



TRAFFIC IMPACT ASSESSMENT

PREPARED FOR: BONADVENTURA DEVELOPMENTS PTY LTD
PROJECT: 171-173 UPPER KEDRON ROAD, FERNY GROVE

AUG 2026

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1 Introduction

1.1 Overview

Velocity has been commissioned by Bonaventura Developments to provide a Traffic Impact Assessment (TIA) report in relation to the proposed development located at 171-173 Upper Kedron Road, Ferny Grove.

1.2 References

- ▶ Brisbane City Council (BCC), Transport, Access, Parking and Servicing Planning Scheme Policy, 2014 v36 – 12 June 2026 (BCC TAPS v36)
- ▶ BCC, Refuse Planning Scheme Policy, 2022 (BCC RPSP)
- ▶ AS2890.1 Australian Standards (AS) Parking Facilities Part 1: Off Street Car Parking (AS2890.1)
- ▶ AS2890.2 Parking Facilities Part 2: Off-Street Commercial Vehicle Facilities, 2002 (AS2890.2)
- ▶ Roads and Traffic Authority, Guide to Traffic Generating Developments, 2013 Update, (RTA GTGD)

1.3 Limitations

This traffic report was prepared with the usual care and diligence of the consulting profession. It follows accepted traffic engineering practices and standards that were in place at the time of the assessment. However, Velocity cannot be held responsible for any changes to project planning or road conditions that may happen after the assessment is completed.

2 Existing Conditions

2.1 Site Location

The subject site at 171-173 Upper Kedron Road, Ferny Grove and is exclusively bound by Upper Kedron Road to the south.

The site is identified within Council's Planning Scheme as an Emerging community zone is surrounded by similar zones and Environmental management zones. The lots currently house a single detached dwelling.

The site is well located and features a direct link to the higher order road of Samford Road to the east, providing access to the broader network. The site location and road hierarchy are shown on Figure 2-1 and Table 2-1.

Figure 2-1 Site Location



Source: Nearmap

Table 2-1 Key Road Characteristics

Road	Hierarchy	Speed	Typical Form
Upper Kedron Road	Suburban Road - BCC	60km/h	Six lanes, divided
Hogarth Road	Neighbourhood Road - BCC	50km/h	Two lanes, undivided
Samford Road	Arterial Road - TMR	70km/h	Two lanes, undivided

2.2 Active Transport Network

Upper Kedron Road features an off-road footpath along one side of the road and exists along the site frontage. This path supports walking and cycling trips for all user groups and connects with established recreational paths within the surrounding parks. The path also connects to the higher order facilities along Samford Road.

At a strategic level, Upper Kedron Road, Hogarth Road and Samford Road are all identified on Council Bicycle Network as Secondary Cycle Routes, there is also a future Secondary Cycle Route which runs through the north of the development site which connects to existing facilities through Nelson Place Park and Tramway Street.

2.3 Public Transport Network

Although there are no bus stops located within a comfortable 400m walking radius of the site, the Ferny Grove Train station is located ~1km from the site, access to the north through the future cycle network activation will improve access to the high quality public transport facility.

2.4 Future Network Upgrades

Review of Council's current Local Government Infrastructure Plan (LGIP) identifies a planned four-lane upgrade of Upper Kedron Road between Nelson Place and the access to the Ferny Grove Resource Recovery Centre, referred to as "Transfer Station Road" (project UKE-RC-003). The project is planned for delivery between 2031 and 2036 and includes the section of Upper Kedron Road along the site frontage.

The planned duplication would increase the capacity of Upper Kedron Road and improve its ability to accommodate future traffic growth within the broader Upper Kedron and Ferny Grove catchment. As the works extend along the site frontage, the site would directly benefit from the increased capacity of the frontage road.

The LGIP also identifies the following active transport projects within the wider Ferny Grove and Upper Kedron area:

- ▶ Cedar Creek Bikeway between Keperra Picnic Ground Park and Nelson Place Park (FGR-SP-006).
- ▶ Cedar Creek Bikeway between Levitt Road and Canvey Road (UKE-SP-007).
- ▶ Cedar Creek Bikeway between Levitt Road and Kirralee Crescent (UKE-SP-008).

The FGR-SP-006 project is the most directly relevant to the site, as it would extend the Cedar Creek active transport corridor toward Nelson Place and improve pedestrian and cycling connectivity within the surrounding area.

Council is also delivering the Minnie Street upgrade in Upper Kedron, with completion anticipated in late 2026. The works include road widening and realignment, modifications to the Cedar Creek Road intersection, new bicycle lanes and

reconstruction of the existing footpath. This project will improve broader local road and active transport connectivity within the Upper Kedron catchment.

The LGIP identifies strategic infrastructure intentions only, with the final scope, timing and delivery of each project remaining subject to detailed planning, approvals and funding.

2.5 Existing Development Approval

Council approved development application A005612840 on 5 April 2024 for the reconfiguration of Lot 1 on RP185509 at 173 Upper Kedron Road into 11 residential lots. The approved development is serviced by a new internal public road connecting with Upper Kedron Road.

The approved intersection provides all-movement access and includes:

- ▶ A basic left-turn treatment (BAL) on Upper Kedron Road; and
- ▶ A short channelised right-turn treatment [CHR(S)] on Upper Kedron Road.

The approved plans also provide a separate driveway crossover to 171 Upper Kedron Road.

2.6 Existing Access Arrangements

The two lots currently have a single access crossover directly onto Upper Kedron Road which permits access in all directions for all vehicle types.

2.7 Crash History Assessment

A review of the Queensland Crash Data identified two reported crashes along Upper Kedron Road during the five-year period ending June 2025. These were the only recorded crashes along Upper Kedron Road within the reviewed dataset.

The recorded crashes are detailed in Table 2-2.

Table 2-2 Upper Kedron Road Crash History

ID	Location	Year	Severity	Conditions	Road geometry	Crash description
1	Driveway to 165 Upper Kedron Road	2023	Medical treatment	Sunday, 10:00am; daylight; clear; sealed and dry	Curved alignment with open visibility; dip	Single vehicle left the carriageway on a right-hand bend and struck an object
2	Driveway to 131 Upper Kedron Road	2023	Medical treatment	Tuesday, 3:00am; darkness with street lighting; raining; sealed and wet	Curved alignment with obscured visibility; grade	Single vehicle left the carriageway on a right-hand bend and struck an object

Both crashes involved single vehicles departing the carriageway on curved sections of Upper Kedron Road and striking roadside objects. Neither crash involved a turning vehicle, an intersection conflict or a collision between multiple vehicles.

Crash 1 occurred near the driveway to 165 Upper Kedron Road, toward the lower end of the road crest. The road geometry at this location includes a horizontal curve and vertical dip, with limited visibility toward the west due to the crest location. The available crash record indicates that the vehicle departed the carriageway while negotiating the bend under clear, dry and daylight conditions, suggesting that vehicle control or driver behaviour was the principal contributing factor.

Crash 2 occurred near the driveway to the Baptist church at 131 Upper Kedron Road. This location is positioned on a pronounced horizontal curve with obscured visibility and a graded road alignment. The crash also occurred during darkness, rainfall and wet pavement conditions. The church generates concentrated and strongly directional traffic movements during short periods; however, the recorded crash itself involved a single vehicle leaving the carriageway rather than a conflict with traffic entering or exiting the property.

The crash history therefore reflects isolated loss-of-control events associated with curved road geometry and, in one instance, adverse weather and lighting conditions. No recurring crash pattern associated with access movements or intersection operation was identified along Upper Kedron Road.

3 Proposed Development

3.1 Proposed Yield

The development proposes a subdivision across the two lots to create 33 new lots, with the removal of the existing dwelling.

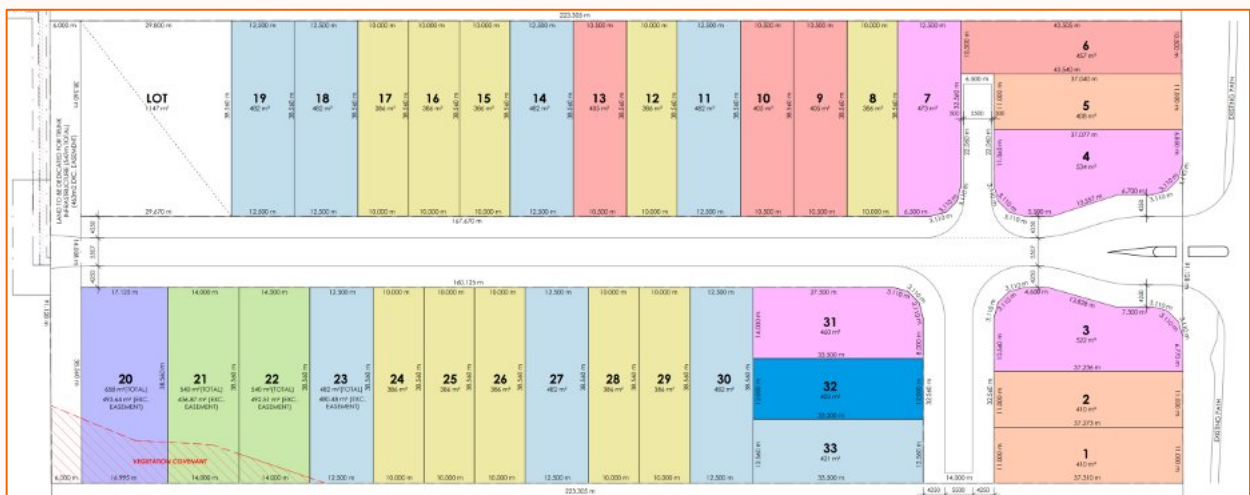
Figure 3-1 illustrates the proposed development plans and Table 3-1 details a breakdown of the land uses.

A copy of the development plans can be found at **Appendix A**.

Table 3-1 Total Development Yield

Land use	Yield
Low Density Residential Lots	33x lots

Figure 3-1 Development Plans



Source: Wink + Co, SITE PLAN, REV C

3.2 Access and Internal Road Arrangement Overview

Vehicle access to the subdivision is proposed via a new priority-controlled public road intersection with Upper Kedron Road. The intersection will provide unrestricted all-movement access and connect directly to the proposed internal road network, which distributes traffic throughout the subdivision.

As illustrated in Figure 3-2, the internal road network comprises:

- ▶ Road A, which forms the primary road extending west through the site and provides access to Lots 7–30;
- ▶ Road B, which extends south from Road A and provides access to Lots 1–3 and Lots 31–33; and
- ▶ Road C, which extends north from Road A as a lower-order laneway and provides access to Lots 4–6.

Figure 3-2 Internal Road Network



Road A will temporarily terminate at the northern boundary with a T-head turnaround facility, while maintaining access provision through the adjoining land.

All residential, refuse and commercial service vehicles will enter and exit the subdivision via the Upper Kedron Road intersection.

3.3 Upper Kedron Road Intersection

3.3.1 Intersection Arrangement

The proposed Road A / Upper Kedron Road intersection will operate as a priority-controlled T-intersection and permit unrestricted entry/exit movements.

The intersection is located slightly west of the intersection approved under development application A005612840 but remains within the same general section of the Upper Kedron Road frontage.

The proposed frontage treatment comprises:

- ▶ A channelised right-turn treatment (CHR) on Upper Kedron Road; and
- ▶ A basic left-turn treatment (BAL) on Upper Kedron Road.

The adopted treatments are supported by the turn warrant assessment contained within **Section 7 Turn Warrant Assessment**.

3.3.2 Minor Road Connection Design

The Road A approach has been designed generally in accordance with Council's ID PSP and BSD-3003 for a minor-road connection to a major road. The arrangement includes the required intersection flaring, kerb returns, splitter island and pedestrian provisions and is consistent with the general form of the Nelson Place subdivision intersection located to the west.

The detailed design of the Road A / Upper Kedron Road intersection, including the intersection geometry, earthworks and drainage design, has been undertaken as part of the civil engineering design and is documented the respective civil engineering reporting.

3.3.3 Intersection Spacing

Council's ID PSP requires a minimum separation of 40m between Local Road intersections located on opposite sides of a through road.

The proposed Road A / Upper Kedron Road intersection is located approximately 95m east of O'Quinn Road and therefore exceeds the applicable minimum intersection spacing requirement. This is detailed in Table 3-2.

Table 3-2 Intersection Spacing

Intersection relationship	Requirement	Proposed Separation	Outcome
O'Quinn Road to Road A	40m	~95m	✓

The proposed intersection location therefore provides appropriate separation from O'Quinn Road.

3.4 Internal Road Network

3.4.1 Road Hierarchy and Cross-Sections

The internal road network comprises two Local Streets and one Laneway in accordance with the road hierarchy established by Council's ID PSP.

Roads A and B are proposed as Local Streets, while Road C is proposed as a Laneway. The proposed road cross-sections are summarised in Table 3-3.

Table 3-3 Road Hierarchy and Cross-Sections

Road	Classification	Requirement	Proposed arrangement	Outcome
Road A	Local Street	14m reserve, 5.5m carriageway and 4.25m verges	14m reserve, 5.5m carriageway and 4.25m verges	✓
Road B	Local Street	14m reserve, 5.5m carriageway and 4.25m verges	14m reserve, 5.5m carriageway and 4.25m verges	✓
Road C	Laneway	N/A	6.5m corridor comprising a 5.5m pavement and 0.5m offsets	✓*

*Council's ID PSP does not prescribe minimum reserve or pavement dimensions for a Laneway. The suitability of Road C has therefore been assessed having regard to its function, traffic demand and the vehicles expected to use it.

Road C provides access only to Lots 4–6 and will therefore accommodate a very low volume of private vehicle movements. Refuse and other service vehicles will not traverse the Laneway.

The proposed 5.5m pavement allows opposing private vehicles to pass and materially exceeds the nominal 4.3m pavement width generally required to accommodate passing between a B85 and B99 vehicle. The overall 6.5m corridor also exceeds the corresponding 5m minimum width, with the additional 0.5m offsets on either side providing space for services, crossover transitions and separation from adjoining lot boundaries.

Accordingly, although no numerical Laneway dimensions are prescribed by the ID PSP, Road C is appropriately dimensioned for the number and function of the lots it serves and is considered compliant with the intended Laneway function.

Roads A and B comply with the applicable Local Street requirements of Council's ID PSP and provide standard cross-sections suitable for direct residential access.

3.4.2 Internal Intersection Arrangement

Roads B and C connect with Road A at a common four-leg intersection north of the proposed Road A / Upper Kedron Road intersection.

The intersection will operate within a low-speed residential environment and provide access to a limited number of dwellings. Its geometry will naturally moderate vehicle speeds and provide clear priority between the adjoining roads.

3.4.3 Internal Intersection Spacing

The IPWEA Street Design Manual has been adopted to assess the spacing of the internal intersection from the Upper Kedron Road intersection.

Under the Street Design Manual, Road B is classified as a Local Access and Road C is classified as a Laneway, for which no specific intersection spacing criterion is prescribed so the Local Access classification has been adopted. The requirements and provision are detailed in Table 3-4.

Table 3-4 Internal Intersection Spacing

Road	Applicable requirement	Proposed separation	Outcome
Road B	40m	40m	✓
Road C	40m	40m	✓

As detailed in Table 3-4, both proposed roads provide suitable separation to the intersection of Road A / Upper Keron Road.

3.5 Sight Distance Assessment

3.5.1 Upper Kedron Road Intersection

As outlined in Austroads Guide to Road Design Part 4A: Unsignalised and Signalised Intersections (AGRD P4), provision of SISD is required to be achieved in both travel directions at approaches of intersections to ensure adequate visibility of oncoming vehicles.

As Upper Kedron Road has a posted speed of 60km/h, it has a design speed of 70km/h.

A reaction time of 2 seconds has been adopted and measurements have been taken 5m back from the kerb as per AGRD P4. The requirements for sight distance and what the external intersection achieves has been outlined in Table 3-5.

Table 3-5 External Intersection Sight Distance Requirements

AGRD P4 Req.	Proposed Sight Distance		Compliant	
	Left	Right	Left	Right
151m	+300m	+300m	✓	✓

As detailed in Table 3-5, the available SISD at the proposed intersection substantially exceeds the applicable requirement in both directions. The intersection is located in a similar general position to the previously approved access location, but has been shifted slightly west toward the higher section of the road crest. This position provides clearer and more extended sight lines to approaching vehicles from both directions. It

is noted the existing trees are proposed to be removed to improve sightlines and enable the provision of the frontage footpath network.

