flow TRANSPORTATION SPECIALISTS

technical note

PROJECT	**DOWNTOWN CARPARK SITE DEVELOPMENT**
SUBJECT	**FTAA ADDENDUM TRANSPORT REPORT**
TO	**PROJECT TEAM AND THE FTAA PANEL**
FROM	HARRY SHEPHERD, GERHARD VAN DER WESTHUIZEN
REVIEWED BY	MICHAEL JONGENEEL
DATE	7 APRIL 2026

1 INTRODUCTION AND PURPOSE OF THIS TECHNICAL NOTE

Precinct Properties New Zealand Limited ("**Precinct**") has commissioned Flow Transportation Specialists Ltd to identify and assess the transport planning and traffic engineering matters relating to the proposed development of the Downtown Carpark site into a mixed-use precinct ("**Project**"), located at 2 Lower Hobson Street in the Auckland City Centre ("**Site"**).

The purpose of this technical note is to:

- Provide a summary of engagement undertaken with Auckland Council and other parties, relating to transport matters
- Provide responses to key technical transport matters (primarily raised by Auckland Transport), and to other technical transport matters
- Provide a response to the updated transport provisions of the Consent Order version of Plan Change 79.

2 SUMMARY OF ENGAGEMENT WITH COUNCIL AND OTHER PARTIES

The following engagement has been undertaken with the following parties, relating to transport matters.

- Auckland Council
    - Engagement and meetings alongside Auckland Transport, as outlined below
    - Provision of a peer review report by Stantec[1], acting for Auckland Council
- Auckland Transport
    - Provision of a peer review report by Elevate and Progressive Transport Solutions[2], acting for Auckland Transport
    - Provision of the resource consent application documents for Auckland Transport's proposal to realign the retaining wall between Customs Street West and Fanshawe Street

[1] Integrated Transportation Assessment Review (PRR00043070) by Stantec, dated 11 February 2026
[2] PRR00043070: Downtown Car Park Fast Track Application by Elevate and Progressive Transport Solutions, dated 18 February 2026 and updated 25 March 2026

- Several meetings to discuss the key transport items, and the retaining wall consent application

- M Social
  - Provision of a peer review report by Commute[3], acting for M Social
  - A meeting between the wider applicant and M Social teams to discuss all applicable matters.

We note that the peer review reports by Stantec and Commute did not raise any notable transport concerns.

The Auckland Transport peer review raised a number of concerns. This addendum report primarily focuses on responding to the matters raised by Auckland Transport.

3 RESPONSES TO KEY TECHNICAL TRANSPORT MATTERS

3.1 Summary of key matters

This section focuses on the key transport matters raised by Auckland Transport.

We have summarised these key matters as follows:

- Auckland Transport retaining wall works and the receiving environment
- Hotel pick up and drop off ("PUDO") design and management plan
- Construction traffic management plan ("CTMP")
- M Social managed access plan.

3.2 Auckland Transport retaining wall works and the receiving environment

To date, our assessments and management plans have been prepared on the basis of the existing road network for the receiving environment.

Auckland Transport has recently lodged a resource consent application to enable changes to Customs Street West and is described by Council as BUN60462925 ("retaining wall application").

Auckland Transport have stated in their report:

- *"Should this application be granted prior to a determination on this Fast Track Application being made, it would mean that the assessment provided to date would accurately capture the transport network that forms part of the receiving environment. Notably, this could change the outcome of AC's and AT's assessment whilst the Fast Track Application is being processed".*

We note that the consent application provided limited details of the future transport environment. As a result, we attended a briefing session with Auckland Transport and Auckland Council to discuss the proposal.

[3] PEER REVIEW – DOWNTOWN CARPARK REDEVELOPMENT by Commute, dated 13 March 2026

At a high level, the retaining wall application seeks to reconstruct and realign the retaining wall between Customs Street West and Fanshawe Street. This is one of the steps identified by Auckland Transport to deliver their City Centre Bus Plan. The AEE report for the retaining wall application stated *that "other required resource consents will be sought as/when required"* to deliver other components of the City Centre Bus Plan.

The transport implications of this application are that the traffic lane configuration on Customs Street West and Fanshawe Street will change during the retaining wall construction period and following the completion of these works.

During a briefing meeting with Auckland Transport, three road network phases were presented relating to these works.

