

Vermont Street Partners No. 4 Limited

Brookvale Green Residential Subdivision Substantive Transport Assessment



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1 EXECUTIVE SUMMARY

Vermont Street Partners No. 4 Limited (the Applicant) has engaged East Cape Consulting (ECC) to provide traffic engineering services for the master planning, consenting and design of Brookvale Green. The site is located at 174 and 176 Brookvale Road approximately 3.5km to the west of Havelock North's village centre in the Hawke's Bay. It comprises a total area of approximately 24 hectares on the eastern edge of Havelock North's urban residential boundary. Brookvale Green is a comprehensive residential community comprising 203 new homes within a well-connected living environment.

Brookvale Green is guided by a series of design principles focused on delivering a liveable, connected and green environment, with enhanced public spaces and diverse housing options. The five-stage development is structured around a central loop road that extends from Brookvale Road and runs through the heart of the site. This loop is supported by local streets and pedestrian and cycle connections to enable a legible grid structure. A variety of housing typologies and densities are proposed to provide choice and flexibility for future residents.

A preliminary transportation assessment¹ was prepared in support of the Fast-track referral application for the project. That assessment identified that there were no transport-related constraints that would preclude the development from proceeding, and outlined the further work required to support a substantive application.

This Substantive Transport Assessment (STA) builds on that earlier work and provides a detailed assessment of the transport effects of the proposed development. It describes the site location and surrounding transport environment, estimates the travel demand generated by the development, and assesses the ability of the surrounding transport network to safely and efficiently accommodate that demand.

The assessment also considers the integration of the proposed development with the existing and planned transport network, including provision for walking, cycling and future public transport. Where appropriate, measures are identified to ensure the development is appropriately integrated with the surrounding network and that any localised transport effects are addressed.

¹ East Cape Consulting Limited (2025). *174–176 Brookvale Road – Fast Track Application Transport Memorandum*, prepared for Vermont Street Partners No.4 Limited, dated 14 August 2025.

2 AUTHORS' QUALIFICATIONS AND EXPERIENCE

This report has been prepared by Anna Wilkins and George Eivers.

Anna Wilkins is a Principal Transportation Engineer at East Cape Consulting Limited (ECC). She holds a Bachelor of Civil Engineering with Honours and a Master of Engineering in Transportation from the University of Canterbury, and a Graduate Diploma in Business Studies from Massey University. She is a Chartered Member of Engineering New Zealand (CMEngNZ), a member of the Engineering New Zealand Transportation Group, a Registered Engineer in Victoria (Australian) and a full member of the Transport Professionals Association (formerly the Australian Institute of Traffic Planning and Management).

Anna has over 24 years' experience in transportation engineering and planning in New Zealand and Australia. Her experience includes the preparation and peer review of Integrated Transport Assessments and transportation reports for a wide range of developments, from individual sites through to large-scale structure planning. She has particular expertise in intersection analysis, network assessment and transport modelling, including extensive use of SIDRA and application of strategic transport models.

Anna has provided transportation advice in support of resource consent applications, Fast Track applications, plan changes and district plan processes, and has prepared and presented expert evidence for hearings and Boards of Inquiry. She is familiar with relevant national and local guidance, including New Zealand Transport Agency policy, Austroads guidance and district plan frameworks.

George Eivers is a Principal Engineer and Managing Director of East Cape Consulting Limited. He holds a Bachelor of Civil Engineering from the University of Canterbury and is a Chartered Professional Engineer (CPEng), Chartered Member of Engineering New Zealand (CMEngNZ), and an International Professional Engineer (IntPE). George has over 25 years' experience in traffic engineering, road design and transport planning in both New Zealand and the United Kingdom. His expertise includes geometric road and intersection design, road safety engineering, and the preparation of traffic assessments and Road Safety Audits.

George has extensive experience supporting residential and mixed-use developments through the consenting process, including contributing to transportation assessments, provision of site planning and access advice, and attendance at hearings. He has also led numerous road safety studies, safety audits and infrastructure design projects, and has worked closely with local authorities and road controlling authorities in delivering practical and effective transport solutions.

3 SITE LOCATION & PLANNING CONTEXT

The site is located on the eastern fringe of Havelock North, on the southern side of Brookvale Road. As shown on Figure 1 below, it is surrounded by existing and planned future residential activities to the west, and rural land to the east.

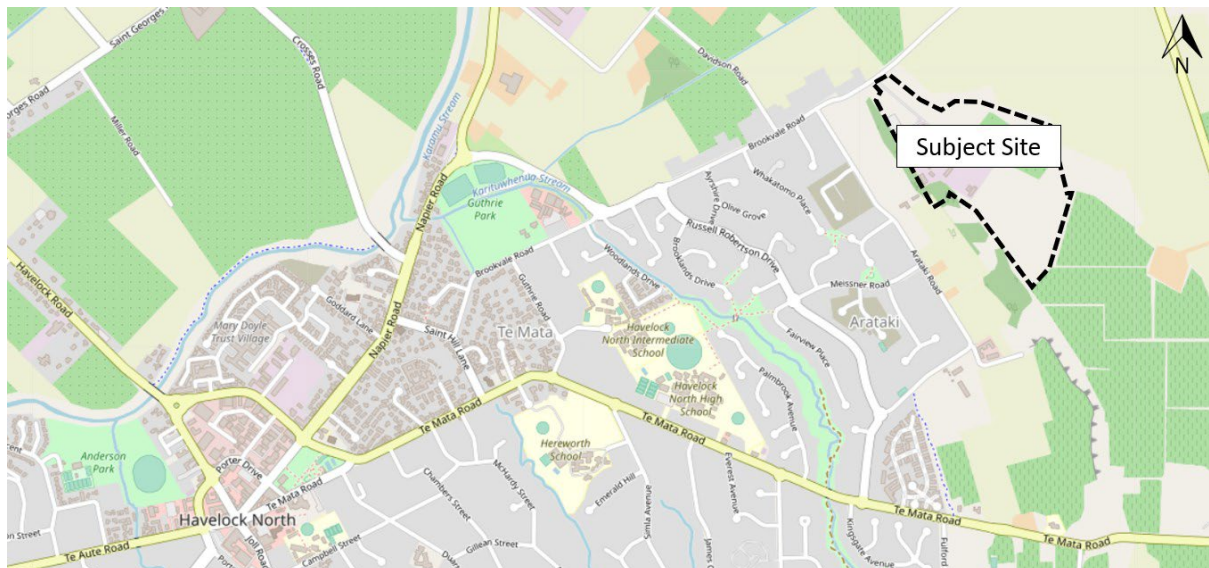


FIGURE 1 - SITE LOCATION (BASE MAP SOURCE: OPEN STREET MAPS)

The subject site historically provided for mushroom growing and distribution. It has an approximate area of 24 hectares (ha) and is made up of three titles. It is within the Plains Production Zone (PPZ) of the Hastings District Council (HDC) Operative District Plan (the District Plan). The District Plan zoning context is shown as Figure 2 below.



FIGURE 2 – HDC ZONING CONTEXT (BASE MAP SOURCE: HDC INTRAMAPS)

4 EXISTING TRANSPORT ENVIRONMENT

4.1 Road Hierarchy

The HDC District Plan road hierarchy around the site and in the wider Havelock North area is shown as Figure 3 below. HDC uses the One Network Road Classification (ONRC) framework.

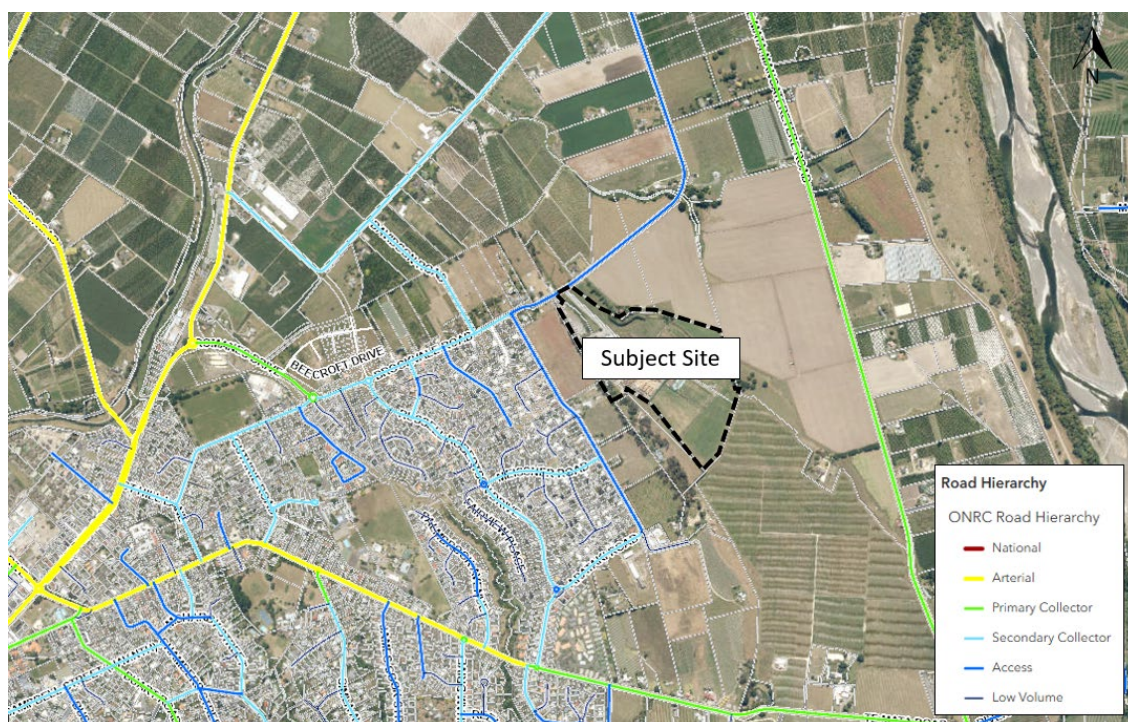


FIGURE 3 – HDC ROAD HIERARCHY CONTEXT (BASE MAP SOURCE: HDC INTRAMAPS)

Brookvale Road forms the immediate frontage to the site and is classified as an access road in this location. To the west of Arataki Road, it transitions to a secondary collector road as the surrounding area becomes more urbanised.

The wider network is structured around a hierarchy of collector and arterial routes that provide connections to Havelock North and the broader Hastings network. Romanes Drive, located to the west of the site, is classified as a primary collector and provides a key east-west connection between Brookvale Road and the arterial network. Arataki Road provides a north-south connection, functioning as an access road near the site and transitioning to a secondary collector further south.

At a higher level, arterial connectivity is provided by Napier Road and Crosses Road to the north and north-west, and Te Mata Road to the south-west. These routes form the primary connections between Havelock North, Hastings, and the wider region.

Te Mata Mangateretere Road provides another north-south connection, running to the east of the site. It is classified as a primary collector road and can be accessed via Thompson Road.

In this context, Brookvale Road and its connections to Romanes Drive and Arataki Road provide the primary means by which traffic from the site will access the wider transport network.

4.2 Existing Road Form

Along the site frontage, Brookvale Road is sealed to a width of between 5.8m and 6.6m. It is formed to a rural standard on both sides (with swales rather than kerb and channel) and no footpaths. Views of this part of Brookvale Road are shown as Figure 4 and Figure 5 below.



FIGURE 4 – BROOKVALE ROAD LOOKING EAST TOWARDS SITE ACCESS (ON RIGHT)



FIGURE 5 – BROOKVALE ROAD LOOKING WEST TOWARDS SITE ACCESS (ON LEFT)

The posted speed limit on Brookvale Road is 50km/h along the site frontage (and to the west) and 100km/h to the east of the site. As can be seen on the above Figures, the change occurs just east of the site access.

Brookvale Road takes on a more urban form, with kerbs and a footpath, as it moves further west into Havelock North. Further urbanisation is expected as the Brookvale Structure Plan area is developed (see Section 7.1 below).

The intersections along Brookvale Road reflect the functional hierarchy of the surrounding road network. At local road connections, intersections are generally priority-controlled T-intersections,

consistent with the low traffic volumes and local access function of these roads. At higher order connections, including where Brookvale Road intersects with collector roads, intersections are typically provided as single-lane roundabouts to accommodate higher traffic demands. Representative examples of these intersection forms are shown below as Figure 6.

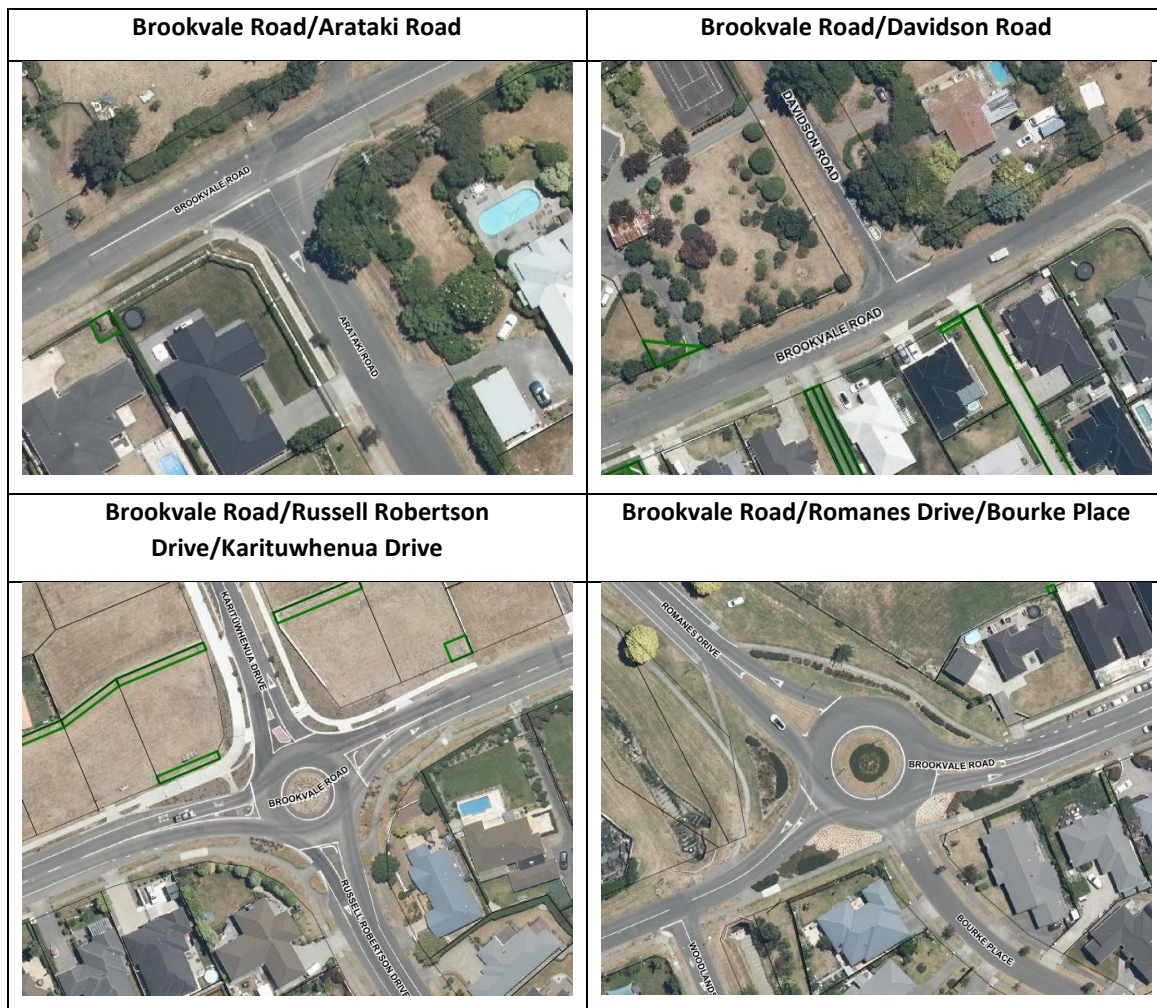


FIGURE 6 – BROOKVALE ROAD INTERSECTIONS

4.3 Public Transport

Public transport in the area is provided by the goBay bus network. Route 1 forms a core service connecting Napier, Hastings, and Havelock North, and operates via the main urban corridors including Omahu Road, Heretaunga Street, and Te Mata Road.

Route 1 extends into the Havelock North area via Arataki Road, with stops located in close proximity to the site, including a stop at 45 Arataki Road. Services operate throughout the day on weekdays, with buses typically running at approximately 20-30 minute intervals during peak periods and at lower frequencies (generally 30-60 minutes) during inter-peak periods. Saturday and Sunday services are also provided, although at reduced frequencies compared to weekdays.

