3.0	405	3.0	0.448	6.3	LOS A	3.2	23.3	0.71	0.71	0.71	46.0
North: Porter Dr														
7	L2	5	3.0	5	3.0	0.428	7.3	LOS A	3.0	21.4	0.77	0.81	0.78	44.4
8	T1	206	3.0	206	3.0	0.428	7.3	LOS A	3.0	21.4	0.77	0.81	0.78	45.3
9	R2	131	3.0	131	3.0	0.428	11.3	LOS B	3.0	21.4	0.77	0.81	0.78	45.3
Approach		342	3.0	342	3.0	0.428	8.8	LOS A	3.0	21.4	0.77	0.81	0.78	45.3
West: Te Aute Rd														
10	L2	278	3.0	278	3.0	0.926	43.6	LOS D	22.2	159.2	1.00	1.82	2.80	31.2
11	T1	222	3.0	222	3.0	0.926	43.6	LOS D	22.2	159.2	1.00	1.82	2.80	31.6
12	R2	43	3.0	43	3.0	0.926	47.6	LOS D	22.2	159.2	1.00	1.82	2.80	31.6
Approach		543	3.0	543	3.0	0.926	43.9	LOS D	22.2	159.2	1.00	1.82	2.80	31.4
All Vehicles		2055	3.0	2055	3.0	0.926	18.6	LOS B	22.2	159.2	0.87	1.11	1.44	40.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

 Site: 102 [Scenario 2 PM (Site Folder: Te Aute Rd/Porter Dr)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Porter Dr														
1	L2	30	3.0	30	3.0	0.604	9.3	LOS A	5.8	41.7	0.84	0.93	1.02	43.5
2	T1	298	3.0	298	3.0	0.604	9.3	LOS A	5.8	41.7	0.84	0.93	1.02	44.3
3	R2	174	3.0	174	3.0	0.604	13.3	LOS B	5.8	41.7	0.84	0.93	1.02	44.3
Approach		502	3.0	502	3.0	0.604	10.7	LOS B	5.8	41.7	0.84	0.93	1.02	44.3
East: Te Aute Rd														
4	L2	227	3.0	227	3.0	0.760	19.0	LOS B	9.9	71.1	1.00	1.26	1.57	39.4
5	T1	173	3.0	173	3.0	0.760	19.0	LOS B	9.9	71.1	1.00	1.26	1.57	40.1
6	R2	52	3.0	52	3.0	0.760	23.0	LOS C	9.9	71.1	1.00	1.26	1.57	40.1
Approach		452	3.0	452	3.0	0.760	19.5	LOS B	9.9	71.1	1.00	1.26	1.57	39.7
North: Porter Dr														
7	L2	7	3.0	7	3.0	0.777	13.1	LOS B	11.2	80.4	0.97	1.11	1.38	41.6
8	T1	401	3.0	401	3.0	0.777	13.1	LOS B	11.2	80.4	0.97	1.11	1.38	42.4
9	R2	265	3.0	265	3.0	0.777	17.1	LOS B	11.2	80.4	0.97	1.11	1.38	42.3
Approach		673	3.0	673	3.0	0.777	14.7	LOS B	11.2	80.4	0.97	1.11	1.38	42.3
West: Te Aute Rd														
10	L2	209	3.0	209	3.0	0.631	10.3	LOS B	6.5	46.7	0.90	0.99	1.12	43.4
11	T1	228	3.0	228	3.0	0.631	10.3	LOS B	6.5	46.7	0.90	0.99	1.12	44.3
12	R2	52	3.0	52	3.0	0.631	14.2	LOS B	6.5	46.7	0.90	0.99	1.12	44.3
Approach		489	3.0	489	3.0	0.631	10.7	LOS B	6.5	46.7	0.90	0.99	1.12	43.9
All Vehicles		2116	3.0	2116	3.0	0.777	13.8	LOS B	11.2	80.4	0.93	1.07	1.27	42.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

 Site: 102 [Baseline AM (Site Folder: Havelock Rd/Porter Dr)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Porter Dr														
1	L2	414	3.0	436	3.0	0.537	5.3	LOS A	4.3	30.9	0.64	0.63	0.64	46.0
2	T1	132	3.0	139	3.0	0.537	5.3	LOS A	4.3	30.9	0.64	0.63	0.64	46.9
3	R2	5	3.0	5	3.0	0.537	9.2	LOS A	4.3	30.9	0.64	0.63	0.64	46.9
Approach		551	3.0	580	3.0	0.537	5.3	LOS A	4.3	30.9	0.64	0.63	0.64	46.2
East: Havelock Rd														
4	L2	3	3.0	3	3.0	0.222	5.5	LOS A	1.3	9.2	0.57	0.61	0.57	45.6
5	T1	173	3.0	182	3.0	0.222	5.5	LOS A	1.3	9.2	0.57	0.61	0.57	46.5
6	R2	22	3.0	23	3.0	0.222	9.5	LOS A	1.3	9.2	0.57	0.61	0.57	46.5
Approach		198	3.0	208	3.0	0.222	6.0	LOS A	1.3	9.2	0.57	0.61	0.57	46.5
North: Porter Dr														
7	L2	12	3.0	13	3.0	0.116	5.9	LOS A	0.6	4.7	0.60	0.67	0.60	44.9
8	T1	38	3.0	40	3.0	0.116	6.0	LOS A	0.6	4.7	0.60	0.67	0.60	45.8
9	R2	44	3.0	46	3.0	0.116	9.9	LOS A	0.6	4.7	0.60	0.67	0.60	45.8
Approach		94	3.0	99	3.0	0.116	7.8	LOS A	0.6	4.7	0.60	0.67	0.60	45.7
West: Havelock Rd														
10	L2	40	3.0	42	3.0	0.032	3.7	LOS A	0.2	1.2	0.33	0.45	0.33	46.9
11	T1	172	3.0	181	3.0	0.347	4.1	LOS A	2.5	17.7	0.43	0.57	0.43	46.1
12	R2	280	3.0	295	3.0	0.347	8.0	LOS A	2.5	17.7	0.43	0.57	0.43	46.1
Approach		492	3.0	518	3.0	0.347	6.3	LOS A	2.5	17.7	0.42	0.56	0.42	46.2
All Vehicles		1335	3.0	1405	3.0	0.537	5.9	LOS A	4.3	30.9	0.55	0.60	0.55	46.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

 Site: 102 [Baseline PM (Site Folder: Havelock Rd/Porter Dr)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Porter Dr														
1	L2	332	3.0	349	3.0	0.447	4.9	LOS A	3.3	23.6	0.57	0.59	0.57	46.1
2	T1	114	3.0	120	3.0	0.447	5.0	LOS A	3.3	23.6	0.57	0.59	0.57	47.1
3	R2	14	3.0	15	3.0	0.447	8.9	LOS A	3.3	23.6	0.57	0.59	0.57	47.0
Approach		460	3.0	484	3.0	0.447	5.1	LOS A	3.3	23.6	0.57	0.59	0.57	46.4
East: Havelock Rd														
4	L2	9	3.0	9	3.0	0.235	7.6	LOS A	1.4	10.3	0.73	0.76	0.73	44.7
5	T1	123	3.0	129	3.0	0.235	7.7	LOS A	1.4	10.3	0.73	0.76	0.73	45.6
6	R2	31	3.0	33	3.0	0.235	11.6	LOS B	1.4	10.3	0.73	0.76	0.73	45.6
Approach		163	3.0	172	3.0	0.235	8.4	LOS A	1.4	10.3	0.73	0.76	0.73	45.5
North: Porter Dr														
7	L2	31	3.0	33	3.0	0.278	8.4	LOS A	1.8	13.0	0.79	0.83	0.79	43.9
8	T1	77	3.0	81	3.0	0.278	8.4	LOS A	1.8	13.0	0.79	0.83	0.79	44.7
9	R2	69	3.0	73	3.0	0.278	12.3	LOS B	1.8	13.0	0.79	0.83	0.79	44.7
Approach		177	3.0	186	3.0	0.278	9.9	LOS A	1.8	13.0	0.79	0.83	0.79	44.6
West: Havelock Rd														
10	L2	70	3.0	74	3.0	0.055	3.7	LOS A	0.3	2.1	0.32	0.45	0.32	47.0
11	T1	191	3.0	201	3.0	0.504	4.2	LOS A	4.2	30.0	0.50	0.59	0.50	45.8
12	R2	476	3.0	501	3.0	0.504	8.2	LOS A	4.2	30.0	0.50	0.59	0.50	45.8
Approach		737	3.0	776	3.0	0.504	6.7	LOS A	4.2	30.0	0.48	0.58	0.48	45.9
All Vehicles		1537	3.0	1618	3.0	0.504	6.8	LOS A	4.2	30.0	0.57	0.63	0.57	45.8

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

 Site: 102 [Scenario 1 AM (Site Folder: Havelock Rd/Porter Dr)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Porter Dr														
1	L2	485	3.0	511	3.0	0.602	5.6	LOS A	5.4	38.8	0.69	0.66	0.70	45.9
2	T1	132	3.0	139	3.0	0.602	5.6	LOS A	5.4	38.8	0.69	0.66	0.70	46.8
3	R2	5	3.0	5	3.0	0.602	9.6	LOS A	5.4	38.8	0.69	0.66	0.70	46.8
Approach		622	3.0	655	3.0	0.602	5.6	LOS A	5.4	38.8	0.69	0.66	0.70	46.1
East: Havelock Rd														
4	L2	3	3.0	3	3.0	0.227	5.7	LOS A	1.3	9.5	0.59	0.63	0.59	45.6
5	T1	173	3.0	182	3.0	0.227	5.7	LOS A	1.3	9.5	0.59	0.63	0.59	46.5
6	R2	22	3.0	23	3.0	0.227	9.7	LOS A	1.3	9.5	0.59	0.63	0.59	46.5
Approach		198	3.0	208	3.0	0.227	6.1	LOS A	1.3	9.5	0.59	0.63	0.59	46.5
North: Porter Dr														
7	L2	12	3.0	13	3.0	0.118	6.1	LOS A	0.7	4.8	0.62	0.68	0.62	44.8
8	T1	38	3.0	40	3.0	0.118	6.1	LOS A	0.7	4.8	0.62	0.68	0.62	45.7
9	R2	44	3.0	46	3.0	0.118	10.1	LOS B	0.7	4.8	0.62	0.68	0.62	45.7
Approach		94	3.0	99	3.0	0.118	8.0	LOS A	0.7	4.8	0.62	0.68	0.62	45.6
West: Havelock Rd														
10	L2	40	3.0	42	3.0	0.032	3.7	LOS A	0.2	1.2	0.33	0.45	0.33	46.9
11	T1	172	3.0	181	3.0	0.363	4.1	LOS A	2.7	19.1	0.44	0.57	0.44	46.1
12	R2	302	3.0	318	3.0	0.363	8.0	LOS A	2.7	19.1	0.44	0.57	0.44	46.1
Approach		514	3.0	541	3.0	0.363	6.4	LOS A	2.7	19.1	0.43	0.56	0.43	46.1
All Vehicles		1428	3.0	1503	3.0	0.602	6.1	LOS A	5.4	38.8	0.58	0.62	0.58	46.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

🚧 Site: 102 [Scenario 1 PM (Site Folder: Havelock Rd/Porter Dr)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Porter Dr														
1	L2	365	3.0	384	3.0	0.478	5.0	LOS A	3.6	26.2	0.59	0.60	0.59	46.1
2	T1	114	3.0	120	3.0	0.478	5.0	LOS A	3.6	26.2	0.59	0.60	0.59	47.0
3	R2	14	3.0	15	3.0	0.478	9.0	LOS A	3.6	26.2	0.59	0.60	0.59	47.0
Approach		493	3.0	519	3.0	0.478	5.1	LOS A	3.6	26.2	0.59	0.60	0.59	46.3
East: Havelock Rd														
4	L2	9	3.0	9	3.0	0.253	8.3	LOS A	1.6	11.5	0.77	0.80	0.77	44.3
5	T1	123	3.0	129	3.0	0.253	8.4	LOS A	1.6	11.5	0.77	0.80	0.77	45.2
6	R2	31	3.0	33	3.0	0.253	12.3	LOS B	1.6	11.5	0.77	0.80	0.77	45.2
Approach		163	3.0	172	3.0	0.253	9.1	LOS A	1.6	11.5	0.77	0.80	0.77	45.1
North: Porter Dr														
7	L2	31	3.0	33	3.0	0.302	9.1	LOS A	2.0	14.5	0.83	0.87	0.83	43.5
8	T1	77	3.0	81	3.0	0.302	9.2	LOS A	2.0	14.5	0.83	0.87	0.83	44.3
9	R2	69	3.0	73	3.0	0.302	13.1	LOS B	2.0	14.5	0.83	0.87	0.83	44.3
Approach		177	3.0	186	3.0	0.302	10.7	LOS B	2.0	14.5	0.83	0.87	0.83	44.2
West: Havelock Rd														
10	L2	70	3.0	74	3.0	0.055	3.7	LOS A	0.3	2.1	0.32	0.45	0.32	47.0
11	T1	191	3.0	201	3.0	0.549	4.3	LOS A	4.8	34.8	0.53	0.60	0.53	45.7
12	R2	537	3.0	565	3.0	0.549	8.3	LOS A	4.8	34.8	0.53	0.60	0.53	45.7
Approach		798	3.0	840	3.0	0.549	6.9	LOS A	4.8	34.8	0.51	0.58	0.51	45.8
All Vehicles		1631	3.0	1717	3.0	0.549	7.0	LOS A	4.8	34.8	0.60	0.64	0.60	45.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