- Retaining Wall Phase 1: Construction of retaining wall
    - This is anticipated to occur over 1 year, where the retaining wall will be reconstructed and realigned. This is anticipated to overlap with the demolition / construction period of the Project
    - During this time, Customs Street West (between Lower Albert Street and the AON/HSBC service lane) will be reduced from two to one eastbound traffic lanes. One eastbound lane on Fanshawe Street will be provided to retain the same number of eastbound lanes, but there will be a short period within the 1 year construction period where this eastbound Fanshawe Street lane can't be provided
    - Auckland Transport's concern was about the overlap of construction vehicle movements from the Project, which would need to travel through the one lane section of Customs Street West at the same time as bus movements.
- Retaining Wall Phase 2: Interim layout
    - Following the construction period of the retaining wall, an 'interim layout' will be implemented on Customs Street West and Fanshawe Street
    - This will retain the same number of traffic lanes on Customs Street West and Fanshawe Street as existing. Auckland Transport will undertake footpath modifications to enable this to occur, which will occur in the phase above to maximise carriageway width during the construction of the retaining wall
    - From a traffic network capacity perspective, this phase is effectively the same as the existing road layout.
- Retaining Wall Phase 3: Permanent layout
    - Auckland Transport presented a 'permanent layout,' which reflects the long term layout as anticipated in the City Centre Bus Plan
    - This layout would provide two lanes in each direction on Fanshawe Street, to accommodate the majority of bus movements. Customs Street West (between Lower Albert Street and the AON/HSBC service lane) would be converted to a left turn only lane, for buses and local vehicle access into Lower Albert Street

- Auckland Transport has acknowledged undertake other works in the network would need to be undertaken first, before implementing this permanent layout. If these works do not occur, the 'interim layout' (Phase 2) would remain in place
- We also note that Auckland Transport have not commenced the detailed design process for this permanent layout.

Should the retaining wall application be granted prior to this Fast Track Application, we have provided our responses to each of these retaining wall phases below

- Retaining Wall Phase 1: Construction of retaining wall
  - The construction of the retaining wall will overlap with the demolition/construction period of the Project
  - Auckland Transport's concern is that construction vehicles of the Project will conflict with bus movements, which will both share one lane on Customs Street West
  - Auckland Transport are seeking that no construction vehicles are permitted to enter and exit the Site during weekday peak periods (7am – 10am and 4pm – 7pm Monday to Friday). We provide further commentary about construction vehicle movements in Section 3.4.1
  - However, we note that it is important to consider that the 'effect' of the demolition/construction works must be compared against a baseline of the Downtown Carpark being operational
  - Based on our assessments to date, there are no noticeable adverse effects on the network during the primary demolition and construction periods. This is not surprising, as the volume of construction traffic will be less than what currently comes in and out of the Downtown Carpark over the local road network. Furthermore, there are also efficiencies enabled in the local network by closing the signalised intersection where the Downtown Carpark ramp intersects with Fanshawe Street
  - While there may be a reduction in local traffic capacity, the construction traffic volumes are offset by the closure of the Downtown Carpark
  - Based on the meeting with Auckland Transport, we understand that Auckland Forecasting Centre are going to undertake modelling of this phase compared to the Downtown Carpark baseline. While we would like the opportunity to review this modelling if it becomes available, our comments above remain applicable for the general conclusion of our assessment
  - We have also undertaken an additional high level sensitivity test of the City Centre SATURN model to address this phase
    - This compares the existing network operation compared to the construction period, with the retaining wall works assumed to be occurring as a baseline in both phases. We assumed the worst-case lane closures during these works, where an additional lane on Fanshawe Street may not be provided, and Customs Street West will be narrowed to one lane. These closures will not apply over the full 1 year period

- We note that this is a high-level test, as signal phasing has not been optimised and was left at default settings. It is very likely that Auckland Transport will optimise signal timing while undertaking the retaining wall works
- The outputs are provided in Appendix C
- In general this shows there are minimal changes to the network operation in terms of vehicle delays, when comparing the baseline with the Downtown Carpark open compared to the construction phase
- We note that there are a few localised increases in vehicle delays. However these mostly apply to general traffic, and can be resolved by optimising signal timing
    - The Eastern Viaduct is shown to have a 43 second delay increase in the AM peak. This can be improved by slightly increasing the phase timing, noting only 3 seconds green time is assigned in the model. No bus movements enter or exit this approach
    - The westbound approach delay on Customs Street West towards the Nelson Street intersection increases by 15 seconds. This applies to general traffic, as bus lanes allow buses to bypass delay to general traffic
    - In the PM peak, the northbound delay on Lower Hobson Street increases by 20 seconds approaching Quay Street, but decreases by 15 seconds approaching Customs Street West. Therefore the net delay increase is only 5 seconds. This applies to general traffic, as bus lanes allow buses to bypass delay to general traffic
- In summary, the sensitivity test shows there is no noticeable difference to the operation of the network as a result of the construction period of the Project while assuming the worst case road closures during the retaining wall realignment works. Any delay changes shown in this sensitivity test can be addressed by optimising signal timing.