3.5.2 Internal Intersection Sight Distance

Based on Table 3.3.3.A of the ID PSP, the future roads will have a posted speed limit of 40km/h. As such, a design speed of 50km/h has been adopted for the SISD requirements of the intersection of Road A / Road B / Road C

The assessment outcomes are outlined in Table 3-6.

Table 3-6 Internal Intersection Sight Distance Requirements

Location	AGRD P4 Req.	Proposed Sight Distance		Compliant	
		Left	Right	Left	Right
Road B	97m	+100m	56m	PO	PO
Road C		+100m	65m	PO	PO

Although Roads B and C do not strictly achieve the SISD requirement identified in AGRD Part 4, the internal intersection has been assessed on a performance basis.

Roads B and C serve only a limited number of residential lots and will generate very low traffic volumes. Through traffic within the subdivision will also be limited, with the intersection functioning primarily as a low-volume access point for the adjoining residential lots rather than as a conventional higher-order road intersection.

The limiting sight distance applies to vehicles approaching the intersection from the Upper Kedron Road direction. These vehicles will have only recently entered the subdivision and negotiated the Road A intersection and adjoining horizontal geometry, with entry speeds expected to be below 40km/h. These lower approach speeds increase the time available for a vehicle waiting on Road B or Road C to perceive and react to an approaching vehicle.

While Roads B and C are technically public road approaches, their traffic demand and operational function are more comparable to low-volume development accesses. Table 7 of BCC TAPS requires 50m of sight distance for the lowest nominated assessment speed of 50km/h. The available sight distance from both approaches exceeds this criterion, notwithstanding that the internal road network will operate at a posted speed of 40km/h.

It is also noted that the previous subdivision approval incorporated a minor road approach in a similar location, with the associated sight distance arrangement considered acceptable as part of that approval.

Having regard to the very low traffic demand, limited through traffic, expected approach speeds, available sight distance and the previous approved arrangement, the proposed Road B and Road C intersection is considered to provide adequate and safe visibility. The arrangement is therefore considered a suitable performance solution.

3.6 Future Lot Accesses

3.6.1 Standard Crossover Provision

Direct residential access is permitted from all of the road types proposed under Council's ID PSP.

The proposed lots provide sufficient frontage to accommodate standard residential crossovers generally in accordance with BSD-2022. Crossovers will be a minimum of 2.5m wide with standard 600mm x 900mm Type A tapers.

The final crossover locations for most lots will be coordinated during detailed design having regard to future dwelling layouts, street trees, power poles, stormwater infrastructure and other frontage services.

3.6.2 Crossovers Resolved at Development Application Stage

The indicative crossover locations for Lots 3–7 and Lot 31 have been resolved at the development application stage due to their proximity to the internal intersection or the lot access requirements associated with Road C.

The crossovers for Lots 3, 7 and 31 are proposed at 2.5m wide in accordance with BSD-2022. The crossovers for Lots 4–6 are proposed at 3m wide to support the required manoeuvring from Road C. Standard Type A tapers will be provided to all crossovers.

A swept path assessment has been undertaken for the B85 design vehicle for Lots 4–6 to demonstrate that vehicles can enter and exit each lot in a forward direction, without reversing from the laneway into Road A.

For Lots 4 and 5, the 5.5m Road C pavement along with the proposed crossovers provides sufficient width for vehicles to manoeuvre between the crossover and laneway and complete the required forward entry and exit movements.

For Lot 6, additional manoeuvring area is required within the lot. The swept path assessment defines the minimum area that must remain clear to allow a vehicle to enter the lot, undertake a three-point turn and return to Road C in a forward direction.

At detailed design and future dwelling construction stage, this manoeuvring area is to remain free of buildings and other permanent structures. The Building Location Envelope is therefore to commence beyond the swept path manoeuvring area identified on Drawing SK03 at Appendix B, ensuring the required vehicle manoeuvring space is preserved within the final lot layout.

The relevant crossover and swept path arrangements are illustrated in **Appendix B**.

3.6.3 Crossover Separation from Internal Intersections

Council's TAPS requires residential crossovers to be located at least 10m from the property boundary of an intersecting minor road. AS2890.1 also identifies a minimum separation of 6m from the tangent point of the intersecting road. Crossovers are also required to be separated 3m from one another.

The proposed crossover separations are detailed in Table 3-7.

Table 3-7 Crossover Separation from Internal Intersections

Lot	TAPS Intersections	TAPS Crossovers	AS2890.1	Proposed separation		Outcome	
				Intersection	Crossover	In	Cr
Lot 3	10m	3m	6m	~4.13m	+3m	PO	✓
Lot 4				~6.35m	+3m	✓	✓
Lot 5				~13.5m	+3m	✓	✓
Lot 6				~21m	+3m	✓	✓
Lot 7				~3.2m	+3m	PO	✓
Lot 31				~4.87m	+3m	PO	✓

Lots 4–6 satisfy the applicable intersection and crossover separation criteria. The reduced intersection separations for Lots 3, 7 and 31 have been assessed on a performance basis, as detailed below.

All crossovers achieve adequate separation to stormwater gully pits.

Lots 3 and 31

The Lots 3 and 31 crossovers serve individual dwellings and are positioned on low-volume Local Streets within a low-speed residential environment. Both crossovers are 2.5m wide in accordance with BSD-2022 and include the standard Type A tapers.

Vehicles using these crossovers will interact only occasionally with traffic at the adjoining internal intersection. Clear visibility is available between the crossover locations and the relevant road approaches, allowing drivers sufficient opportunity to identify and respond to approaching vehicles.

Given the low traffic volumes, infrequent vehicle interaction, compliant crossover geometry and available visibility, the Lots 3 and 31 crossover locations are considered suitable performance solutions.

Lot 7

The Lot 7 crossover also serves a single dwelling and is located adjacent to Road C, which provides access only to Lots 4–6. Traffic volumes on Road C and the frequency of interaction with vehicles entering or exiting Lot 7 will therefore be very low.

The crossover is 2.5m wide in accordance with BSD-2022 and includes the standard Type A tapers. Clear visibility is available between the crossover and Road C, while the internal intersection geometry and short approach lengths will maintain low vehicle speeds.

Given the limited traffic demand, acceptable visibility and low-speed operating environment, the Lot 7 crossover location is considered a suitable performance solution.

3.7 Temporary Road Termination and Future Connection

Road A will temporarily terminate at the northern boundary with a T-head turnaround facility. The road alignment maintains provision for future extension through the adjoining land if that land is developed.

The operation of the temporary turnaround for refuse collection and service vehicles is addressed further in **Section 3.9**.

3.8 Pedestrian and Active Transport Facilities

A pedestrian path is proposed along both verges of Road A and Road B and will connect with the existing/proposed pedestrian infrastructure along Upper Kedron Road.

The path will extend through the subdivision and connect with the 6m-wide easement provided along the northern boundary. This easement preserves a future connection to the Cedar Creek Bikeway corridor identified in Council's LGIP.

The development therefore provides an internal pedestrian connection to Upper Kedron Road while also making provision for the future active transport network.

3.9 Servicing Arrangements

3.9.1 Design Vehicles Required

In accordance with *BCC TAPS* and the BCC RPSP, the servicing requirements are as follows:

Refuse Collection

- ▶ Side Loading Refuse Collection Vehicle (RCV)

Commercial Servicing

- ▶ Medium Rigid Vehicle (MRV) – Occasional Use

3.9.2 Servicing Provision

Refuse Collection

The development will be serviced by a standard side-lift RCV undertaking kerbside collection within the subdivision. The RCV will enter from Upper Kedron Road, service the internal road network and exit the site in a forward direction.

For most lots, two 900mm x 900mm mobile garbage bin presentation areas can be accommodated along the respective lot frontages clear of future driveway crossovers, allowing conventional kerbside collection.

A temporary T-head turnaround facility is proposed at the northern road termination, partly within the adjoining land, with the consent of the landowner. The turnaround is based on BCC Standard Drawing BSD-3001, with its dimensions refined to accommodate the required service vehicle while minimising impacts on the adjoining land and existing vegetation. The facility will operate temporarily until the road is extended through the northern boundary as part of future development, at which time the RCV will continue through the extended road network and manoeuvre through the layout.

Dedicated bin presentation areas are proposed where direct RCV access into the minor roads/laneways would otherwise require reversing near the intersection with Upper Kedron Road. This avoids unnecessary RCV reversing, reduces the potential for obstruction within the main internal road and limits the risk of queues extending toward Upper Kedron Road.

The following consolidated collection arrangements are proposed:

- ▶ Lots 1–3 and Lots 31–33: all 12 bins will be presented along the long frontage of Lot 31 and collected sequentially by the side-lift RCV.
- ▶ Lots 5–7: all bins will be presented along the southern frontage of Lot 7.
- ▶ Lot 4: bins will be presented adjacent to the western boundary of Lot 4.

All consolidated bin presentation areas remain within the maximum 40m bin transfer distance specified by the Refuse Planning Scheme Policy. The proposed arrangement also allows each bin group to be collected without the RCV reversing into the minor roads or laneway serving these lots.

The refuse collection strategy has been developed at the development application stage to confirm that the subdivision can be serviced safely and practically without relying on unresolved operational arrangements at detailed design. Overall, the proposed refuse collection arrangements are considered suitable.

Commercial Servicing

Although the Heavy Rigid Vehicle (HRV) is the required design service vehicle under BCC TAPS, a MRV is expected to be the largest commercial servicing vehicle expected to undertake delivery activities associated with the subdivision, including household moves, furniture and whitegoods deliveries.

Servicing will occur from the kerb, consistent with standard practice for residential subdivisions of this nature. Service vehicles will enter the subdivision from Upper Kedron Road, use the temporary T-head turning facility and exit the site in a forward direction.

Based on 2021 ABS Census data, 14.3% of Australians moved within the previous year. Applied to the proposed 33 lots, this equates to approximately five move-ins and five move-outs per annum, or approximately 10 total moving events each year. Move-in and move-out activity will therefore occur infrequently and can be readily accommodated by the proposed servicing arrangement. Other occasional bulky deliveries are also expected to be undertaken by smaller vehicles.

3.9.3 Swept Path Assessment

A swept path assessment has been undertaken for the T-head turnaround using the for the RCV, as the largest vehicle required to access the subdivision.

The assessment demonstrates that the RCV can traverse the T-head facility while the vehicle wheels remain on the pavement and the required clearance envelope avoids all obstructions and lot boundaries in accordance with AS2890.2.

This swept path is attached at **Appendix B**.

4 Traffic Assumptions and Characteristics

4.1 Study Intersections

Figure 4-1 shows the intersections under investigation, detail is provided in Table 4-1.

Figure 4-1 Study Intersections



Source: Nearmap

Table 4-1 Study Intersections

ID	Intersection	Control
1	Samford Road / Upper Kedron Road	Signalised Intersection
2	Hogarth Road / Upper Kedron Road	Signalised Intersection
3	Upper Kedron Road / Site Access	Priority Intersection

4.2 Background Traffic Volumes

To understand the current up-to-date existing traffic conditions, intersection traffic counts were sourced from Matrix from the 14th of July 2026. Collection of recent data ensures conclusions drawn from the following investigations are accurately supported. Data from the following intersections were recorded:

- ▶ Samford Road / Upper Kedron Road
- ▶ Hogarth Road / Upper Kedron Road
- ▶ Two-way site frontage counts

A copy of the traffic survey data is enclosed in **Appendix D**.

The survey peak periods and the adopted network peak are summarised in Table 4-2.

Table 4-2 Assessment Peak Periods

Intersection ID	Surveyed Peak Period	
	AM	PM
Samford Road / Upper Kedron Road	7:30 – 8:30am	4:15 – 5:15pm
Hogarth Road / Upper Kedron Road	7:30 – 8:30am	4:30 – 5:30pm
Upper Kedron Road / Site Access	7:30 – 8:30am	4:15 – 5:15pm
Adopted Site Peaks	7:30 – 8:30am	4:30 – 5:30pm

4.3 Traffic Growth

To understand traffic growth within the transport network near the development site, TMR's 2025 Segment Reports were consulted. These reports provide information on the Average Annual Daily Traffic (AADT) on State Controlled Roads in Queensland.

AADT data from one nearby location was used to provide insight into traffic near the development site. The 5-year growth rate was adopted (in lieu of non-available 10-year rate for the specific site) for the development.

Table 4-3 outlines the location of the AADT counter and the average growth rates over the last 5-years from the 2025 traffic volumes.

Table 4-3 2025 TMR AADT – 5-year Average Growth Rates

ID	Segment Site	5 Year Average Growth Rate
135714	Samford Road - 350m South of Tramway St	0.89% p.a

NOTE: Counter contains no data for 10-year growth.

As outlined in Table 4-3, the average growth rate in the surrounding area over the last 5 years is 0.89% p.a. It is also noted that a growth rate of 1.5%p.a was adopted within the previous reporting undertaken by PTT.

As such, to provide a conservative and consistent assessment, a growth rate of **1.5% p.a.** has been adopted for this assessment. The adoption of this rate is considered conservative and is expected to provide an accurate representation of traffic advancements.

5 Traffic Generation

5.1 Development Traffic Generation

To determine the net traffic demand for the proposed use, reference has been made to the RTA GTGD 2002. The existing yield has been removed to illustrate the net increase.

Table 5-1 summarises the adopted trip generation rates for the land uses.

Table 5-1 Adopted Generation Rates

Land Use	Yield	Trip Generation Rates		Trip Generation	
		AM	PM	AM	PM
Existing Use					
Low Density Residential	1 dwelling	0.85 trips per dwelling	0.85 trips per dwelling	0.85 vph	0.85 vph
Proposed Use					
Low Density Residential	33 dwellings	0.85 trips per dwelling	0.85 trips per dwelling	28.1 vph	28.1 vph
TOTAL				27.2 vph	27.2 vph

As outlined in Table 5-1, a net increase of ~27 vph is expected during both the AM and PM peaks.

Table 5-2 and Table 5-3 shows the peak hour traffic directional distribution and the resulting directional trips for the proposed development.

Table 5-2 Directional Distribution

Land Use	AM		PM	
	IN	OUT	IN	OUT
Low Density Residential	30%	70%	70%	30%

Table 5-3 Directional Trips

Land Use	Yield	AM		PM	
		IN	OUT	IN	OUT
Existing Use					
Low Density Residential	1 dwelling	0.2 vph	0.6 vph	0.6 vph	0.2 vph
Proposed Use					

Low Density Residential	33 dwellings	8.4 vph	19.6 vph	19.6 vph	8.4 vph
NET INCREASE		8.2 vph	19 vph	19 vph	8.2 vph
		27.2 vph		27.2 vph	

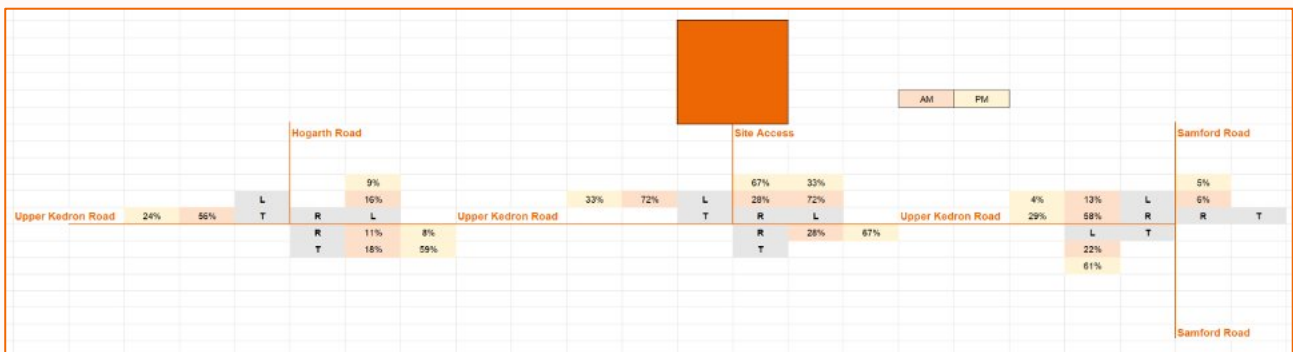
As indicated in Table 5-3, the proposed development is anticipated to generate up to ~8 vph entering and 19 vph exiting the development in the AM peak, the opposite is true of the PM peak.