🚧 Site: 102 [Scenario 2 AM (Site Folder: Havelock Rd/Porter Dr)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Porter Dr														
1	L2	566	3.0	596	3.0	0.678	6.5	LOS A	7.4	53.4	0.76	0.71	0.82	45.6
2	T1	132	3.0	139	3.0	0.678	6.6	LOS A	7.4	53.4	0.76	0.71	0.82	46.5
3	R2	5	3.0	5	3.0	0.678	10.5	LOS B	7.4	53.4	0.76	0.71	0.82	46.5
Approach		703	3.0	740	3.0	0.678	6.6	LOS A	7.4	53.4	0.76	0.71	0.82	45.7
East: Havelock Rd														
4	L2	3	3.0	3	3.0	0.233	5.9	LOS A	1.4	9.8	0.61	0.65	0.61	45.5
5	T1	173	3.0	182	3.0	0.233	5.9	LOS A	1.4	9.8	0.61	0.65	0.61	46.4
6	R2	22	3.0	23	3.0	0.233	9.9	LOS A	1.4	9.8	0.61	0.65	0.61	46.4
Approach		198	3.0	208	3.0	0.233	6.4	LOS A	1.4	9.8	0.61	0.65	0.61	46.4
North: Porter Dr														
7	L2	12	3.0	13	3.0	0.122	6.3	LOS A	0.7	5.0	0.64	0.70	0.64	44.7
8	T1	38	3.0	40	3.0	0.122	6.3	LOS A	0.7	5.0	0.64	0.70	0.64	45.6
9	R2	44	3.0	46	3.0	0.122	10.3	LOS B	0.7	5.0	0.64	0.70	0.64	45.6
Approach		94	3.0	99	3.0	0.122	8.2	LOS A	0.7	5.0	0.64	0.70	0.64	45.5
West: Havelock Rd														
10	L2	40	3.0	42	3.0	0.032	3.7	LOS A	0.2	1.3	0.34	0.45	0.34	46.9
11	T1	172	3.0	181	3.0	0.385	4.1	LOS A	2.9	20.9	0.46	0.58	0.46	46.0
12	R2	329	3.0	346	3.0	0.385	8.0	LOS A	2.9	20.9	0.46	0.58	0.46	46.0
Approach		541	3.0	569	3.0	0.385	6.5	LOS A	2.9	20.9	0.45	0.57	0.45	46.1
All Vehicles		1536	3.0	1617	3.0	0.678	6.6	LOS A	7.4	53.4	0.62	0.65	0.65	45.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

🚧 Site: 102 [Scenario 2 PM (Site Folder: Havelock Rd/Porter Dr)]

New Site
Site Category: (None)
Roundabout

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Porter Dr														
1	L2	403	3.0	424	3.0	0.514	5.1	LOS A	4.1	29.5	0.62	0.61	0.62	46.0
2	T1	114	3.0	120	3.0	0.514	5.1	LOS A	4.1	29.5	0.62	0.61	0.62	47.0
3	R2	14	3.0	15	3.0	0.514	9.0	LOS A	4.1	29.5	0.62	0.61	0.62	46.9
Approach		531	3.0	559	3.0	0.514	5.2	LOS A	4.1	29.5	0.62	0.61	0.62	46.2
East: Havelock Rd														
4	L2	9	3.0	9	3.0	0.277	9.2	LOS A	1.8	13.0	0.82	0.85	0.82	43.8
5	T1	123	3.0	129	3.0	0.277	9.3	LOS A	1.8	13.0	0.82	0.85	0.82	44.7
6	R2	31	3.0	33	3.0	0.277	13.2	LOS B	1.8	13.0	0.82	0.85	0.82	44.7
Approach		163	3.0	172	3.0	0.277	10.0	LOS B	1.8	13.0	0.82	0.85	0.82	44.7
North: Porter Dr														
7	L2	31	3.0	33	3.0	0.335	10.2	LOS B	2.3	16.6	0.88	0.91	0.88	43.0
8	T1	77	3.0	81	3.0	0.335	10.2	LOS B	2.3	16.6	0.88	0.91	0.88	43.8
9	R2	69	3.0	73	3.0	0.335	14.2	LOS B	2.3	16.6	0.88	0.91	0.88	43.8
Approach		177	3.0	186	3.0	0.335	11.7	LOS B	2.3	16.6	0.88	0.91	0.88	43.6
West: Havelock Rd														
10	L2	70	3.0	74	3.0	0.055	3.7	LOS A	0.3	2.1	0.32	0.45	0.32	47.0
11	T1	191	3.0	201	3.0	0.605	4.4	LOS A	5.7	41.1	0.56	0.60	0.56	45.5
12	R2	608	3.0	640	3.0	0.605	8.4	LOS A	5.7	41.1	0.56	0.60	0.56	45.5
Approach		869	3.0	915	3.0	0.605	7.1	LOS A	5.7	41.1	0.54	0.59	0.54	45.6
All Vehicles		1740	3.0	1832	3.0	0.605	7.3	LOS A	5.7	41.1	0.63	0.65	0.63	45.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Geometric Delay is included).
Queue Model: SIDRA Standard.
Gap-Acceptance Capacity: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

MOVEMENT SUMMARY

▼ Site: 101 [Scenario 2 AM (Site Folder: Te Aute Rd Access (Scenario 2 only))]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Access														
1	L2	30	3.0	32	3.0	0.208	5.5	LOS A	0.8	6.0	0.53	0.74	0.53	44.5
3	R2	106	3.0	112	3.0	0.208	9.0	LOS A	0.8	6.0	0.53	0.74	0.53	44.1
Approach		136	3.0	143	3.0	0.208	8.2	LOS A	0.8	6.0	0.53	0.74	0.53	44.2
East: Te Aute Rd														
4	L2	37	3.0	39	3.0	0.152	4.6	LOS A	0.0	0.0	0.00	0.07	0.00	49.0
5	T1	237	3.0	249	3.0	0.152	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	49.5
Approach		274	3.0	288	3.0	0.152	0.7	NA	0.0	0.0	0.00	0.07	0.00	49.5
West: Te Aute Rd														
11	T1	243	3.0	256	3.0	0.135	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	49.9
12	R2	10	3.0	11	3.0	0.008	5.5	LOS A	0.0	0.2	0.37	0.54	0.37	45.4
Approach		253	3.0	266	3.0	0.135	0.3	NA	0.0	0.2	0.01	0.02	0.01	49.7
All Vehicles		663	3.0	698	3.0	0.208	2.1	NA	0.8	6.0	0.11	0.19	0.11	48.4

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

MOVEMENT SUMMARY

▼ Site: 101 [Scenario 2 PM (Site Folder: Te Aute Rd Access (Scenario 2 only))]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn	Aver. Delay	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed
		[Total veh/h	HV] %	[Total veh/h	HV] %	v/c	sec		[Veh. veh	Dist] m				km/h
South: Access														
1	L2	14	3.0	15	3.0	0.111	5.7	LOS A	0.4	3.0	0.55	0.75	0.55	44.2
3	R2	50	3.0	53	3.0	0.111	9.7	LOS A	0.4	3.0	0.55	0.75	0.55	43.8
Approach		64	3.0	67	3.0	0.111	8.8	LOS A	0.4	3.0	0.55	0.75	0.55	43.9
East: Te Aute Rd														
4	L2	92	3.0	97	3.0	0.218	4.6	LOS A	0.0	0.0	0.00	0.13	0.00	48.7
5	T1	299	3.0	315	3.0	0.218	0.1	LOS A	0.0	0.0	0.00	0.13	0.00	49.2
Approach		391	3.0	412	3.0	0.218	1.1	NA	0.0	0.0	0.00	0.13	0.00	49.1
West: Te Aute Rd														
11	T1	215	3.0	226	3.0	0.119	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	50.0
12	R2	26	3.0	27	3.0	0.023	6.1	LOS A	0.1	0.7	0.45	0.60	0.45	45.2
Approach		241	3.0	254	3.0	0.119	0.7	NA	0.1	0.7	0.05	0.06	0.05	49.4
All Vehicles		696	3.0	733	3.0	0.218	1.7	NA	0.4	3.0	0.07	0.16	0.07	48.6

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

MOVEMENT SUMMARY

▼ Site: 101 [Scenario 2 AM (Site Folder: Middle Rd Access (Scenario 2 only))]

New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
East: Middle Rd														
5	T1	302	3.0	318	3.0	0.178	0.1	LOS A	0.1	1.0	0.05	0.03	0.05	49.7
6	R2	15	3.0	16	3.0	0.178	5.7	LOS A	0.1	1.0	0.05	0.03	0.05	48.7
Approach		317	3.0	334	3.0	0.178	0.3	NA	0.1	1.0	0.05	0.03	0.05	49.7
North: Access														
7	L2	46	3.0	48	3.0	0.068	5.5	LOS A	0.2	1.8	0.37	0.60	0.37	45.7
9	R2	20	3.0	21	3.0	0.068	7.6	LOS A	0.2	1.8	0.37	0.60	0.37	45.3
Approach		66	3.0	69	3.0	0.068	6.1	LOS A	0.2	1.8	0.37	0.60	0.37	45.6
West: Middle Rd														
10	L2	7	3.0	7	3.0	0.140	4.6	LOS A	0.0	0.0	0.00	0.02	0.00	49.3
11	T1	247	3.0	260	3.0	0.140	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	49.9
Approach		254	3.0	267	3.0	0.140	0.2	NA	0.0	0.0	0.00	0.02	0.00	49.8
All Vehicles		637	3.0	671	3.0	0.178	0.9	NA	0.2	1.8	0.06	0.08	0.06	49.3

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

MOVEMENT SUMMARY

▼ Site: 101 [Scenario 2 PM (Site Folder: Middle Rd Access (Scenario 2 only))]

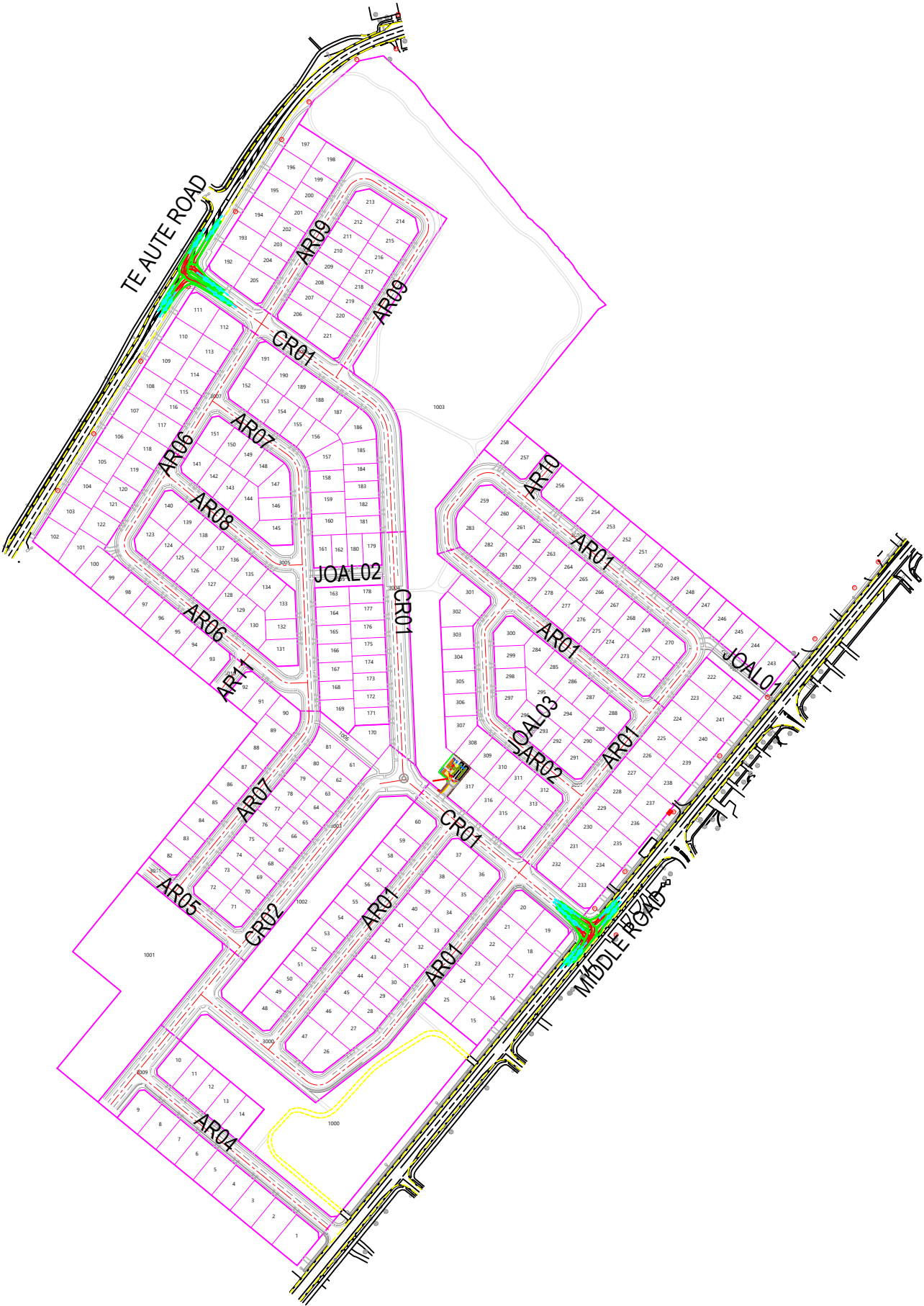
New Site
Site Category: (None)
Give-Way (Two-Way)

Vehicle Movement Performance														
Mov ID	Turn	INPUT VOLUMES		DEMAND FLOWS		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% BACK OF QUEUE		Prop. Que	Effective Stop Rate	Aver. No. Cycles	Aver. Speed km/h
		[Total veh/h	HV] %	[Total veh/h	HV] %				[Veh. veh	Dist] m				
East: Middle Rd														
5	T1	306	3.0	322	3.0	0.201	0.3	LOS A	0.4	2.7	0.13	0.07	0.13	49.3
6	R2	39	3.0	41	3.0	0.201	6.0	LOS A	0.4	2.7	0.13	0.07	0.13	48.3
Approach		345	3.0	363	3.0	0.201	0.9	NA	0.4	2.7	0.13	0.07	0.13	49.2
North: Access														
7	L2	21	3.0	22	3.0	0.033	5.6	LOS A	0.1	0.8	0.39	0.60	0.39	45.6
9	R2	9	3.0	9	3.0	0.033	8.0	LOS A	0.1	0.8	0.39	0.60	0.39	45.2
Approach		30	3.0	32	3.0	0.033	6.3	LOS A	0.1	0.8	0.39	0.60	0.39	45.4
West: Middle Rd														
10	L2	18	3.0	19	3.0	0.169	4.6	LOS A	0.0	0.0	0.00	0.03	0.00	49.2
11	T1	288	3.0	303	3.0	0.169	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	49.7
Approach		306	3.0	322	3.0	0.169	0.3	NA	0.0	0.0	0.00	0.03	0.00	49.7
All Vehicles		681	3.0	717	3.0	0.201	0.9	NA	0.4	2.7	0.08	0.07	0.08	49.2