- Retaining Wall Phase 2: Interim layout
    - This is effectively the same road network layout as existing. As our assessments have already been prepared on this basis, no further assessments would be required for this phase.
- Retaining Wall Phase 3: Permanent layout
    - As noted previously, we do not believe it is feasible, realistic or likely for Auckland Transport to deliver this permanent layout without first undertaking works in the surrounding network, which may require further consents. Auckland Transport stated that the interim layout would remain in place, until those other network changes are implemented
    - Therefore, no assessment of this scenario is considered possible or necessary, given it is reliant on further changes being implemented.

3.3 Hotel PUDO design and management plan

Auckland Transport raised a number of concerns about the design, operation and management plan of the hotel PUDO.

- Design matters
    - Auckland Transport requested an assessment to show if a van with trailer can pass through the PUDO area if both PUDO spaces are occupied.
    - Auckland Transport requested additional vehicle tracking to show if the PUDO spaces can be accessed if the other space is occupied.
    - Auckland Transport requested cross-sections to understand the gradients and general layout of the PUDO area, and the interface with the footpaths.
    - We have prepared additional plans showing vehicle tracking of the hotel PUDO operation as well as proposed amendments to the road markings on Lower Hobson Street Slip Lane. We also assessed the sight lines of vehicles yielding at the proposed give-way sign for vehicles entering Custom Street West from the Lower Hobson Street Slip Lane. Refer to Appendix A (sheets 1 to 5)
        - In order to accommodate vehicle tracking, minor adjustments to the vehicle crossings are required. This will require a minor adjustment to the final architectural plans
        - Sheets 1 to 4 confirm that the PUDO spaces can be accessed without requiring manoeuvring onto the public footpath
        - The external line marking changes will be subject to Engineering Approval and Traffic Resolution. We note that this is only required if Auckland Transport's long term layout is not to be implemented. Refer to Sheet 2
        - The sight line plan shows that there is sufficient Safe Intersection Sight Distance for an operating speed of 40 km/h
        - The 'Proposed Landscape Drawings' in the application documents show both elements. These show the gradients in the PUDO will be essentially flat. A 3D render is also provided in these plans to show how the PUDO will appear
        - We emphasise that the PUDO vehicle crossings will have much lower volumes than the existing Downtown Carpark vehicle crossings along the Customs Street West frontage, and provide a safer pedestrian environment compared to the existing
- Operational matters
    - The Auckland Transport and Stantec memos both asked whether coaches are required to service the hotel, and may therefore require parking. There is no requirement to provide coach parking to service the hotel
    - Auckland Transport has requested further analysis of a comparative hotel for the operation of the PUDO and vehicle dwell times. Our assessment to date has been based on M Social, which has a similar number of hotel rooms, and is located in the same area

of the City Centre. We do not believe any further comparisons are necessary. The proposed PUDO will be subject to an active management plan, whereas other PUDO facilities in the City Centre are not subject to such plans

- Auckland Transport has raised concerns about vehicles needing to be moved on if there is no space for them to stop. There are options available, including circulating through the service lane. We note that peak hour PUDO volumes are expected to be low, so the number of potential recirculated trips will be even lower. Our modelling assessment also assumed that 100% of PUDO trips would effectively circle around the block, so this phase is accounted for in our assessment