5.2 External Directional Trip Distribution

The external directional trip distribution on the surrounding existing intersections has been adopted based on the approved traffic distributions detailed within the PTT TIA for the previously approved development.

As such, the adopted distribution for the proposed development traffic during the in/out movements are shown in Figure 5-1.

Figure 5-1 External Directional Trip Distribution



Source: PTT

6 Traffic Assessment Criteria

6.1 Assessment Scenarios

To evaluate the impact of the proposed development on the existing road network, each intersection has been analysed during the AM and PM peak periods, using the proposed yields detailed in Table 5-3.

As required by TMR's GTIA, the impact assessment year for external intersections should be the year of opening, while the impact assessment year for site accesses should be 10 years after the year of opening.

Information from the client depicts that the total development will be completed by 2028, thereby making a 10-year design horizon of 2038. SIDRA results and layouts can be found in **Appendix D**.

Table 6-1 summarises the impact assessment scenarios.

Table 6-1 Assessment Scenarios

Impact Assessment Scenario	Study Intersections
2026 Current Background	All
2028 BG (year of opening)	All
2028 BG + DEV	All
2038 BG	3
2038 BG (design horizon) + DEV	3

Note: BG = **B**ackground, Dev = **D**evelopment Traffic

6.2 Assessment Criteria

6.2.1 Intersection Degree of Saturation

The performance of each study intersection has been analysed using SIDRA Intersection 10 to determine the Degree of Saturation (DOS), queuing and delays. DOS is a measure of the intersection's capacity. TMR's DOS thresholds are listed in Table 6-2.

Table 6-2 Intersection DOS Thresholds

Intersection Treatment	DOS Threshold
Signalised Intersections	Less than or equal to 0.90
Priority Intersections	Less than or equal to 0.80

Source: TMR Guidelines for Assessment of Road Impacts Development

If the DOS exceeds the values in Table 6-2, it means that the intersection is approaching its practical capacity and upgrade works may be necessary. Above these threshold values, users of the intersection are likely to experience increased delays and queueing.

6.2.2 Intersection Delay

According to the *GTIA*, delay is a more important indicator of intersection performance than the DOS, as outlined in the previous TMR Guidelines for Assessment of Road Impacts of Development (GARID).

The GTIA aims to prevent intersection delays on the basis of traffic from getting worse by more than 5% on average as a result of the development. Measures to avoid, manage, or mitigate intersection delays must be considered if delays are expected to exceed this threshold. Velocity Traffic has provided additional comments if this threshold has been exceeded.

For priority-controlled intersections, if the average peak hour delay for any movement exceeds 42 seconds, as stated in the GTIA, the intersection should be upgraded for safety reasons. For signalised intersections, the DOS is still considered, as delay depends on the cycle length and phasing arrangement.

6.2.3 95th Percentile Queuing

The 95th percentile queue length is the one that 95% of all observed queue lengths during the assessment hour fall under. This value indicates the maximum queue length that should be designed for to prevent negative impacts on upstream lanes.

6.2.4 Modelling Parameters

A summary of the SIDRA parameters adopted for the study intersection is summarised below:

- ▶ Peak Flow Factor – 0.95 (30min/60min)
- ▶ Basic Saturation Flow – 1,950tcu/hr

6.3 Intersection 1: Samford Road / Upper Kedron Road

The Samford Road / Upper Kedron Road intersection is a three-way signalised intersection as shown in Figure 6-1. Results from the SIDRA analysis are summarised in Table 6-3 and Table 6-4.

Full SIDRA results for this assessment can be found in **Appendix E**.

Figure 6-1 Samford Road / Upper Kedron Road intersection - SIDRA Layout

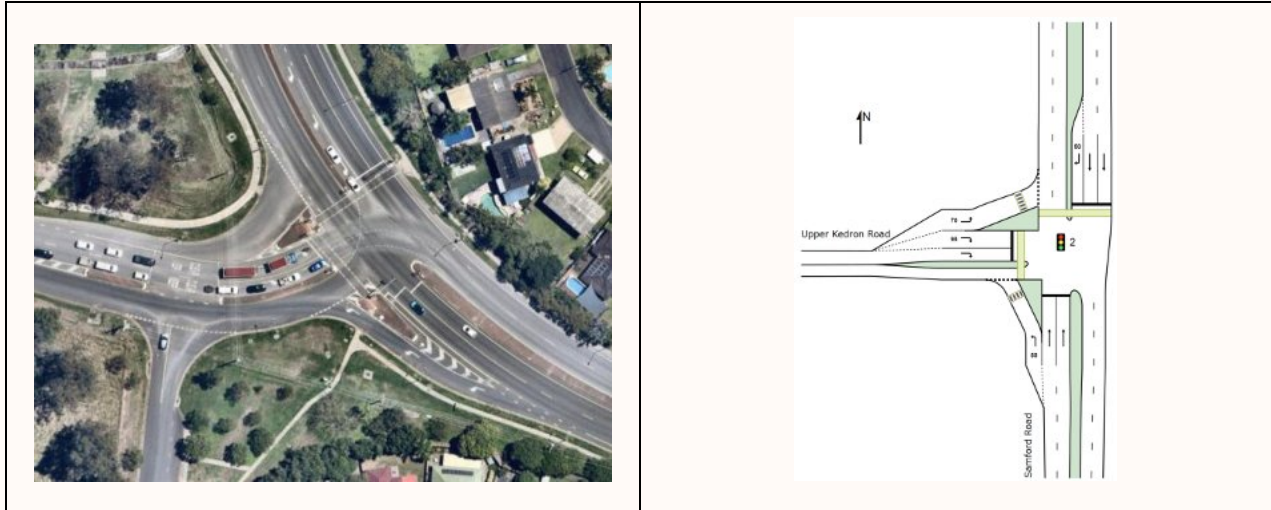


Table 6-3 Samford Road / Upper Kedron Road intersection - SIDRA Summary (AM)

Scenario	DOS	Critical Delay	95th %ile Queue	Critical Movement
2026 BG	0.708	33.8 sec	115.4m	Northern Approach
2028 BG	0.730	34.2 sec	123.6m	Northern Approach
2028 BG + DEV	0.730	34.3 sec	123.7m	Northern Approach

Table 6-4 Samford Road / Upper Kedron Road intersection - SIDRA Summary (PM)

Scenario	DOS	Critical Delay	95th %ile Queue	Critical Movement
2026 BG	0.653	61.9 sec	178.1m	Northern Approach
2028 BG	0.669	61.3 sec	188.3m	Northern Approach
2028 BG + DEV	0.686	60.4 sec	195.6m	Northern Approach

The results presented in Table 6-3 and Table 6-4 above suggest that the intersection is within acceptable performance thresholds for an unsignalised intersection (i.e. DOS less than 0.9) in all scenarios.

6.4 Intersection 2: Hogarth Road / Upper Kedron Road

The Hogarth Road / Upper Kedron Road is a three-way signalised intersection as shown in Figure 6-2. Results from the SIDRA analysis are summarised in Table 6-5 and Table 6-6.

Full SIDRA results for this assessment can be found in **Appendix E**.

Figure 6-2 Hogarth Road / Upper Kedron Road intersection - SIDRA Layout

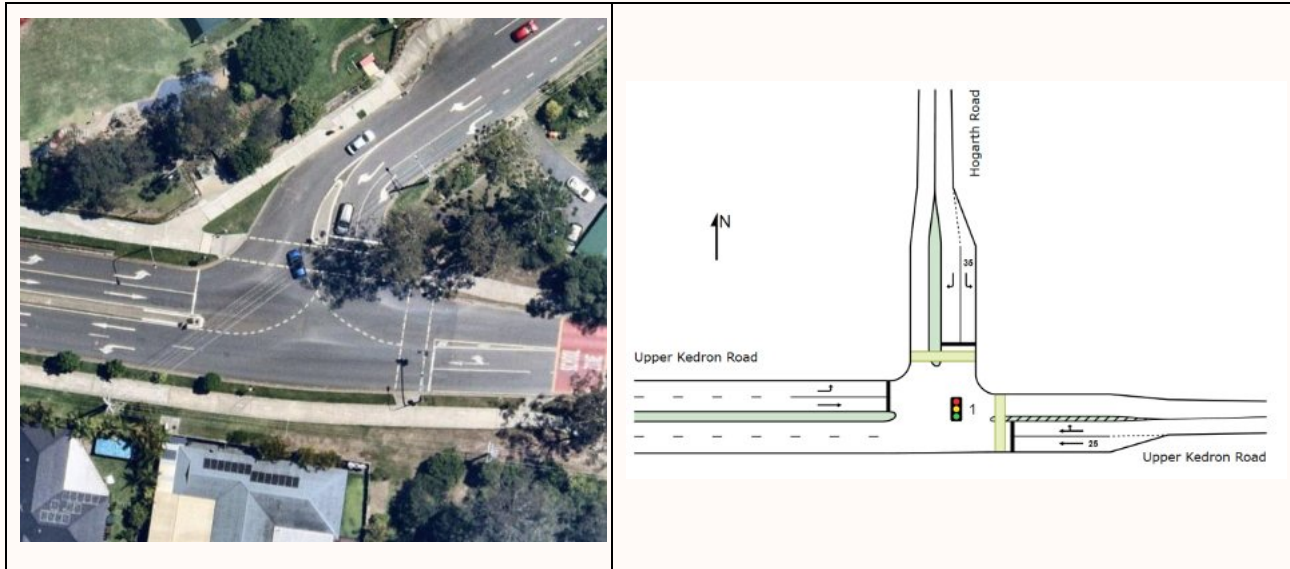


Table 6-5 Hogarth Road / Upper Kedron Road intersection - SIDRA Summary (AM)

Scenario	DOS	Critical Delay	95th %ile Queue	Critical Movement
2026 BG	0.597	54.3 sec	145.6m	Northern Approach
2028 BG	0.645	51.8 sec	162.9m	Northern Approach
2028 BG + DEV	0.650	51.8 sec	164.8m	Northern Approach

Table 6-6 Hogarth Road / Upper Kedron Road intersection - SIDRA Summary (PM)

Scenario	DOS	Critical Delay	95th %ile Queue	Critical Movement
2026 BG	0.446	61.4 sec	76.6m	Eastern Approach
2028 BG	0.461	61.9 sec	80.8m	Eastern Approach
2028 BG + DEV	0.466	61.8 sec	81.7m	Eastern Approach

The results presented in Table 6-5 and Table 6-6 above suggest that the intersection is within acceptable performance thresholds for a signalised intersection (i.e. DOS less than 0.9) in all scenarios.

6.5 Intersection 3: Upper Kedron Road / Site Access

The Upper Kedron Road / Site Access intersection is a three-way priority controlled as shown in Figure 6-3. Results from the SIDRA analysis are summarised in Table 6-7 and Table 6-8.

Full SIDRA results for this assessment can be found in **Appendix E**.

Figure 6-3 Upper Kedron Road / Site Access intersection - SIDRA Layout

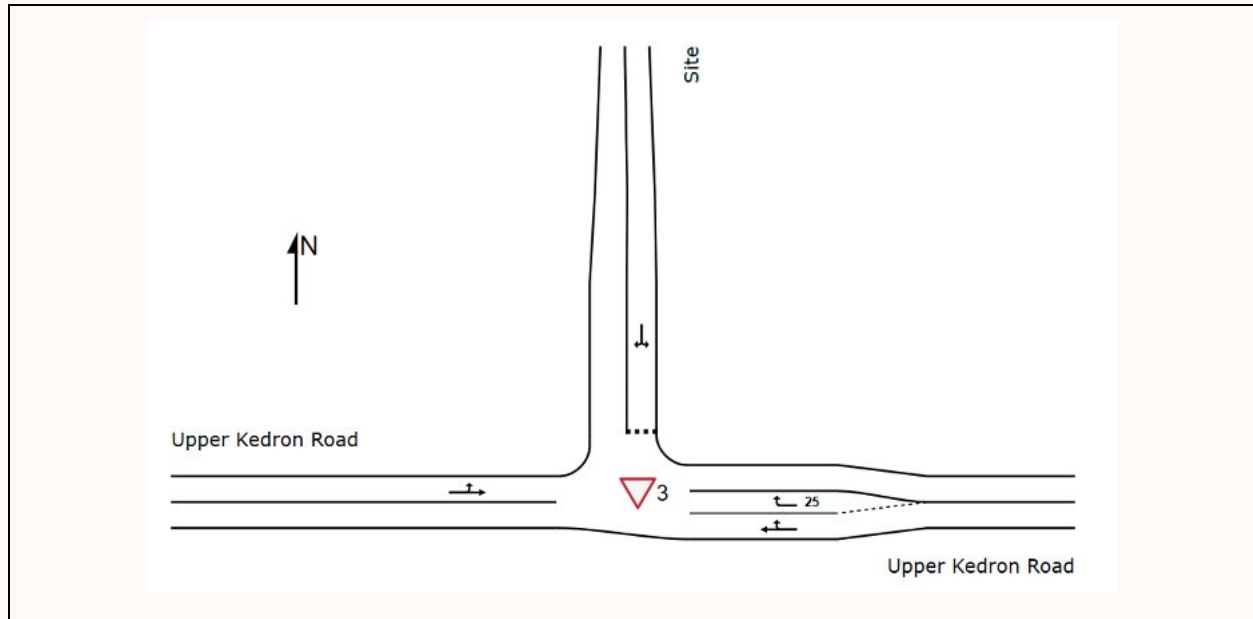


Table 6-7 Upper Kedron Road / Site Access intersection - SIDRA Summary (AM)

Scenario	DOS	Critical Delay	95th %ile Queue	Critical Movement
2028 BG + DEV	0.480	24.9 sec	1.4m	Northern Approach
2038 BG + DEV	0.556	39.1 sec	1.8m	Northern Approach

Table 6-8 Upper Kedron Road / Site Access intersection - SIDRA Summary (PM)

Scenario	DOS	Critical Delay	95th %ile Queue	Critical Movement
2028 BG + DEV	0.377	20 sec	0.6m	Northern Approach
2038 BG + DEV	0.437	28.8 sec	0.9m	Northern Approach

The results presented in Table 6-7 and Table 6-8 above suggest that the intersection is within acceptable performance thresholds for an unsignalised intersection (i.e. DOS less than 0.8, Delay <42s) in all scenarios.

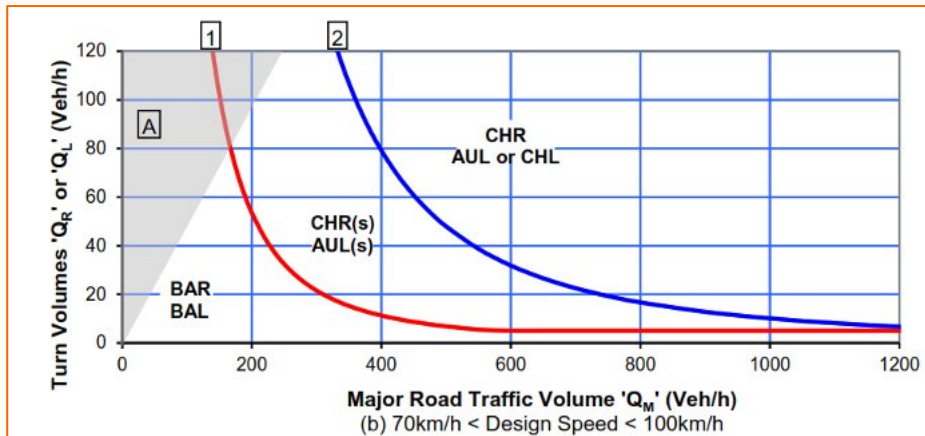
7 Turn Warrant Assessment

The turn lane configurations for the intersections have been assessed in correlation to the method set out in *Austroad's Guide to Traffic Management (AGTM)* Part 6.

7.1 Upper Kedron Road / Site Access

Figure 7-1 illustrates the turn warrant requirements for the turn facilities at the intersection.