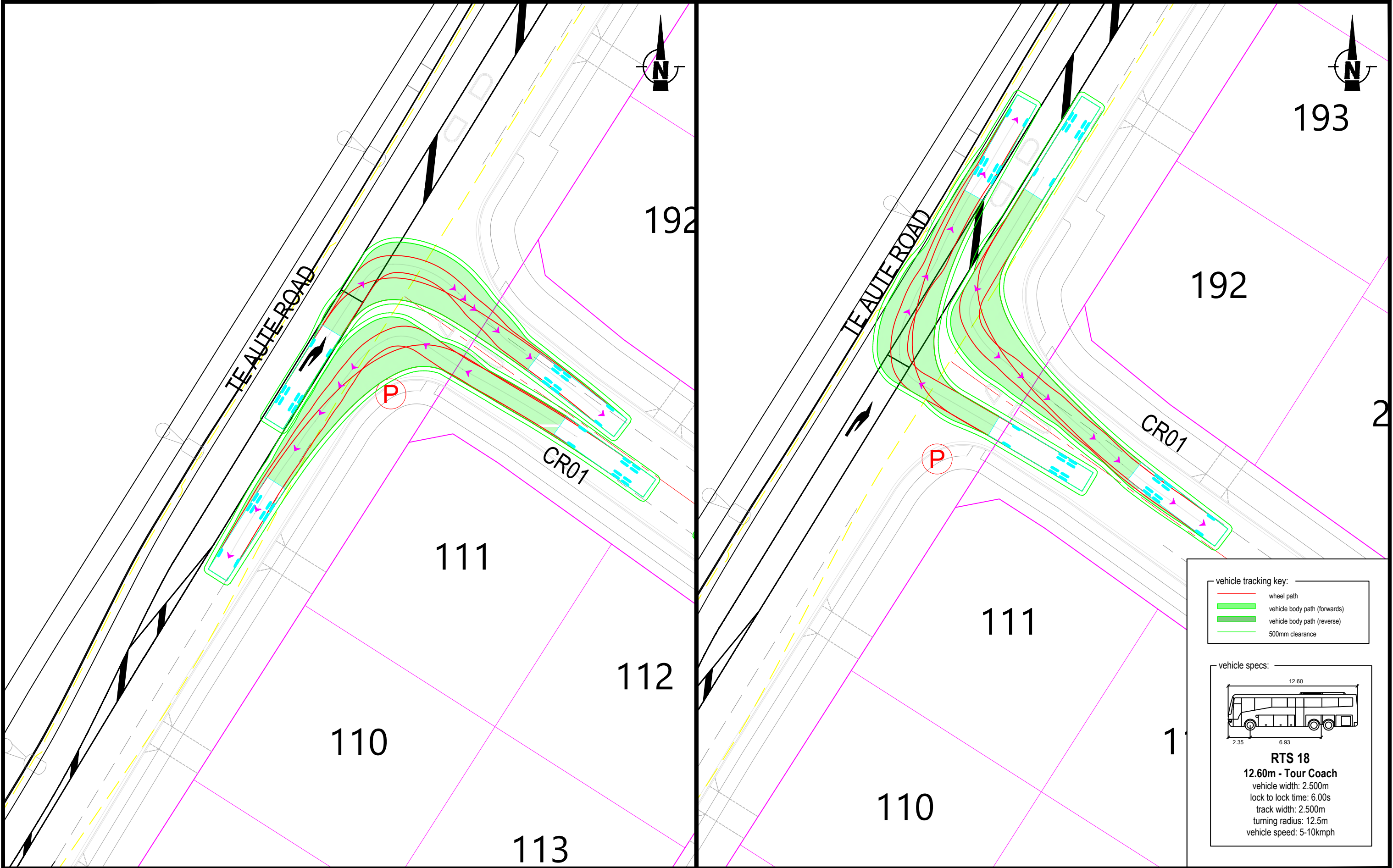
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Site tab).
Vehicle movement LOS values are based on average delay per movement.
Minor Road Approach LOS values are based on average delay for all vehicle movements.
NA: Intersection LOS and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

APPENDIX D

Vehicle tracking plans



REV	AMENDMENT	DATE OF ISSUE	DESIGN: GVDW	DRAWN: GVDW	CLIENT: CDL LAND NEW ZEALAND LTD	SHEET TITLE: OVERALL LAYOUT PLAN OVERVIEW	SHEET: 01 of 18	flow TRANSPORTATION SPECIALISTS Level 1, 11 Blake Street, Ponsonby, Auckland PO Box 47497 Ponsonby p 09 970 3820 f 09 970 3890 www.flownz.com
A	First Issue	24/07/2026	CHECKED: TC	DATE: 24/07/2026	PROJECT: MIDDLE ROAD PROJECT FAST TRACK APPLICATION			
B	Second Issue	11/08/2026	SCALE: 0 NTS 		LOCATION: MIDDLE ROAD, HAVELOCK NORTH			
C	Third Issue - 13.5 m bus tracking added	09/09/2026			FOR RESOURCE CONSENT	DRAWING NUMBER: CLDD-MR-DW01-A	REV: C	



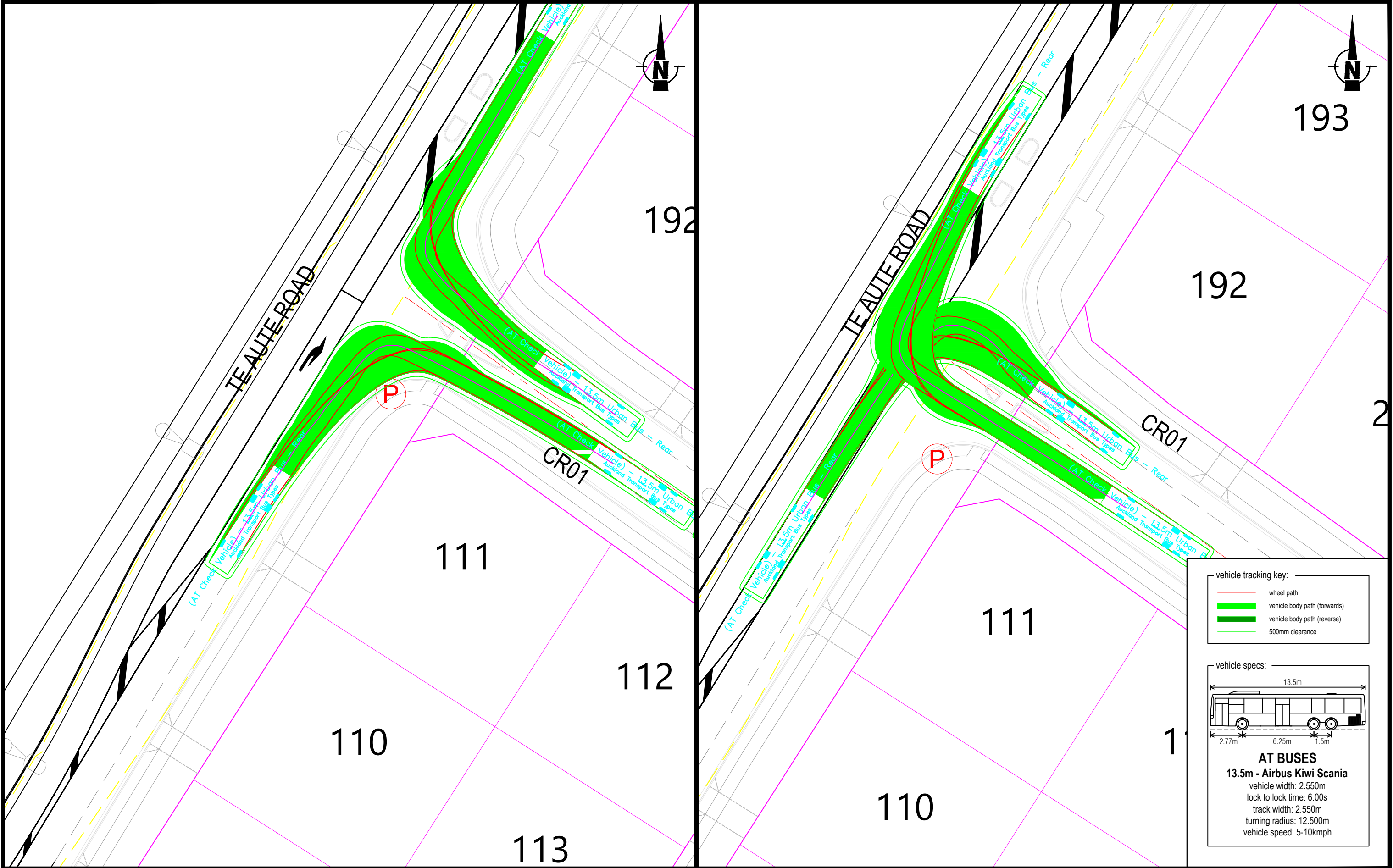
vehicle tracking key:

- wheel path
- vehicle body path (forwards)
- vehicle body path (reverse)
- 500mm clearance

vehicle specs:

RTS 18
12.60m - Tour Coach
vehicle width: 2.500m
lock to lock time: 6.00s
track width: 2.500m
turning radius: 12.5m
vehicle speed: 5-10kmph

REV	AMENDMENT	DATE OF ISSUE	DESIGN: GVDW	DRAWN: GVDW	CLIENT: CDL LAND NEW ZEALAND LTD	SHEET TITLE: TE AUTE ROAD / CR01	SHEET: 02 of 18	flow TRANSPORTATION SPECIALISTS Level 1, 11 Blake Street, Ponsonby, Auckland PO Box 47497 Ponsonby p 09 970 3820 f 09 970 3890 www.flownz.com
A	First Issue	24/07/2026	CHECKED: TC	DATE: 24/07/2026	PROJECT: MIDDLE ROAD PROJECT	12.6 m BUS TRACKING		
B	Second Issue	11/08/2026			FAST TRACK APPLICATION			
C	Third Issue - 13.5 m bus tracking added	09/09/2026	SCALE: 0 16m		LOCATION: MIDDLE ROAD, HAVELOCK NORTH			
			1:400 @ A3		FOR RESOURCE CONSENT	DRAWING NUMBER: CLDD-MR-DW01-A	REV: C	



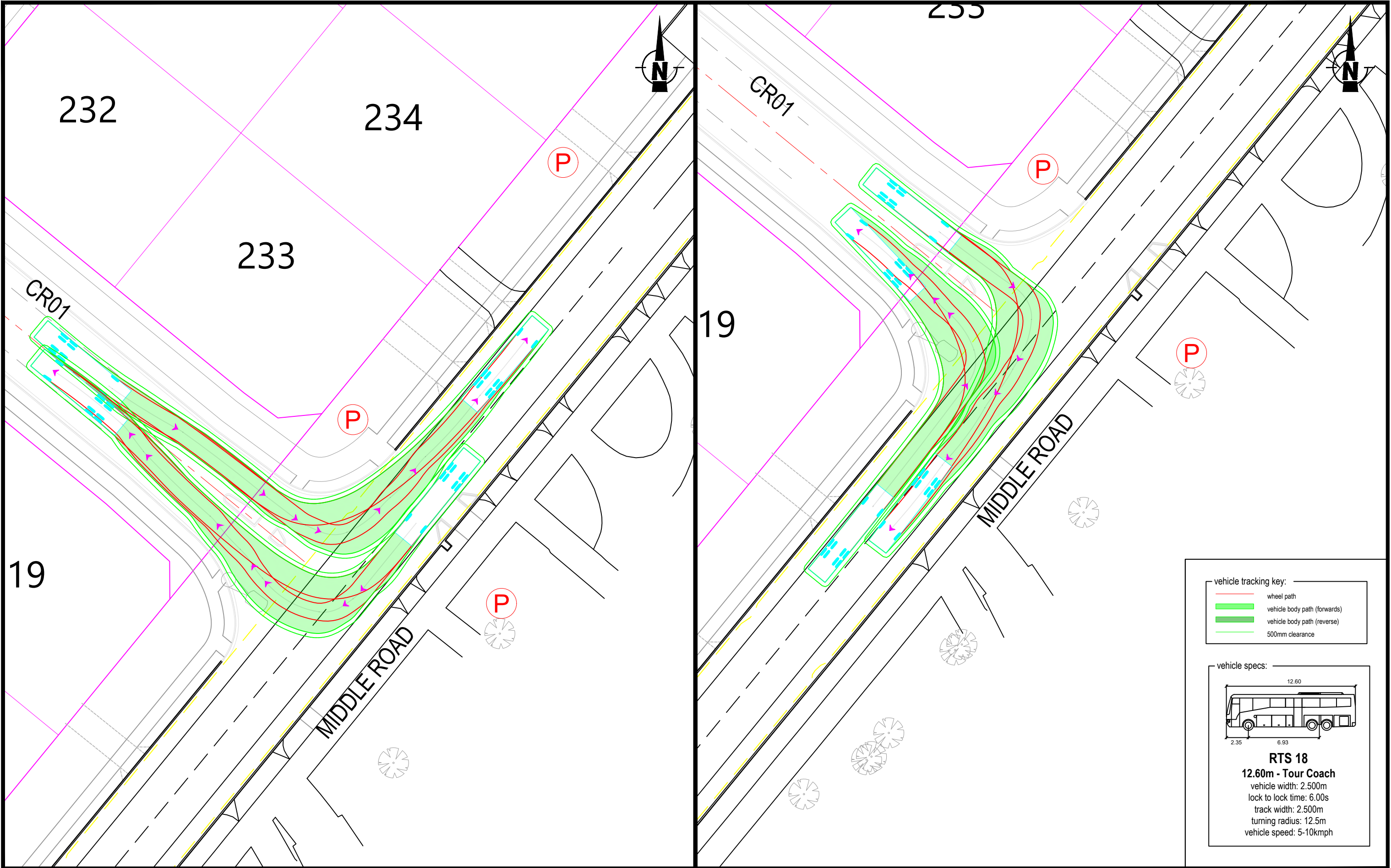
vehicle tracking key:

- wheel path
- vehicle body path (forwards)
- vehicle body path (reverse)
- 500mm clearance

vehicle specs:

AT BUSES
13.5m - Airbus Kiwi Scania
vehicle width: 2.550m
lock to lock time: 6.00s
track width: 2.550m
turning radius: 12.500m
vehicle speed: 5-10kmph

REV	AMENDMENT	DATE OF ISSUE	DESIGN: GVDW	DRAWN: GVDW	CLIENT: CDL LAND NEW ZEALAND LTD	SHEET TITLE: TE AUTE ROAD / CR01 13.5 m BUS TRACKING	SHEET: 03 of 18	flow TRANSPORTATION SPECIALISTS Level 1, 11 Blake Street, Ponsonby, Auckland PO Box 47497 Ponsonby p 09 970 3820 f 09 970 3890 www.flownz.com	
A	First Issue	24/07/2026	CHECKED: TC	DATE: 24/07/2026	PROJECT: MIDDLE ROAD PROJECT FAST TRACK APPLICATION		DRAWING NUMBER: CLDD-MR-DW01-A		REV: C
B	Second Issue	11/08/2026	SCALE:  1:400 @ A3	LOCATION: MIDDLE ROAD, HAVELOCK NORTH					
C	Third Issue - 13.5 m bus tracking added	09/09/2026							
					FOR RESOURCE CONSENT				



vehicle tracking key:

- wheel path
- vehicle body path (forwards)
- vehicle body path (reverse)
- 500mm clearance

vehicle specs:

RTS 18
12.60m - Tour Coach
vehicle width: 2.500m
lock to lock time: 6.00s
track width: 2.500m
turning radius: 12.5m
vehicle speed: 5-10kmph

REV	AMENDMENT	DATE OF ISSUE	DESIGN: GVDW	DRAWN: GVDW	CLIENT: CDL LAND NEW ZEALAND LTD	SHEET TITLE: MIDDLE ROAD / CR01 12.6 m BUS TRACKING	SHEET: 04 of 18	flow TRANSPORTATION SPECIALISTS Level 1, 11 Blake Street, Ponsonby, Auckland PO Box 47497 Ponsonby p 09 970 3820 f 09 970 3890 www.flownz.com
A	First Issue	24/07/2026	CHECKED: TC	DATE: 24/07/2026	PROJECT: MIDDLE ROAD PROJECT FAST TRACK APPLICATION			
B	Second Issue	11/08/2026	SCALE: 0 16m 1:400 @ A3		LOCATION: MIDDLE ROAD, HAVELOCK NORTH			
C	Third Issue - 13.5 m bus tracking added	09/09/2026			FOR RESOURCE CONSENT	DRAWING NUMBER: CLDD-MR-DW01-A	REV: C	



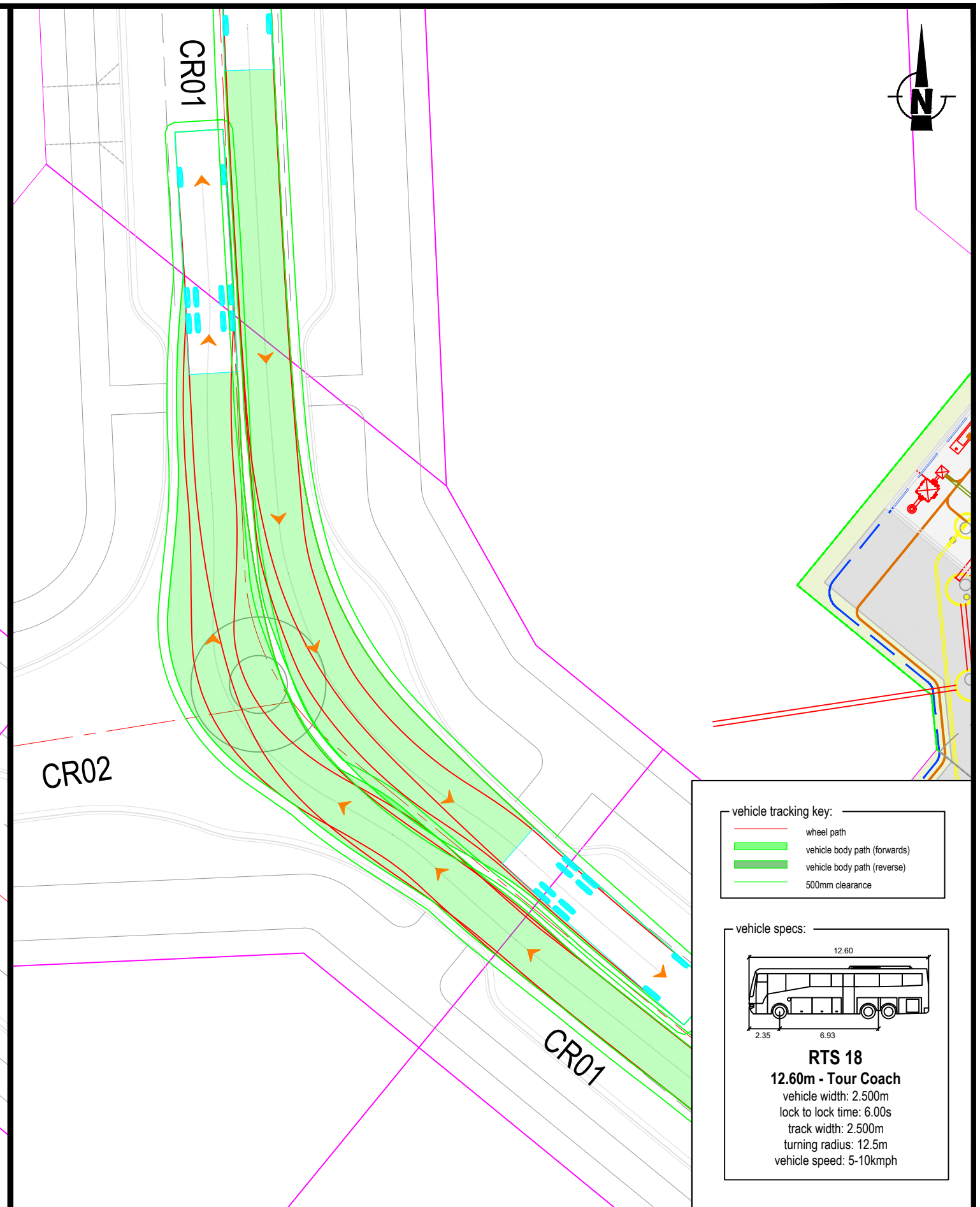
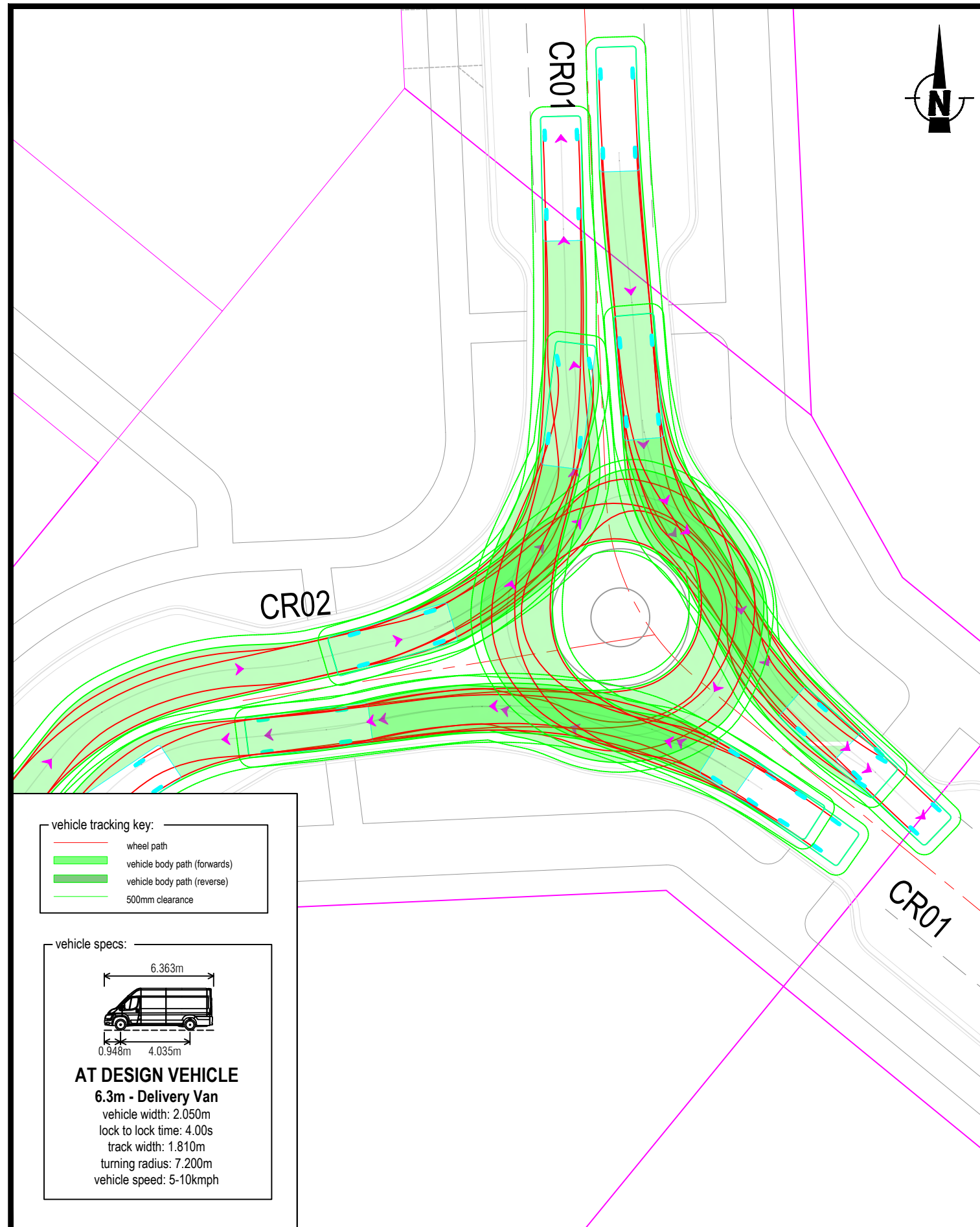
vehicle tracking key:

- wheel path
- vehicle body path (forwards)
- vehicle body path (reverse)
- 500mm clearance

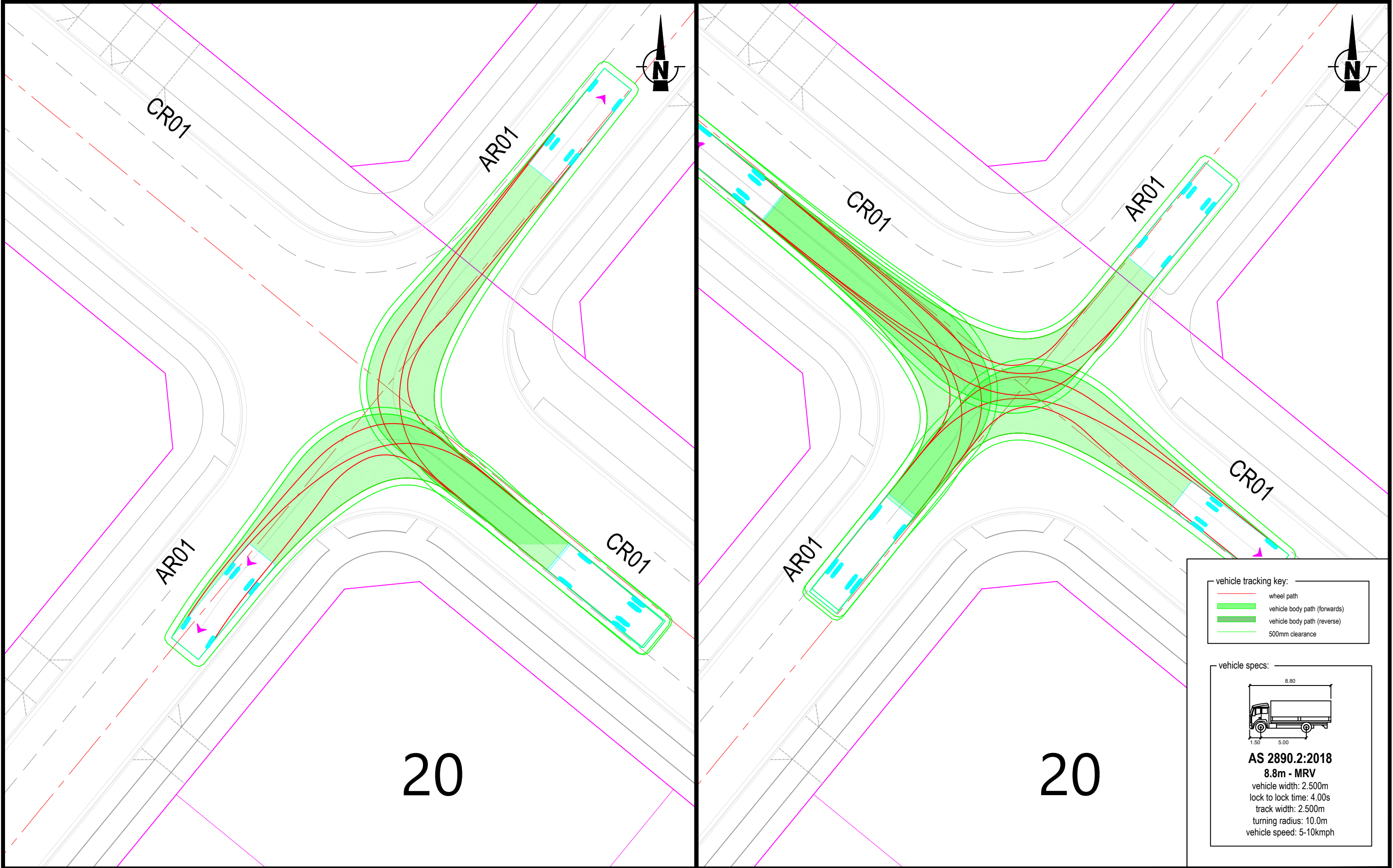
vehicle specs:

AT BUSES
13.5m - Airbus Kiwi Scania
vehicle width: 2.550m
lock to lock time: 6.00s
track width: 2.550m
turning radius: 12.500m
vehicle speed: 5-10kmph

REV	AMENDMENT	DATE OF ISSUE	DESIGN: GVDW	DRAWN: GVDW	CLIENT: CDL LAND NEW ZEALAND LTD	SHEET TITLE: MIDDLE ROAD / CR01 13.5 m BUS TRACKING	SHEET: 05 of 18	flow TRANSPORTATION SPECIALISTS Level 1, 11 Blake Street, Ponsonby, Auckland PO Box 47497 Ponsonby p 09 970 3820 f 09 970 3890 www.flownz.com
A	First Issue	24/07/2026	CHECKED: TC	DATE: 24/07/2026	PROJECT: MIDDLE ROAD PROJECT FAST TRACK APPLICATION			
B	Second Issue	11/08/2026			LOCATION: MIDDLE ROAD, HAVELOCK NORTH			
C	Third Issue - 13.5 m bus tracking added	09/09/2026	SCALE: 0 16m		FOR RESOURCE CONSENT	DRAWING NUMBER: CLDD-MR-DW01-A	REV: C	
			1:400 @ A3					