- Management plan
  - Auckland Transport have raised numerous matters with the hotel PUDO management plan, and have provided suggestions for changes
  - We agree with the following suggestions
    - An additional objective to prevent queueing across the public footpath on Customs Street West
    - That the management plan should be reviewed within the first 3 months of opening, in addition to the annual review that is already proposed
  - We agree in part with the following suggestions
    - With an additional objective to avoid adverse safety and operational effects of the PUDO on the adjacent road network. However, we disagree with specific references to future road environments as this could create obligations that are outside of the applicant's and hotel's control
    - That the monitoring of the management plan should include crash records in the vicinity, but should be focused on what can reasonably be attributed to the PUDO, rather than an open ended requirement of the local network
  - We disagree with the following suggestions
    - That a review should be triggered at the request of Council to respond to complaints from the public or operational matters identified as this creates an uncertain and open-ended process, susceptible to misuse. The proposed review periods (annually and within the first 3 months) provide a scheduled and structured process where matters can be addressed
  - Auckland Transport have requested additional details on specific measures and the exact design of signs. We consider these can be implemented in the final management plan, once a hotel operator has been appointed. The proposed draft management plan and assessment provide a sufficient framework for these matters to be developed further.

3.4 Construction traffic management plan *(primary matters)*

This section addresses the key matters relating to construction traffic management. Secondary matters are covered in Section 4.1.

3.4.1 Construction vehicle movements during weekday peak periods

Until recently, Auckland Transport have been opposed to any heavy construction vehicle movements during weekday peak periods (7am – 10am and 4pm – 7pm Monday to Friday). Their concern was primarily about the potential effects on bus movements in the local area of the Site.

Our 'Downtown Carpark Demolition and Construction Transport Assessment' assessed this matter in detail. As concluded in that report, our analysis demonstrated that the With Construction phase, which includes up to 48 construction truck movements per hour (24 inbound and 24 outbound), either improves or maintains the level of service at the assessed intersections, relative to the baseline phase with the Downtown Carpark operational. Overall, the construction-related traffic effects are minimal and can be appropriately accommodated. Effects on buses were also assessed to be negligible.

It is important to note that imposing peak hour restrictions creates significant risks of the overall construction programme duration extending. This will prolong any effects associated with road closures such as vehicle and pedestrian diversions.

Auckland Transport have provided an updated position in their memo.

- Auckland Transport have stated they are *"open to further discussion regarding the potential for allowing a limited number of arrivals and departures of heavy vehicles during peak periods, subject to suitable management including appropriate monitoring and response measures"*
- The memo states *"the assessment provided by the applicant shows that the buses are not adversely affected at peak times"*
- Auckland Transport still have outstanding concerns about the ability to manage the number of construction traffic volumes within the Site
- Auckland Transport's main concern now is about cumulative effects, particularly during the retaining wall construction period
- Auckland Transport have suggested the following during the retaining wall construction period
    - Blanket peak period heavy vehicle restrictions (7am – 10am and 4pm – 7pm Monday to Friday)
- Outside of the retaining wall construction period, Auckland Transport have suggested the following
    - Reduced peak hour heavy vehicle movements (12 vehicles / 24 movements as a starting point, which equates to 50% of the construction traffic volumes we've assessed), on the basis that monitoring is undertaken and there are mechanisms to enable further restrictions subject to this monitoring.

Our responses to Auckland Transport's updated position is outlined below

- We highlight that Auckland Transport have acknowledged that our assessment has currently shown that buses are not adversely affected at peak times
- Ability to manage construction vehicles within the Site

- For capacity within the site, it will be on the contractor to manage within the practical capacity of the site, and the management plan includes measures/objectives and contractor obligations to minimise adverse effects onto the road. We highlight two of the 'contractor obligations for final CTMP', which are contained in our draft CTMP
  - *Measures to ensure that loading zones for construction traffic will be managed to minimise congestion on the surrounding road network*
  - *Measures to ensure truck travel to and from the site are staged and sequenced as much as possible. These measures will include (but not limited to) detailed planning and preconstruction coordination, radio communication devices and GPS tracking of trucks requirements. This will ensure that the designated truck holding areas will be unlikely to overflow and potentially result in conflicts with the general traffic and bus lanes*
- While we have assessed the maximum number of potential truck movements in any one hour throughout the entire demolition and construction process, heavy construction vehicle volumes will fluctuate depending on the construction stage and activity being undertaken. The loading and processing time for construction vehicles will also fluctuate depending on the type of activity
- It is in the contractors shared interest to not have excess trucks accumulating or idling within the Site or by the access point, as this will make it more difficult for contractors to manage, and results in wasted time for staff members being idle
- We note that we have proposed a new pedestrian crossing location for the east-west pedestrian movement along Customs Street West, which may ease one of Auckland Transport's concerns about overlap between construction vehicles and pedestrians. This is explained in Section 3.4.3