Figure 7-1 Turn Warrant Assessment - Design speed of 70-100km/h, Major Road Frontage



Source: AGTM Part 6, Figure 3.25

7.1.1 2028 (Year of Opening)

The required turn warrant treatments for each peak for the year of opening with development traffic are shown on Figure 7-2 and Figure 7-3.

Figure 7-2 2028 BG + DEV AM

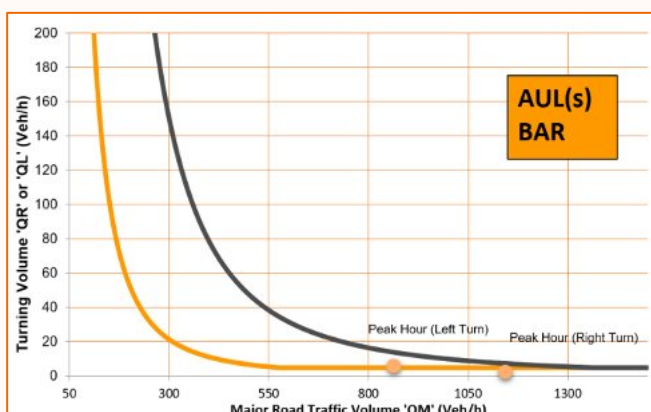
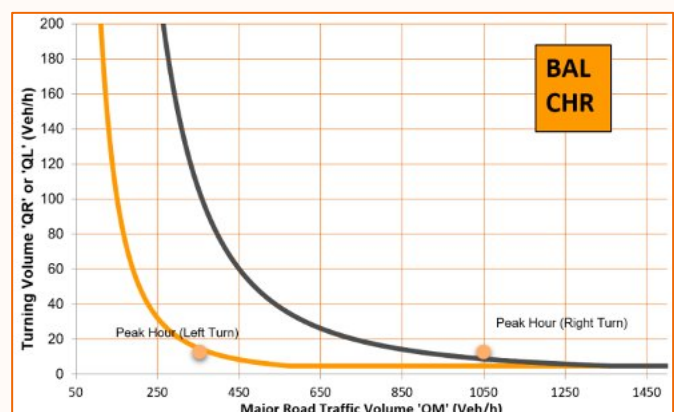


Figure 7-3 2028 BG + DEV PM



As shown in the figures above, the assessment resulted in a auxiliary Left turn (short) [AUL(S)], treatment and a Channelised Right (CHR) turn treatment from a traffic flow perspective.

7.1.2 2038 (Design Horizon)

The required turn warrant treatments for each peak for the year of opening with development traffic are shown on Figure 7-4 and Figure 7-5.

Figure 7-4 2038 BG + DEV AM

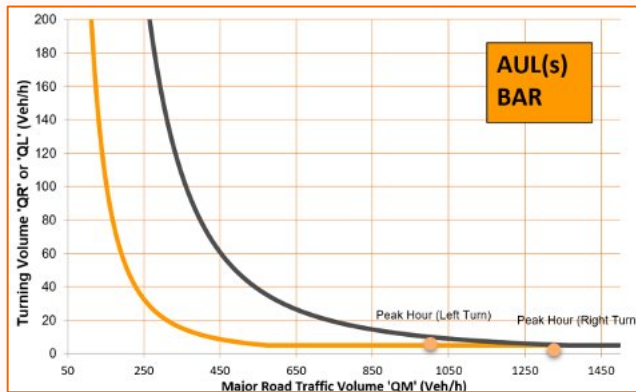
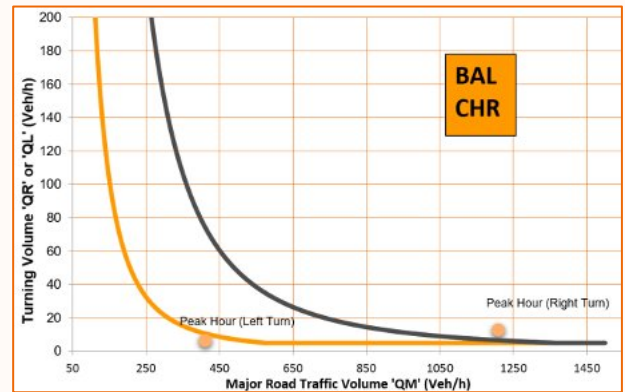


Figure 7-5 2038 BG + DEV PM



As shown in the figures above, the assessment resulted in an AUL(s) treatment, and a CHR turn treatment from a traffic flow perspective.

7.1.3 Turn Warrant Discussion

The Road A / Upper Kedron Road intersection proposes a CHR treatment for right-turn movements and a Basic Left turn (BAL) treatment for left-turn movements. The CHR accords with the Austroads turn-warrant outcome, while Velocity Traffic considers the proposed BAL to provide an appropriate left-turn treatment having regard to the site-specific operating environment and forecast turning demand.

The Austroads turn-warrant methodology adopts a BAL/BAR arrangement as the minimum treatment for priority-controlled intersections assessed using the relevant warrant procedure. Trigger assessment indicated that once left-turn demand exceeds only four vehicles during the design hour, the warrant diagram recommends an AUL(s). The methodology therefore adopts a conservative starting point and is known to recommend additional turn-lane infrastructure in response to relatively small increases in turning demand.

The assessment recommends an AUL(s) during both the 2028 year-of-opening and 2038 design-horizon scenarios. However, the treatment is triggered by only six vehicles turning left into the subdivision during the respective peak hour. This equates to approximately one left-turn movement every 10 minutes during the two busiest hours of the day.

The proposed BAL treatment has therefore been assessed on a performance basis, having regard to the following site-specific considerations.

Approach Visibility

Austrroads identifies an Approach Sight Distance (ASD) of 92m for a 70km/h design-speed environment.

For eastbound vehicles approaching from the west, the proposed intersection is positioned toward the top of the Upper Kedron Road crest. From this direction, approximately 500m of ASD is available, with Upper Kedron Road maintaining an extended straight horizontal alignment toward the intersection.

Accordingly, eastbound drivers will be able to observe a vehicle indicating, slowing and turning left into Road A from a substantial distance. This provides ample opportunity for following drivers to perceive the turning vehicle, adjust their speed and respond safely. The ASD is illustrated visually on Figure 7-6.

Figure 7-6 Eastbound Approach Sight Distance to Proposed Intersection



Proposed BAL Treatment

Although the Austrroads warrant recommends an AUL(s), the proposal includes a BAL treatment rather than an unmodified left-turn arrangement.

The BAL provides additional pavement width for an entering vehicle to decelerate and move partially clear of the eastbound through-traffic path while completing the turn into Road A. Combined with the approximately 500m of available approach visibility, this provides following drivers with sufficient time and space to respond to an isolated turning vehicle.

The detailed BAL geometry is documented within the civil engineering drawings. The proposed central chevron treatment also provides additional separation within the roadway and increases the effective width available to negotiate around a slowing vehicle in the unlikely event that a following driver needs to pass.

Given that only one left-turn movement is forecast approximately every 10 minutes during the peak hours, the frequency of interaction between a through vehicle and a vehicle turning into the subdivision will be low. The likelihood of a following driver needing to pass the turning vehicle is lower again and would generally arise only arise from tailgating or late turn indicating combined with minimal entry speed reduction, both scenarios are not expected to occur often or be a typical trend.

Comparable Developments

The Nelson Place subdivision intersection to the west provides access to 41 residential lots, being eight more lots than the proposed development. The intersection is provided with a CHR(S) right-turn treatment and a simple left-turn arrangement, without the additional pavement associated with a BAL treatment.

A review of all years of available DTMR crash data did not identify any recorded crashes at the Nelson Place / Upper Kedron Road intersection since its inception. The absence of any recorded crash history indicates that the lac of formal turning provision serving the larger residential catchment has not resulted in an identified operational or safety deficiency.

A further comparable development is located at 181 Upper Kedron Road. That development comprises 21 townhouses accessed through a single driveway and was completed in 2024. The access includes a CHR(s) right-turn treatment but no dedicated left-turn treatment.

No recorded crashes were identified at this access within the available crash database since it's completion. While the development has a shorter operational history, it provides another comparable residential access on the same road frontage operating without an auxiliary left-turn lane (or any facility in this case).

Both developments are exposed to similar background traffic conditions along Upper Kedron Road and would generate comparable concentrated turning movements at their respective access points. The proposed BAL therefore represents a higher level of left-turn provision than is currently operating at either nearby development.

Physical and Active Transport Constraints

Provision of an AUL(s) would require additional widening along the northern side of Upper Kedron Road, encroaching into the area allocated to the proposed pedestrian connection to the internal road network and future LGIP active transport corridor.

Accommodating the additional lane while retaining this connection may require the Road A intersection and adjoining through lanes to be shifted further south, bringing the works closer to existing underground services and overhead electricity infrastructure. More importantly, this would introduce a change in the horizontal alignment near the top of the road crest for the benefit of an infrequent left-turn movement, while affecting the alignment experienced by the overwhelming majority of vehicles continuing through on Upper Kedron Road. Introducing lateral deflection at this location would be undesirable from a road safety perspective and disproportionate to the limited turning demand.

The AUL(s) would therefore create additional civil, utility, active transport and through-traffic impacts despite the turning movement already being accommodated by extensive approach visibility and the proposed BAL treatment.

Design-Horizon Assessment

A conservative annual background traffic growth rate of 1.5% has been adopted within the assessment, exceeding the recorded five-year average growth rate of 0.89% per annum.

Despite this conservative growth allowance, the 2038 design-horizon assessment does not result in a higher-order left-turn treatment than the 2028 scenario. The warrant outcome remains an AUL(S) and does not progress to a full AUL or channelised left-turn treatment.

A high-level review of the surrounding catchment also indicates that much of the land presently served by Upper Kedron Road is already developed, with only limited remaining development land available within Upper Kedron. The existing road-reserve pattern also preserves the potential for a future connection toward Mount Nebo Road. Should that connection be delivered, it would provide an alternative and convenient route for part of the future catchment, reducing reliance on Upper Kedron Road.

Accordingly, the 10-year assessment does not identify any material escalation in the nature of the left-turn demand or the treatment recommended by the Austroads methodology, while the broader network context indicates limited potential for substantial additional growth beyond that already conservatively assessed.

Conclusion

The AUL(s) warrant is triggered by only six left-turn movements during the peak hour, equivalent to approximately one movement every 10 minutes. The proposed intersection provides approximately 500m of approach visibility from the west, while the BAL supplies additional pavement for a turning vehicle to decelerate and move partially clear of the through-traffic path.

Comparable residential developments on Upper Kedron Road accommodate similar or greater concentrated access demands without auxiliary left-turn lanes. No recorded crashes were identified at either comparable access, and the proposed BAL represents a higher level of left-turn provision than the arrangements currently operating at those locations.

Provision of an AUL(s) would also adversely affect the proposed pedestrian connection and introduce civil and utility impacts that are disproportionate to the limited turning demand and identified safety risk.

Having regard to the low frequency of left-turn movements, extensive approach visibility, proposed BAL geometry, conservative traffic growth assumptions, operation of comparable nearby developments and impacts associated with additional widening, the proposed BAL is considered adequate and safe. The arrangement is therefore considered a suitable performance solution.

Road Link Capacity Assessment

The proposed development will generate approximately 9 vehicle trips per day per dwelling. Applied to the proposed 33 residential lots, this equates to approximately 297 vpd.

The existing daily traffic volume along Upper Kedron Road has been estimated using the standard relationship of the average AM and PM peak-hour volumes multiplied by 10. This results in an estimated existing daily traffic volume of approximately 10,325 vpd.

The resulting traffic volume with the proposed development is summarised in Table 7-1.

Table 7-0-1 Environmental Capacity Assessment

Road Name	Road Type	Theoretical Capacity	Anticipated Daily Volume
Upper Kedron Road	Suburban Road	15,000–30,000 vpd	10,622 vpd

The resulting daily traffic volume remains well below the theoretical capacity range for a Suburban Road. The additional traffic associated with the proposed development represents only a minor increase in overall traffic demand and can be readily accommodated by the existing Upper Kedron Road formation.

Accordingly, no road link capacity upgrades are required as a result of the proposed development.

8 Summary

Findings for the development at 171-173 Upper Kedron Road, Ferny Grove are as follows:

Item	Findings
Existing conditions	The site comprises two lots fronting Upper Kedron Road and currently contains one dwelling. Upper Kedron Road is a Council-controlled Suburban Road with a posted speed limit of 60km/h.
Proposed development	The proposal involves reconfiguring the site into 33 low-density residential lots serviced by a new public road network.
Access arrangement	All-movement access is proposed via a new priority-controlled Road A / Upper Kedron Road intersection incorporating CHR and BAL treatments.
Internal road network	Roads A and B comply with the applicable Local Street cross-section requirements. Road C provides a 5.5m pavement within a 6.5m corridor and is suitable for the three lots it serves.
Intersection spacing	The proposed external and internal intersections satisfy the applicable Council and IPWEA spacing criteria.
Sight distance	The Upper Kedron Road intersection substantially exceeds the applicable SIRD requirement. The internal intersection provides suitable visibility on a performance basis having regard to its low traffic demand and operating speeds.
Future lot access	Standard residential crossovers can be accommodated for all lots. The nominated crossovers and performance solutions for Lots 3, 7 and 31 are considered suitable, while forward access and egress are provided for Lots 4-6.
Pedestrian connectivity	Footpaths are proposed through the subdivision and connect Upper Kedron Road with the future Cedar Creek Bikeway corridor.
Refuse and servicing	Kerbside refuse collection is proposed, supported by consolidated bin presentation areas and a temporary T-head turnaround. Swept paths confirm the RCV can enter, turn and depart in a forward direction.
Crash history	The two recorded crashes on Upper Kedron Road were isolated single-vehicle loss-of-control incidents on curved sections. No recurring access or intersection-related crash pattern was identified.
Traffic generation	The proposal is expected to generate a net increase of approximately 27vph during the AM and PM peak periods.
Intersection performance	SIDRA analysis confirms all assessed intersections operate within the applicable performance thresholds under the year-of-opening and design-horizon scenarios.
Turn warrant assessment	A CHR treatment is proposed in accordance with the Austroads warrant. The BAL treatment is considered a suitable performance solution given the low left-turn demand, extensive approach visibility and comparable nearby access arrangements.
Road link capacity	Upper Kedron Road is expected to carry approximately 10,622vpd with the development, remaining below the theoretical capacity of a Suburban Road. No road link capacity upgrade is required.

Velocity is of the opinion the proposal is compliant with relevant codes and standards.

The identified departures from the acceptable outcomes have been assessed on a performance basis and are considered suitable performance solutions. Velocity Traffic considers the proposal to satisfy the relevant performance outcomes of the Transport, access, parking and servicing code and to be supportable from a traffic and transport perspective.