In this context, the site has access to an established public transport service that provides connectivity to key destinations including Havelock North village, Hastings, and Napier. While service frequency is lower than in more central urban areas, it represents a reasonable level of public

transport accessibility for a site located at the urban edge. Public transport accessibility is expected to improve over time as development within the Brookvale Structure Plan area increases demand and supports service provision.

4.4 Walking and Cycling

There are currently no footpaths along Brookvale Road in the immediate vicinity of the site, reflecting its rural road environment. To the west of Arataki Road, where the surrounding land use becomes urban, footpaths (and some sections of shared path) are provided on the southern side of Brookvale Road.

Footpaths are also provided along Arataki Road (on the western side) and on one or both sides of other roads in the surrounding area, generally where there is established residential development. This reflects the transition from a rural to an urban transport environment across the area.

Cycling provision in the area is typically on-road, with cyclists sharing road carriageways with general traffic, except where shared path facilities are available.

Generally, there is currently limited pedestrian and cycling connectivity along the Brookvale Road frontage of the site, however facilities are available within the established urban area to the west and are expected to extend as the area develops.

4.5 Site Access

The site has one main vehicle access to Brookvale Road. This was formerly used by the mushroom farm for staff, customer, and service vehicles.

This access has approximately 140m of sight distance to the west (an exiting driver's view looking left) and 450m of sight distance to the east (looking right). This exceeds the Austroads Safe Intersection Sight Distance (SISD) requirement of 97m in a 50km/h speed zone.

The existing access is shown as Figure 7 below.



FIGURE 7 – EXISTING SITE ACCESS VIEWED FROM BROOKVALE ROAD

5 TRAFFIC VOLUMES

The Mobileroad website, which sources information from Council databases, gives the following daily traffic volumes for 2025, in vehicles per day (vpd), for roads around the site and in the wider area:

■ Brookvale Road, east of site	560 vpd
■ Brookvale Road, west of site	450 vpd
■ Brookvale Road, west of Arataki Road	1,500 vpd
■ Brookvale Road, east of Romanes Drive	2,325 vpd
■ Romanes Drive, north of Brookvale Road	5,950 vpd
■ Napier Road, north of Thompsons Road	7,775 vpd
■ Crosses Road, west of Napier Road	4,925 vpd
■ Thompson Road, Brookvale Road	810 vpd
■ Te Mata Mangateretere Road, south of Thompson Road	1,500 vpd
■ Arataki Road (Brookvale Road to Russell Robertson Drive)	700 vpd
■ Arataki Road (south of Russell Robertson Drive)	1,400 vpd
■ Russell Robertson Drive (south of Arataki Road)	2,475 vpd
■ Te Mata Road, west of Arataki Road	5,225 vpd

These volumes are also shown below on Figure 8.

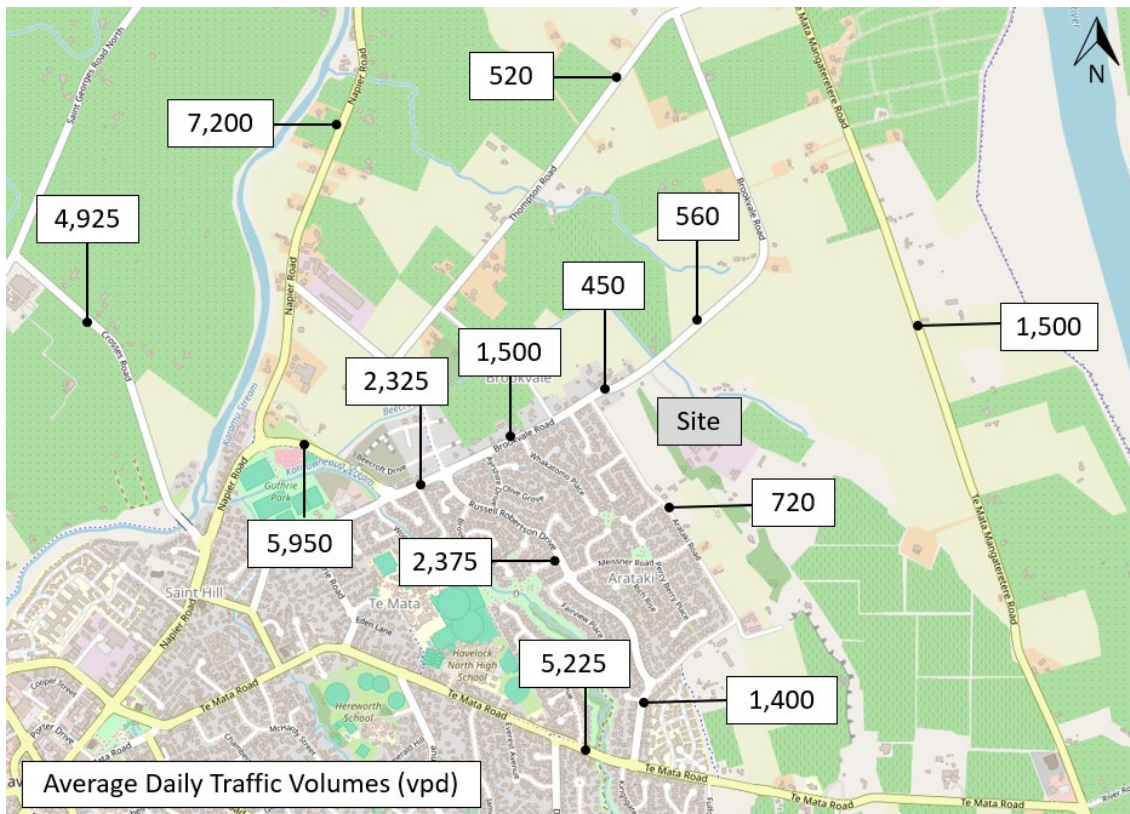


FIGURE 8 – EXISTING AVERAGE DAILY TRAFFIC VOLUMES

The data indicates a clear hierarchy in traffic volumes across the network, consistent with the road classifications described earlier in Section 4.1. The local road environment in the vicinity of the site is characterised by relatively low traffic volumes, with Brookvale Road carrying approximately 450-560 vpd adjacent to the site and Arataki Road carrying between approximately 720 and 1,400 vpd.

These volumes are within the typical range for access roads and lower-order collector roads under the ONRC which generally accommodate low traffic volumes and perform a local access function. In this context, the existing volumes indicate that these roads are operating comfortably within their intended function.

Traffic volumes increase progressively to the west as roads perform a greater collector function, with Brookvale Road carrying approximately 1,500-2,325 vpd west of Arataki Road and Romanes Drive carrying approximately 5,950 vpd. These volumes are consistent with the expected operating range of collector roads within the ONRC, which are intended to accommodate moderate traffic volumes and distribute movements between local roads and the arterial network.

Higher volumes are observed on the arterial network, including Napier Road (approximately 7,200 vpd) and Te Mata Road (approximately 5,225 vpd). These volumes are typical of arterial roads within the ONRC, which accommodate higher traffic demands and provide connectivity for longer-distance movements.

In this context, the site is located within a low-volume part of the network at the edge of the urban area, with traffic distributing westwards onto higher order collector and arterial routes. The existing traffic environment on Brookvale Road is therefore typical of a transitioning rural-to-urban corridor and is operating well within the expected capacity of the network to accommodate additional local traffic associated with residential development.

6 ROAD SAFETY

The road safety history of the area was reviewed using the New Zealand Transport Agency (NZTA) Crash Analysis System (CAS). The search covered Brookvale Road for a length of 500m either side of the site access. Data was extracted for the five-year period 2021 to 2025 inclusive, as well as any available data from 2026.

The search identified two reported injury crashes within this section of road, one serious injury crash (2024) and one minor injury crash (2022). Both crashes were single vehicle loss of control incidents. The 2024 crash involved an eastbound vehicle leaving the carriageway and coming to rest in the vicinity of the site access, while the 2022 crash involved a westbound vehicle approximately 500m to the east of the access.

In both cases, contributing factors were recorded as being driver-related, specifically driver impairment and a medical event, and both crashes occurred in wet road conditions. There is no pattern of crashes indicative of systemic safety issues associated with the road environment, intersection layout, or traffic operations at or around the site access.

7 FUTURE TRANSPORT NETWORK

7.1 Brookvale Structure Plan

The future transport environment around the site is informed by the Brookvale Structure Plan (BSP), which is incorporated into the District Plan. The BSP provides a framework for the planned urbanisation of land to the north of Brookvale Road and east of Napier Road, including the establishment of an integrated road network, open space corridors, and supporting infrastructure.

In transport terms, the BSP identifies a connected street network comprising a hierarchy of collector and local roads. Key elements include an east-west spine road linking Romanes Drive to Thompson Road, together with supporting local roads and connections to Brookvale Road, Davidson Road, and the wider arterial network. The BSP is shown below as Figure 9.

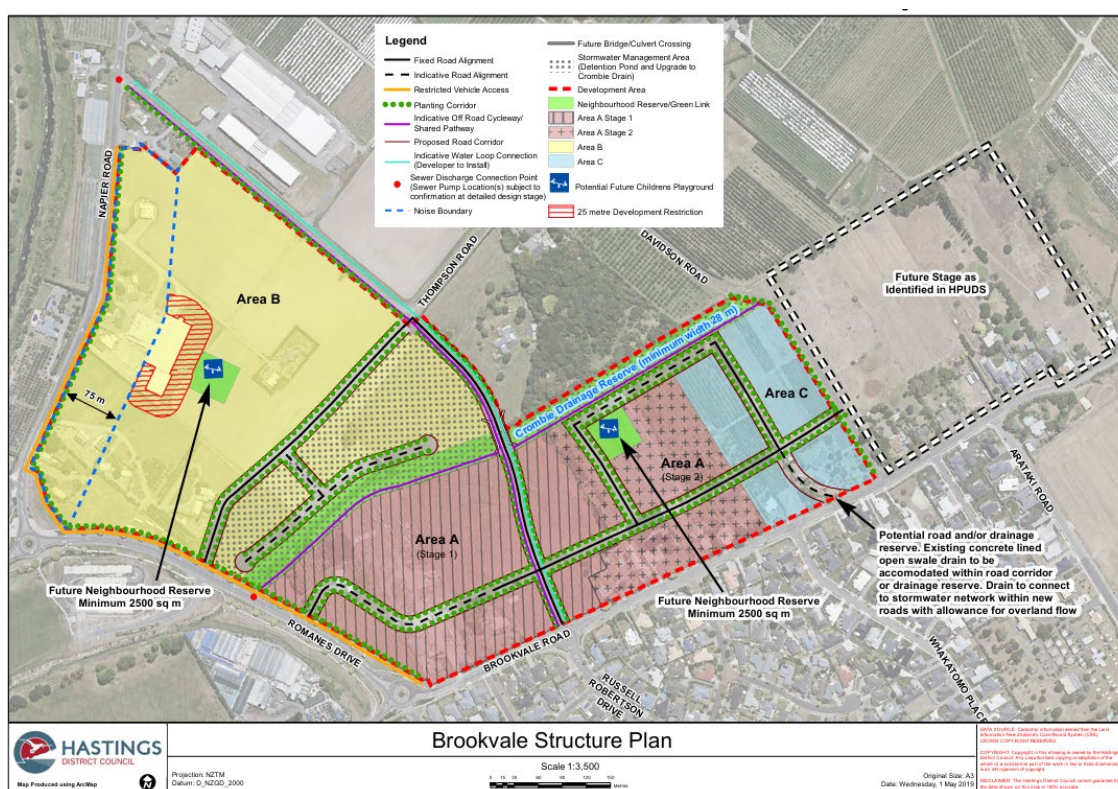


FIGURE 9 – BROOKVALE STRUCTURE PLAN (SOURCE: FIGURE 1, APPENDIX 13B, DISTRICT PLAN)

To support development of the BSP area, a detailed transportation assessment² was undertaken in 2018 by Traffic Design Group Ltd (now Stantec New Zealand), which provides the basis for subsequent assessments. This assessment (referred to herein as “the BSP traffic assessment”) considered the cumulative effects of residential development across the structure plan area and surrounding network. The modelling evaluated traffic generation, distribution, and the performance of key intersections, including those on Brookvale Road, Romanes Drive, Napier Road, Arataki Road, and Thompson Road.

² Traffic Design Group Limited (TDG) now part of Stantec New Zealand (2018). *Brookvale Residential Development, Havelock North – Traffic Structure Plan Investigations*, prepared for Landsdale Development Limited, 28 February 2018.

The 2018 assessment concluded that the surrounding transport network was capable of accommodating the anticipated growth in traffic, subject to targeted upgrades to parts of the network. These upgrades include urbanisation and widening of certain local roads and capacity improvements at key intersections, with several of these works now implemented or being progressed by HDC.

7.2 Private Plan Change 9

Subsequent to the adoption of the BSP, Private Plan Change 9 (PC9) has been proposed to extend the structure plan area further east to incorporate additional land (Areas D and E) and to provide for residential development and a retirement village. PC9 includes amendments to the structure plan, including the extension of the internal road network and additional connections to Brookvale Road. The proposed amendments are shown as Figure 10 below.

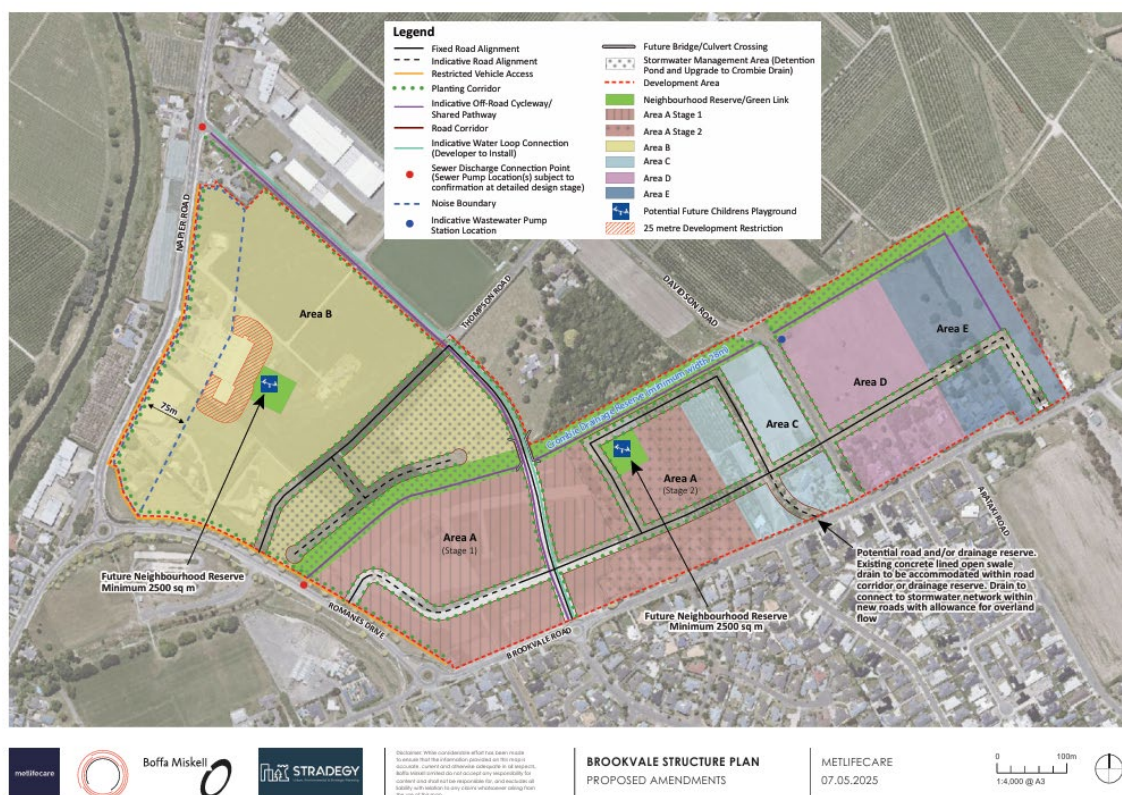


FIGURE 10 – PROPOSED AMENDMENTS TO BSP (SOURCE: PC9)

An Integrated Transportation Assessment (ITA) was prepared in support of PC9 by Stantec New Zealand³. This report and the transport evidence⁴ presented in support of PC9 confirms that the traffic modelling undertaken in 2018 for the BSP already included allowance for development of the land now proposed to be incorporated through PC9. While that land was not zoned for residential development at the time, it was treated as a potential future development area and included in the cumulative assessment of network effects.