REV	AMENDMENT	DATE OF ISSUE	DESIGN: GVDW	DRAWN: GVDW	CLIENT: CDL LAND NEW ZEALAND LTD	SHEET TITLE: CR02 / CR01 12.6 m BUS & 6.3 m VAN TRACKING	SHEET:	flow TRANSPORTATION SPECIALISTS Level 1, 11 Blake Street, Ponsonby, Auckland PO Box 47497 Ponsonby p 09 970 3820 f 09 970 3890 www.flownz.com
A	First Issue	24/07/2026	CHECKED: TC	DATE: 24/07/2026	PROJECT: MIDDLE ROAD PROJECT		06 of 18	
B	Second Issue	11/08/2026			FAST TRACK APPLICATION			
C	Third Issue - 13.5 m bus tracking added	09/09/2026			LOCATION: MIDDLE ROAD, HAVELOCK NORTH			
			SCALE: 010m 1:250 @ A3		FOR RESOURCE CONSENT	DRAWING NUMBER: CLDD-MR-DW01-A		REV: C



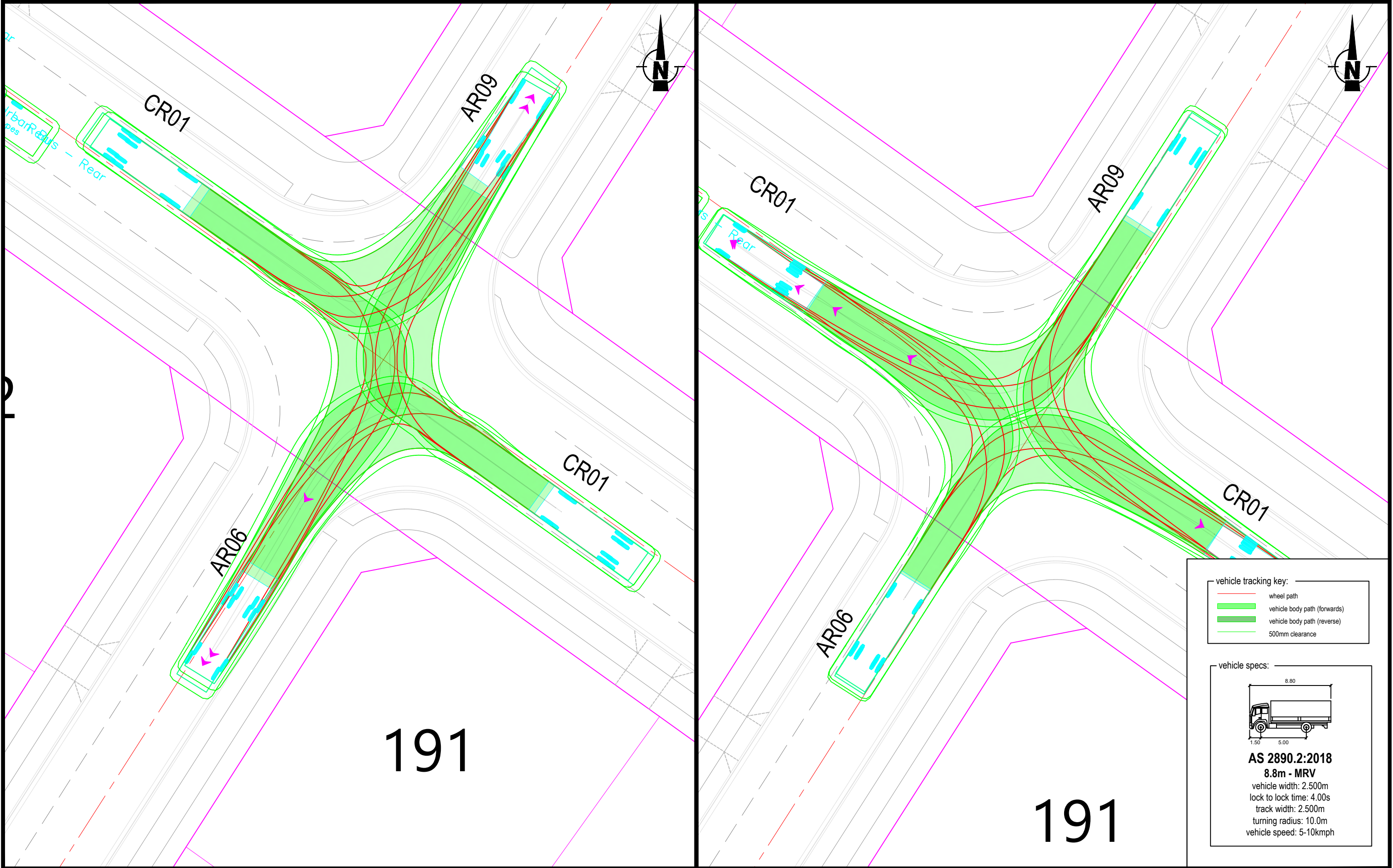
vehicle tracking key:

- wheel path
- vehicle body path (forwards)
- vehicle body path (reverse)
- 500mm clearance

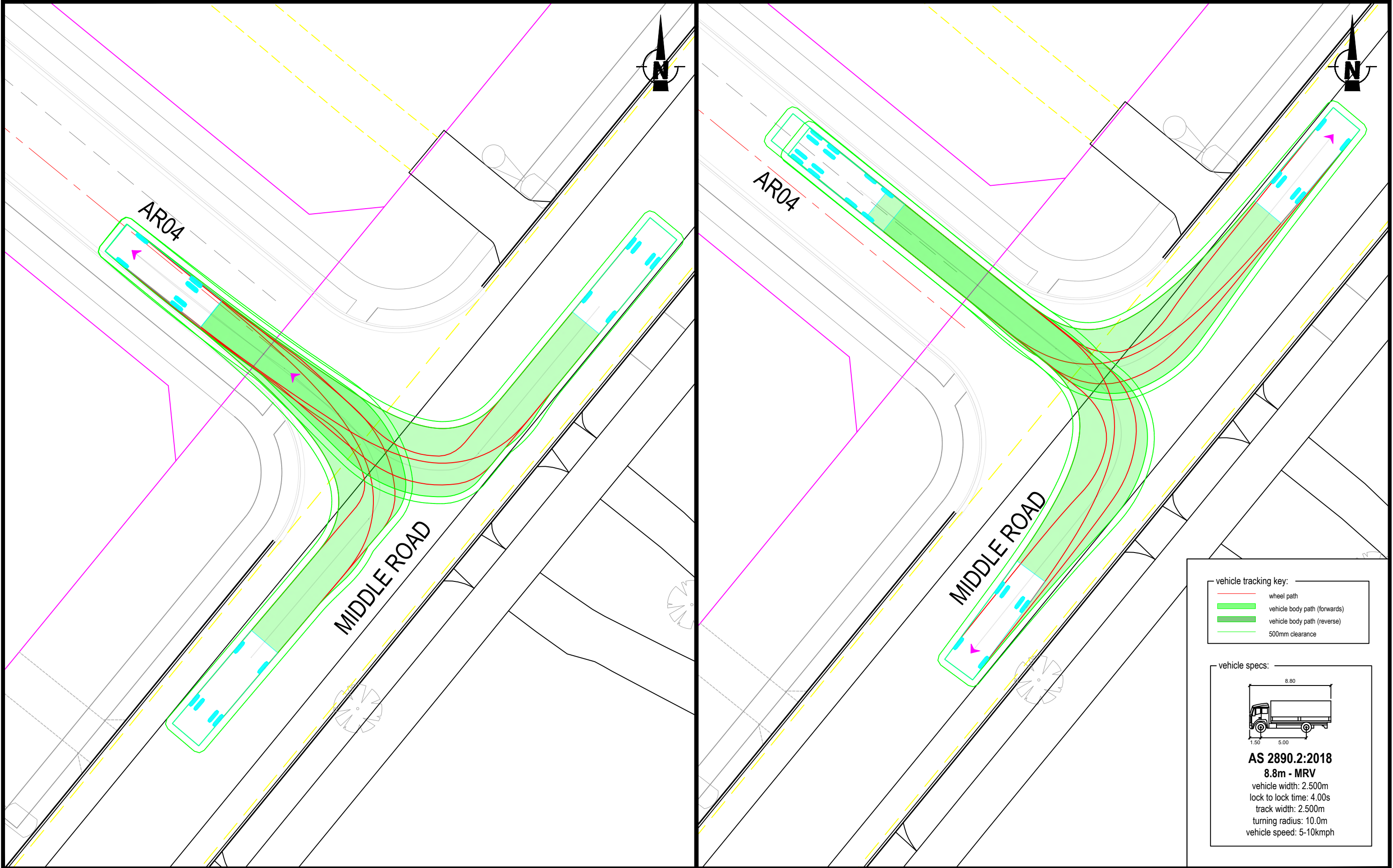
vehicle specs:

AS 2890.2:2018
8.8m - MRV
vehicle width: 2.500m
lock to lock time: 4.00s
track width: 2.500m
turning radius: 10.0m
vehicle speed: 5-10kmph

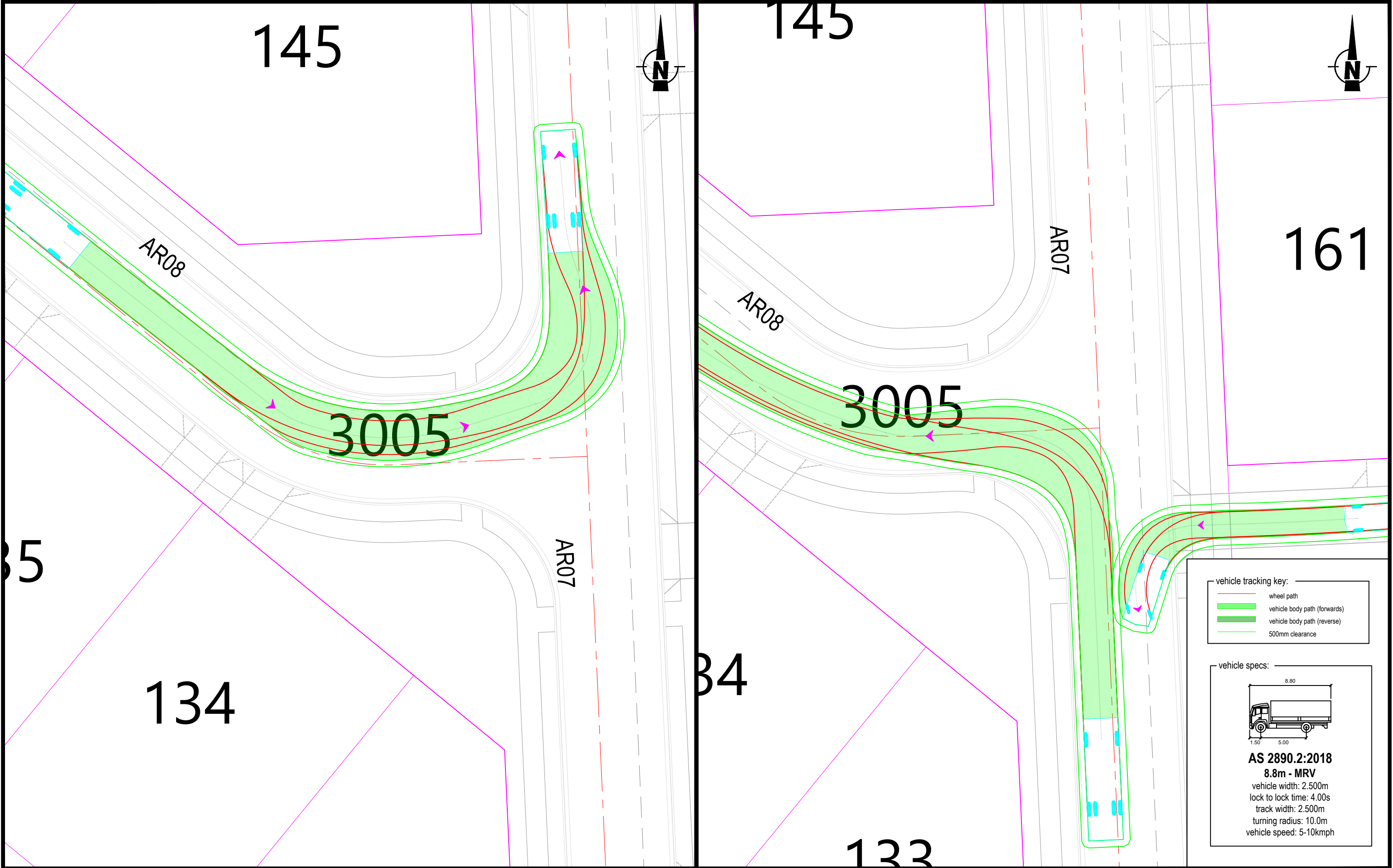
REV	AMENDMENT	DATE OF ISSUE	DESIGN: GVDW	DRAWN: GVDW	CLIENT: CDL LAND NEW ZEALAND LTD	SHEET TITLE: AR01 / CR01	SHEET: 07 of 18	flow TRANSPORTATION SPECIALISTS Level 1, 11 Blake Street, Ponsonby, Auckland PO Box 47497 Ponsonby p 09 970 3820 f 09 970 3890 www.flownz.com
A	First Issue	24/07/2026	CHECKED: TC	DATE: 24/07/2026	PROJECT: MIDDLE ROAD PROJECT	8.8 m RIGID TRUCK TRACKING		
B	Second Issue	11/08/2026	SCALE: 0 10m 1:250 @ A3		FAST TRACK APPLICATION			
C	Third Issue - 13.5 m bus tracking added	09/09/2026			LOCATION: MIDDLE ROAD, HAVELOCK NORTH			
					FOR RESOURCE CONSENT	DRAWING NUMBER: CLDD-MR-DW01-A	REV: C	



REV	AMENDMENT	DATE OF ISSUE	DESIGN: GVDW	DRAWN: GVDW	CLIENT: CDL LAND NEW ZEALAND LTD	SHEET TITLE: AR06 / AR09 / CR01	SHEET: 08 of 18	flow TRANSPORTATION SPECIALISTS Level 1, 11 Blake Street, Ponsonby, Auckland PO Box 47497 Ponsonby p 09 970 3820 f 09 970 3890 www.flownz.com
A	First Issue	24/07/2026	CHECKED: TC	DATE: 24/07/2026	PROJECT: MIDDLE ROAD PROJECT	8.8 m RIGID TRUCK TRACKING		
B	Second Issue	11/08/2026	SCALE: 0 10m 1:250 @ A3		FAST TRACK APPLICATION			
C	Third Issue - 13.5 m bus tracking added	09/09/2026			LOCATION: MIDDLE ROAD, HAVELOCK NORTH			
					FOR RESOURCE CONSENT	DRAWING NUMBER: CLDD-MR-DW01-A	REV: C	