VELOCITY
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APPENDIX A

CONCEPT PLANS



LOT SCHEDULE					
LOT	LOT WIDTH	Area	LOT	LOT WIDTH	Area
1	11m	410 m²	18	12.5m	482 m²
2	11m	410 m²	19	12.5m	482 m²
3	CORNER	522 m²	20	17m	658 m²
4	CORNER	534 m²	21	15m	540 m²
5	11m	408 m²	22	15m	540 m²
6	10.5m	457 m²	23	12.5m	482 m²
7	CORNER	473 m²	24	10m	386 m²
8	10m	386 m²	25	10m	386 m²
9	10.5m	405 m²	26	10m	386 m²
10	10.5m	405 m²	27	12.5m	482 m²
11	12.5m	482 m²	28	10m	386 m²
12	10m	386 m²	29	10m	386 m²
13	10.5m	405 m²	30	12.5m	482 m²
14	12.5m	482 m²	31	CORNER	460 m²
15	10m	386 m²	32	12m	402 m²
16	10m	386 m²	33	12.5m	421 m²
17	10m	386 m²			



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CLIENT:
BONAVENTURA DEVELOPMENTS

DRAWING TITLE:
SITE PLAN

SCALE: 1 : 500

PROJECT: 33x LOT DEVELOPMENT
LOT 1 & 2 [RP185509]
171-173 UPPER KEDRON RD,
FERNY GROVE, QLD 4055

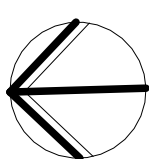
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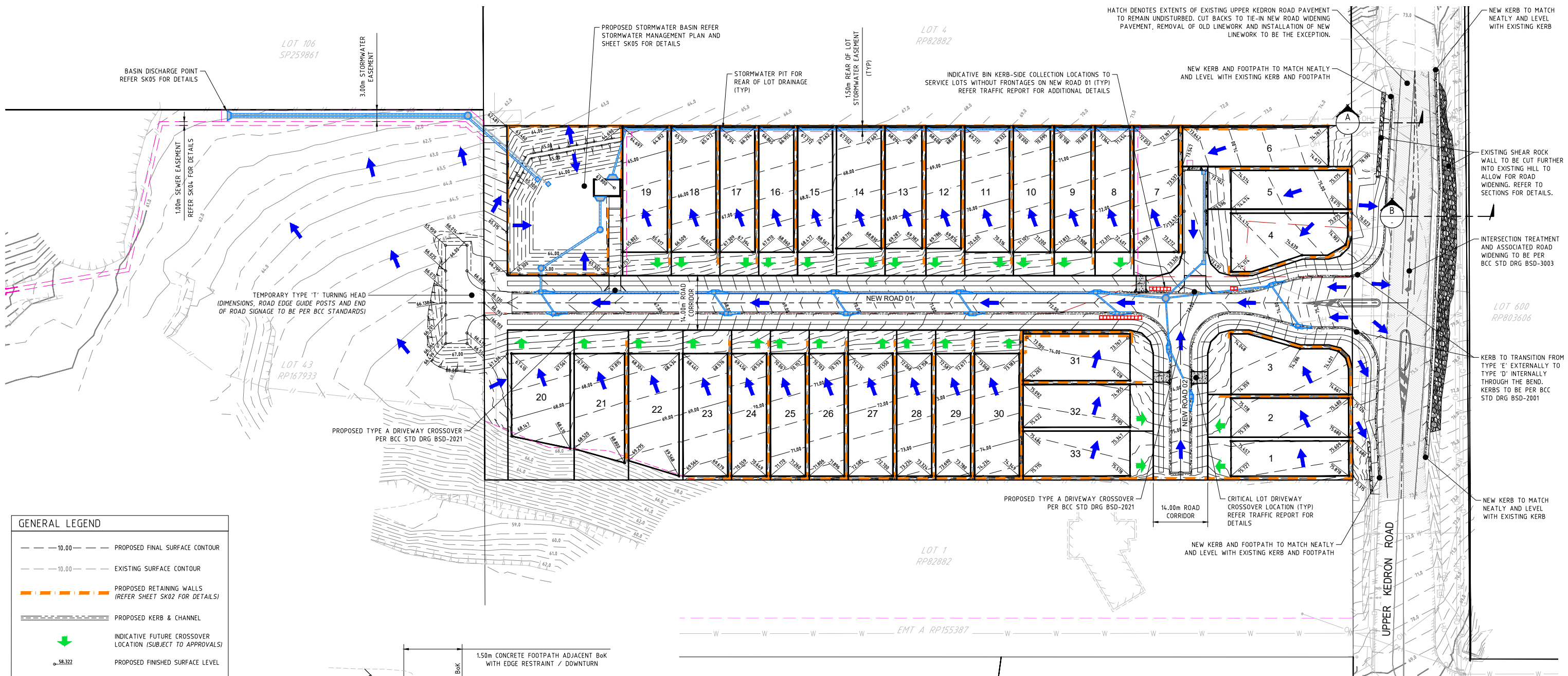
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Date: 17/07/2026



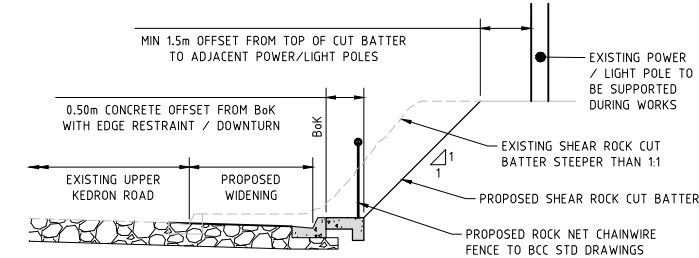
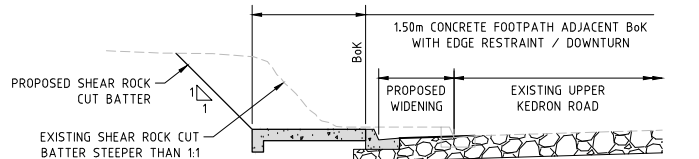
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B	AMENDMENTS	04/08/26	TD	SW
C	AMENDMENTS	06/08/26	TD	SW
D				
E				
F				
G				



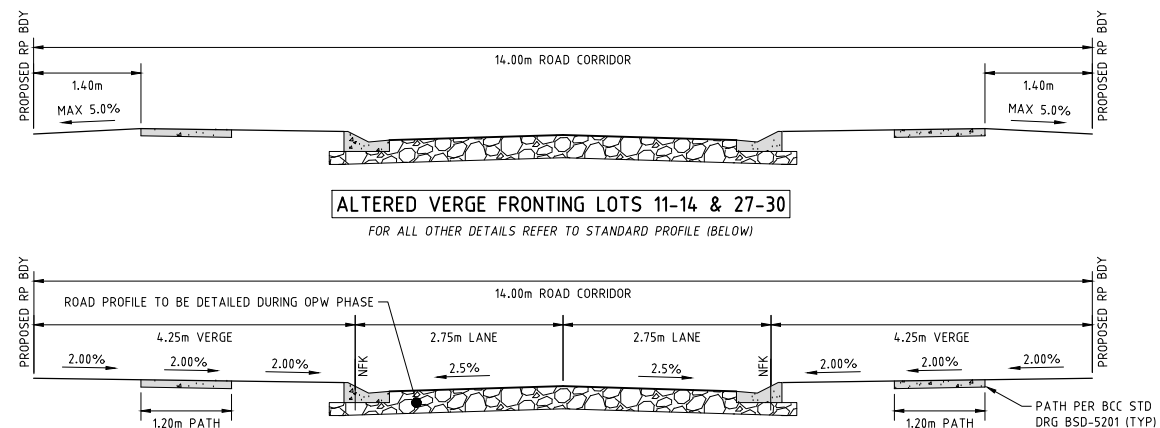
GENERAL LEGEND	
	PROPOSED FINAL SURFACE CONTOUR
	EXISTING SURFACE CONTOUR
	PROPOSED RETAINING WALLS (REFER SHEET SK02 FOR DETAILS)
	PROPOSED KERB & CHANNEL
	INDICATIVE FUTURE CROSSOVER LOCATION (SUBJECT TO APPROVALS)
	PROPOSED FINISHED SURFACE LEVEL

EXISTING SERVICE LEGEND	
	GAS MAIN / VALVE
	STORMWATER MAIN / PIT
	WATER MAIN / VALVE & HYDRANT
	SEWER MAIN / MANHOLE
	O/H ELECTRICITY / POWER POLE
	NBN / JUNCTION & PIT
	UNDERGROUND ELECTRICITY

PROPOSED STORMWATER LEGEND	
	PROPOSED STORMWATER DRAINAGE
	PROPOSED STORMWATER STRUCTURES
	OVERLAND FLOW DIRECTION



TYPICAL ROCK WALL DETAILS
SCALE 1:50 (A1)



STANDARD PROFILE

TYPICAL ROAD 01 & ROAD 02 SECTIONS
SCALE 1:50 (A1)



ISSUE	DESCRIPTION	DATE	DRAWN	AUTH.	ISSUE STAMP	NORTH	CITY COUNCIL APPROVAL NUMBER:	CLIENT:	PROJECT TITLE:	DESIGN:	DATE:	DESIGN CHECK:	DATE:
A	PRELIMINARY ISSUE	31.07.2026	KR	AR	ISSUE FOR APPROVAL NOT FOR CONSTRUCTION WITHOUT COUNCIL APPROVAL			BONAVENTURA DEVELOPMENTS PTY LTD	PROPOSED MULTI-LOT SUBDIVISION AT 171 - 173 UPPER KEDRON ROAD, FERNY GROVE, QLD 4055	KR		AR	
B	PRELIMINARY ISSUE REVISED	06.08.2026	KR	AR						DRAWN:	DATE:	DWG CHECK:	DATE:
C	APPROVAL ISSUE	07.08.2026	KR	AR						AUTHORISED FOR ISSUE			
CONCEPT STORMWATER DRAINAGE PLAN										PROJECT NUMBER / SHEET		ORIG. SIZE	
										C26062		A1	
										SK01		C	

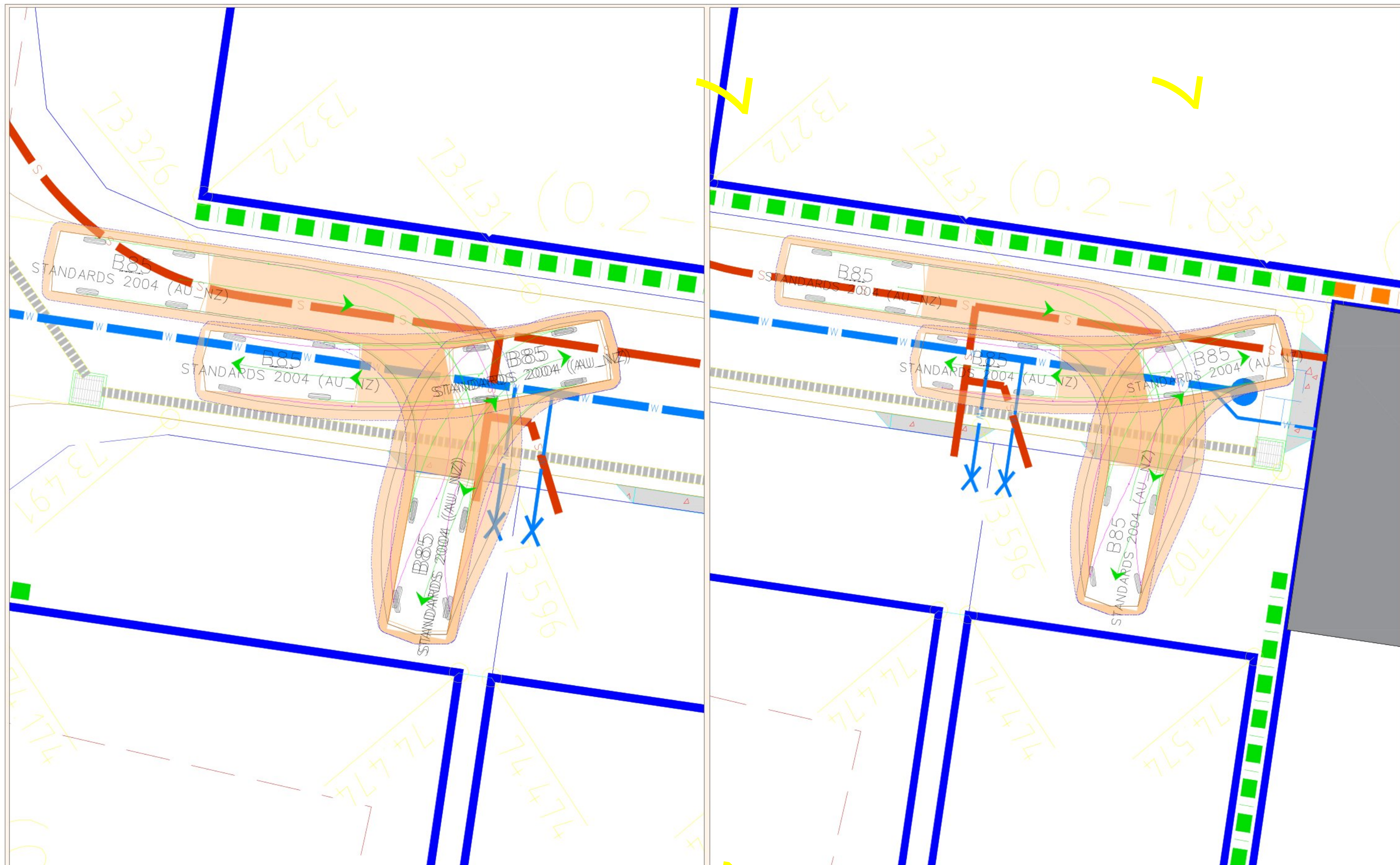


VELOCITY
TRAFFIC
ENGINEERING

APPENDIX B

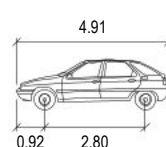
SWEPT PATH ASSESSMENT





SWEPT PATH LEGEND

- VEHICLE BODY
- FRONT TIRES
- REAR TIRES
- VEHICLE PATH
- VEHICLE CLEARANCE (300mm)
- VEHICLE



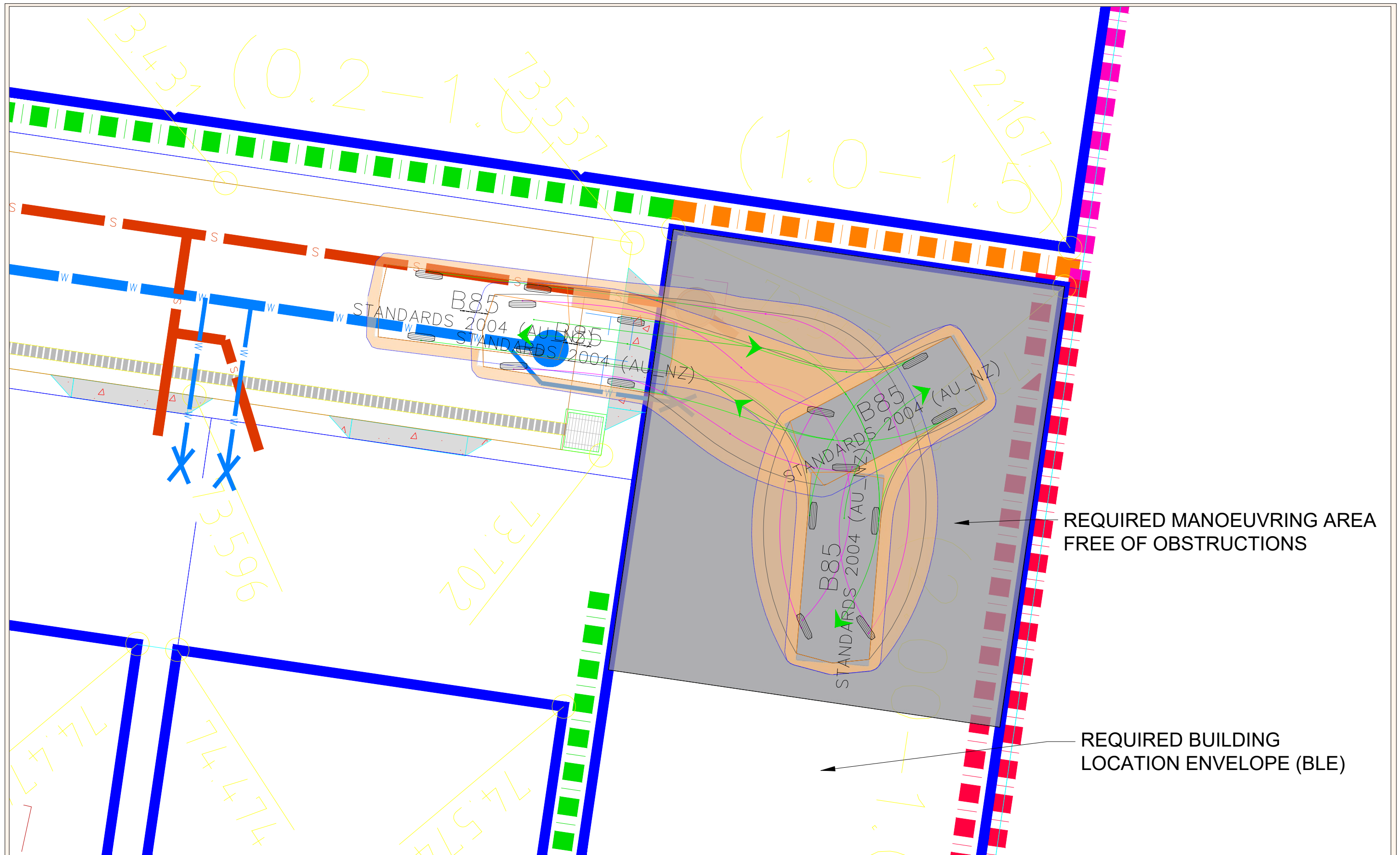
B85 - AS2890.1

Meters
Width : 1.87
Track : 1.77
Lock to Lock Time : 6.0
Steering Angle : 40.0



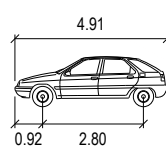
Velocity Traffic Engineering
T 0413482746
ABN 94 658 980 208