³ Stantec New Zealand (2025). *Metlifecare Brookvale Private Plan Change Integrated Transport Assessment*, prepared for Metlifecare Retirement Villages Limited, 19 September 2025

⁴ Georgeson, M.G. (2026). *Summary Statement of Evidence on Behalf of Metlifecare Limited – Traffic*, dated 16 February 2026

On this basis, the BSP traffic assessment provides a consistent and robust foundation for understanding the future operation of the transport network, regardless of whether PC9 is ultimately approved. Accordingly, this assessment adopts the findings of the 2018 modelling as the basis for assessing the performance of the receiving environment under future development conditions.

Spatially, the eastern boundary of Area E aligns approximately with the western boundary of the subject site. The indicative subdivision road serving Area E is located approximately 110m to the west of the proposed primary subdivision access (Road 1) which is described in the following section.

7.3 The Arataki Project

A residential subdivision has been approved on land to the west of the site, accessed from Arataki Road (the Arataki Project). The development provides for approximately 150-200 residential lots and will be supported by a local internal road network connecting to Arataki Road via multiple priority-controlled intersections.

From a transport perspective, the key features of the development are:

- access is taken from Arataki Road, with traffic distributed to the wider network via Brookvale Road and the surrounding collector and arterial routes;
- the development includes upgrades to Arataki Road and the Arataki Road/Brookvale Road intersection, including urbanisation of the road corridor and traffic calming measures;
- an internal low-speed road network is proposed, with a focus on local access and active mode connectivity; and
- the scale of traffic generation is modest, with peak hour traffic volumes able to be accommodated within the capacity of the surrounding road network.

The traffic effects of the Arataki Road subdivision were assessed through an Integrated Transport Assessment prepared by Flow Transportation Specialists Ltd⁵. This report concludes that the surrounding road network, including Brookvale Road and key intersections, will continue to operate within capacity under future development conditions.

In this context, the Arataki Road subdivision represents an additional source of traffic on the local network, particularly on Brookvale Road west of the site, and is therefore considered as part of the future receiving environment for this assessment.

7.4 Future Traffic Growth and Forecast Validation

The BSP traffic assessment provides a strategic, full build-out assessment of traffic effects across the structure plan area and surrounding network. Subsequent transport assessments, including the Integrated Transport Assessment prepared by Stantec and the supporting traffic evidence of Georgeson (2026), confirm that the assumptions and conclusions of the BSP traffic assessment

⁵ Flow Transportation Specialists Ltd (2025). *The Arataki Project Fast Track Consent – Integrated Transport Assessment*, prepared for CDL Land New Zealand Limited, July 2025.

remain applicable, noting that no material changes have occurred to the surrounding transport network that would alter the outcomes of that earlier work.

This position is reinforced by more recent project-specific assessments and outcomes. The Integrated Transport Assessment prepared for the Arataki Project similarly concluded that the surrounding road network is capable of accommodating the anticipated traffic demands associated with that residential development. In its decision, the Arataki Expert Panel accepted that assessment, finding that the predicted traffic volumes are well within network capacity and that the development would not result in any unacceptable adverse effects on the function or safety of the local roading network.

A comparison of observed traffic volumes further supports the ongoing relevance of the BSP traffic assessment. Intersection turning count surveys undertaken by TDG in 2017 at seven locations across the network included the Brookvale Road/Bourke Place/Romanes Drive and Brookvale Road/Arataki Road intersections. These same intersections were subsequently surveyed by Flow Transportation Specialists in October 2024, enabling a direct comparison of peak hour traffic volumes over time.

This comparison indicates that traffic volumes at these key intersections have remained broadly stable. At the Brookvale Road/Bourke Place/Romanes Drive intersection, AM peak hour volumes have reduced relative to 2017 levels, while PM peak hour volumes remain of a similar order (within 8%). At the Brookvale Road/Arataki Road intersection, changes in peak hour traffic volumes are modest, with a small increase observed in the AM peak and negligible change in the PM peak.

Overall, these results indicate that, notwithstanding ongoing development within the wider area, peak hour traffic demands on the surrounding network have not materially increased beyond the levels anticipated in the BSP traffic assessment. This provides a useful validation of the earlier modelling and confirms that the strategic forecasts remain representative of current network conditions.

In this context, the BSP traffic modelling, as supported by subsequent assessments and observed traffic data, provides an appropriate representation of the future traffic environment and is adopted as the baseline for this assessment. The potential effects of the proposed Brookvale Green development are therefore assessed by reference to this established future environment, with the additional traffic associated with the proposal considered as an incremental increase on top of the BSP-derived traffic volumes.

8 PROPOSED SUBDIVISION

The proposed Brookvale Green subdivision includes 203 residential lots and open space areas arranged as shown in the civil engineering package prepared by Maven.

The development includes 31 small (approximately 200sqm) lots, 8 small-medium (about 350sqm) lots and 164 standard residential lots (each between 500sqm and 800sqm), all of which are served by a new internal road network.

Road 1 provides the primary connection to Brookvale Road and forms a loop through the development, distributing traffic to the surrounding local road network. Roads 2 to 10 function as lower-order local roads, providing direct access to individual lots and accommodating local movement.

In addition to the primary access via Road 1, a secondary connection is proposed where Road 3 meets Brookvale Road. This connection provides network resilience in the event that the primary access is unavailable, and is also expected to be the primary access for lots with frontage to Road 3.

Pedestrian infrastructure is provided throughout the development to support internal movement and connections to the wider network. A shared user path is proposed along the western side of Road 1 and around the outer extent of the loop road, providing a continuous and legible route for walking and cycling.

9 TRIP GENERATION AND DISTRIBUTION

9.1 Trip Generation

To maintain consistency with the BSP traffic assessment, all lots have been assessed with traffic generation rates of 10.9 vpd per lot and 1.2 vehicle movements per hour (vph) per lot.

On this basis, the proposed subdivision could generate an estimated:

- 2,169 vpd; including
- 239 vph during the peak hours of the day.

The adopted traffic generation rates are at the upper end of those typically applied in practice, including those presented in the NZTA Research Report 453 – Trips and parking related to land use (RR453) and other comparable guidance. In this context, the resulting traffic volumes are considered conservative and are likely to overestimate the level of traffic that will be generated by the development.

9.2 Trip Distribution

The distribution of trips associated with the proposed subdivision has been informed by a review of 2023 Census journey-to-work data for the Brookvale area. This provides an evidence-based understanding of existing travel patterns and the likely destinations of trips generated by the development.

The Census data indicates that a large proportion of trips are oriented towards nearby urban centres, particularly Havelock North and Hastings, with a smaller proportion travelling towards Napier and Clive.

Based on this analysis, and with minor adjustments to reflect the expected characteristics of a new residential catchment, the following distribution has been adopted:

On this basis, the adopted distribution is:

- | | |
|---|-----|
| ■ To/from Havelock North | 40% |
| ■ To/from Hastings (including Flaxmere) | 35% |
| ■ To/from Napier | 20% |
| ■ To/from Clive | 5% |

This distribution reflects the proximity of Havelock North and Hastings as primary destinations for employment, education, and services, as well as the role of Napier as a secondary regional centre. It also aligns with the structure of the surrounding road network, where traffic from the site will primarily travel west via Brookvale Road to access Romanes Drive, Arataki Road, and the wider arterial network.

Compared to the preliminary assessment undertaken at the referral stage, which adopted a simplified directional split, this approach provides a more refined and locally representative distribution of trips. Notwithstanding this refinement, the overall conclusion remains that the

10 ASSESSMENT OF EFFECTS

10.1 Approach to Assessment

The assessment of transport effects has been undertaken with reference to the future transport environment outlined earlier in Section 7. In particular, it draws on the BSP traffic assessment, which established the expected performance of the surrounding network under full development conditions. It also makes reference to the Integrated Transportation Assessment (ITA) prepared in support of the Arataki Project.

On this basis, the assessment presented in this report is proportionate to the scale of the proposal and focuses on confirming that the additional traffic generated by the development can be accommodated within that future network environment. The approach builds on the findings of the 2018 study rather than duplicating detailed modelling.

Traffic generation for the development has been estimated using rates consistent with the 2018 study and is at the upper end of typical values. The resulting traffic volumes therefore represent a conservative assessment of potential effects.

The assessment considers:

- effects on the operation of the surrounding road network;
- the performance and safety of the proposed site access arrangements;
- the suitability of the internal road network; and
- integration with walking, cycling and public transport networks.

10.2 Effects on the Road Network

The BSP traffic assessment includes a comprehensive assessment of traffic volumes on roads within the Brookvale Structure Plan area under a full development scenario. These volumes are presented as peak hour flows and have been converted to indicative daily volumes⁶ to enable comparison with the traffic generated by the proposed subdivision.

Table 1 summarises the forecast daily traffic volumes from the BSP traffic assessment, together with the additional traffic associated with the proposed development and the resulting combined volumes.

⁶ Daily volumes are the average of the AM and PM peak one-hour volumes on Figure 8 and Figure 9 of the BSP traffic assessment, multiplied by 10.

Road Section	Average Daily Volume (vpd)			% Change	ONRC Classification	ONRC Typical Volume Range (vpd)
	With BSP	Proposed Subdivision	New Total			
Napier Rd, south of Thompson Rd	9,105	87	9,192	1%	Arterial	5,000-15,000+
Napier Rd, south of Romanes Dr	19,370	868	20,238	4%	Arterial	5,000-15,000+
Brookvale Rd, south of Thompson Rd	1,305	607	1,912	47%	Access	<1,000
Brookvale Rd, east of Arataki Rd	1,035	1,562	2,597	151%	Access	<1,000
Brookvale Road, east of Davidson	1,600	1,388	2,988	87%	Secondary Collector	1,000-3,000
Brookvale Rd, east of Romanes Dr	7,620	1,388	9,008	18%	Secondary Collector	1,000-3,000
Brookvale Rd, west of Romanes Dr	3,285	434	3,719	13%	Secondary Collector	1,000-3,000
Romanes Dr, north of Brookvale Rd	7,990	954	8,944	12%	Primary Collector	3,000-5,000
Arataki Rd	985	174	1,159	18%	Access	<1,000

TABLE 1– DAILY ROAD VOLUME ESTIMATES

The results indicate that the additional traffic generated by the subdivision is small in the context of the wider network. On the arterial network (including Napier Road), increases in traffic volumes are minimal, typically in the order of 1% to 4%. These changes are negligible relative to existing and forecast traffic volumes on these routes.

On the collector road network, including Romanes Drive and Brookvale Road west of Romanes Drive, increases in traffic volumes are modest, generally in the order of 8-18%. These roads are intended to accommodate moderate traffic volumes and distribute traffic between local roads and the arterial network. The resulting volumes remain consistent with their function within the network.

Larger percentage increases are observed on sections of Brookvale Road closer to the site, particularly east of Arataki Road. These increases reflect the relatively low baseline traffic volumes in this part of the network. In absolute terms, traffic volumes increase from approximately 1,000-1,600 vpd under the BSP scenario to approximately 2,500-3,000 vpd with the addition of the proposed development.

These resulting volumes are consistent with a transition from a rural access road environment to a more urbanised collector function, as anticipated by the BSP. The increases therefore represent a change in the character of the road, rather than an exceedance of its capacity.

The resulting traffic volumes are generally within, or approaching, the typical operating range for collector roads under the ONRC. In some locations, forecast volumes under the BSP scenario already approach or exceed these indicative ranges, reflecting the planned urbanisation of the area and the transition of Brookvale Road from a rural access environment to a more urban collector function.

In this context, the additional traffic associated with the proposed development does not introduce a new or unexpected level of demand but rather contributes to a change in road function that has already been anticipated through the planning process for the BSP.

10.3 Intersection Capacity

In addition to the assessment of link volumes described above, a selection of key intersections within the surrounding network has been assessed to confirm that the additional traffic generated by the development can be accommodated in operational terms.

The assessment focuses on a small number of representative locations, including the primary site access at Brookvale Road and key downstream intersections at Brookvale Road/Arataki Road, Brookvale Road/Russell Robertson Drive, and Brookvale Road/Romanes Drive. These intersections represent the principal points at which traffic from the site enters, and is distributed across, the wider network.

Operational performance at these intersections has been assessed using SIDRA Intersection (Version 10). Turning movement volumes have been derived from the peak hour flows reported in the BSP traffic assessment, with traffic generated by the proposed subdivision added based on the peak hour trip generation and distribution outlined in Section 9.1 above.

To provide an assessment of cumulative effects, expected traffic volumes associated with the consented Arataki Road subdivision have also been incorporated into the SIDRA modelling. The resulting scenarios therefore represent a future case comprising the full BSP development, the proposed subdivision, and additional traffic from nearby consented development.

The full modelling outputs are provided in Appendix A.

The SIDRA assessment indicates that all intersections operate at a high level of service under both the BSP and cumulative development scenarios, with only minor changes in performance following the addition of development traffic.

At the Brookvale Road/Romanes Drive roundabout, the intersection continues to operate at Level of Service (LOS) A during both the AM and PM peak periods. The addition of development traffic and the Arataki Project traffic, results in only modest increases in degree of saturation (remaining below approximately 0.75) and negligible changes in delay, which remains low (generally around 6-7 seconds per vehicle). The intersection continues to operate well within capacity.

A similar outcome is observed at the Brookvale Road/Russell Robertson Drive intersection, which continues to operate efficiently with low delays and no indication of capacity constraints under cumulative development conditions.

At the Brookvale Road/Arataki Road intersection, traffic volumes increase to a greater extent in percentage terms due to the combined effects of nearby development. However, the SIDRA results confirm that the intersection continues to operate efficiently with acceptable delays and no capacity constraints. This reflects the relatively low baseline traffic volumes at this location and the ability of the priority-controlled intersection to accommodate additional demand.

At the Brookvale Road/Road 1 intersection, the proposed priority-controlled T-intersection operates with low delays on all movements and no evidence of queuing or capacity constraints, confirming that the access can safely and efficiently accommodate the forecast traffic movements associated with the development.

Across all modelled intersections, degree of saturation values remain well below capacity, and queues are short. The inclusion of traffic associated with the Arataki Road subdivision results in only minor increases in demand and does not materially change the operational performance of the assessed intersections.

Overall, the results confirm that the additional traffic generated by the proposed subdivision, both individually and in combination with nearby consented development, can be accommodated within the surrounding road network, which continues to operate as anticipated under the Brookvale Structure Plan.

10.4 Effects at Site Access

Access to the subdivision is provided via a new priority-controlled T-intersection (Road 1) with Brookvale Road. The performance of this intersection has been assessed using SIDRA Intersection, which confirms that a priority-controlled intersection with single lane approaches and departures on all legs is appropriate for the forecast traffic volumes.

The proposed access utilises the location of the existing site access onto Brookvale Road. This location provides good visibility in both directions and is able to achieve appropriate safe intersection sight distance (SISD) in accordance with relevant design standards.

The intersection geometry has been developed to accommodate the swept path requirements of a Single Unit Truck/Bus⁷ and proposes 15m radius kerb and channel on both sides of Road 1 as shown in the civil engineering package prepared by Maven.

The interface with Brookvale Road has also been considered as part of the access design. Channelisation is proposed on Brookvale Road to safely and efficiently accommodate turning movements. The kerb line discourages through vehicles from passing turning traffic and protects the integrity of the seal edge.

Channelisation also acts as a type of threshold treatment (see Section 10.5) that highlights to drivers they are entering or leaving an urban environment. This ensures that the transition from the existing rural road environment to a more urbanised frontage is appropriately managed.

The proposed access arrangement is assessed as appropriate for the scale of development and consistent with the anticipated function of Brookvale Road under the BSP.

If PC9 is approved, Area E will have a new road that meets Brookvale Road as a T-intersection. The centreline of this indicative road is located approximately 110m to the west of the centreline of Road 1, and approximately 45m west of the centreline of Road 3. By way of comparison, the spacings between existing intersections along Brookvale Road are approximately:

- 90m between Arataki Road and Whitaker Place;
- 65m between Whitaker Place and Davidson Road;
- 130m between Davidson Road and Whakatomo Place;
- 140m between Whakatomo Place Ayshire Drive; and
- 170m between Whakatomo Drive and Russell Robertson Drive

These spacings indicate that the primary site access (Road 1) position is consistent with the existing pattern of intersection spacing along Brookvale Road.

⁷ A 12.5m long rigid vehicle as defined by Appendix 72 of the HDC District Plan.

SIDRA modelling confirms that this level of separation is sufficient to ensure that queuing and operational interaction between adjacent intersections and accesses is low. The primary access therefore operates independently of nearby intersections and is not likely to give rise to operational or safety concerns.