- For movements during the retaining wall construction period (Phase 1 as outlined in Section 3.2)
  - We do not agree with the blanket peak period restriction that Auckland Transport have proposed
  - While AFC will model this updated phase (with the Downtown Carpark included in the baseline), the construction vehicle traffic will be lower than the existing DTC trips during peak periods. This is the 'effect' which should be considered by the panel. Furthermore, our high level sensitivity test shows that buses are not materially impacted
- For movements outside of the retaining wall construction period
  - We acknowledge that Auckland Transport have updated their position to potentially allow some construction vehicle movements during peak periods and are open to further discussions
  - However, there has not been any basis provided for the 50% reduction. Auckland Transport have already acknowledged that our assessment has shown that buses are not adversely affected at peak times (with 100% of the volumes)
  - We do not agree with a monitoring condition, as the operation of construction vehicles could be influenced by matters outside of the direct control of the CTMP and applicant, including Auckland Transport undertaking ongoing changes to the network

- As noted previously the draft CTMP already outlines contractor obligations for the final CTMP, which provide mechanisms to contain effects of construction traffic.

In summary, our conclusion remains unchanged that heavy construction vehicle movements can occur and be managed within peak periods as we've assessed.

3.4.2 Safety zones and road closures

Auckland Transport raised numerous concerns about safety zones and the construction methodology, in the scenario that they could result in additional road closures

- The intention is that no additional road closures will be required beyond what is assessed and outlined within the CTMP. The final CTMP will work within these conditions
- Auckland Transport raised concerns about wastewater and stormwater construction options. This matter is being addressed elsewhere in the responses by the applicant team
- Auckland Transport noted a potential overlap between the sediment treatment and storage devices with vehicle access into the M Social loading bay. We understand that Tonkin and Taylor are preparing an addendum report which will outline that the location of these devices will be confirmed by the contractor and can be progressively adjusted, and will be positioned to not interfere with the proposed truck manouevring routes or the Class B hoardings
- Specific safety clearance zones are a detailed design matter, but we note that the movement of trucks within the construction zone is a matter that the contractors can manage. It is common for contractors to manage construction vehicle movements and loading within constrained construction sites. The important consideration is that this will not trigger the need for additional road closures
- Auckland Transport questioned whether the demolition of the Downtown Carpark ramp would result in a bus lane closure outside of the two specified weekends. We confirm that the full road closures are required for weekends only and not weekdays. This means that the work does not need to be scheduled over two consecutive weekends.

3.4.3 Pedestrian routes

Auckland Transport raised concerns about construction vehicles overlapping with pedestrians using the east-west route on Customs Street West. Specifically, Auckland Transport were concerned about there being limited space for inbound trucks to queue within the construction zone if pedestrians are using the pedestrian crossing, which has the potential to cause queuing onto the road network.

While the contractor has the ability to sequence truck movements and hold pedestrian movements when trucks are entering and exit the construction zone, we have proposed a new route as shown in Figure 1.

- The new route is shown in yellow. The previous route is shown in orange
- The new route will result in a new pedestrian crossing location, as shown in red. The previous option relied on utilising the existing raised zebra crossing (which would have also required kerb modifications). This existing zebra crossing can be closed while the new crossing in red is provided
- This achieves the following