BONADVENTURA DEVELOPMENTS
171-173 UPPER KEDRON ROAD, FERNY GROVE
SWEPT PATH -B85
LEFT: LOT 4
RIGHT: LOT 5
Drawn Date Scale Size
C.Schackow 10/08/2026 1:100 A3
Drawing Number Rev
SK01 A



SWEPT PATH LEGEND

- VEHICLE BODY
- FRONT TIRES
- REAR TIRES
- VEHICLE PATH
- VEHICLE CLEARANCE (300mm)
- VEHICLE



B85 - AS2890.1

	Meters
Width	: 1.87
Track	: 1.77
Lock to Lock Time	: 6.0
Steering Angle	: 40.0



Velocity Traffic Engineering
T 0413482746
ABN 94 658 980 208

BONADVENTURA DEVELOPMENTS
171-173 UPPER KEDRON ROAD, FERNY GROVE
SWEPT PATH - B85 LOT 6

Drawn C.Schackow	Date 10/08/2026	Scale 1:100	Size A3
Drawing Number SK03	Rev A		



VELOCITY
TRAFFIC
ENGINEERING

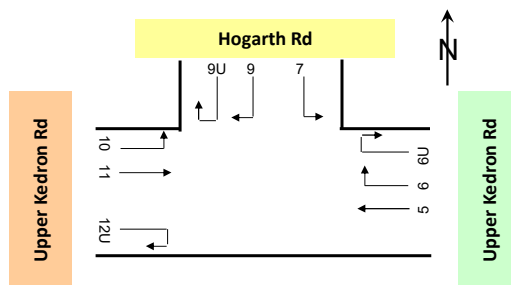
APPENDIX C

TRAFFIC SURVEYS



Job No. : AUQLD16215
Client : Velocity Traffic Engineering
Suburb : Ferny Grove
Location : 1. Upper Kedron Rd & Hogarth Rd

Day/Date : Tuesday, 14 July 2026
Weather : Fine
Description : Classified Intersection Count
 : Peak Hour Summary

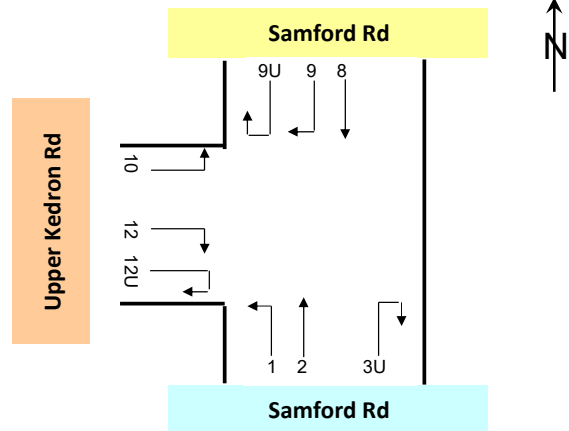


Approach		Upper Kedron Rd			Hogarth Rd			Upper Kedron Rd			Grand Total
		Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	
AM	7:30 to 8:30	271	10	281	240	15	255	805	35	840	1,376
PM	16:30 to 17:30	609	4	613	271	1	272	391	2	393	1,278

Approach		Upper Kedron Rd			Hogarth Rd			Upper Kedron Rd			Grand Total
		Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	
	6:30 to 7:30	152	46	198	98	7	105	705	33	738	1,041
	6:45 to 7:45	180	43	223	143	5	148	777	41	818	1,189
	7:00 to 8:00	195	31	226	163	7	170	804	48	852	1,248
	7:15 to 8:15	218	16	234	198	8	206	778	41	819	1,259
	7:30 to 8:30	271	10	281	240	15	255	805	35	840	1,376
	7:45 to 8:45	289	9	298	260	14	274	728	31	759	1,331
	8:00 to 9:00	297	11	308	295	13	308	647	22	669	1,285
	8:15 to 9:15	293	11	304	267	11	278	550	25	575	1,157
	8:30 to 9:30	251	18	269	215	5	220	428	21	449	938
	AM Totals	674	74	748	553	27	580	1,938	89	2,027	3,355
	16:00 to 17:00	586	1	587	262	0	262	365	7	372	1,221
	16:15 to 17:15	613	2	615	263	1	264	378	4	382	1,261
	16:30 to 17:30	609	4	613	271	1	272	391	2	393	1,278
	16:45 to 17:45	592	6	598	261	1	262	363	5	368	1,228
	17:00 to 18:00	562	6	568	259	1	260	352	4	356	1,184
	17:15 to 18:15	501	4	505	249	1	250	312	6	318	1,073
	17:30 to 18:30	469	2	471	212	1	213	288	7	295	979
	17:45 to 18:45	429	0	429	171	1	172	270	4	274	875
	18:00 to 19:00	406	0	406	142	1	143	248	5	253	802
	PM Totals	1,554	7	1,561	663	2	665	965	16	981	3,207

Job No. : AUQLD16215
Client : Velocity Traffic Engineering
Suburb : Ferny Grove
Location : 2. Upper Kedron Rd & Samford Rd

Day/Date : Tuesday, 14 July 2026
Weather : Fine
Description : Classified Intersection Count
: Peak Hour Summary

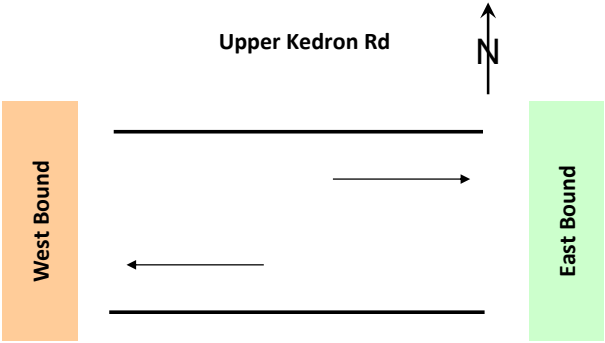


Approach		Samford Rd			Samford Rd			Upper Kedron Rd			Grand Total
Time Period		Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	
AM	7:30 to 8:30	660	30	690	1,372	25	1,397	773	44	817	2,904
PM	16:15 to 17:15	1,849	14	1,863	705	20	725	348	6	354	2,942

Approach		Samford Rd			Samford Rd			Upper Kedron Rd			Grand Total
Time Period		Lights	Heavies	Total	Lights	Heavies	Total	Lights	Heavies	Total	
6:30 to 7:30		438	90	528	1,194	34	1,228	662	32	694	2,450
6:45 to 7:45		486	72	558	1,260	30	1,290	692	47	739	2,587
7:00 to 8:00		523	55	578	1,368	31	1,399	752	50	802	2,779
7:15 to 8:15		575	39	614	1,418	31	1,449	730	51	781	2,844
7:30 to 8:30		660	30	690	1,372	25	1,397	773	44	817	2,904
7:45 to 8:45		725	39	764	1,299	28	1,327	755	34	789	2,880
8:00 to 9:00		776	41	817	1,183	35	1,218	691	25	716	2,751
8:15 to 9:15		792	51	843	1,035	36	1,071	616	23	639	2,553
8:30 to 9:30		775	64	839	955	36	991	523	31	554	2,384
AM Totals		1,873	184	2,057	3,521	95	3,616	1,958	107	2,065	7,738
16:00 to 17:00		1,821	22	1,843	697	19	716	363	10	373	2,932
16:15 to 17:15		1,849	14	1,863	705	20	725	348	6	354	2,942
16:30 to 17:30		1,814	15	1,829	714	16	730	370	5	375	2,934
16:45 to 17:45		1,826	15	1,841	706	16	722	341	8	349	2,912
17:00 to 18:00		1,764	14	1,778	666	13	679	302	6	308	2,765
17:15 to 18:15		1,625	12	1,637	638	11	649	302	9	311	2,597
17:30 to 18:30		1,507	8	1,515	558	8	566	268	8	276	2,357
17:45 to 18:45		1,353	2	1,355	494	8	502	249	5	254	2,111
18:00 to 19:00		1,221	2	1,223	453	6	459	227	7	234	1,916
PM Totals		4,806	38	4,844	1,816	38	1,854	892	23	915	7,613

Job No. : AUQLD16215
Client : Velocity Traffic Engineering
Suburb : Ferny Grove
Location : 3. Midblock at 171 Upper Kedron Rd

Day/Date : Tuesday, 14 July 2026
Weather : Fine
Description : Mid-block Count
: Peak Hour Summary



Approach		West Bound			East Bound			Grand Total
Time Period		Lights	Heavies	Total	Lights	Heavies	Total	
AM	7:30 to 8:30	256	10	266	810	28	838	1,104
PM	16:15 to 17:15	670	2	672	331	5	336	1,008

Approach		West Bound			East Bound			Grand Total
Time Period		Lights	Heavies	Total	Lights	Heavies	Total	
6:30	to 7:30	148	46	194	646	22	668	862
6:45	to 7:45	175	42	217	725	31	756	973
7:00	to 8:00	190	32	222	755	39	794	1,016
7:15	to 8:15	212	17	229	757	39	796	1,025
7:30	to 8:30	256	10	266	810	28	838	1,104
7:45	to 8:45	284	9	293	748	23	771	1,064
8:00	to 9:00	300	11	311	699	10	709	1,020
8:15	to 9:15	290	11	301	603	8	611	912
8:30	to 9:30	270	18	288	481	11	492	780
AM Totals		674	74	748	1,937	61	1,998	2,746
16:00	to 17:00	642	2	644	334	5	339	983
16:15	to 17:15	670	2	672	331	5	336	1,008
16:30	to 17:30	659	4	663	340	3	343	1,006
16:45	to 17:45	650	6	656	306	6	312	968
17:00	to 18:00	615	5	620	281	5	286	906
17:15	to 18:15	551	4	555	259	7	266	821
17:30	to 18:30	503	2	505	246	8	254	759
17:45	to 18:45	452	0	452	235	5	240	692
18:00	to 19:00	432	0	432	219	6	225	657
PM Totals		1,689	7	1,696	834	16	850	2,546

APPENDIX D

SIDRA ANALYSIS



MOVEMENT SUMMARY

 **Site: [1] Upper Kedron / Hogarth - 2026 BG AM (Folder1)**
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100.0 seconds (Site User-Given Cycle Time)
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
East: Upper Kedron Road															
5	T1	All MCs	189	5.3	189	5.3	0.138	4.2	LOS A	2.7	19.8	0.32	0.27	0.32	53.4
6	R2	All MCs	106	1.0	106	1.0	0.562	53.9	LOS D	5.2	36.7	1.00	0.78	1.00	31.2
Approach			296	3.8	296	3.8	0.562	22.1	LOS C	5.2	36.7	0.56	0.45	0.56	39.4
North: Hogarth Road															
7	L2	All MCs	113	1.4	113	1.4	* 0.597	54.3	LOS D	5.5	39.3	1.00	0.80	1.03	31.0
9	R2	All MCs	156	13.8	156	13.8	* 0.597	50.1	LOS D	7.4	57.7	0.98	0.81	0.98	23.6
Approach			268	8.6	268	8.6	0.597	51.9	LOS D	7.4	57.7	0.99	0.80	1.00	27.3
West: Upper Kedron Road															
10	L2	All MCs	236	4.2	236	4.2	0.239	16.6	LOS B	5.9	43.0	0.56	0.72	0.56	38.2
11	T1	All MCs	648	4.4	648	4.4	* 0.597	14.2	LOS B	20.1	145.6	0.69	0.63	0.69	42.3
Approach			884	4.3	884	4.3	0.597	14.9	LOS B	20.1	145.6	0.66	0.65	0.66	41.1
All Vehicles			1448	5.0	1448	5.0	0.597	23.2	LOS C	20.1	145.6	0.70	0.64	0.70	36.7

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped]	Dist]			sec	m	m/sec
						ped	m					
East: Upper Kedron Road												
P2	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
North: Hogarth Road												
P3	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians		100	105	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

 **Site: [1 (5)] Upper Kedron / Hogarth - 2028 BG AM (Folder1)**
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100.0 seconds (Site User-Given Cycle Time)
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.]	[Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
East: Upper Kedron Road															
5	T1	All MCs	195	5.3	195	5.3	0.141	4.1	LOS A	2.7	20.0	0.31	0.26	0.31	53.6
6	R2	All MCs	109	1.0	109	1.0	0.440	49.8	LOS D	5.1	35.9	0.96	0.78	0.96	32.3
Approach			304	3.8	304	3.8	0.440	20.5	LOS C	5.1	35.9	0.55	0.45	0.55	40.3
North: Hogarth Road															
7	L2	All MCs	160	1.4	160	1.4	* 0.645	51.8	LOS D	7.8	55.0	1.00	0.82	1.04	31.7
9	R2	All MCs	116	13.8	116	13.8	* 0.459	49.5	LOS D	5.4	42.0	0.96	0.79	0.96	23.8
Approach			276	6.6	276	6.6	0.645	50.8	LOS D	7.8	55.0	0.98	0.81	1.01	28.9
West: Upper Kedron Road															
10	L2	All MCs	243	4.2	243	4.2	0.263	18.6	LOS B	6.6	47.8	0.60	0.73	0.60	36.8
11	T1	All MCs	668	4.4	668	4.4	* 0.645	16.5	LOS B	22.4	162.9	0.75	0.68	0.75	40.5
Approach			912	4.3	912	4.3	0.645	17.0	LOS B	22.4	162.9	0.71	0.69	0.71	39.4
All Vehicles			1492	4.6	1492	4.6	0.645	24.0	LOS C	22.4	162.9	0.73	0.66	0.73	36.5

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped]	Dist]			sec	m	m/sec
East: Upper Kedron Road												
P2	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
North: Hogarth Road												
P3	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians		100	105	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

 Site: [1 (3)] Upper Kedron / Hogarth - 2028 BG + DEV AM
(Folder1)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100.0 seconds (Site User-Given Cycle Time)
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]	%				[Veh. veh	Dist] m				km/h
East: Upper Kedron Road															
5	T1	All MCs	199	5.3	199	5.3	0.144	4.1	LOS A	2.8	20.5	0.31	0.27	0.31	53.6
6	R2	All MCs	112	1.0	112	1.0	0.446	49.8	LOS D	5.2	36.6	0.96	0.78	0.96	32.3
Approach			311	3.8	311	3.8	0.446	20.5	LOS C	5.2	36.6	0.55	0.45	0.55	40.3
North: Hogarth Road															
7	L2	All MCs	162	1.4	162	1.4	* 0.650	51.8	LOS D	7.9	55.8	1.00	0.83	1.04	31.7
9	R2	All MCs	116	13.8	116	13.8	* 0.459	49.5	LOS D	5.4	42.0	0.96	0.79	0.96	23.8
Approach			278	6.6	278	6.6	0.650	50.9	LOS D	7.9	55.8	0.98	0.81	1.01	28.9
West: Upper Kedron Road															
10	L2	All MCs	243	4.2	243	4.2	0.263	18.6	LOS B	6.6	47.9	0.60	0.73	0.60	36.8
11	T1	All MCs	673	4.4	673	4.4	* 0.650	16.6	LOS B	22.7	164.8	0.75	0.68	0.75	40.4
Approach			916	4.3	916	4.3	0.650	17.1	LOS B	22.7	164.8	0.71	0.69	0.71	39.4
All Vehicles			1504	4.6	1504	4.6	0.650	24.1	LOS C	22.7	164.8	0.73	0.67	0.73	36.5

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
East: Upper Kedron Road												
P2	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
North: Hogarth Road												
P3	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians		100	105	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