The Road 3 access is located closer to the proposed Area E connection at approximately 45m away. However, this access is of a much smaller scale, serving approximately 18 lots, and will generate relatively low traffic volumes. As such, its operational influence on Brookvale Road is limited.

Overall, the proposed access arrangement is consistent with the established pattern of development along Brookvale Road and can be accommodated without adverse operational or safety effects. Structure Plan roads, such as the connection serving Area E under PC9, are generally shown indicatively. Subject to adoption of PC9 a detailed design and consenting process will be undertaken to confirm the final intersection location and form. The proposed subdivision access does not preclude an appropriate intersection arrangement being achieved.

10.5 Speed Management on Brookvale Road

As part of the approved Arataki Road subdivision, a gateway or threshold treatment is proposed on Brookvale Road to reinforce the transition from a higher speed rural environment to a lower speed urban environment in the vicinity of Arataki Road. This type of treatment typically includes visual narrowing, signage and/or surface treatments to encourage lower vehicle speeds and improve driver awareness of a changing road environment.

In the context of the proposed Brookvale Green development, it is assessed as appropriate that the location of this threshold treatment be moved further east. There is an opportunity to align the gateway so that it reflects the eastern extent of urban development and includes the proposed Road 1 intersection. This would provide a more consistent and legible transition in road environment and support safe vehicle speeds in the vicinity of the site access.

An indicative layout is shown as Figure 12 below, a larger version is included as Appendix B.

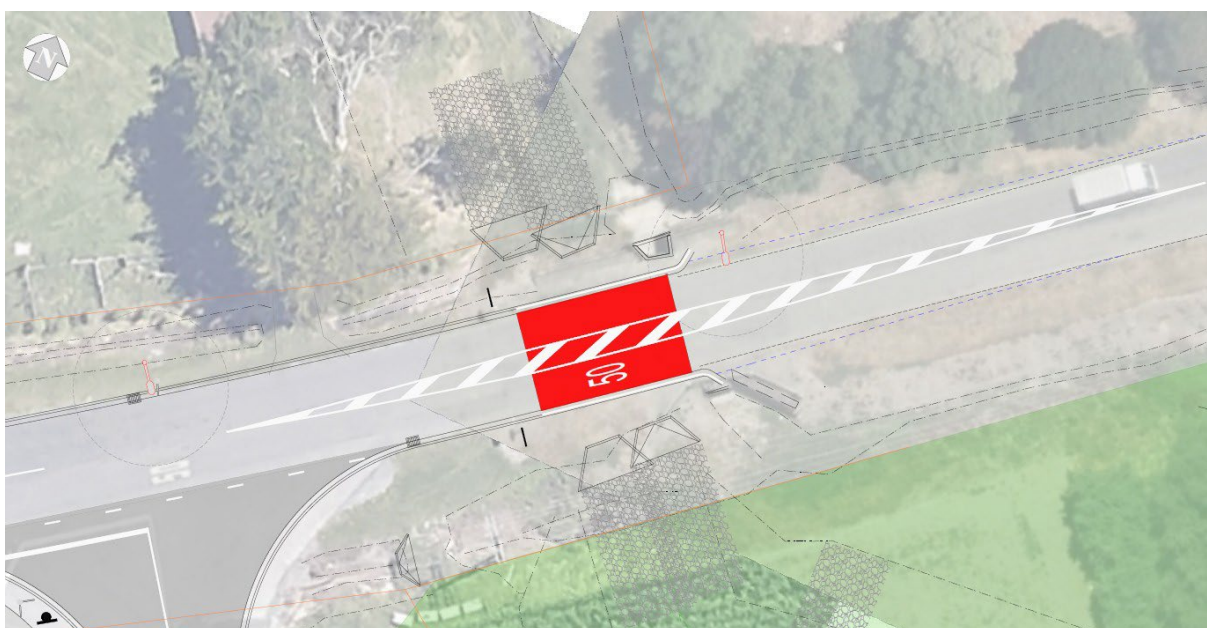


FIGURE 12 – PROPOSED AMENDMENTS TO BSP (SOURCE: PC9)

It is recommended that the final location and form of the threshold treatment on Brookvale Road be confirmed in coordination with adjacent development, including the Arataki Road subdivision, as part of the detailed design process which is overseen by HDC in both cases.

10.6 Internal Road Network and Site Layout

The internal road network has been designed to provide a clear and legible hierarchy that supports both access to individual lots and movement through the development.

Road 1 forms the primary internal route through the site, providing the main connection between Brookvale Road and the eastern parts of the development. It is configured as a loop road, which distributes traffic efficiently and avoids reliance on a single access point. This supports resilience within the network and reduces the potential for localised congestion.

Roads 2 to 10 are local roads that provide direct access to residential lots. These roads are generally short in length and are designed to operate in a low-speed environment, consistent with their function as local access streets.

The network provides a high level of permeability, with multiple connections between streets and minimum use of cul-de-sac roads. This supports convenient vehicle circulation and provides opportunities for walking and cycling within the development.

The internal road layout has been designed to accommodate service and emergency vehicles. Swept path drawings demonstrating the movement of a 10.3 m long service vehicle through the critical sections of the site, specifically the near 90-degree bend on Road 2 and the two bends on Road 5, are included in the civil engineering package prepared by Maven.

Hammer heads (one to be vested and two private) are proposed rather than cul-de-sacs due to topographical constraints. Turning manoeuvres using the appropriate vehicle⁸ have been checked within each hammer head.

The U-turn at the end of Road 3 is shown by Figure 13 below.

⁸ For the vested hammer head a 11.5m long rigid truck, as defined by RTS18. For the passing bays and other hammer heads a 5.2m long B99 light vehicle, as defined by NZS2890.

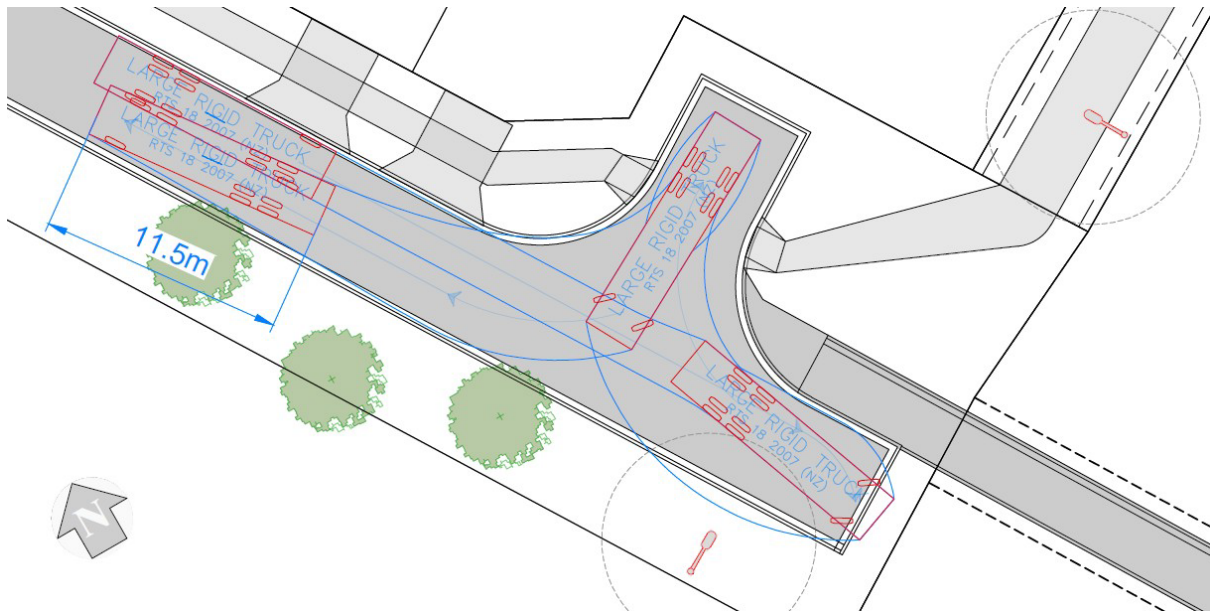


FIGURE 13 – ROAD 3 HAMMER HEAD U-TURN

At the northern end of Road 3, the carriageway width is achieved by utilising some of the adjacent reserve. Only a limited number of lots (generally those with frontage to Road 3 and ROW 1) are likely to use the Road 3 connection, with the majority of the development traffic expected to access Brookvale Road via Road 1 as it is more direct. This reflects both the layout of the network and the relative convenience of routes, including the gradient and alignment of Road 2.

On-street parking is provided by indented parking bays along most roads within the subdivision. Vehicle crossing locations have been designed in order to position indented parking bays in-between. Indented parking bays providing a total of 126 parking spaces are proposed, comprising 26 single bays, 30 double bays, 8 triple bays, 1 quadruple bay, and 2 sextuple bays.

Sightlines have been checked at each intersection, as shown in Appendix C. Safe Intersection Sight Distance (SISD), as defined by Austroads⁹, is achieved in both directions.

A series of pedestrian crossing features is proposed along Road 1, where housing is located on one side only and the effects of side friction on vehicle speeds are therefore reduced. These features have been positioned at consistent spacings which will help manage intersection approach speeds and ensure that SISD is maintained.

Cross-sections for each road type are shown in the civil design package prepared by Maven. Generally, three corridors are proposed, a 21m corridor a 15m corridor and a 4.5m wide corridor. The overall corridor, lane (2.75m) and footpath (1.5m and 2.5m) widths all comply with, or exceed, the relevant HDC code requirements¹⁰. Separate parking laybys are proposed throughout the development as noted earlier¹¹.

Overall, the internal road network is consistent with typical residential subdivision design and is appropriate for the scale and nature of the development. It provides safe and efficient access for all users and integrates well with the surrounding transport network.

⁹ Guide to Road Design Part 4A: Unsignalised and Signalised Intersections Section 3.3.2 SISD.

¹⁰ Table C4 - Minimum Road Design Standards – Urban And Rural Roads from the HDC Code of Practice 2020.

¹¹ Rather than be shared within the movement lane as permitted for up to 100 dwellings.

10.7 Walking and Cycling Integration

The proposed development includes an internal network of footpaths and shared user paths that provide connectivity throughout the site. These paths are integrated with the road network and include appropriate crossing points, enabling safe and convenient movement for pedestrians and cyclists within the subdivision.

In terms of wider network integration, the key opportunity is to provide a connection to the existing urban area of Havelock North to the west. It is understood that the Applicant has explored opportunities to provide a direct connection to Arataki Road via adjoining land in this direction however, this has not been able to be achieved at this stage.

To support integration with the wider network, a footpath is proposed along the southern side of Brookvale Road between Road 1 and Arataki Road. This will provide a continuous pedestrian connection between the subdivision and the existing urban area, including access to the established street and path network within Havelock North.

Overall, the proposed walking and cycling infrastructure provides good internal connectivity and, where practicable, integrates the development with the surrounding network.

10.8 Public Transport Accessibility

The existing public transport network in the vicinity of the site is limited. The nearest bus service operates along Arataki Road, where a bus stop is located within approximately 500m to 1,500m of lots within the proposed subdivision. This equates to a walking time of approximately 7 to 21 minutes.

The Hawke's Bay Regional Public Transport Plan 2025-2035 identifies a target of providing access to public transport within 400m walking distance for approximately 70% of residents within the Napier-Hastings urban area. This target does not specifically apply to Havelock North.

Notwithstanding this, the furthest lots in the proposed subdivision are located within approximately 900m of Brookvale Road. Should public transport services be extended along Brookvale Road in the future, some of the site would be located within this target distance of 400m and the balance would be within 900m, which is a walk of 12-13 minutes.

In this context, while current public transport accessibility is limited, the site is well positioned to integrate with any future extension of the public transport network along Brookvale Road. The provision of pedestrian connections, including the proposed footpath along Brookvale Road, will support this integration and improve accessibility over time.

11 DISTRICT PLAN ASSESSMENT

11.1 Introduction

This section assesses the proposed subdivision against the relevant transport-related provisions of the Hastings District Plan, including the general performance standards and assessment criteria set out in Section 26.1.

11.2 Transport Standards

Access to Property (Rule 26.1.6A.1)

The District Plan requires that all sites are provided with legal access to a formed legal road, and that private accessways are designed in accordance with the minimum width and performance requirements set out in Table 26.1.6.1-1.

Assessment:

It is assessed that the proposal complies with Rule 26.1.6A.1.

All lots are provided with legal vehicle access via the internal road network, which connects to Brookvale Road. Vehicle crossings serving individual lots are limited to one per site and are of a standard residential configuration.

The subdivision includes two private accessways:

- ROW 1, serving four residential lots; and
- ROW 2, serving six residential lots.

In accordance with Table 26.1.6.1-1, private accesses serving 4-6 household units are required to have a minimum legal width of 4.5m and minimum formed width of 2.75m. They operate as a shared accessway within a low-speed environment.

ROW 1 and ROW 2 have been designed to meet these requirements, including legal width and access function appropriate to the number of lots served. A passing bay is proposed part-way along ROW 1 (which is about 80m in length). ROW 2 is short enough (about 40m long) that appropriate passing can be achieved by wider areas provided at either end.

Neither accessway exceeds the threshold at which vesting as public road may be required. Other roads are proposed to be vested.

Distance of Vehicle Access from Intersections (Rule 26.1.6A.2)

The District Plan requires that vehicle crossings are located at least 15 metres from an intersection, or at the extent of the property boundary, whichever is the lesser. Where there are two adjacent accesses, vehicle crossings shall be offset from the legal property boundary (side boundary) by 1.5 metres.

Assessment:

Vehicle crossings may be located within 15 metres of intersections due to the configuration of lot frontages and the internal road layout. In these instances, crossings are located at or near the extent of the property boundary, such that further separation is not practicable.

The rule expressly provides for this outcome where the property boundary limits the achievable setback. On this basis, the proposed access arrangements comply with Rule 26.1.6A.2.

Only four vehicle crossings are located within 15m of intersections, these are shown and dimensioned by Figure 14 below.



FIGURE 14 – DRIVEWAY-INTERSECTION SEPARATION

In all four instances, the shortfall occurs on a major road approach. This provides drivers on the major road with good visibility of the vehicle crossing, allowing them to easily avoid any stopped or slowing vehicles. Drivers on the minor road approach are required to give way to all vehicles on the major road. As a result, they can also observe and safely avoid any stopped or slowing vehicles at the vehicle crossings.

For Lot 174 (on the Road 1 / Road 2 corner) the access has been positioned on Road 1 following a recommendation¹² from HDC.

Where two adjacent accesses occur, vehicle crossings are offset from the side boundary by a minimum of 1.5 metres.

¹² Urban Design Query # 11 from Anna Wood dated 02/06/2026.

Other Rules in 26.1.6A:

The provisions relating to vehicle access within the General Industrial Zone (Irongate Area) and the Howard Street Structure Plan (Rules 26.1.6A.3 and 26.1.6A.4) do not apply, as the site is not located within these areas.

The requirements relating to separation from railway level crossings (Rule 26.1.6A.5) are satisfied, as there are no railway level crossings in the vicinity of the site.

Safe Sightline Distances (Rule 26.1.6B)

Rule 26.1.6B requires that intersections are located and designed to achieve safe sightline distances¹³.

Assessment:

The internal intersections are required to provide 97m and 73m of sight distance in accordance with Austroads guidance¹⁴ for 50km/h and 40km/h speed environments respectively. The lower speed has been adopted on approaches with low radius (50m and below) curves which are expected to result in slower speeds.

A series of pedestrian crossing features is proposed along Road 1, where housing is located on one side only and the effects of side friction on vehicle speeds are therefore reduced. These features have been positioned at consistent spacings which will help manage intersection approach speeds and ensure that SISD is maintained.

The drawings in Appendix C demonstrate that SISD is achieved at all intersections.

Loading (Rule 26.1.6C)

The District Plan includes requirements for loading facilities for non-residential activities.

Assessment:

Rule 26.1.6C is not applicable, as the proposal comprises residential activities only and does not require dedicated loading spaces.

Parking (Rule 26.1.6D)

The District Plan does not prescribe minimum parking requirements for residential activities but includes design requirements for parking spaces, where they are provided.

Assessment:

Individual dwellings have not been designed at this stage. Where parking is provided, it is expected to comply with the relevant dimensional requirements of the District Plan.

¹³ Noting “compliance with Austroads Standards is deemed an acceptable means of compliance.”

¹⁴ Specifically Safe Intersection Sight Distance (SISD) has been applied.

Vehicle Standing Bay (Rule 26.1.7A)

The District Plan requires a minimum vehicle standing bay length of 5 metres for residential garages and carports.