REV	AMENDMENT	DATE OF ISSUE	DESIGN: GVDW	DRAWN: GVDW	CLIENT: CDL LAND NEW ZEALAND LTD	SHEET TITLE: AR04 / MIDDLE ROAD	SHEET: 09 of 18	flow TRANSPORTATION SPECIALISTS Level 1, 11 Blake Street, Ponsonby, Auckland PO Box 47497 Ponsonby p 09 970 3820 f 09 970 3890 www.flownz.com
A	First Issue	24/07/2026	CHECKED: TC	DATE: 24/07/2026	PROJECT: MIDDLE ROAD PROJECT	8.8 m RIGID TRUCK TRACKING		
B	Second Issue	11/08/2026			FAST TRACK APPLICATION			
C	Third Issue - 13.5 m bus tracking added	09/09/2026	SCALE: 0 10m		LOCATION: MIDDLE ROAD, HAVELOCK NORTH			
			1:250 @ A3		FOR RESOURCE CONSENT	DRAWING NUMBER: CLDD-MR-DW01-A	REV: C	



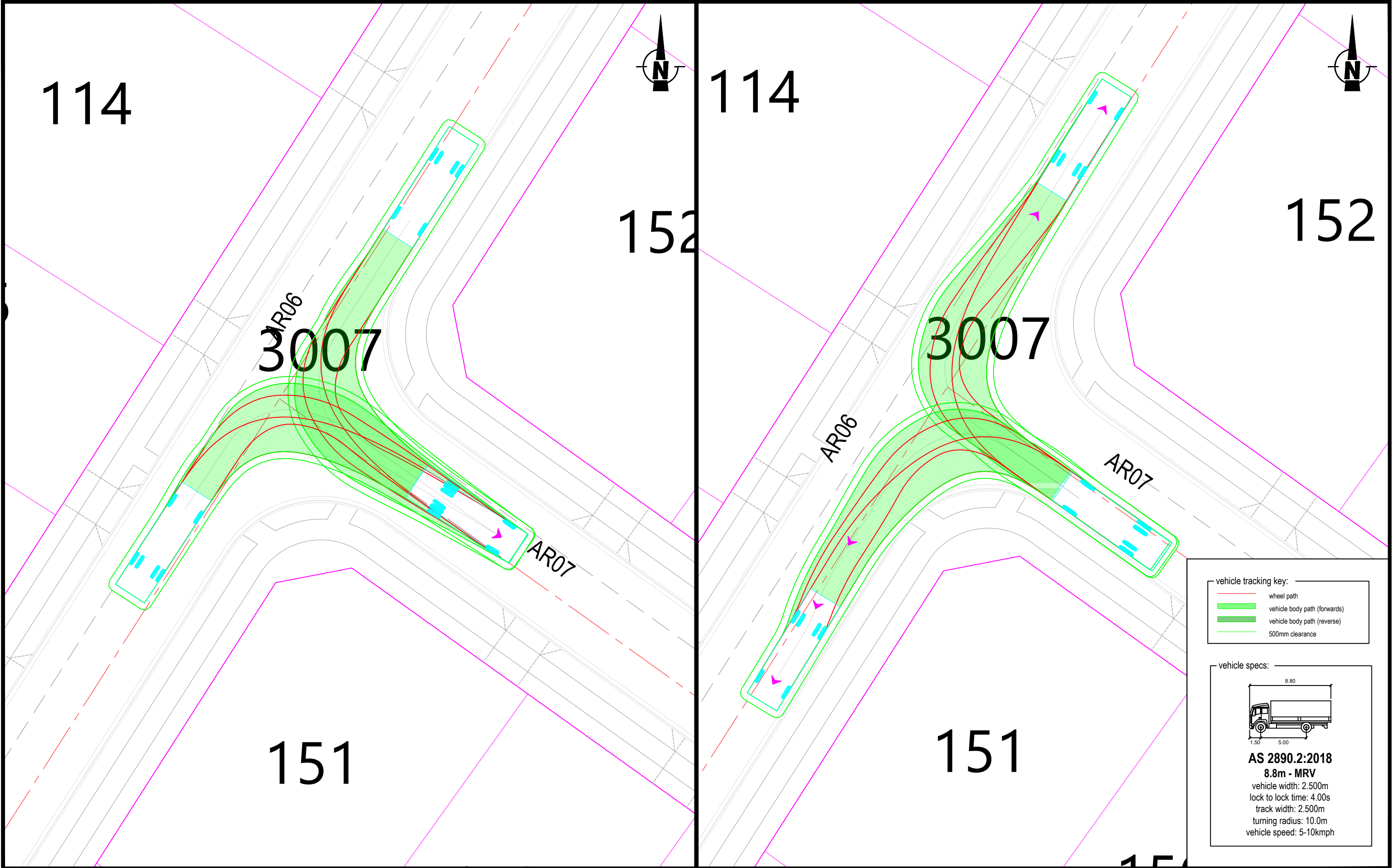
vehicle tracking key:

- wheel path
- vehicle body path (forwards)
- vehicle body path (reverse)
- 500mm clearance

vehicle specs:

AS 2890.2:2018
8.8m - MRV
vehicle width: 2.500m
lock to lock time: 4.00s
track width: 2.500m
turning radius: 10.0m
vehicle speed: 5-10kmph

REV	AMENDMENT	DATE OF ISSUE	DESIGN: GVDW	DRAWN: GVDW	CLIENT: CDL LAND NEW ZEALAND LTD	SHEET TITLE: AR08 / AR07	SHEET: 10 of 18	flow TRANSPORTATION SPECIALISTS Level 1, 11 Blake Street, Ponsonby, Auckland PO Box 47497 Ponsonby p 09 970 3820 f 09 970 3890 www.flownz.com
A	First Issue	24/07/2026	CHECKED: TC	DATE: 24/07/2026	PROJECT: MIDDLE ROAD PROJECT	8.8 m RIGID TRUCK TRACKING		
B	Second Issue	11/08/2026			FAST TRACK APPLICATION			
C	Third Issue - 13.5 m bus tracking added	09/09/2026	SCALE: 0 10m		LOCATION: MIDDLE ROAD, HAVELOCK NORTH			
			1:250 @ A3		FOR RESOURCE CONSENT	DRAWING NUMBER: CLDD-MR-DW01-A	REV: C	



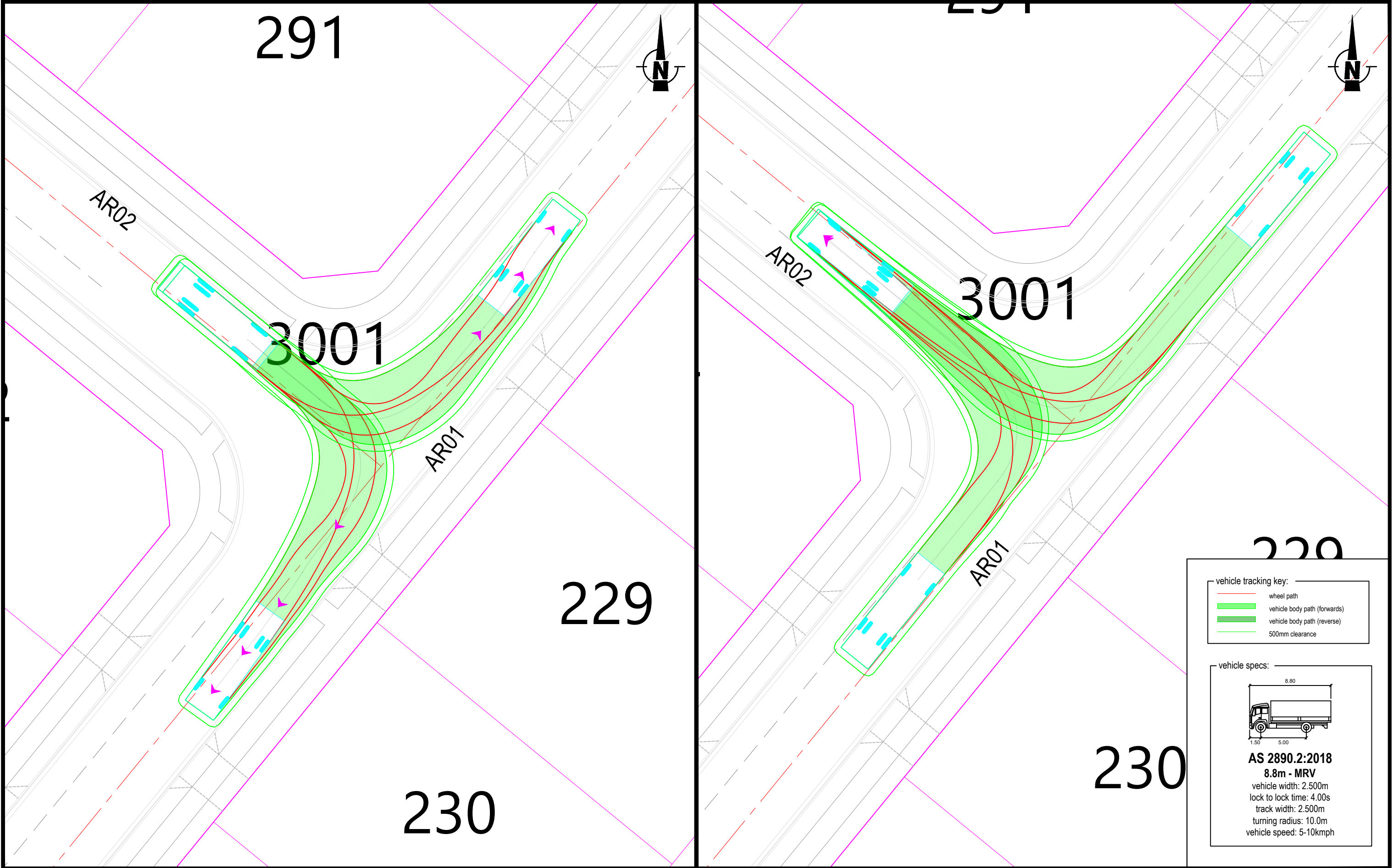
vehicle tracking key:

- wheel path
- vehicle body path (forwards)
- vehicle body path (reverse)
- 500mm clearance

vehicle specs:

AS 2890.2:2018
8.8m - MRV
vehicle width: 2.500m
lock to lock time: 4.00s
track width: 2.500m
turning radius: 10.0m
vehicle speed: 5-10kmph

REV	AMENDMENT	DATE OF ISSUE	DESIGN: GVDW	DRAWN: GVDW	CLIENT: CDL LAND NEW ZEALAND LTD	SHEET TITLE: AR06 / AR07	SHEET: 11 of 18	flow TRANSPORTATION SPECIALISTS Level 1, 11 Blake Street, Ponsonby, Auckland PO Box 47497 Ponsonby p 09 970 3820 f 09 970 3890 www.flownz.com
A	First Issue	24/07/2026	CHECKED: TC	DATE: 24/07/2026	PROJECT: MIDDLE ROAD PROJECT	8.8 m RIGID TRUCK TRACKING		
B	Second Issue	11/08/2026			FAST TRACK APPLICATION			
C	Third Issue - 13.5 m bus tracking added	09/09/2026	SCALE: 0 10m		LOCATION: MIDDLE ROAD, HAVELOCK NORTH			
			1:250 @ A3		FOR RESOURCE CONSENT	DRAWING NUMBER: CLDD-MR-DW01-A	REV: C	



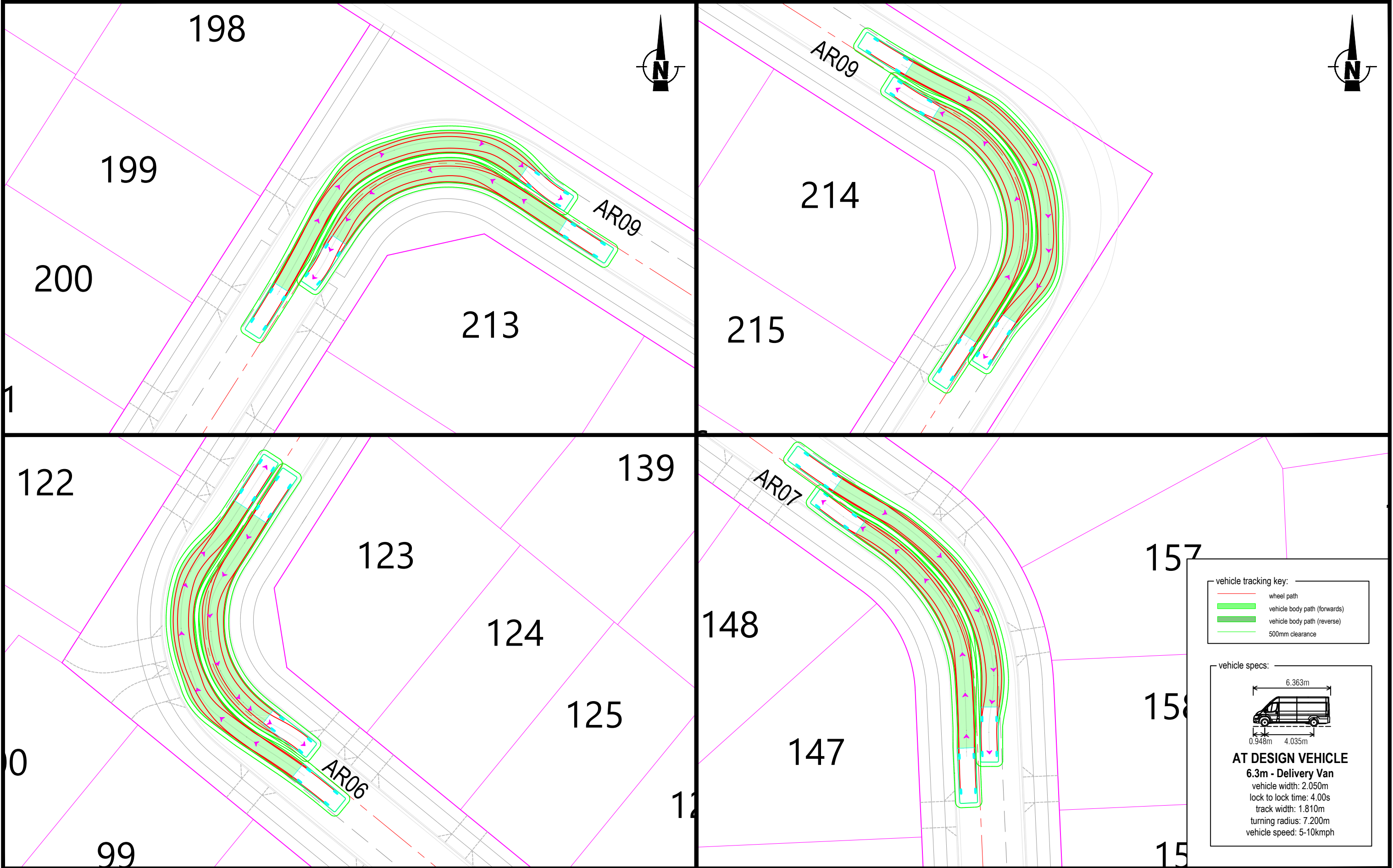
vehicle tracking key:

- wheel path
- vehicle body path (forwards)
- vehicle body path (reverse)
- 500mm clearance

vehicle specs:

AS 2890.2:2018
8.8m - MRV
vehicle width: 2.500m
lock to lock time: 4.00s
track width: 2.500m
turning radius: 10.0m
vehicle speed: 5-10kmph

REV	AMENDMENT	DATE OF ISSUE	DESIGN: GVDW	DRAWN: GVDW	CLIENT: CDL LAND NEW ZEALAND LTD	SHEET TITLE: AR02 / AR01 8.8 m RIGID TRUCK TRACKING	SHEET:	flow TRANSPORTATION SPECIALISTS Level 1, 11 Blake Street, Ponsonby, Auckland PO Box 47497 Ponsonby p 09 970 3820 f 09 970 3890 www.flownz.com	
A	First Issue	24/07/2026	CHECKED: TC	DATE: 24/07/2026	PROJECT: MIDDLE ROAD PROJECT FAST TRACK APPLICATION		12 of 18		
B	Second Issue	11/08/2026	SCALE: 0 10m 1:250 @ A3				LOCATION: MIDDLE ROAD, HAVELOCK NORTH		
C	Third Issue - 13.5 m bus tracking added	09/09/2026				FOR RESOURCE CONSENT	DRAWING NUMBER: CLDD-MR-DW01-A		REV: C



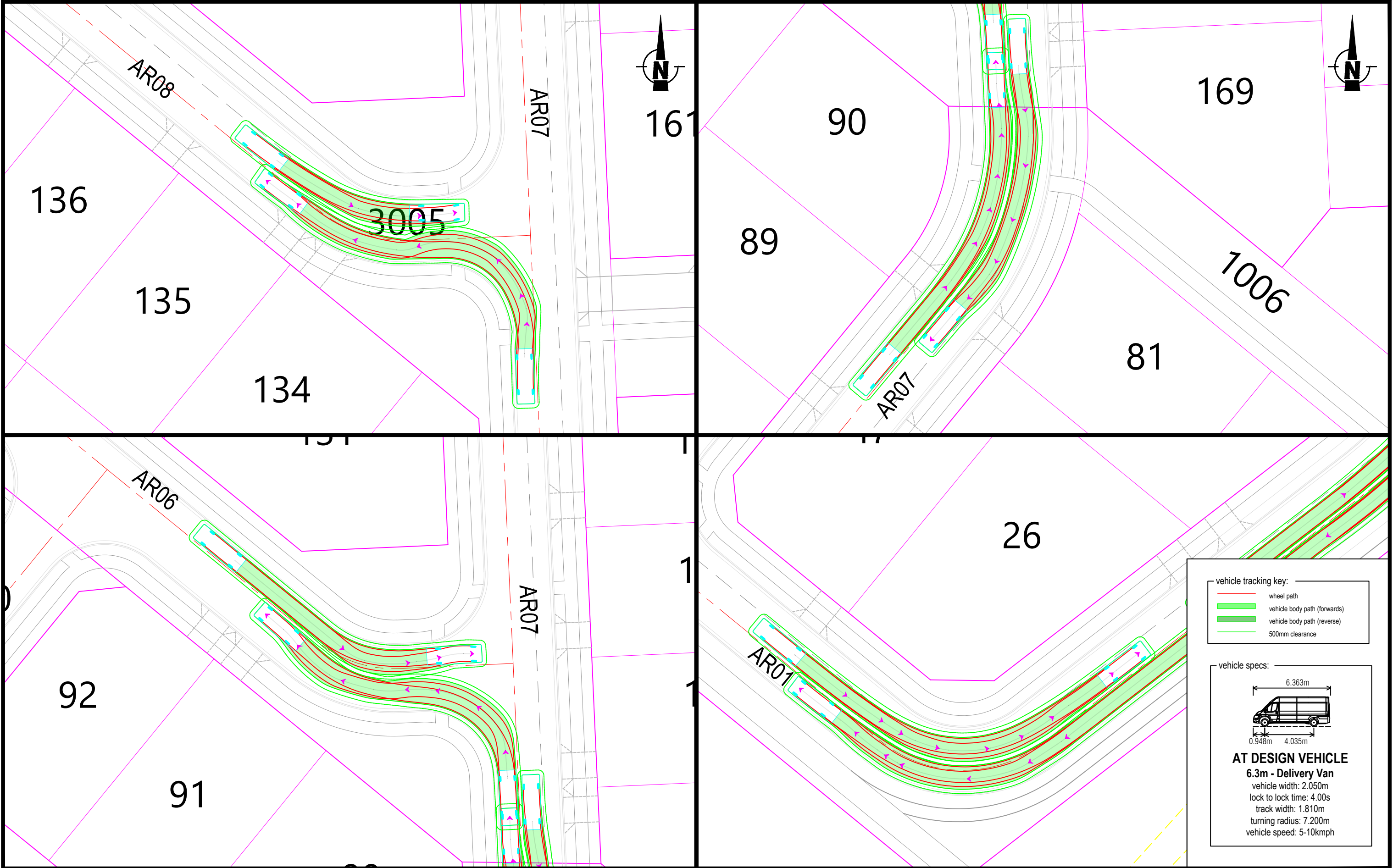
vehicle tracking key:

- wheel path
- vehicle body path (forwards)
- vehicle body path (reverse)
- 500mm clearance

vehicle specs:

AT DESIGN VEHICLE
6.3m - Delivery Van
vehicle width: 2.050m
lock to lock time: 4.00s
track width: 1.810m
turning radius: 7.200m
vehicle speed: 5-10kmph

REV	AMENDMENT	DATE OF ISSUE	DESIGN: GVDW	DRAWN: GVDW	CLIENT: CDL LAND NEW ZEALAND LTD	SHEET TITLE: ROAD CURVES 6.3 m VAN TRACKING	SHEET: 13 of 18
A	First Issue	24/07/2026	CHECKED: TC	DATE: 24/07/2026	PROJECT: MIDDLE ROAD PROJECT FAST TRACK APPLICATION		
B	Second Issue	11/08/2026	SCALE: 0 16m 1:400 @ A3		LOCATION: MIDDLE ROAD, HAVELOCK NORTH		
C	Third Issue - 13.5 m bus tracking added	09/09/2026					
					FOR RESOURCE CONSENT	DRAWING NUMBER: CLDD-MR-DW01-A	REV: C



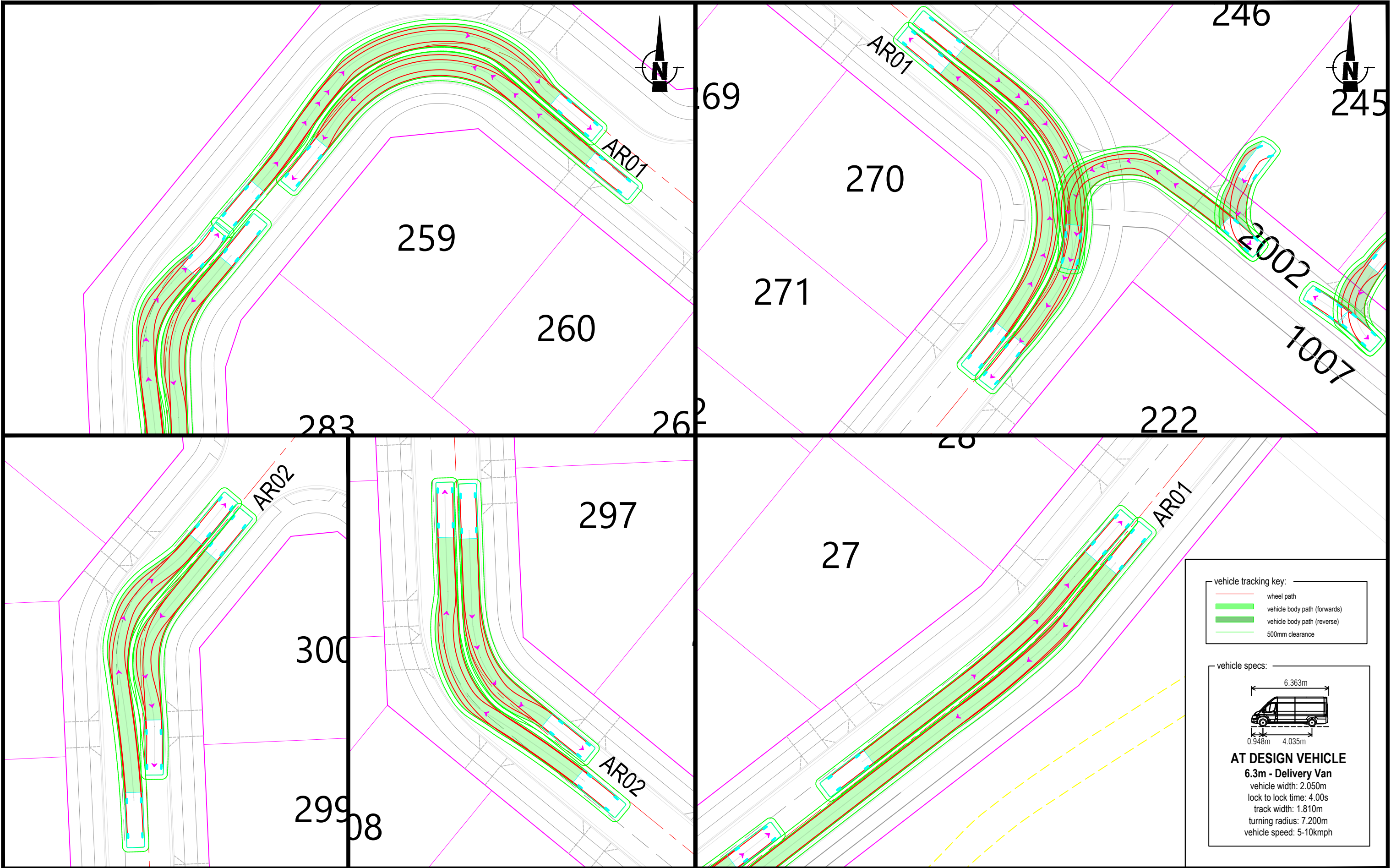
vehicle tracking key:

- wheel path
- vehicle body path (forwards)
- vehicle body path (reverse)
- 500mm clearance

vehicle specs:

AT DESIGN VEHICLE
6.3m - Delivery Van
vehicle width: 2.050m
lock to lock time: 4.00s
track width: 1.810m
turning radius: 7.200m
vehicle speed: 5-10kmph

REV	AMENDMENT	DATE OF ISSUE	DESIGN: GVDW	DRAWN: GVDW	CLIENT: CDL LAND NEW ZEALAND LTD	SHEET TITLE: ROAD CURVES 6.3 m VAN TRACKING	SHEET: 14 of 18	flow TRANSPORTATION SPECIALISTS Level 1, 11 Blake Street, Ponsonby, Auckland PO Box 47497 Ponsonby p 09 970 3820 f 09 970 3890 www.flownz.com
A	First Issue	24/07/2026	CHECKED: TC	DATE: 24/07/2026	PROJECT: MIDDLE ROAD PROJECT FAST TRACK APPLICATION			
B	Second Issue	11/08/2026	SCALE: 0 16m 1:400 @ A3		LOCATION: MIDDLE ROAD, HAVELOCK NORTH			
C	Third Issue - 13.5 m bus tracking added	09/09/2026			FOR RESOURCE CONSENT			
					DRAWING NUMBER: CLDD-MR-DW01-A		REV: C	



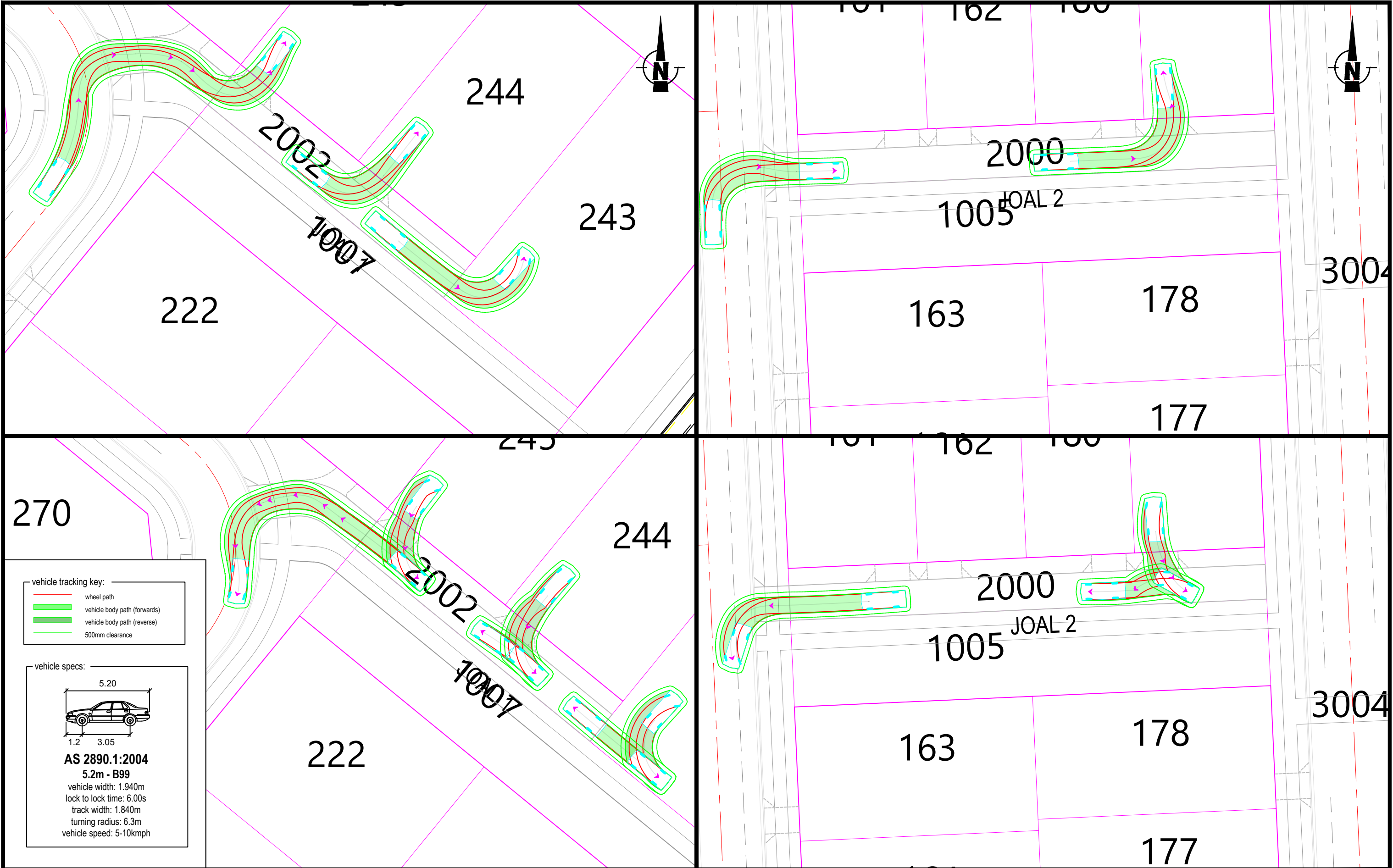
vehicle tracking key:

- wheel path
- vehicle body path (forwards)
- vehicle body path (reverse)
- 500mm clearance

vehicle specs:

AT DESIGN VEHICLE
6.3m - Delivery Van
vehicle width: 2.050m
lock to lock time: 4.00s
track width: 1.810m
turning radius: 7.200m
vehicle speed: 5-10kmph

REV	AMENDMENT	DATE OF ISSUE	DESIGN: GVDW	DRAWN: GVDW	CLIENT: CDL LAND NEW ZEALAND LTD	SHEET TITLE: ROAD CURVES 6.3 m VAN TRACKING	SHEET: 15 of 18	flow TRANSPORTATION SPECIALISTS Level 1, 11 Blake Street, Ponsonby, Auckland PO Box 47497 Ponsonby p 09 970 3820 f 09 970 3890 www.flownz.com
A	First Issue	24/07/2026	CHECKED: TC	DATE: 24/07/2026	PROJECT: MIDDLE ROAD PROJECT FAST TRACK APPLICATION			
B	Second Issue	11/08/2026	SCALE: 0 16m 1:400 @ A3		LOCATION: MIDDLE ROAD, HAVELOCK NORTH			
C	Third Issue - 13.5 m bus tracking added	09/09/2026			FOR RESOURCE CONSENT	DRAWING NUMBER: CLDD-MR-DW01-A	REV: C	



vehicle tracking key:

wheel path

vehicle body path (forwards)

vehicle body path (reverse)

500mm clearance

vehicle specs:

5.20

1.23.05

AS 2890.1:2004

5.2m - B99

vehicle width: 1.940m

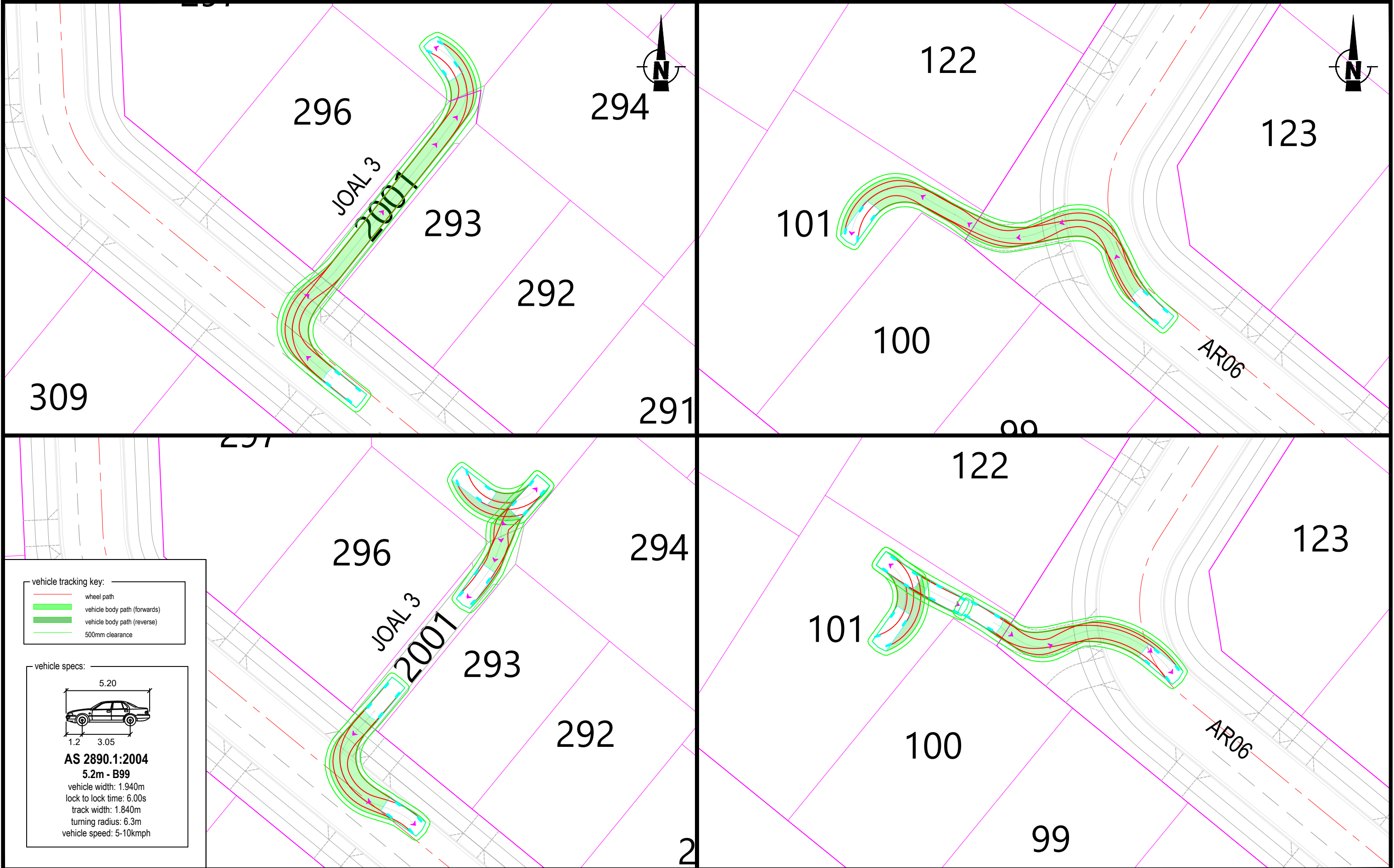
lock to lock time: 6.00s

track width: 1.840m

turning radius: 6.3m

vehicle speed: 5-10kmph

REV	AMENDMENT	DATE OF ISSUE	DESIGN: GVDW	DRAWN: GVDW	CLIENT: CDL LAND NEW ZEALAND LTD	SHEET TITLE: JOAL 1 & JOAL 2 B99 CAR TRACKING	SHEET: 16 of 18	flow TRANSPORTATION SPECIALISTS Level 1, 11 Blake Street, Ponsonby, Auckland PO Box 47497 Ponsonby p 09 970 3820 f 09 970 3890 www.flownz.com
A	First Issue	24/07/2026	CHECKED: TC	DATE: 24/07/2026	PROJECT: MIDDLE ROAD PROJECT FAST TRACK APPLICATION			
B	Second Issue	11/08/2026	SCALE: 016m 1:400 @ A3		LOCATION: MIDDLE ROAD, HAVELOCK NORTH			
C	Third Issue - 13.5 m bus tracking added	09/09/2026			FOR RESOURCE CONSENT	DRAWING NUMBER: CLDD-MR-DW01-A	REV: C	



vehicle tracking key:

wheel path

vehicle body path (forwards)

vehicle body path (reverse)

500mm clearance

vehicle specs:

5.20

1.2 3.05



AS 2890.1:2004

5.2m - B99

vehicle width: 1.940m

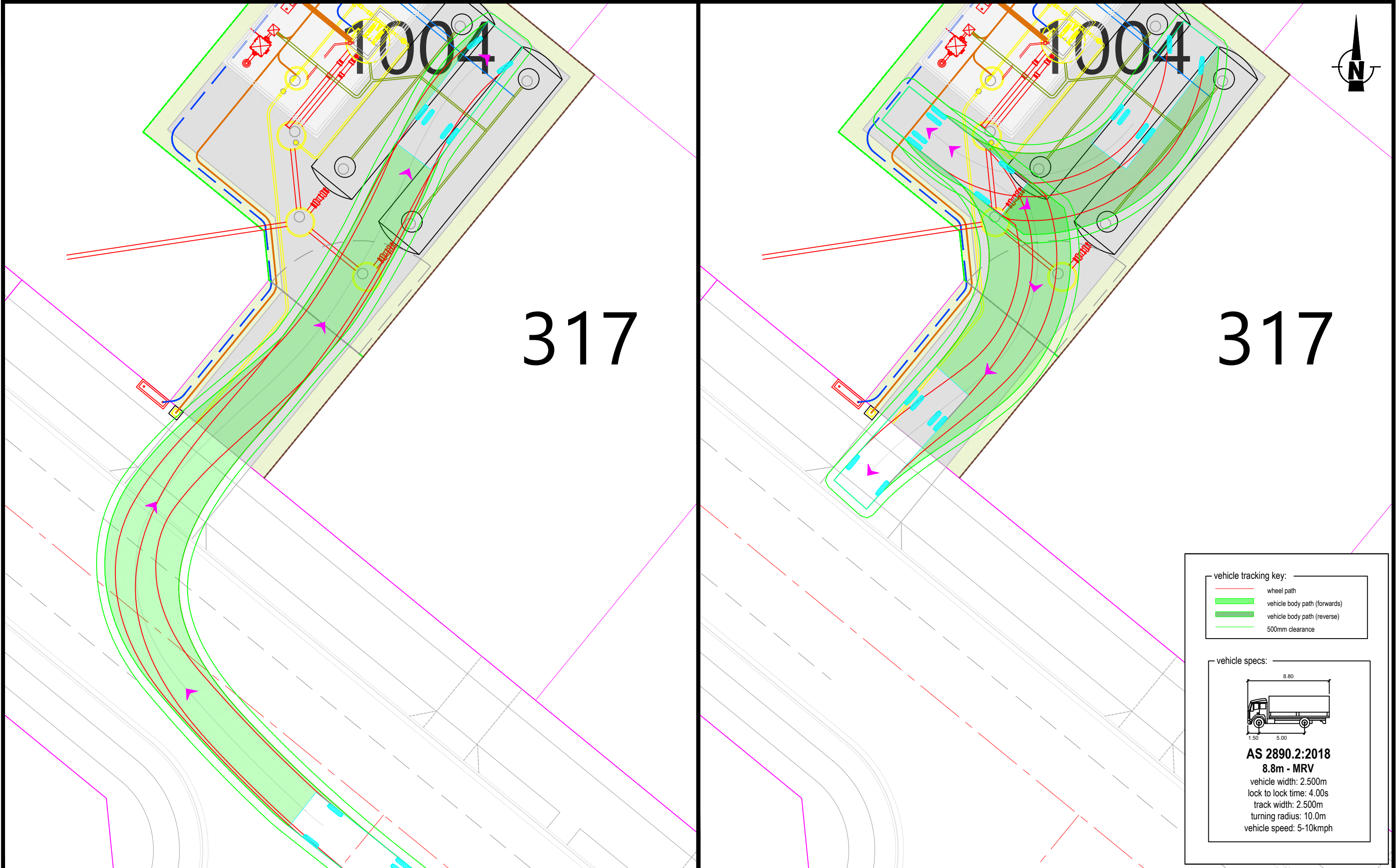
lock to lock time: 6.00s

track width: 1.840m

turning radius: 6.3m

vehicle speed: 5-10kmph

REV	AMENDMENT	DATE OF ISSUE	DESIGN: GVDW	DRAWN: GVDW	CLIENT: CDL LAND NEW ZEALAND LTD	SHEET TITLE: JOAL 3 & VX FROM AR06 B99 CAR TRACKING	SHEET: 17 of 18	flow TRANSPORTATION SPECIALISTS Level 1, 11 Blake Street, Ponsonby, Auckland PO Box 47497 Ponsonby p 09 970 3820 f 09 970 3890 www.flownz.com
A	First Issue	24/07/2026	CHECKED: TC	DATE: 24/07/2026	PROJECT: MIDDLE ROAD PROJECT FAST TRACK APPLICATION			
B	Second Issue	11/08/2026	SCALE: 0 16m 1:400 @ A3		LOCATION: MIDDLE ROAD, HAVELOCK NORTH			
C	Third Issue - 13.5 m bus tracking added	09/09/2026			FOR RESOURCE CONSENT	DRAWING NUMBER: CLDD-MR-DW01-A	REV: C	



vehicle tracking key:

wheel path

vehicle body path (forwards)

vehicle body path (reverse)

500mm clearance

vehicle specs:

8.80

1.50

5.00

AS 2890.2:2018

8.8m - MRV

vehicle width: 2.500m

lock to lock time: 4.00s

track width: 2.500m

turning radius: 10.0m

vehicle speed: 5-10kmph

REV	AMENDMENT	DATE OF ISSUE	DESIGN: GVDW	DRAWN: GVDW	CLIENT: CDL LAND NEW ZEALAND LTD	SHEET TITLE: PUMP STATION 8.8 m RIGID TRUCK TRACKING	SHEET: 18 of 18	flow TRANSPORTATION SPECIALISTS Level 1, 11 Blake Street, Ponsonby, Auckland PO Box 47497 Ponsonby p 09 970 3820 f 09 970 3890 www.flownz.com	
A	First Issue	24/07/2026	CHECKED: TC	DATE: 24/07/2026	PROJECT: MIDDLE ROAD PROJECT FAST TRACK APPLICATION				
B	Second Issue	11/08/2026	SCALE:  1:200 @ A3				LOCATION: MIDDLE ROAD, HAVELOCK NORTH		
C	Third Issue - 13.5 m bus tracking added	09/09/2026				FOR RESOURCE CONSENT	DRAWING NUMBER: CLDD-MR-DW01-A		REV: C