 **Site: [1 (2)] Upper Kedron / Hogarth - 2026 BG PM (Folder1)**
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100.0 seconds (Site User-Given Cycle Time)
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
East: Upper Kedron Road															
5	T1	All MCs	562	0.8	562	0.8	0.434	13.6	LOS B	10.9	76.6	0.59	0.52	0.59	42.7
6	R2	All MCs	83	0.0	83	0.0	*0.434	61.4	LOS E	7.5	52.8	0.85	0.74	0.85	38.1
Approach			645	0.7	645	0.7	0.434	19.7	LOS B	10.9	76.6	0.62	0.55	0.62	39.1
North: Hogarth Road															
7	L2	All MCs	84	0.0	84	0.0	0.161	34.4	LOS C	3.1	21.6	0.79	0.74	0.79	37.3
9	R2	All MCs	202	0.5	202	0.5	*0.446	41.1	LOS D	8.5	59.9	0.90	0.80	0.90	26.4
Approach			286	0.4	286	0.4	0.446	39.1	LOS D	8.5	59.9	0.87	0.78	0.87	30.2
West: Upper Kedron Road															
10	L2	All MCs	146	0.0	146	0.0	0.216	27.4	LOS C	4.9	34.3	0.73	0.75	0.73	31.9
11	T1	All MCs	267	0.8	267	0.8	*0.446	29.6	LOS C	10.4	73.6	0.85	0.72	0.85	32.1
Approach			414	0.5	414	0.5	0.446	28.8	LOS C	10.4	73.6	0.81	0.73	0.81	32.0
All Vehicles			1345	0.6	1345	0.6	0.446	26.7	LOS C	10.9	76.6	0.73	0.65	0.73	34.5

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped]	[Dist]			sec	m	m/sec
						ped	m					
East: Upper Kedron Road												
P2	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
North: Hogarth Road												
P3	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians		100	105	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

 **Site: [1 (6)] Upper Kedron / Hogarth - 2028 BG PM (Folder1)**
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100.0 seconds (Site User-Given Cycle Time)

Site Scenario: 1 | Local Volumes

Vehicle Movement Performance															
Mov ID	Turn	Mov Class	Demand Flows [Total HV] veh/h %		Arrival Flows [Total HV] veh/h %		Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. Dist] veh m		Prop. Qued	Eff. Stop Rate	Number of Cycles to Depart	Aver. Speed km/h
East: Upper Kedron Road															
5	T1	All MCs	579	0.8	579	0.8	0.453	14.1	LOS B	11.5	80.8	0.60	0.53	0.60	42.7
6	R2	All MCs	85	0.0	85	0.0	* 0.453	61.9	LOS E	7.7	54.0	0.85	0.75	0.85	38.0
Approach			664	0.7	664	0.7	0.453	20.2	LOS C	11.5	80.8	0.63	0.56	0.63	38.8
North: Hogarth Road															
7	L2	All MCs	86	0.0	86	0.0	0.164	34.3	LOS C	3.2	22.1	0.79	0.74	0.79	37.3
9	R2	All MCs	208	0.5	208	0.5	* 0.461	41.3	LOS D	8.8	62.1	0.91	0.80	0.91	26.3
Approach			295	0.4	295	0.4	0.461	39.3	LOS D	8.8	62.1	0.87	0.79	0.87	30.1
West: Upper Kedron Road															
10	L2	All MCs	151	0.0	151	0.0	0.223	27.6	LOS C	5.1	35.5	0.73	0.75	0.73	31.8
11	T1	All MCs	276	0.8	276	0.8	* 0.461	29.8	LOS C	10.8	76.5	0.85	0.72	0.85	32.0
Approach			426	0.5	426	0.5	0.461	29.0	LOS C	10.8	76.5	0.81	0.73	0.81	31.9
All Vehicles			1385	0.6	1385	0.6	0.461	27.0	LOS C	11.5	80.8	0.74	0.66	0.74	34.4

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.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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 Green.

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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped]	Dist]			sec	m	m/sec
						ped	m					
East: Upper Kedron Road												
P2	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
North: Hogarth Road												
P3	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians		100	105	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

 **Site: [1 (4)] Upper Kedron / Hogarth - 2028 BG +DEV PM**
(Folder1)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100.0 seconds (Site User-Given Cycle Time)

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
East: Upper Kedron Road															
5	T1	All MCs	584	0.8	584	0.8	0.457	14.1	LOS B	11.6	81.7	0.60	0.53	0.60	42.8
6	R2	All MCs	86	0.0	86	0.0	* 0.457	61.8	LOS E	7.7	54.2	0.86	0.75	0.86	37.9
Approach			671	0.7	671	0.7	0.457	20.2	LOS C	11.6	81.7	0.63	0.56	0.63	38.8
North: Hogarth Road															
7	L2	All MCs	88	0.0	88	0.0	0.168	34.3	LOS C	3.2	22.6	0.79	0.75	0.79	37.4
9	R2	All MCs	208	0.5	208	0.5	* 0.466	41.5	LOS D	8.9	62.3	0.91	0.81	0.91	26.3
Approach			297	0.4	297	0.4	0.466	39.4	LOS D	8.9	62.3	0.87	0.79	0.87	30.1
West: Upper Kedron Road															
10	L2	All MCs	151	0.0	151	0.0	0.223	27.7	LOS C	5.1	35.5	0.73	0.75	0.73	31.7
11	T1	All MCs	280	0.8	280	0.8	* 0.466	29.8	LOS C	11.0	77.7	0.85	0.72	0.85	32.1
Approach			431	0.5	431	0.5	0.466	29.0	LOS C	11.0	77.7	0.81	0.73	0.81	31.9
All Vehicles			1398	0.6	1398	0.6	0.466	27.0	LOS C	11.6	81.7	0.74	0.66	0.74	34.4

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.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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 Green.

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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
East: Upper Kedron Road												
P2	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
North: Hogarth Road												
P3	Full	50	53	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians		100	105	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

SITE LAYOUT

 Site: [2] Upper Kedron / Samford - 2026 BG AM (Folder1)

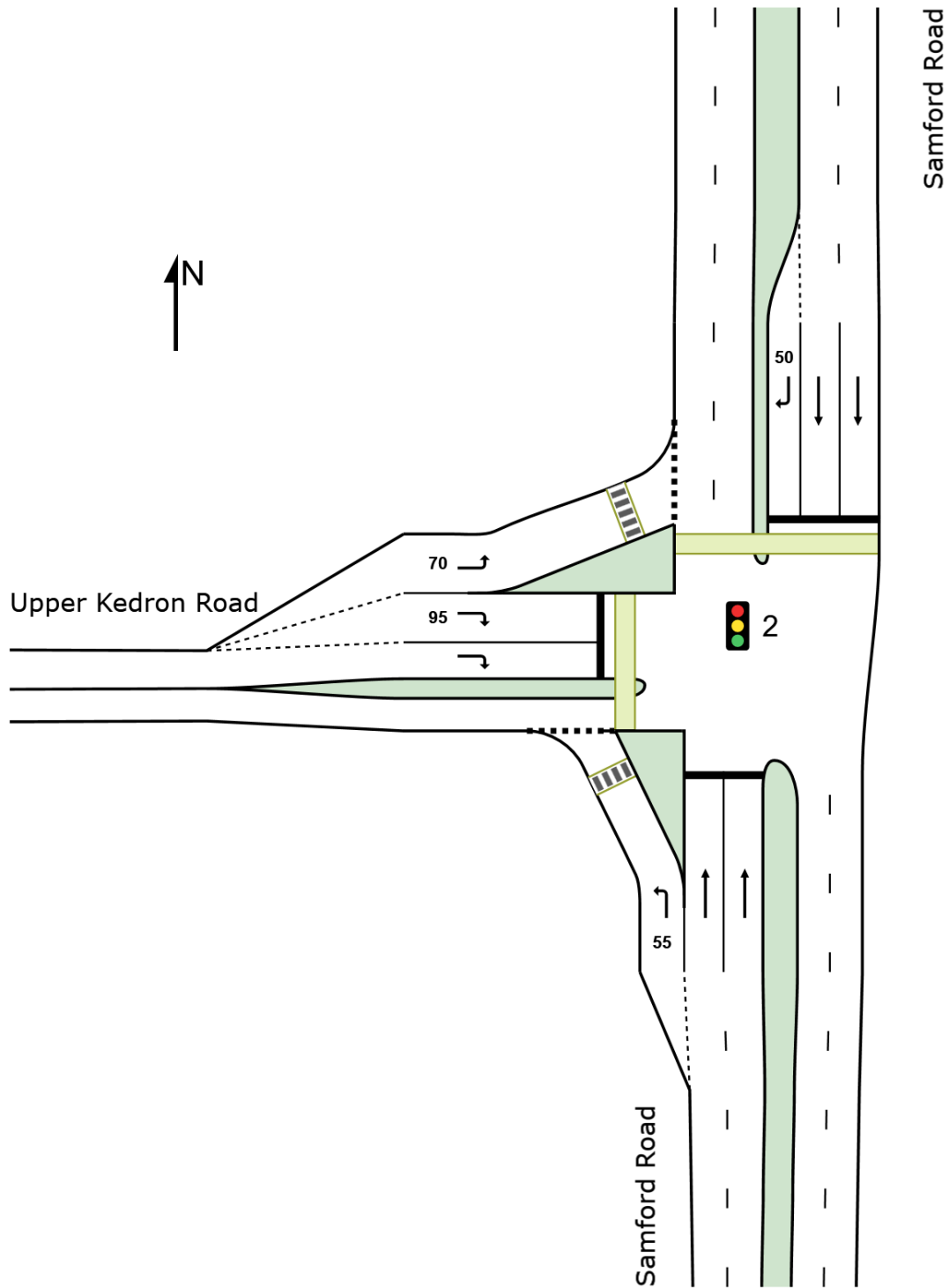
New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated

Site Scenario: 1 | Local Volumes

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



MOVEMENT SUMMARY

 **Site: [2] Upper Kedron / Samford - 2026 BG AM (Folder1)**
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60.0 seconds (Site Practical Cycle Time)

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: Samford Road															
1	L2	All MCs	224	7.0	224	7.0	0.171	6.6	LOS A	1.1	8.3	0.18	0.81	0.18	43.7
2	T1	All MCs	502	3.5	502	3.5	* 0.511	21.6	LOS C	6.5	47.2	0.91	0.75	0.91	46.7
Approach			726	4.6	726	4.6	0.511	17.0	LOS B	6.5	47.2	0.69	0.77	0.69	45.8
North: Samford Road															
8	T1	All MCs	1397	1.5	1397	1.5	0.708	14.0	LOS B	16.3	115.4	0.83	0.75	0.84	51.3
9	R2	All MCs	74	7.7	74	7.7	* 0.279	33.8	LOS C	2.0	15.1	0.93	0.75	0.93	40.1
Approach			1471	1.8	1471	1.8	0.708	15.0	LOS B	16.3	115.4	0.84	0.75	0.84	50.0
West: Upper Kedron Road															
10	L2	All MCs	123	8.3	123	8.3	0.122	7.7	LOS A	0.9	6.9	0.27	0.90	0.27	44.7
12	R2	All MCs	737	5.3	737	5.3	* 0.648	26.1	LOS C	10.0	73.3	0.92	0.84	0.94	42.4
Approach			860	5.7	860	5.7	0.648	23.5	LOS C	10.0	73.3	0.83	0.85	0.84	42.7
All Vehicles			3057	3.6	3057	3.6	0.708	17.8	LOS B	16.3	115.4	0.80	0.78	0.81	46.8

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.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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 Green.

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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped ped	Dist] m			sec	m	m/sec
North: Samford Road												
P3	Full	50	53	24.4	LOS C	0.1	0.1	0.90	0.90	178.2	200.0	1.12
West: Upper Kedron Road												
P4	Full	50	53	24.4	LOS C	0.1	0.1	0.90	0.90	178.2	200.0	1.12
All Pedestrians		150	105	24.4	LOS C	0.1	0.1	0.90	0.90	178.2	200.0	1.12

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

 **Site: [2 (3)] Upper Kedron / Samford - 2028 BG AM (Folder1)**
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60.0 seconds (Site Practical Cycle Time)

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: Samford Road															
1	L2	All MCs	231	7.0	231	7.0	0.176	6.7	LOS A	1.2	8.7	0.19	0.81	0.19	43.6
2	T1	All MCs	517	3.5	517	3.5	* 0.525	21.7	LOS C	6.8	48.8	0.91	0.76	0.91	46.6
Approach			747	4.6	747	4.6	0.525	17.1	LOS B	6.8	48.8	0.69	0.78	0.69	45.7
North: Samford Road															
8	T1	All MCs	1439	1.5	1439	1.5	0.730	14.9	LOS B	17.4	123.6	0.85	0.78	0.87	50.9
9	R2	All MCs	76	7.7	76	7.7	* 0.287	34.2	LOS C	2.1	15.6	0.93	0.75	0.93	40.1
Approach			1515	1.8	1515	1.8	0.730	15.9	LOS B	17.4	123.6	0.85	0.78	0.87	49.5
West: Upper Kedron Road															
10	L2	All MCs	127	8.3	127	8.3	0.126	7.8	LOS A	1.0	7.3	0.28	0.91	0.28	44.5
12	R2	All MCs	759	5.3	759	5.3	* 0.668	26.5	LOS C	10.5	76.7	0.93	0.85	0.96	42.2
Approach			886	5.7	886	5.7	0.668	23.8	LOS C	10.5	76.7	0.84	0.86	0.86	42.5
All Vehicles			3148	3.6	3148	3.6	0.730	18.4	LOS B	17.4	123.6	0.81	0.80	0.83	46.5

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.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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 Green.

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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped]	Dist]			sec	m	m/sec
						ped	m					
North: Samford Road												
P3	Full	50	53	24.4	LOS C	0.1	0.1	0.90	0.90	178.2	200.0	1.12
West: Upper Kedron Road												
P4	Full	50	53	24.4	LOS C	0.1	0.1	0.90	0.90	178.2	200.0	1.12
All Pedestrians		150	105	24.4	LOS C	0.1	0.1	0.90	0.90	178.2	200.0	1.12

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

 **Site: [2 (2)] Upper Kedron / Samford - 2028 BG + DEV AM**
(Folder1)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 60.0 seconds (Site Practical Cycle Time)

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]						[Veh.	Dist]				
			veh/h	%	veh/h	%	v/c	sec		veh	m				km/h
South: Samford Road															
1	L2	All MCs	233	7.0	233	7.0	0.178	6.7	LOS A	1.2	8.8	0.19	0.81	0.19	43.5
2	T1	All MCs	517	3.5	517	3.5	* 0.525	21.7	LOS C	6.8	48.8	0.91	0.76	0.91	46.6
Approach			749	4.6	749	4.6	0.525	17.0	LOS B	6.8	48.8	0.69	0.78	0.69	45.7
North: Samford Road															
8	T1	All MCs	1439	1.5	1439	1.5	0.730	14.9	LOS B	17.4	123.7	0.85	0.78	0.87	50.9
9	R2	All MCs	77	7.7	77	7.7	* 0.291	34.3	LOS C	2.1	15.8	0.93	0.75	0.93	40.1
Approach			1516	1.8	1516	1.8	0.730	15.9	LOS B	17.4	123.7	0.85	0.78	0.87	49.5
West: Upper Kedron Road															
10	L2	All MCs	129	8.3	129	8.3	0.128	7.8	LOS A	1.0	7.5	0.28	0.91	0.28	44.5
12	R2	All MCs	771	5.3	771	5.3	* 0.678	26.7	LOS C	10.7	78.6	0.93	0.85	0.97	42.1
Approach			900	5.7	900	5.7	0.678	24.0	LOS C	10.7	78.6	0.84	0.86	0.87	42.4
All Vehicles			3165	3.6	3165	3.6	0.730	18.5	LOS B	17.4	123.7	0.81	0.80	0.83	46.5

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.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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 Green.