Assessment:

Individual dwellings have not been designed at this stage. Those that provide parking are expected comply with the standing bay requirement.

Infrastructure to Support Alternative Transport Modes (Rule 26.1.7B)

The District Plan includes provisions for bicycle parking and end-of-trip facilities associated with on-site car parking.

Assessment:

Rule 26.1.7B does not apply to the proposed residential subdivision. The standard is triggered where on-site car parking is required; however, the Hastings District Plan does not prescribe minimum parking requirements for residential activities.

As such, the standard is not triggered in this instance. It is noted that there is adequate opportunity to accommodate bicycle storage on each lot and the overall subdivision supports active modes through provision of walking and cycling paths.

11.3 Overall Compliance Assessment

It is assessed that the proposed subdivision is consistent with the transport-related provisions of the Hastings District Plan. The proposal:

- provides legal access to all lots in accordance with Rule 26.1.6A.1, including compliant private access arrangements;
- complies with the requirements for the location of vehicle crossings relative to intersections under Rule 26.1.6A.2;
- achieves appropriate Safe Intersection Sight Distance in accordance with Rule 26.1.6B; and
- appropriately addresses all other relevant transport standards, with non-applicable provisions identified where relevant.

No transport-related matters are identified that would preclude the development or require mitigation beyond standard engineering design and detailed design confirmation.

12 CONSTRUCTION TRAFFIC EFFECTS

Construction activities associated with the development, particularly those affecting Brookvale Road and the surrounding road network, will be managed through the preparation and implementation of a Construction Traffic Management Plan (CTMP).

The CTMP will be prepared in accordance with relevant industry guidance, including the New Zealand Guide to Temporary Traffic Management (NZGTTM), and will be submitted to and approved by HDC prior to the commencement of works affecting the road network.

The CTMP will set out the measures required to safely manage construction-related traffic and minimise disruption to the surrounding network. This will generally include (but not be limited to):

- management of construction vehicle access routes, including entry and exit points;
- temporary traffic management measures to maintain the safe operation of Brookvale Road, including for pedestrians and cyclists;
- measures to manage potential conflicts between construction traffic and general traffic; and
- procedures for maintaining access to adjacent properties during construction.

On this basis, construction traffic effects are expected to be appropriately managed through a standard CTMP condition.

13 CONCLUSIONS AND RECOMMENDATIONS

13.1 Conclusions

This Integrated Transport Assessment has considered the transport effects of the proposed Brookvale Green residential subdivision at 174 and 176 Brookvale Road.

The assessment has been undertaken with reference to the future transport environment established by the Brookvale Structure Plan and the BSP traffic assessment, together with the expected effects of nearby consented development, including the Arataki Project.

On this basis, it is assessed that:

- The surrounding transport network is capable of accommodating the additional traffic generated by the proposed subdivision.
- Increases in traffic volumes are generally modest and consistent with the anticipated urbanisation of the area under the Structure Plan.
- Key intersections, including Brookvale Road/Arataki Road, Brookvale Road/Russell Robertson Drive and Brookvale Road/Romanes Drive, continue to operate at a high level of service under cumulative development conditions.
- The proposed T-intersection where Road 1 meets Brookvale Road can meet relevant engineering standards and is appropriate for the scale of development.
- The internal road network provides a legible and resilient layout that supports low-speed operation and accommodates service and emergency vehicles.
- The proposal provides appropriate integration with the surrounding transport network, including provision for walking and cycling.

Overall, the transport effects of the proposed subdivision are assessed as being acceptable.

13.2 Recommendations

To support the conclusions above, the following transport-related matters are recommended as conditions on the fast-track approval:

Site Access and Frontage Works

- The design of the Road 1 / Brookvale Road intersection shall be finalised in accordance with relevant design standards and approved by Hastings District Council.
- The design of the Road 2 / Brookvale Road intersection shall be finalised in accordance with relevant design standards and approved by Hastings District Council.
- Frontage improvements along Brookvale Road, including edge treatment and any associated widening or urbanisation works, shall be undertaken as part of the development.

Internal Road Network

- The internal road network shall be constructed generally in accordance with the conceptual layout shown in this report and in accordance with the HDC Engineering Code of Practice.

Walking and Cycling

- A footpath, separated from Brookvale Road by a kerb, shall be provided along the southern side of Brookvale Road between Road 1 and Arataki Road to support connectivity to the existing urban area.

Network Integration

- The final location and form of any gateway or threshold treatment on Brookvale Road shall be confirmed in coordination with HDC.

Construction Traffic Management

- A Construction Traffic Management Plan (CTMP) shall be prepared and implemented for construction activities affecting the public road network.

East Cape Consulting

1 July 2026

Appendix A – SIDRA Summaries

SITE LAYOUT

 Site: [1] Brookvale Romanes AM BSP (Folder1)

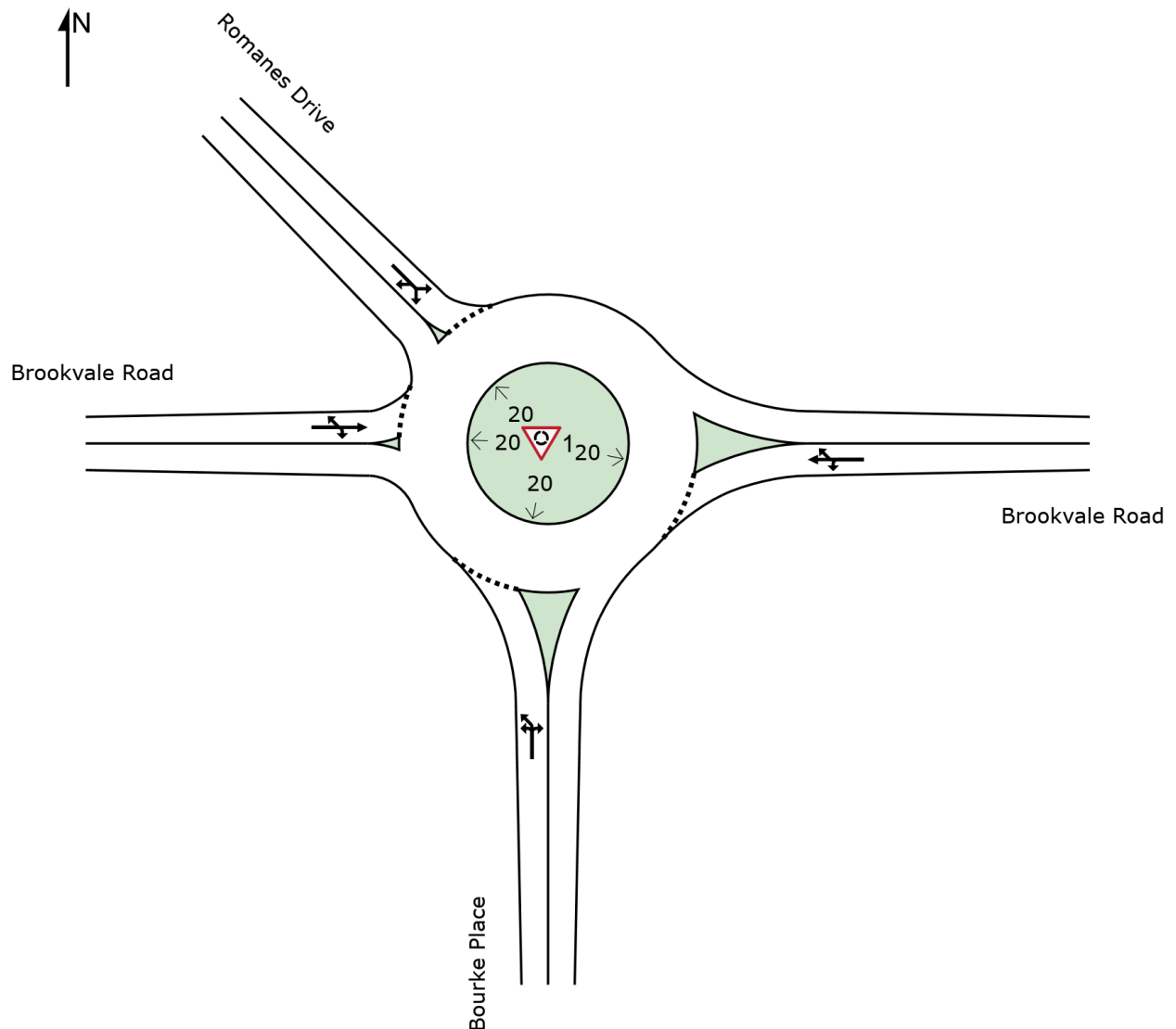
New Site

Site Category: (None)

Roundabout

Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Organisation: AJW | Licence: NETWORK / 1PC | Created: Tuesday, 7 April 2026 4:40:01 pm

Project: C:\Users\annaj\OneDrive\AW Consulting\Projects\165 Brookvale Te Mata Mushrooms Masterplan\Fasttrack application\Substantive Application\Brookvale Green Intersections.sipx

MOVEMENT SUMMARY



Site: [1] Brookvale Romanes AM BSP (Folder1)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh.]	Dist]				km/h
South: Bourke Place															
1	L2	All MCs	1	0.0	1	0.0	0.008	9.7	LOS A	0.0	0.3	0.83	0.62	0.83	43.2
1a	L1	All MCs	2	0.0	2	0.0	0.008	9.3	LOS A	0.0	0.3	0.83	0.62	0.83	43.4
3	R2	All MCs	1	0.0	1	0.0	0.008	14.1	LOS B	0.0	0.3	0.83	0.62	0.83	42.9
Approach			4	0.0	4	0.0	0.008	10.6	LOS B	0.0	0.3	0.83	0.62	0.83	43.3
East: Brookvale Road															
4	L2	All MCs	3	0.0	3	0.0	0.634	4.0	LOS A	5.9	41.7	0.48	0.54	0.48	44.6
5	T1	All MCs	104	1.0	104	1.0	0.634	3.9	LOS A	5.9	41.7	0.48	0.54	0.48	44.8
6a	R1	All MCs	773	0.1	773	0.1	0.634	7.4	LOS A	5.9	41.7	0.48	0.54	0.48	44.3
Approach			880	0.2	880	0.2	0.634	7.0	LOS A	5.9	41.7	0.48	0.54	0.48	44.4
NorthWest: Romanes Drive															
27a	L1	All MCs	51	0.0	51	0.0	0.105	2.5	LOS A	0.6	4.5	0.07	0.56	0.07	45.6
29a	R1	All MCs	1	0.0	1	0.0	0.105	6.4	LOS A	0.6	4.5	0.07	0.56	0.07	45.0
29b	R3	All MCs	117	0.9	117	0.9	0.105	8.2	LOS A	0.6	4.5	0.07	0.56	0.07	45.0
Approach			168	0.6	168	0.6	0.105	6.5	LOS A	0.6	4.5	0.07	0.56	0.07	45.2
West: Brookvale Road															
10b	L3	All MCs	5	0.0	5	0.0	0.018	7.4	LOS A	0.1	0.8	0.73	0.62	0.73	44.6
11	T1	All MCs	6	0.0	6	0.0	0.018	7.1	LOS A	0.1	0.8	0.73	0.62	0.73	45.0
12	R2	All MCs	1	0.0	1	0.0	0.018	11.6	LOS B	0.1	0.8	0.73	0.62	0.73	44.4
Approach			13	0.0	13	0.0	0.018	7.6	LOS A	0.1	0.8	0.73	0.62	0.73	44.8
All Vehicles			1065	0.3	1065	0.3	0.634	6.9	LOS A	5.9	41.7	0.42	0.55	0.42	44.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY



Site: [2] Brookvale Romanes AM BSP + Arataki + Subdivision (Folder1)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Bourke Place															
1	L2	All MCs	1	0.0	1	0.0	0.010	13.0	LOS B	0.1	0.5	0.93	0.68	0.93	41.6
1a	L1	All MCs	2	0.0	2	0.0	0.010	12.6	LOS B	0.1	0.5	0.93	0.68	0.93	41.8
3	R2	All MCs	1	0.0	1	0.0	0.010	17.4	LOS B	0.1	0.5	0.93	0.68	0.93	41.4
Approach			4	0.0	4	0.0	0.010	13.9	LOS B	0.1	0.5	0.93	0.68	0.93	41.7
East: Brookvale Road															
4	L2	All MCs	3	0.0	3	0.0	0.750	4.3	LOS A	9.0	63.2	0.60	0.55	0.60	44.4
5	T1	All MCs	151	0.7	151	0.7	0.750	4.2	LOS A	9.0	63.2	0.60	0.55	0.60	44.6
6a	R1	All MCs	894	0.1	894	0.1	0.750	7.7	LOS A	9.0	63.2	0.60	0.55	0.60	44.0
Approach			1047	0.2	1047	0.2	0.750	7.2	LOS A	9.0	63.2	0.60	0.55	0.60	44.1
NorthWest: Romanes Drive															
27a	L1	All MCs	106	0.0	106	0.0	0.149	2.6	LOS A	1.0	6.8	0.15	0.50	0.15	45.9
29a	R1	All MCs	1	0.0	1	0.0	0.149	6.5	LOS A	1.0	6.8	0.15	0.50	0.15	45.4
29b	R3	All MCs	117	0.9	117	0.9	0.149	8.3	LOS A	1.0	6.8	0.15	0.50	0.15	45.4
Approach			224	0.5	224	0.5	0.149	5.6	LOS A	1.0	6.8	0.15	0.50	0.15	45.6
West: Brookvale Road															
10b	L3	All MCs	5	0.0	5	0.0	0.055	8.9	LOS A	0.4	2.5	0.83	0.72	0.83	44.0
11	T1	All MCs	25	0.0	25	0.0	0.055	8.6	LOS A	0.4	2.5	0.83	0.72	0.83	44.4
12	R2	All MCs	1	0.0	1	0.0	0.055	13.1	LOS B	0.4	2.5	0.83	0.72	0.83	43.8
Approach			32	0.0	32	0.0	0.055	8.8	LOS A	0.4	2.5	0.83	0.72	0.83	44.3
All Vehicles			1307	0.2	1307	0.2	0.750	7.0	LOS A	9.0	63.2	0.53	0.54	0.53	44.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY



Site: [3] Brookvale Romanes PM BSP (Folder1)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh.]	Dist]				km/h
South: Bourke Place															
1	L2	All MCs	2	0.0	2	0.0	0.005	5.6	LOS A	0.0	0.2	0.60	0.53	0.60	45.3
1a	L1	All MCs	1	0.0	1	0.0	0.005	5.3	LOS A	0.0	0.2	0.60	0.53	0.60	45.5
3	R2	All MCs	1	0.0	1	0.0	0.005	10.1	LOS B	0.0	0.2	0.60	0.53	0.60	44.9
Approach			4	0.0	4	0.0	0.005	6.7	LOS A	0.0	0.2	0.60	0.53	0.60	45.2
East: Brookvale Road															
4	L2	All MCs	1	0.0	1	0.0	0.359	3.6	LOS A	2.4	17.0	0.37	0.53	0.37	45.0
5	T1	All MCs	84	1.2	84	1.2	0.359	3.6	LOS A	2.4	17.0	0.37	0.53	0.37	45.2
6a	R1	All MCs	388	0.0	388	0.0	0.359	7.1	LOS A	2.4	17.0	0.37	0.53	0.37	44.7
Approach			474	0.2	474	0.2	0.359	6.5	LOS A	2.4	17.0	0.37	0.53	0.37	44.7
NorthWest: Romanes Drive															
27a	L1	All MCs	84	0.0	84	0.0	0.163	3.0	LOS A	1.0	6.8	0.31	0.53	0.31	45.4
29a	R1	All MCs	1	0.0	1	0.0	0.163	6.9	LOS A	1.0	6.8	0.31	0.53	0.31	44.8
29b	R3	All MCs	123	0.9	123	0.9	0.163	8.7	LOS A	1.0	6.8	0.31	0.53	0.31	44.8
Approach			208	0.5	208	0.5	0.163	6.4	LOS A	1.0	6.8	0.31	0.53	0.31	45.0
West: Brookvale Road															
10b	L3	All MCs	139	0.8	139	0.8	0.252	5.3	LOS A	1.5	10.6	0.58	0.56	0.58	45.7
11	T1	All MCs	111	0.0	111	0.0	0.252	4.9	LOS A	1.5	10.6	0.58	0.56	0.58	46.1
12	R2	All MCs	1	0.0	1	0.0	0.252	9.5	LOS A	1.5	10.6	0.58	0.56	0.58	45.5
Approach			251	0.4	251	0.4	0.252	5.2	LOS A	1.5	10.6	0.58	0.56	0.58	45.8
All Vehicles			937	0.3	937	0.3	0.359	6.1	LOS A	2.4	17.0	0.41	0.54	0.41	45.1