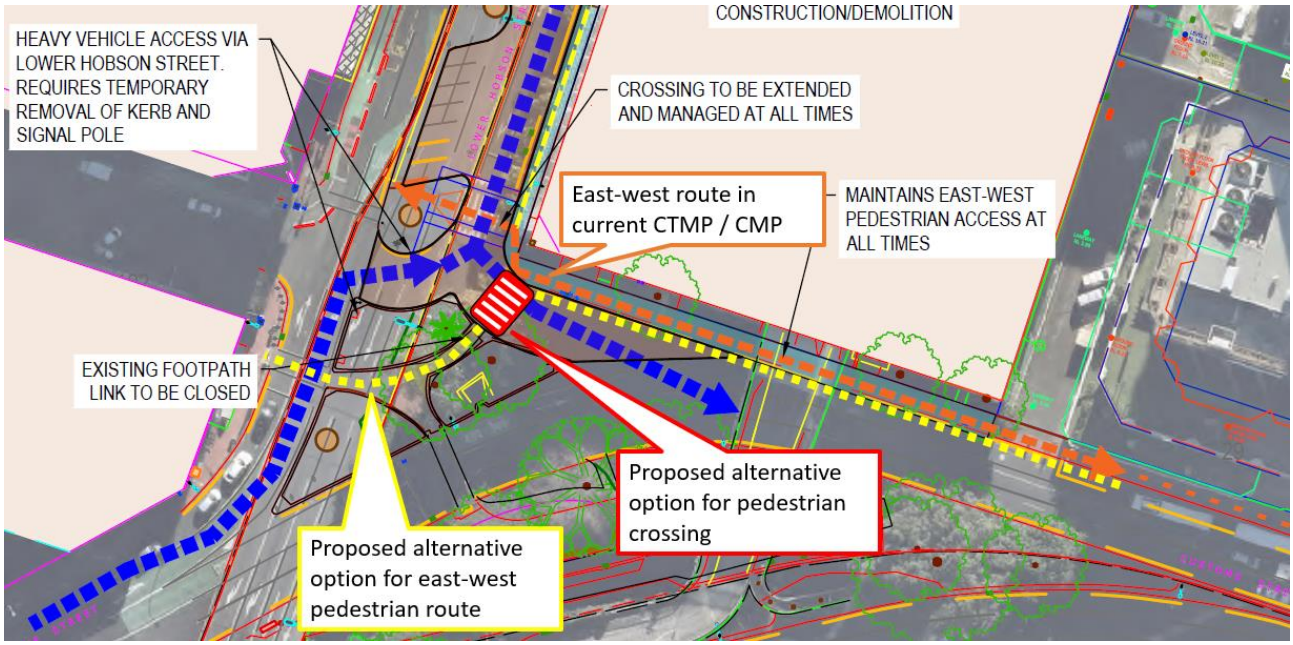
- Maintains east-west connectivity on Customs Street West for pedestrians
- Links to existing footpaths and signalised crossing points
- Easier for contractors to manage trucks vs pedestrians, as inbound trucks can enter the Lower Hobson Street slip lane without pedestrians needing to be stopped by contractors. Pedestrians would primarily only need to be held for truck outbound movements
- Keeps pedestrian away from Lower Hobson Street slip lane construction zone
- Keeps pedestrians away from the constrained underneath the flyover, where there is a smaller area for pedestrians to wait to cross.

We note that this may affect the ability to utilise a loading zone on Customs Street West by the southwest corner of the site for larger construction vehicles. However, there will be more space available to utilise on the Lower Hobson Street slip lane for construction vehicles.

From a transport perspective, we consider this new option provides better outcomes and will make it easier for the contractor to manage pedestrians and trucks.

This route can be included in an updated draft of the CTMP.

Figure 1: New option for east-west pedestrian connection on Customs Street West



3.4.4 Pedestrian Class B Hoarding provision and design

Auckland Transport noted that the design of the Class B hoardings should be designed to account for the following guidelines:

- Auckland Transport's Practice Note 6 - Vertical and Horizontal Clearance over and beside bus routes
  - This requires minimum horizontal clearances of 450 mm behind the face of a non-mountable kerb (or 500 mm behind a mountable kerb) along bus operating corridors,

together with vertical clearance envelopes of approximately 5.0–5.75 m above the carriageway depending on the object type and maintenance allowance

- Auckland Transport's Temporary Traffic Management Guidelines
    - The guidelines state the footpaths must be maintained at their existing widths

The existing footpath width on Customs Street West varies between 2.5 to 2.9 m. There are localised areas where this is narrowed due to street light poles.

There are three competing constraints

- The need to maintain east-west connectivity for pedestrians through a Class-B hoarding, while maintain the existing footpath width
- Maintaining sufficient clearances from the bus lane to meet Practice Note 6
- Utilising the available space between the Customs Street West bus lane and the existing Downtown Carpark building. This space is constrained, assuming that no bus lane closures occur.

Assuming that a 500 mm horizontal clearance is provided from the bus lane, there appears to be the same amount of space located between the existing footpath and the Downtown Carpark building to offset the footpath from its existing location. However, Class B hoardings will require space for columns/supports which may reduce the available width. To avoid any bus lane closures and provide sufficient clearances from buses, Auckland Transport may need to accept that the final hoarding width could be narrower than the existing width at some locations, due to the finite amount of space available.

The exact design and footpath of the Class B hoardings will be subject to the final CTMP, but should aim to retain the existing footpath widths where practicable.