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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped]	Dist]			sec	m	m/sec
						ped	m					
North: Samford Road												
P3	Full	50	53	24.4	LOS C	0.1	0.1	0.90	0.90	178.2	200.0	1.12
West: Upper Kedron Road												
P4	Full	50	53	24.4	LOS C	0.1	0.1	0.90	0.90	178.2	200.0	1.12
All Pedestrians		150	105	24.4	LOS C	0.1	0.1	0.90	0.90	178.2	200.0	1.12

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

 **Site: [2 (4)] Upper Kedron / Samford - 2026 BG PM (Folder1)**
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 105.0 seconds (Site Optimum Cycle Time - Minimum Delay)

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: Samford Road															
1	L2	All MCs	616	1.2	616	1.2	0.456	7.3	LOS A	5.5	39.1	0.24	1.21	0.24	35.0
2	T1	All MCs	1309	0.6	1309	0.6	* 0.645	16.3	LOS B	25.3	178.1	0.71	0.64	0.71	49.4
Approach			1925	0.8	1925	0.8	0.645	13.4	LOS B	25.3	178.1	0.56	0.82	0.56	44.0
North: Samford Road															
8	T1	All MCs	692	2.3	692	2.3	0.255	6.9	LOS A	6.7	48.0	0.42	0.36	0.42	55.0
9	R2	All MCs	77	1.4	77	1.4	* 0.653	61.9	LOS E	4.2	29.6	1.00	0.82	1.11	31.0
Approach			768	2.2	768	2.2	0.653	12.4	LOS B	6.7	48.0	0.47	0.41	0.48	51.4
West: Upper Kedron Road															
10	L2	All MCs	60	1.8	60	1.8	0.093	29.9	LOS C	2.1	14.6	0.72	1.16	0.72	36.5
12	R2	All MCs	335	1.3	335	1.3	* 0.419	45.2	LOS D	7.8	55.1	0.92	0.79	0.92	35.5
Approach			395	1.4	395	1.4	0.419	42.8	LOS D	7.8	55.1	0.89	0.85	0.89	35.6
All Vehicles			3088	1.2	3088	1.2	0.653	16.9	LOS B	25.3	178.1	0.58	0.72	0.58	44.4

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.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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 Green.

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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped]	Dist]			sec	m	m/sec
						ped	m					
North: Samford Road												
P3	Full	50	53	46.8	LOS E	0.1	0.1	0.94	0.94	200.6	200.0	1.00
West: Upper Kedron Road												
P4	Full	50	53	46.8	LOS E	0.1	0.1	0.94	0.94	200.6	200.0	1.00
All Pedestrians		150	105	46.8	LOS E	0.1	0.1	0.94	0.94	200.6	200.0	1.00

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

 **Site: [2 (5)] Upper Kedron / Samford - 2028 BG PM (Folder1)**
Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 105.0 seconds (Site User-Given Cycle Time)
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: Samford Road															
1	L2	All MCs	635	1.2	635	1.2	0.470	7.4	LOS A	5.8	41.0	0.25	1.22	0.25	35.1
2	T1	All MCs	1349	0.6	1349	0.6	* 0.669	16.8	LOS B	26.8	188.3	0.73	0.66	0.73	49.1
Approach			1984	0.8	1984	0.8	0.669	13.8	LOS B	26.8	188.3	0.57	0.84	0.57	43.8
North: Samford Road															
8	T1	All MCs	713	2.3	713	2.3	0.263	6.9	LOS A	7.0	49.7	0.42	0.37	0.42	55.0
9	R2	All MCs	79	1.4	79	1.4	* 0.640	61.3	LOS E	4.3	30.2	1.00	0.81	1.09	31.1
Approach			792	2.2	792	2.2	0.640	12.3	LOS B	7.0	49.7	0.48	0.41	0.49	51.4
West: Upper Kedron Road															
10	L2	All MCs	62	1.8	62	1.8	0.096	31.0	LOS C	2.1	15.0	0.72	1.19	0.72	36.0
12	R2	All MCs	345	1.3	345	1.3	* 0.432	45.3	LOS D	8.1	57.1	0.92	0.80	0.92	35.5
Approach			407	1.4	407	1.4	0.432	43.1	LOS D	8.1	57.1	0.89	0.86	0.89	35.5
All Vehicles			3183	1.2	3183	1.2	0.669	17.2	LOS B	26.8	188.3	0.59	0.73	0.59	44.2

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.
Intersection and Approach LOS values are based on average delay for all vehicle movements.
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 Green.
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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped]	[Dist]			sec	m	m/sec
						ped	m					
North: Samford Road												
P3	Full	50	53	46.8	LOS E	0.1	0.1	0.94	0.94	200.6	200.0	1.00
West: Upper Kedron Road												
P4	Full	50	53	46.8	LOS E	0.1	0.1	0.94	0.94	200.6	200.0	1.00
All Pedestrians		150	105	46.8	LOS E	0.1	0.1	0.94	0.94	200.6	200.0	1.00

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)
Pedestrian movement LOS values are based on average delay per pedestrian movement.
Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

MOVEMENT SUMMARY

 **Site: [2 (6)] Upper Kedron / Samford - 2028 BG +DEV PM**
(Folder1)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

New Site

Site Category: (None)

Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 105.0 seconds (Site User-Given Cycle Time)

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]	%				[Veh.]	[Dist]				
			veh/h		veh/h		v/c	sec		veh	m				km/h
South: Samford Road															
1	L2	All MCs	646	1.2	646	1.2	0.479	7.5	LOS A	6.1	42.8	0.25	1.22	0.25	35.1
2	T1	All MCs	1349	0.6	1349	0.6	* 0.686	17.2	LOS B	27.8	195.6	0.74	0.67	0.74	48.9
Approach			1996	0.8	1996	0.8	0.686	14.0	LOS B	27.8	195.6	0.58	0.85	0.58	43.7
North: Samford Road															
8	T1	All MCs	713	2.3	713	2.3	0.263	6.9	LOS A	7.0	49.7	0.42	0.37	0.42	55.0
9	R2	All MCs	80	1.4	80	1.4	* 0.608	60.4	LOS E	4.3	30.3	1.00	0.80	1.06	31.3
Approach			793	2.2	793	2.2	0.608	12.3	LOS B	7.0	49.7	0.48	0.41	0.48	51.4
West: Upper Kedron Road															
10	L2	All MCs	62	1.8	62	1.8	0.095	29.6	LOS C	2.1	14.9	0.71	1.16	0.71	36.5
12	R2	All MCs	347	1.3	347	1.3	* 0.435	45.3	LOS D	8.1	57.4	0.92	0.80	0.92	35.4
Approach			409	1.4	409	1.4	0.435	42.9	LOS D	8.1	57.4	0.89	0.85	0.89	35.6
All Vehicles			3198	1.2	3198	1.2	0.686	17.3	LOS B	27.8	195.6	0.59	0.74	0.60	44.2

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.

Intersection and Approach LOS values are based on average delay for all vehicle movements.

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 Green.

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.

* Critical Movement (Signal Timing)

Pedestrian Movement Performance												
Mov ID	Crossing	Input Vol.	Dem. Flow	Aver. Delay	Level of Service	AVERAGE BACK OF QUEUE		Prop. Qued	Eff. Stop Rate	Travel Time	Travel Dist.	Aver. Speed
		ped/h	ped/h	sec		[Ped]	[Dist]			sec	m	m/sec
						ped	m					
North: Samford Road												
P3	Full	50	53	46.8	LOS E	0.1	0.1	0.94	0.94	200.6	200.0	1.00
West: Upper Kedron Road												
P4	Full	50	53	46.8	LOS E	0.1	0.1	0.94	0.94	200.6	200.0	1.00
All Pedestrians		150	105	46.8	LOS E	0.1	0.1	0.94	0.94	200.6	200.0	1.00

Level of Service (LOS) Method: SIDRA Pedestrian LOS Method (Based on Average Delay)

Pedestrian movement LOS values are based on average delay per pedestrian movement.

Intersection LOS value for Pedestrians is based on average delay for all pedestrian movements.

SITE LAYOUT

▽ Site: [3] Upper Kedron Road / Site - 2028 BG + DEV AM
(Folder1)

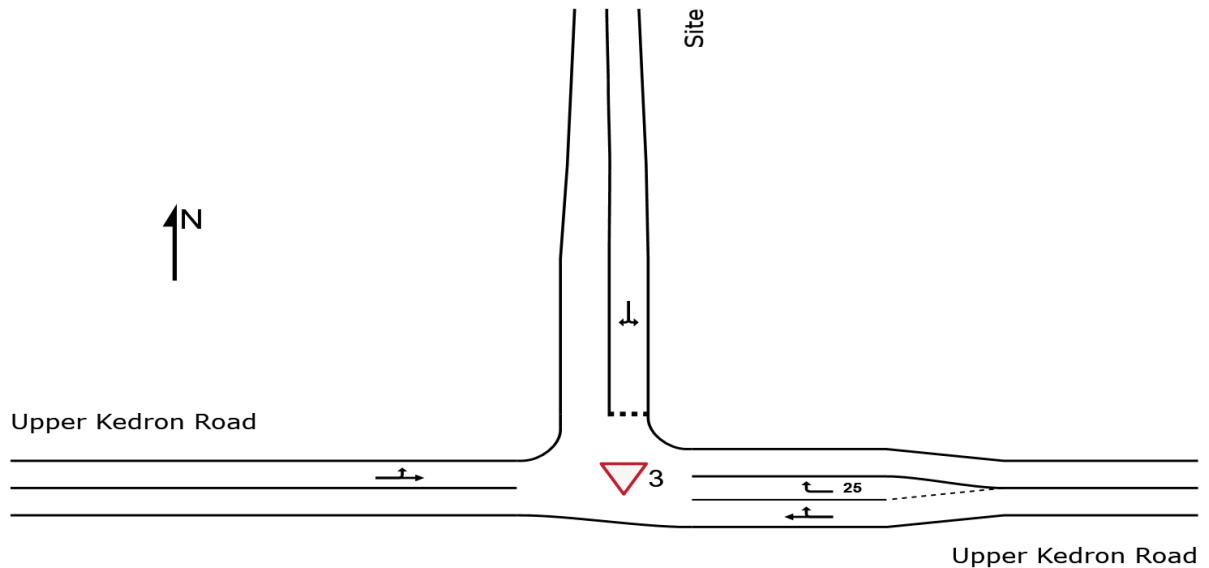
New Site

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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Project: C:\Users\Casey\Modus Engineering\Projects 2022 - 2023 - Documents\General\Projects 2022-2023\ACT\JOBS\Bonadventura Developments\171-173 Upper Kedron Rd, Ferny Grove\3 ANALYSIS\SIDRA\171-173 Upper Kedron Road.sipx

MOVEMENT SUMMARY

▼ Site: [3] Upper Kedron Road / Site - 2028 BG + DEV AM
(Folder1)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

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]	%				[Veh. veh	Dist] m				km/h
East: Upper Kedron Road															
5	T1	All MCs	288	5.0	288	5.0	0.151	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	All MCs	2	5.0	2	5.0	0.004	11.4	LOS B	0.0	0.1	0.69	0.70	0.69	42.5
Approach			291	5.0	291	5.0	0.151	0.1	NA	0.0	0.1	0.00	0.01	0.00	59.8
North: Site															
7	L2	All MCs	15	5.0	15	5.0	0.060	10.0	LOS A	0.2	1.4	0.76	0.89	0.76	40.1
9	R2	All MCs	5	5.0	5	5.0	0.060	24.9	LOS C	0.2	1.4	0.76	0.89	0.76	40.0
Approach			20	5.0	20	5.0	0.060	13.9	LOS B	0.2	1.4	0.76	0.89	0.76	40.1
West: Upper Kedron Road															
10	L2	All MCs	6	5.0	6	5.0	0.480	5.8	LOS A	0.0	0.0	0.00	0.00	0.00	30.4
11	T1	All MCs	908	5.0	908	5.0	0.480	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.6
Approach			915	5.0	915	5.0	0.480	0.2	NA	0.0	0.0	0.00	0.00	0.00	59.4
All Vehicles			1225	5.0	1225	5.0	0.480	0.4	NA	0.2	1.4	0.01	0.02	0.01	59.2

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: [3 (2)] Upper Kedron Road / Site - 2028 BG + DEV PM
(Folder1)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

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.]	[Dist]				km/h
East: Upper Kedron Road															
5	T1	All MCs	719	5.0	719	5.0	0.377	0.1	LOS A	0.0	0.0	0.00	0.00	0.00	59.8
6	R2	All MCs	14	5.0	14	5.0	0.011	6.9	LOS A	0.0	0.4	0.43	0.58	0.43	46.5
Approach			733	5.0	733	5.0	0.377	0.3	NA	0.0	0.4	0.01	0.01	0.01	59.6
North: Site															
7	L2	All MCs	3	5.0	3	5.0	0.028	5.2	LOS A	0.1	0.6	0.70	0.75	0.70	39.7
9	R2	All MCs	5	5.0	5	5.0	0.028	20.0	LOS C	0.1	0.6	0.70	0.75	0.70	39.5
Approach			8	5.0	8	5.0	0.028	14.4	LOS B	0.1	0.6	0.70	0.75	0.70	39.6
West: Upper Kedron Road															
10	L2	All MCs	6	5.0	6	5.0	0.198	5.6	LOS A	0.0	0.0	0.00	0.01	0.00	30.5
11	T1	All MCs	372	5.0	372	5.0	0.198	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	59.8
Approach			378	5.0	378	5.0	0.198	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.3
All Vehicles			1119	5.0	1119	5.0	0.377	0.3	NA	0.1	0.6	0.01	0.02	0.01	59.3

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: [3 (4)] Upper Kedron Road / Site - 2038 BG + DEV AM
(Folder1)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

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]	%				[Veh. veh	Dist] m				km/h
East: Upper Kedron Road															
5	T1	All MCs	335	5.0	335	5.0	0.175	0.0	LOS A	0.0	0.0	0.00	0.00	0.00	59.9
6	R2	All MCs	2	5.0	2	5.0	0.005	14.2	LOS B	0.0	0.1	0.77	0.77	0.77	40.1
Approach			337	5.0	337	5.0	0.175	0.1	NA	0.0	0.1	0.00	0.00	0.00	59.8
North: Site															
7	L2	All MCs	15	5.0	15	5.0	0.082	12.9	LOS B	0.2	1.8	0.83	0.92	0.83	36.6
9	R2	All MCs	4	5.0	4	5.0	0.082	39.1	LOS E	0.2	1.8	0.83	0.92	0.83	36.5
Approach			19	5.0	19	5.0	0.082	18.7	LOS C	0.2	1.8	0.83	0.92	0.83	36.6
West: Upper Kedron Road															
10	L2	All MCs	6	5.0	6	5.0	0.556	5.8	LOS A	0.0	0.0	0.00	0.00	0.00	30.3
11	T1	All MCs	1055	5.0	1055	5.0	0.556	0.3	LOS A	0.0	0.0	0.00	0.00	0.00	59.5
Approach			1061	5.0	1061	5.0	0.556	0.3	NA	0.0	0.0	0.00	0.00	0.00	59.3
All Vehicles			1417	5.0	1417	5.0	0.556	0.5	NA	0.2	1.8	0.01	0.02	0.01	59.1

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: [3 (3)] Upper Kedron Road / Site - 2038 BG + DEV PM
(Folder1)

Output produced by SIDRA INTERSECTION Version: 10.0.5.217

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.]	[Dist]				km/h
East: Upper Kedron Road															
5	T1	All MCs	835	5.0	835	5.0	0.437	0.2	LOS A	0.0	0.0	0.00	0.00	0.00	59.7
6	R2	All MCs	14	5.0	14	5.0	0.012	7.2	LOS A	0.1	0.4	0.47	0.60	0.47	46.4
Approach			848	5.0	848	5.0	0.437	0.3	NA	0.1	0.4	0.01	0.01	0.01	59.5
North: Site															
7	L2	All MCs	3	5.0	3	5.0	0.041	5.5	LOS A	0.1	0.9	0.76	0.83	0.76	35.7
9	R2	All MCs	5	5.0	5	5.0	0.041	28.8	LOS D	0.1	0.9	0.76	0.83	0.76	35.6
Approach			8	5.0	8	5.0	0.041	20.1	LOS C	0.1	0.9	0.76	0.83	0.76	35.7
West: Upper Kedron Road															
10	L2	All MCs	6	5.0	6	5.0	0.230	5.7	LOS A	0.0	0.0	0.00	0.01	0.00	30.5
11	T1	All MCs	432	5.0	432	5.0	0.230	0.1	LOS A	0.0	0.0	0.00	0.01	0.00	59.8
Approach			438	5.0	438	5.0	0.230	0.1	NA	0.0	0.0	0.00	0.01	0.00	59.3
All Vehicles			1295	5.0	1295	5.0	0.437	0.4	NA	0.1	0.9	0.01	0.01	0.01	59.3

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.