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY



Site: [4] Brookvale Romanes PM BSP + Arataki +
Subdivision (Folder1)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]		[Total HV]					[Veh.]					
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Bourke Place															
1	L2	All MCs	2	0.0	2	0.0	0.005	6.2	LOS A	0.0	0.2	0.65	0.55	0.65	45.0
1a	L1	All MCs	1	0.0	1	0.0	0.005	5.8	LOS A	0.0	0.2	0.65	0.55	0.65	45.2
3	R2	All MCs	1	0.0	1	0.0	0.005	10.6	LOS B	0.0	0.2	0.65	0.55	0.65	44.7
Approach			4	0.0	4	0.0	0.005	7.2	LOS A	0.0	0.2	0.65	0.55	0.65	45.0
East: Brookvale Road															
4	L2	All MCs	1	0.0	1	0.0	0.413	3.7	LOS A	3.0	21.3	0.40	0.53	0.40	44.9
5	T1	All MCs	104	1.0	104	1.0	0.413	3.6	LOS A	3.0	21.3	0.40	0.53	0.40	45.1
6a	R1	All MCs	442	0.0	442	0.0	0.413	7.1	LOS A	3.0	21.3	0.40	0.53	0.40	44.6
Approach			547	0.2	547	0.2	0.413	6.5	LOS A	3.0	21.3	0.40	0.53	0.40	44.7
NorthWest: Romanes Drive															
27a	L1	All MCs	202	0.0	202	0.0	0.265	3.3	LOS A	1.7	12.1	0.41	0.50	0.41	45.7
29a	R1	All MCs	1	0.0	1	0.0	0.265	7.2	LOS A	1.7	12.1	0.41	0.50	0.41	45.2
29b	R3	All MCs	123	0.9	123	0.9	0.265	9.1	LOS A	1.7	12.1	0.41	0.50	0.41	45.2
Approach			326	0.3	326	0.3	0.265	5.5	LOS A	1.7	12.1	0.41	0.50	0.41	45.5
West: Brookvale Road															
10b	L3	All MCs	139	0.8	139	0.8	0.311	5.8	LOS A	2.0	13.8	0.64	0.59	0.64	45.4
11	T1	All MCs	156	0.0	156	0.0	0.311	5.4	LOS A	2.0	13.8	0.64	0.59	0.64	45.8
12	R2	All MCs	1	0.0	1	0.0	0.311	10.0	LOS A	2.0	13.8	0.64	0.59	0.64	45.2
Approach			296	0.4	296	0.4	0.311	5.6	LOS A	2.0	13.8	0.64	0.59	0.64	45.6
All Vehicles			1174	0.3	1174	0.3	0.413	6.0	LOS A	3.0	21.3	0.46	0.54	0.46	45.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

 Site: [9] Brookvale Russell Robertson AM BSP (Folder1)

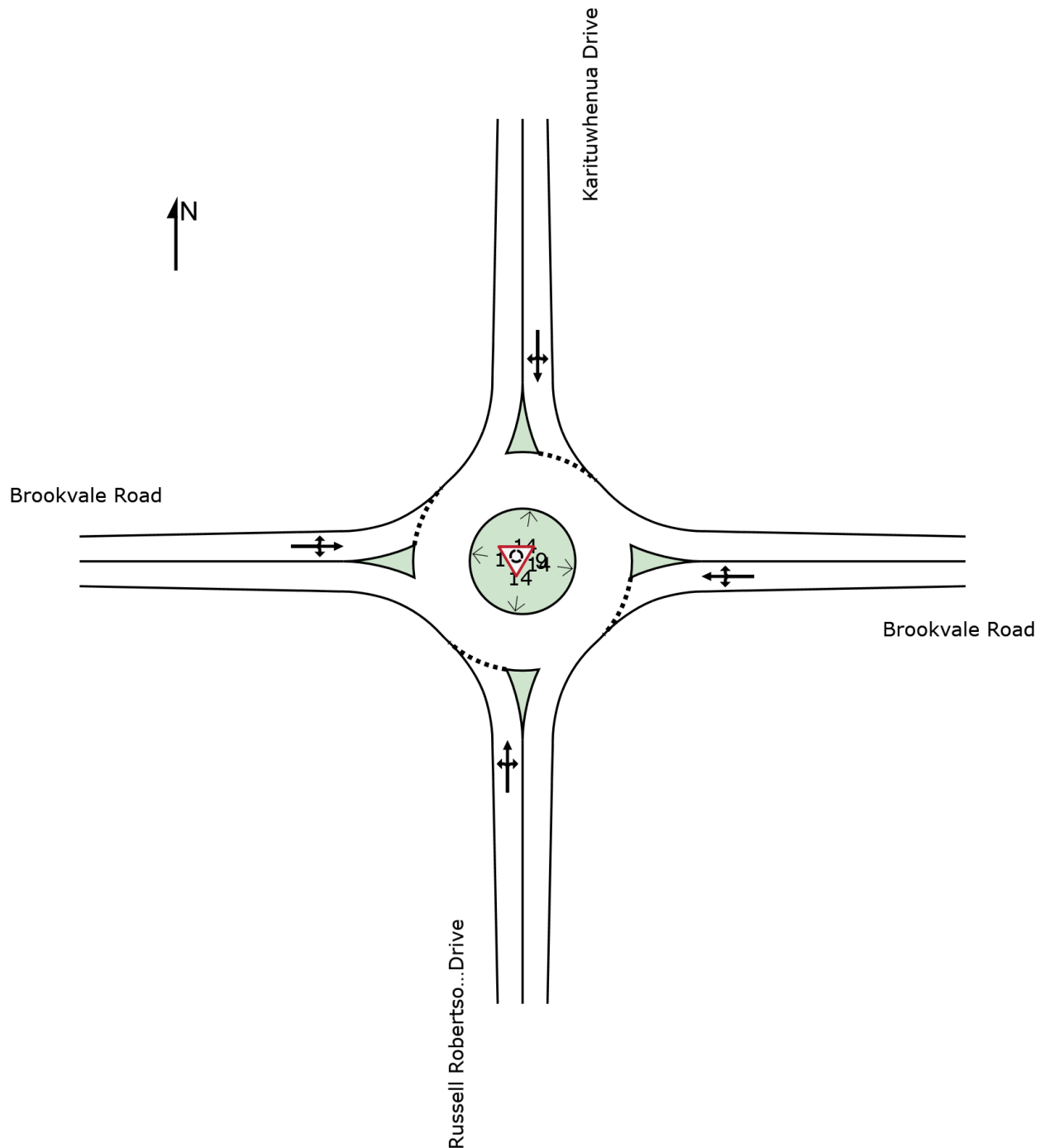
New Site

Site Category: (None)

Roundabout

Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY



Site: [9] Brookvale Russell Robertson AM BSP (Folder1)
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]						[Veh.]	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Russell Robertson Drive															
1	L2	All MCs	326	0.0	326	0.0	0.354	5.6	LOS A	2.2	15.7	0.59	0.59	0.59	45.6
2	T1	All MCs	20	0.0	20	0.0	0.354	5.6	LOS A	2.2	15.7	0.59	0.59	0.59	45.9
3	R2	All MCs	1	0.0	1	0.0	0.354	9.4	LOS A	2.2	15.7	0.59	0.59	0.59	45.3
Approach			347	0.0	347	0.0	0.354	5.6	LOS A	2.2	15.7	0.59	0.59	0.59	45.6
East: Brookvale Road															
4	L2	All MCs	2	0.0	2	0.0	0.228	4.7	LOS A	1.3	9.0	0.46	0.49	0.46	45.6
5	T1	All MCs	231	0.9	231	0.9	0.228	4.8	LOS A	1.3	9.0	0.46	0.49	0.46	45.8
6	R2	All MCs	8	0.0	8	0.0	0.228	8.6	LOS A	1.3	9.0	0.46	0.49	0.46	45.3
Approach			241	0.9	241	0.9	0.228	4.9	LOS A	1.3	9.0	0.46	0.49	0.46	45.8
North: Karituhenua Drive															
7	L2	All MCs	26	0.0	26	0.0	0.150	4.4	LOS A	0.8	5.5	0.39	0.58	0.39	44.8
8	T1	All MCs	29	0.0	29	0.0	0.150	4.4	LOS A	0.8	5.5	0.39	0.58	0.39	45.0
9	R2	All MCs	111	0.0	111	0.0	0.150	8.2	LOS A	0.8	5.5	0.39	0.58	0.39	44.5
Approach			166	0.0	166	0.0	0.150	6.9	LOS A	0.8	5.5	0.39	0.58	0.39	44.6
West: Brookvale Road															
10	L2	All MCs	36	0.0	36	0.0	0.170	3.4	LOS A	1.0	7.3	0.14	0.49	0.14	45.7
11	T1	All MCs	94	1.1	94	1.1	0.170	3.4	LOS A	1.0	7.3	0.14	0.49	0.14	46.0
12	R2	All MCs	114	7.4	114	7.4	0.170	7.3	LOS A	1.0	7.3	0.14	0.49	0.14	45.3
Approach			243	3.9	243	3.9	0.170	5.2	LOS A	1.0	7.3	0.14	0.49	0.14	45.6
All Vehicles			998	1.2	998	1.2	0.354	5.6	LOS A	2.2	15.7	0.42	0.54	0.42	45.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY



Site: [10] Brookvale Russell Robertson AM BSP + Arataki + Subdivision (Folder1)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%				[Veh. veh	Dist] m				km/h
South: Russell Robertson Drive															
1	L2	All MCs	326	0.0	326	0.0	0.412	6.9	LOS A	2.8	19.4	0.73	0.67	0.73	44.9
2	T1	All MCs	20	0.0	20	0.0	0.412	7.0	LOS A	2.8	19.4	0.73	0.67	0.73	45.1
3	R2	All MCs	1	0.0	1	0.0	0.412	10.8	LOS B	2.8	19.4	0.73	0.67	0.73	44.6
Approach			347	0.0	347	0.0	0.412	6.9	LOS A	2.8	19.4	0.73	0.67	0.73	44.9
East: Brookvale Road															
4	L2	All MCs	2	0.0	2	0.0	0.379	5.0	LOS A	2.5	17.3	0.53	0.51	0.53	45.4
5	T1	All MCs	399	0.5	399	0.5	0.379	5.0	LOS A	2.5	17.3	0.53	0.51	0.53	45.6
6	R2	All MCs	8	0.0	8	0.0	0.379	8.8	LOS A	2.5	17.3	0.53	0.51	0.53	45.1
Approach			409	0.5	409	0.5	0.379	5.1	LOS A	2.5	17.3	0.53	0.51	0.53	45.6
North: Karituwhenua Drive															
7	L2	All MCs	26	0.0	26	0.0	0.159	4.8	LOS A	0.8	5.9	0.46	0.60	0.46	44.7
8	T1	All MCs	29	0.0	29	0.0	0.159	4.8	LOS A	0.8	5.9	0.46	0.60	0.46	44.9
9	R2	All MCs	111	0.0	111	0.0	0.159	8.6	LOS A	0.8	5.9	0.46	0.60	0.46	44.4
Approach			166	0.0	166	0.0	0.159	7.3	LOS A	0.8	5.9	0.46	0.60	0.46	44.5
West: Brookvale Road															
10	L2	All MCs	36	0.0	36	0.0	0.218	3.4	LOS A	1.4	10.0	0.15	0.46	0.15	45.9
11	T1	All MCs	168	0.6	168	0.6	0.218	3.4	LOS A	1.4	10.0	0.15	0.46	0.15	46.2
12	R2	All MCs	114	7.4	114	7.4	0.218	7.3	LOS A	1.4	10.0	0.15	0.46	0.15	45.5
Approach			318	3.0	318	3.0	0.218	4.8	LOS A	1.4	10.0	0.15	0.46	0.15	45.9
All Vehicles			1241	0.9	1241	0.9	0.412	5.8	LOS A	2.8	19.4	0.48	0.55	0.48	45.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY



Site: [11] Brookvale Russell Robertson PM BSP (Folder1)
Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]						[Veh.]	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Russell Robertson Drive															
1	L2	All MCs	163	0.0	163	0.0	0.171	4.6	LOS A	0.9	6.5	0.45	0.52	0.45	46.0
2	T1	All MCs	17	0.0	17	0.0	0.171	4.7	LOS A	0.9	6.5	0.45	0.52	0.45	46.2
3	R2	All MCs	1	0.0	1	0.0	0.171	8.5	LOS A	0.9	6.5	0.45	0.52	0.45	45.7
Approach			181	0.0	181	0.0	0.171	4.7	LOS A	0.9	6.5	0.45	0.52	0.45	46.0
East: Brookvale Road															
4	L2	All MCs	3	0.0	3	0.0	0.155	5.3	LOS A	0.8	5.8	0.51	0.54	0.51	45.3
5	T1	All MCs	137	0.0	137	0.0	0.155	5.3	LOS A	0.8	5.8	0.51	0.54	0.51	45.6
6	R2	All MCs	12	0.0	12	0.0	0.155	9.1	LOS A	0.8	5.8	0.51	0.54	0.51	45.0
Approach			152	0.0	152	0.0	0.155	5.6	LOS A	0.8	5.8	0.51	0.54	0.51	45.5
North: Karituhenua Drive															
7	L2	All MCs	19	0.0	19	0.0	0.153	5.4	LOS A	0.8	5.7	0.53	0.64	0.53	44.3
8	T1	All MCs	21	0.0	21	0.0	0.153	5.5	LOS A	0.8	5.7	0.53	0.64	0.53	44.5
9	R2	All MCs	107	0.0	107	0.0	0.153	9.3	LOS A	0.8	5.7	0.53	0.64	0.53	44.0
Approach			147	0.0	147	0.0	0.153	8.2	LOS A	0.8	5.7	0.53	0.64	0.53	44.1
West: Brookvale Road															
10	L2	All MCs	63	0.0	63	0.0	0.303	3.4	LOS A	2.0	13.8	0.15	0.51	0.15	45.6
11	T1	All MCs	155	0.0	155	0.0	0.303	3.4	LOS A	2.0	13.8	0.15	0.51	0.15	45.8
12	R2	All MCs	240	0.0	240	0.0	0.303	7.2	LOS A	2.0	13.8	0.15	0.51	0.15	45.3
Approach			458	0.0	458	0.0	0.303	5.4	LOS A	2.0	13.8	0.15	0.51	0.15	45.5
All Vehicles			938	0.0	938	0.0	0.303	5.7	LOS A	2.0	13.8	0.33	0.54	0.33	45.4

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY



Site: [12] Brookvale Russell Robertson PM BSP + Arataki + Subdivision (Folder1)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Roundabout
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh.]	[Dist]				km/h
South: Russell Robertson Drive															
1	L2	All MCs	163	0.0	163	0.0	0.182	5.1	LOS A	1.0	7.2	0.51	0.56	0.51	45.8
2	T1	All MCs	17	0.0	17	0.0	0.182	5.1	LOS A	1.0	7.2	0.51	0.56	0.51	46.1
3	R2	All MCs	1	0.0	1	0.0	0.182	8.9	LOS A	1.0	7.2	0.51	0.56	0.51	45.5
Approach			181	0.0	181	0.0	0.182	5.1	LOS A	1.0	7.2	0.51	0.56	0.51	45.9
East: Brookvale Road															
4	L2	All MCs	3	0.0	3	0.0	0.231	5.4	LOS A	1.3	9.2	0.54	0.55	0.54	45.3
5	T1	All MCs	211	0.0	211	0.0	0.231	5.4	LOS A	1.3	9.2	0.54	0.55	0.54	45.5
6	R2	All MCs	12	0.0	12	0.0	0.231	9.2	LOS A	1.3	9.2	0.54	0.55	0.54	45.0
Approach			225	0.0	225	0.0	0.231	5.6	LOS A	1.3	9.2	0.54	0.55	0.54	45.5
North: Karituwhenua Drive															
7	L2	All MCs	19	0.0	19	0.0	0.174	6.6	LOS A	1.0	6.8	0.62	0.69	0.62	43.7
8	T1	All MCs	21	0.0	21	0.0	0.174	6.6	LOS A	1.0	6.8	0.62	0.69	0.62	43.9
9	R2	All MCs	107	0.0	107	0.0	0.174	10.4	LOS B	1.0	6.8	0.62	0.69	0.62	43.4
Approach			147	0.0	147	0.0	0.174	9.4	LOS A	1.0	6.8	0.62	0.69	0.62	43.5
West: Brookvale Road															
10	L2	All MCs	63	0.0	63	0.0	0.403	3.4	LOS A	3.0	21.2	0.17	0.47	0.17	45.8
11	T1	All MCs	317	0.0	317	0.0	0.403	3.4	LOS A	3.0	21.2	0.17	0.47	0.17	46.0
12	R2	All MCs	240	0.0	240	0.0	0.403	7.2	LOS A	3.0	21.2	0.17	0.47	0.17	45.5
Approach			620	0.0	620	0.0	0.403	4.9	LOS A	3.0	21.2	0.17	0.47	0.17	45.8
All Vehicles			1174	0.0	1174	0.0	0.403	5.6	LOS A	3.0	21.2	0.35	0.52	0.35	45.4

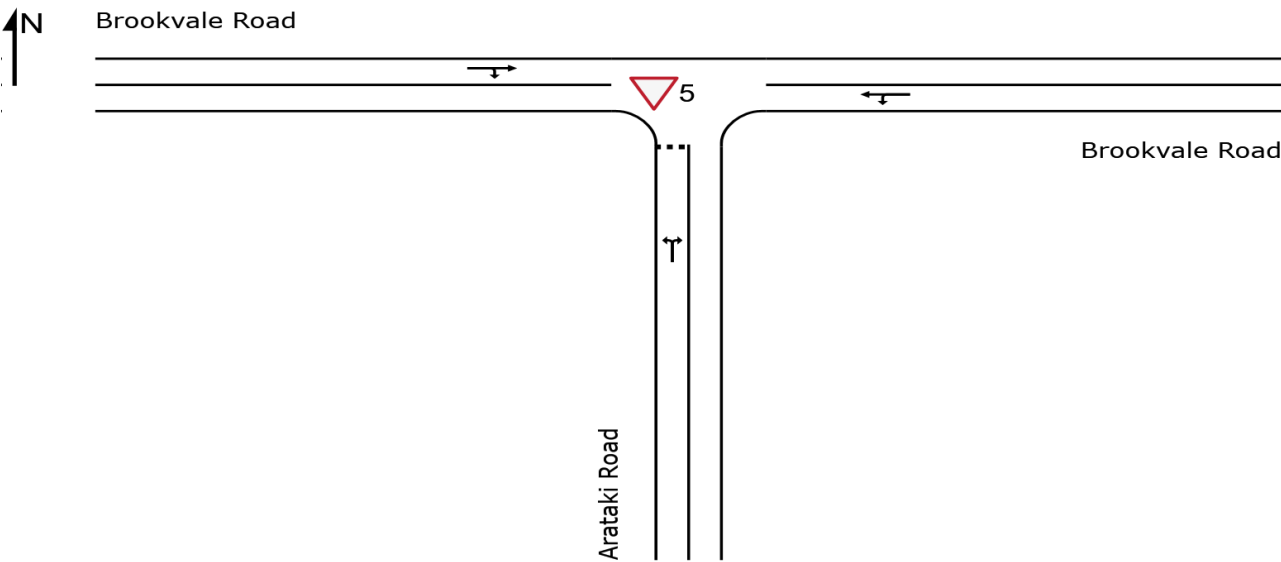
Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options tab).
Roundabout LOS Method: SIDRA Roundabout LOS.
Vehicle movement LOS values are based on average delay per movement.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
Roundabout Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

 Site: [5] Brookvale Arataki AM BSP (Folder1)

New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



MOVEMENT SUMMARY



Site: [5] Brookvale Arataki AM BSP (Folder1)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]	[Total HV]	[Total HV]				[Veh. veh	Dist] m				km/h
			veh/h	%	veh/h	%	v/c	sec							
South: Arataki Road															
1	L2	All MCs	34	0.0	34	0.0	0.031	4.7	LOS A	0.1	0.8	0.10	0.51	0.10	45.7
3	R2	All MCs	18	0.0	18	0.0	0.031	4.7	LOS A	0.1	0.8	0.10	0.51	0.10	45.5
Approach			52	0.0	52	0.0	0.031	4.7	LOS A	0.1	0.8	0.10	0.51	0.10	45.7
East: Brookvale Road															
4	L2	All MCs	7	0.0	7	0.0	0.023	4.6	LOS A	0.0	0.0	0.00	0.09	0.00	48.3
5	T1	All MCs	37	2.9	37	2.9	0.023	0.0	LOS A	0.0	0.0	0.00	0.09	0.00	49.5
Approach			44	2.4	44	2.4	0.023	0.8	NA	0.0	0.0	0.00	0.09	0.00	49.3
West: Brookvale Road															
11	T1	All MCs	46	2.3	46	2.3	0.045	0.1	LOS A	0.2	1.1	0.09	0.24	0.09	48.4
12	R2	All MCs	35	0.0	35	0.0	0.045	4.7	LOS A	0.2	1.1	0.09	0.24	0.09	47.1
Approach			81	1.3	81	1.3	0.045	2.0	NA	0.2	1.1	0.09	0.24	0.09	47.8
All Vehicles			177	1.2	177	1.2	0.045	2.5	NA	0.2	1.1	0.07	0.28	0.07	47.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [6] Brookvale Arataki AM BSP + Arataki + Subdivision
(Folder1)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Arataki Road															
1	L2	All MCs	89	0.0	89	0.0	0.084	5.0	LOS A	0.3	2.2	0.24	0.53	0.24	45.4
3	R2	All MCs	38	0.0	38	0.0	0.084	4.9	LOS A	0.3	2.2	0.24	0.53	0.24	45.2
Approach			127	0.0	127	0.0	0.084	5.0	LOS A	0.3	2.2	0.24	0.53	0.24	45.4
East: Brookvale Road															
4	L2	All MCs	25	0.0	25	0.0	0.091	4.6	LOS A	0.0	0.0	0.00	0.08	0.00	48.3
5	T1	All MCs	149	0.7	149	0.7	0.091	0.0	LOS A	0.0	0.0	0.00	0.08	0.00	49.5
Approach			175	0.6	175	0.6	0.091	0.7	NA	0.0	0.0	0.00	0.08	0.00	49.3
West: Brookvale Road															
11	T1	All MCs	95	1.1	95	1.1	0.090	0.3	LOS A	0.3	2.3	0.20	0.28	0.20	48.3
12	R2	All MCs	62	0.0	62	0.0	0.090	5.1	LOS A	0.3	2.3	0.20	0.28	0.20	46.9
Approach			157	0.7	157	0.7	0.090	2.2	NA	0.3	2.3	0.20	0.28	0.20	47.7
All Vehicles			459	0.5	459	0.5	0.091	2.4	NA	0.3	2.3	0.14	0.27	0.14	47.6

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akcelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY



Site: [7] Brookvale Arataki PM BSP (Folder1)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Arataki Road															
1	L2	All MCs	39	2.7	39	2.7	0.038	4.7	LOS A	0.1	0.9	0.12	0.51	0.12	45.7
3	R2	All MCs	24	0.0	24	0.0	0.038	4.7	LOS A	0.1	0.9	0.12	0.51	0.12	45.5
Approach			63	1.7	63	1.7	0.038	4.7	LOS A	0.1	0.9	0.12	0.51	0.12	45.6
East: Brookvale Road															
4	L2	All MCs	16	6.7	16	6.7	0.033	4.6	LOS A	0.0	0.0	0.00	0.14	0.00	47.9
5	T1	All MCs	46	2.3	46	2.3	0.033	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	49.2
Approach			62	3.4	62	3.4	0.033	1.2	NA	0.0	0.0	0.00	0.14	0.00	48.9
West: Brookvale Road															
11	T1	All MCs	56	0.0	56	0.0	0.050	0.1	LOS A	0.2	1.2	0.11	0.23	0.11	48.6
12	R2	All MCs	35	0.0	35	0.0	0.050	4.7	LOS A	0.2	1.2	0.11	0.23	0.11	47.2
Approach			91	0.0	91	0.0	0.050	1.9	NA	0.2	1.2	0.11	0.23	0.11	48.0
All Vehicles			216	1.5	216	1.5	0.050	2.5	NA	0.2	1.2	0.08	0.28	0.08	47.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [8] Brookvale Arataki PM BSP + Arataki + Subdivision
(Folder1)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Cycles	Number of Cycles to Depart	Aver. Speed
			[Total HV]	[Total HV]						[Veh.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Arataki Road															
1	L2	All MCs	65	1.6	65	1.6	0.070	4.9	LOS A	0.2	1.7	0.19	0.52	0.19	45.5
3	R2	All MCs	45	0.0	45	0.0	0.070	4.9	LOS A	0.2	1.7	0.19	0.52	0.19	45.3
Approach			111	1.0	111	1.0	0.070	4.9	LOS A	0.2	1.7	0.19	0.52	0.19	45.4
East: Brookvale Road															
4	L2	All MCs	32	3.3	32	3.3	0.066	4.6	LOS A	0.0	0.0	0.00	0.14	0.00	48.0
5	T1	All MCs	95	1.1	95	1.1	0.066	0.0	LOS A	0.0	0.0	0.00	0.14	0.00	49.2
Approach			126	1.7	126	1.7	0.066	1.2	NA	0.0	0.0	0.00	0.14	0.00	48.9
West: Brookvale Road															
11	T1	All MCs	168	0.0	168	0.0	0.140	0.2	LOS A	0.5	3.3	0.16	0.23	0.16	48.6
12	R2	All MCs	84	0.0	84	0.0	0.140	5.0	LOS A	0.5	3.3	0.16	0.23	0.16	47.2
Approach			253	0.0	253	0.0	0.140	1.8	NA	0.5	3.3	0.16	0.23	0.16	48.1
All Vehicles			489	0.6	489	0.6	0.140	2.3	NA	0.5	3.3	0.12	0.27	0.12	47.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akcelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

SITE LAYOUT

 Site: [13] Brookvale Road 1 AM BSP + Arataki + Subdivision
(Folder1)

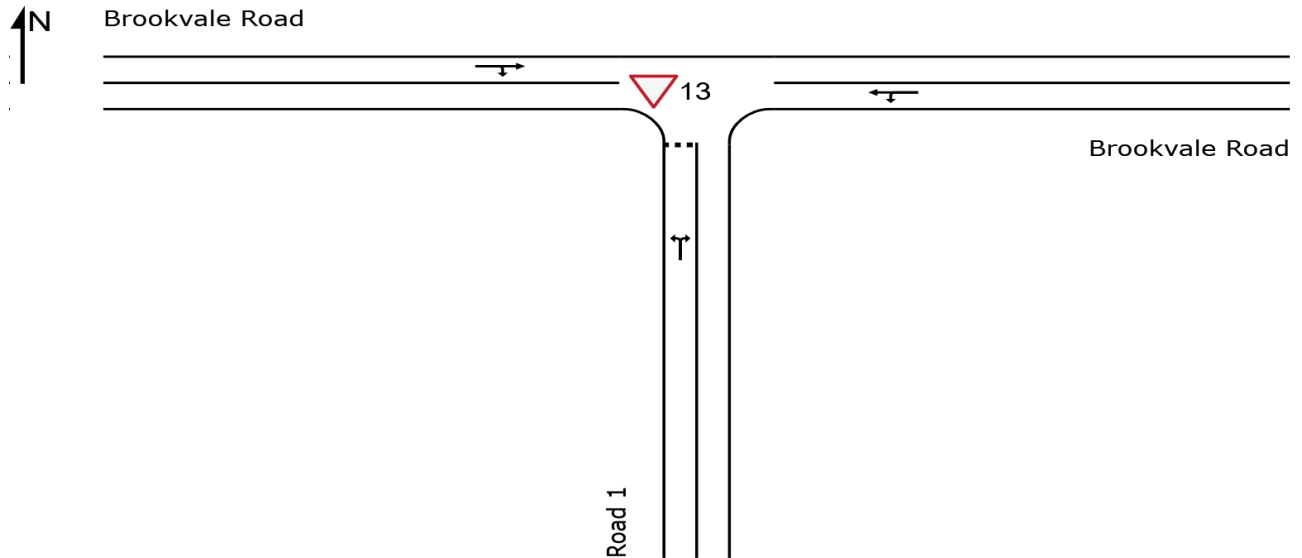
New Site

Site Category: (None)

Give-Way (Two-Way)

Site Scenario: 1 | Local Volumes

Layout pictures are schematic functional drawings reflecting input data. They are not design drawings.



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Organisation: AJW | Licence: NETWORK / 1PC | Created: Tuesday, 7 April 2026 4:40:27 pm

Project: C:\Users\annaj\OneDrive\AW Consulting\Projects\165 Brookvale Te Mata Mushrooms Masterplan\Fasttrack application\Substantive Application\Brookvale Green Intersections.sipx

MOVEMENT SUMMARY

Site: [13] Brookvale Road 1 AM BSP + Arataki + Subdivision
(Folder1)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop of Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Road 1															
1	L2	All MCs	126	0.0	126	0.0	0.107	4.7	LOS A	0.4	2.9	0.13	0.51	0.13	45.7
3	R2	All MCs	49	0.0	49	0.0	0.107	4.8	LOS A	0.4	2.9	0.13	0.51	0.13	45.5
Approach			176	0.0	176	0.0	0.107	4.7	LOS A	0.4	2.9	0.13	0.51	0.13	45.6
East: Brookvale Road															
4	L2	All MCs	21	0.0	21	0.0	0.037	4.6	LOS A	0.0	0.0	0.00	0.16	0.00	47.9
5	T1	All MCs	48	2.2	48	2.2	0.037	0.0	LOS A	0.0	0.0	0.00	0.16	0.00	49.0
Approach			69	1.5	69	1.5	0.037	1.4	NA	0.0	0.0	0.00	0.16	0.00	48.7
West: Brookvale Road															
11	T1	All MCs	78	1.4	78	1.4	0.073	0.1	LOS A	0.3	1.8	0.12	0.24	0.12	48.4
12	R2	All MCs	55	0.0	55	0.0	0.073	4.8	LOS A	0.3	1.8	0.12	0.24	0.12	47.0
Approach			133	0.8	133	0.8	0.073	2.0	NA	0.3	1.8	0.12	0.24	0.12	47.8
All Vehicles			378	0.6	378	0.6	0.107	3.2	NA	0.4	2.9	0.10	0.35	0.10	46.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akcelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

MOVEMENT SUMMARY

Site: [14] Brookvale Road 1 PM BSP + Arataki + Subdivision
(Folder1)

Output produced by SIDRA INTERSECTION Version: 10.0.9.250

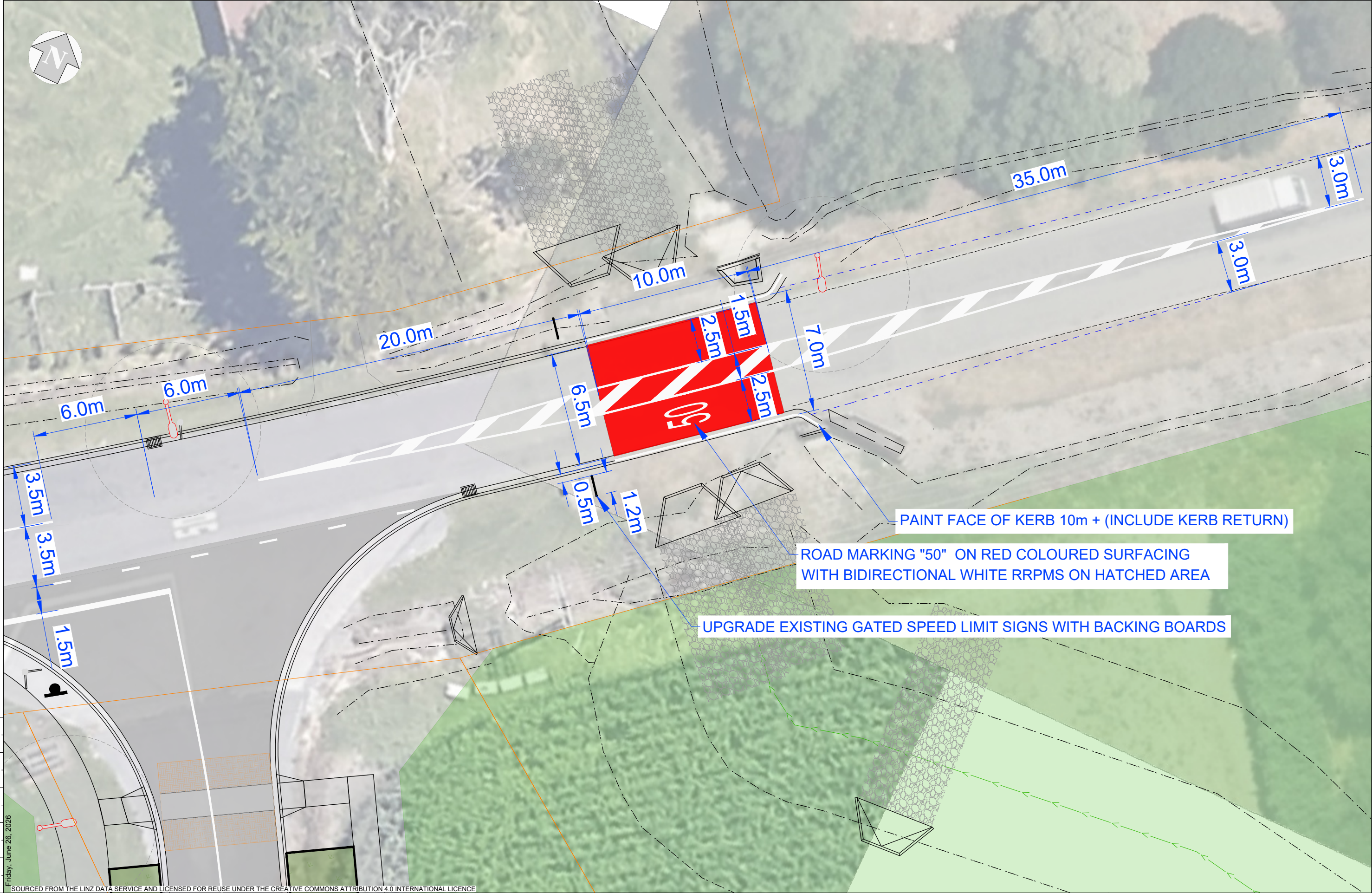
New Site
Site Category: (None)
Give-Way (Two-Way)
Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows		Arrival Flows		Deg. Satn	Aver. Delay	Level of Service	95% Back Of Queue		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed
			[Total HV]	%	[Total HV]	%	v/c	sec		[Veh. veh	Dist] m				km/h
South: Road 1															
1	L2	All MCs	55	0.0	55	0.0	0.048	4.8	LOS A	0.2	1.2	0.16	0.51	0.16	45.6
3	R2	All MCs	21	0.0	21	0.0	0.048	4.9	LOS A	0.2	1.2	0.16	0.51	0.16	45.4
Approach			76	0.0	76	0.0	0.048	4.8	LOS A	0.2	1.2	0.16	0.51	0.16	45.5
East: Brookvale Road															
4	L2	All MCs	49	0.0	49	0.0	0.064	4.6	LOS A	0.0	0.0	0.00	0.22	0.00	47.5
5	T1	All MCs	72	2.9	72	2.9	0.064	0.0	LOS A	0.0	0.0	0.00	0.22	0.00	48.7
Approach			121	1.7	121	1.7	0.064	1.9	NA	0.0	0.0	0.00	0.22	0.00	48.2
West: Brookvale Road															
11	T1	All MCs	86	0.0	86	0.0	0.124	0.3	LOS A	0.6	3.9	0.21	0.36	0.21	47.7
12	R2	All MCs	126	0.0	126	0.0	0.124	5.0	LOS A	0.6	3.9	0.21	0.36	0.21	46.4
Approach			213	0.0	213	0.0	0.124	3.1	NA	0.6	3.9	0.21	0.36	0.21	46.9
All Vehicles			409	0.5	409	0.5	0.124	3.0	NA	0.6	3.9	0.14	0.34	0.14	47.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Parameter Settings dialog (Options 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 (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).
Two-Way Sign Control Capacity Model: SIDRA Standard.
Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).
Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.
Gap-Acceptance Capacity Formula: SIDRA Standard (Akcelik M3D).
HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Appendix B – Brookvale Road Threshold Treatment

(ECC drawing 25-0170-03K, 1 page)



REV	DESCRIPTION	DRAWN	DATE
F	DETAIL MAIN ACCESS DESIGN	G. Eivers	15/04/2026
G	MINOR LAYOUT EDITS	G. Eivers	28/04/2026
H	DESIGN THRESHOLD TREATMENT	G. Eivers	5/05/2026
I	UPDATE SISD PLANS FOR REPORTING	G. Eivers	10/05/2026
J	REVISE VEHICLE TRACKING TO SUIT NEW LAYOUT	G. Eivers	9/06/2026
K	MINOR EDITS FOLLOWING HDC FEEDBACK	G. Eivers	26/06/2026

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BROOKVALE ROAD THRESHOLD TREATMENT



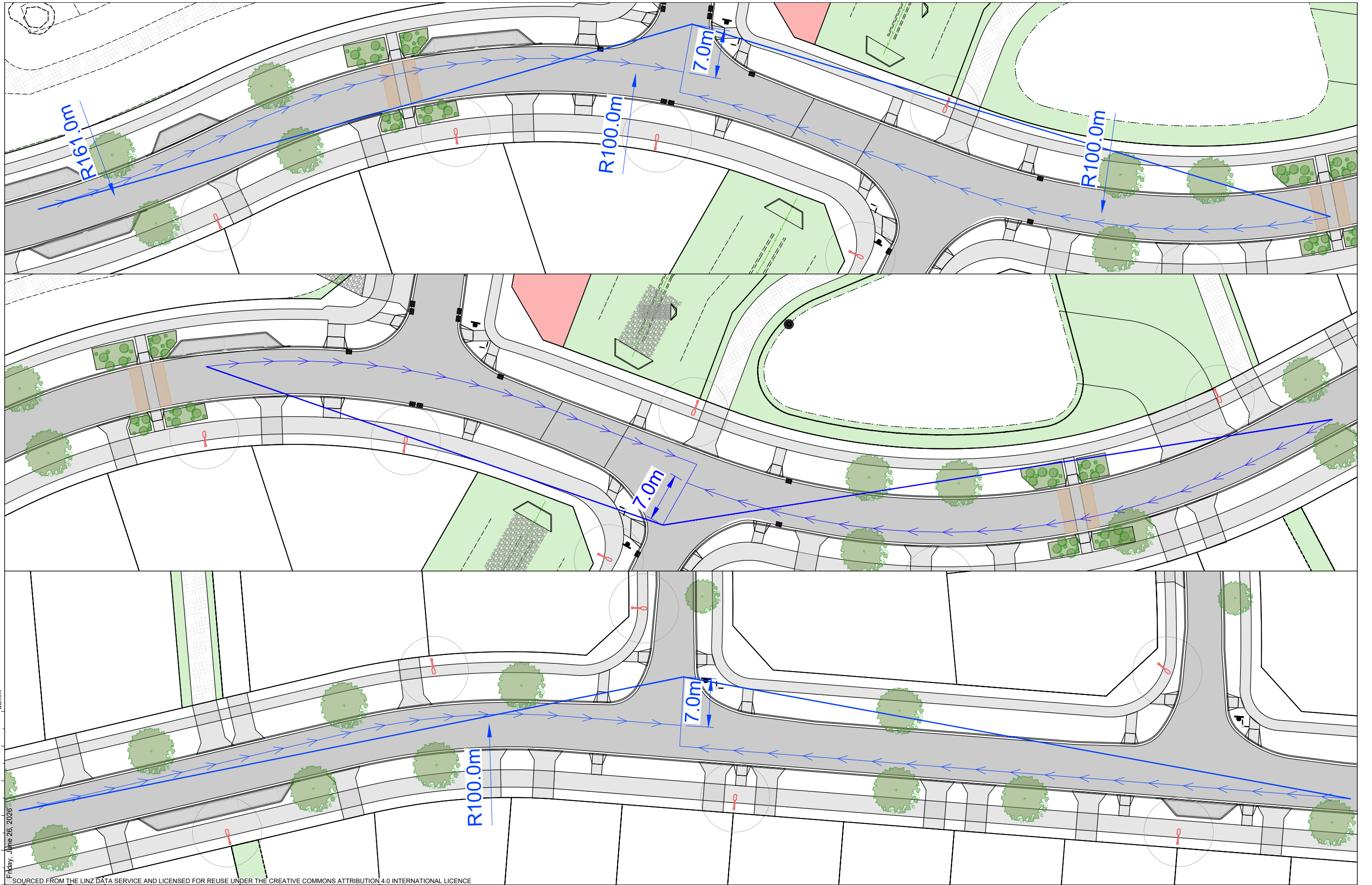
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DWG NO: 25-0170-03K

REV: K

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Appendix C – Sight Distance Drawings

(ECC drawing 25-0170-03K, 3 pages)



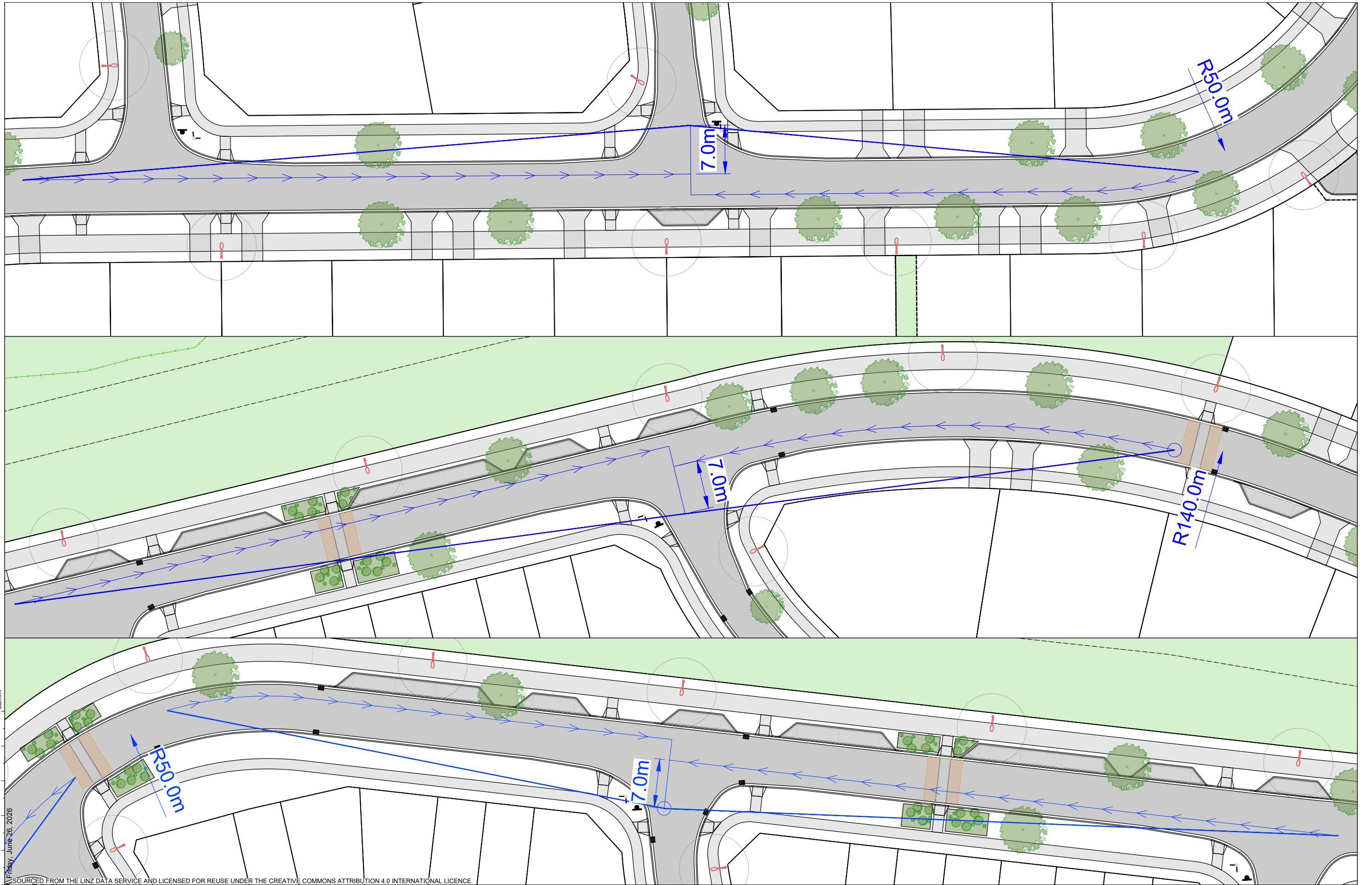
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J	REVISE VEHICLE TRACKING TO SUIT NEW LAYOUT	G.Eivers	9/06/2026
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J	REVISE VEHICLE TRACKING TO SUIT NEW LAYOUT	G.Eivers	9/06/2026
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SIGHT LINE PLAN (2 OF 3)

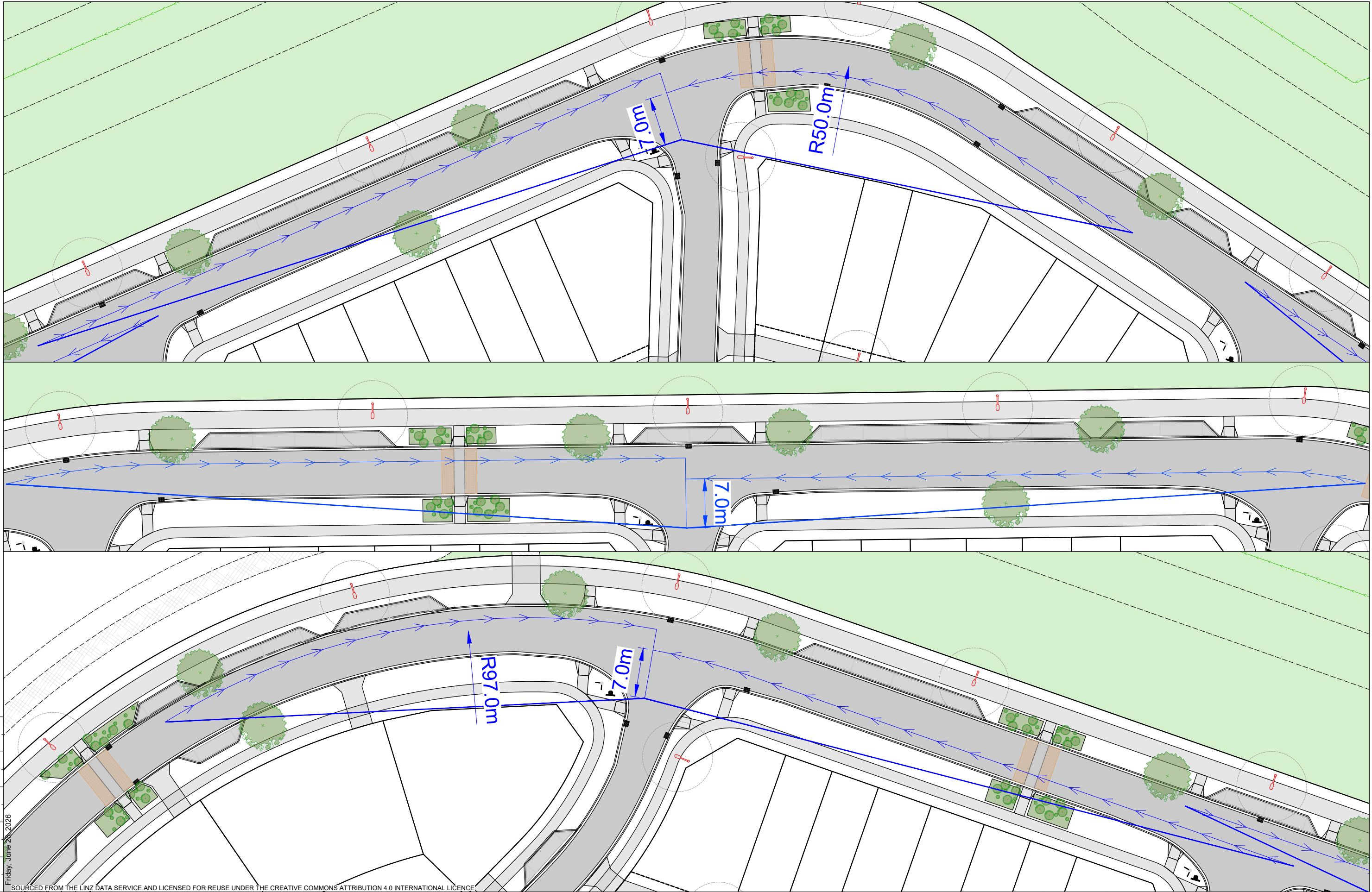


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SIGHT LINE PLAN (3 OF 3)



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