3.4.5 Light vehicle movements and contractor access and parking

Auckland Transport queried the following information and assumptions about contractor access, particularly relating to light vehicles

- How contractors will be able to access the site to unload tools and equipment
- Auckland Transport stated that vehicle access underneath the Lower Hobson Street flyover would not be acceptable as these movements can't be controlled unlike heavy vehicle movements

Our assessment has currently assumed no contractor parking will be provided on-site. There are numerous options for contractors to access the Site, including by public transport, off-site parking, or arranging shuttles / vans to transport staff in groups.

While contractor parking is not provided, we do not think it is practical to completely restrict access. Some allowance for these movements may be required at certain times during the construction period. However, the contractor has the ability to control and manage how these staff arrive and depart the site. These can be scheduled to occur at the start or end of a working day, or during times when heavy vehicle movements are low.

Our traffic modelling of the construction vehicle access point underneath the flyover is conservative. It assumes the highest daily truck movements over the entire construction period, and then assumes 20%

of these peak daily movements will occur in one hour. This means that the heavy vehicle volumes will not always be this high. Therefore, there is flexibility for the occasional light vehicle movement to utilise this access without creating adverse effects on the network.

3.5 M Social managed access plan

The Commute peer review report on behalf of M Social raised no fundamental concerns about the Draft Managed Access Service Arrangement Plan (M Social), relating to ensuring continued access to M Social's loading bay during the demolition and construction periods.

The Commute peer review questioned M Social about their maximum servicing vehicle size

- This is because the management plan provides scenarios for how larger servicing vehicles (indicatively 8.3 m in length and over) are managed, compared to smaller servicing vehicles
- Based on Commute's (and our own) observations of the operation of the loading bay, there were no servicing vehicles over 8.3 m in length
- We note that the management plan adequately provides measures for these larger trucks, in the situation that they arrive at the M Social loading bay.

Auckland Transport initially raised concerns that the management plan had not been prepared in consultation with M Social. The engagement undertaken with M Social confirms they are comfortable with the arrangement. We note that the final management plan must provide records of consultation with M Social, which enables further communication to occur between M Social and the contractor (once appointed).

Auckland Transport also raised several detailed concerns about the operation of the management plan. However, we consider these are matters which can be resolved in the final management plan, in conjunction with the final CTMP.

4 RESPONSES TO OTHER TECHNCICAL TRANSPORT MATTERS

This section responds to other technical transport matters that were not identified as primary matters.

4.1 Construction traffic management plan *(secondary matters)*

4.1.1 Secondary construction vehicle access on Customs Street West

Auckland Transport raised concerns about providing a secondary construction vehicle entrance from Customs Street West, near the southwest corner of the site. The concern was that this would occur at the same time as the primary construction vehicle entrance underneath the flyover, and also causing queueing on the bus lane.

We note that this access was intended to be a backup access if absolutely needed, in order to provide flexibility. It would not be used at the same time as the primary access for inbound vehicle movements.

However, we note that this secondary access will likely not be needed if the east-west pedestrian crossing location is relocated, as outlined in Section 3.4.3.

4.1.2 Safety assessment of distraction from construction works

Auckland Transport considers that a safety assessment *"is required as to the effects on the adjacent road network where materials are craned from trucks on Lower Hobson Street or Customs Street West as this activity could be a distraction to road users on the flyover or a pose a hazard for areas under goods being moved".*

We disagree and do not consider a further assessment is required. It is very common for construction works to occur within the City Centre, so no further assessment or mitigation is required beyond what would be contained within a standard CTMP.

For vehicles travelling on the flyover

- The speed limit is 30 km/h which significantly reduces the likelihood of a high severity crash
- Vehicles are travelling in one direction, which means there will be no head-on crashes with other vehicles
- There are no pedestrian footpaths on the flyover, which means there are no potential chances of a pedestrian vs vehicle crash
- Goods being moved will be contained within the identified construction zones, and not impact on vehicle movements on the flyover.

4.1.3 Service lane access during construction

Auckland Transport requested additional details to understand whether the existing access and loading arrangements for the HSBC and AON buildings are impacted during the construction and demolition periods.

We note that it is possible that the southern portion of the service lane (with access onto Customs Street West) may need to be closed throughout some periods of demolition and construction, and the details can be developed in the final CTMP.

Any closures will be coordinated with relevant private stakeholders and where required with Auckland Transport, the Road Controlling Authority. We note that Precinct owns and operates the AON and HSBC buildings.

In this scenario, some vehicles may be diverted towards the Quay Street access. However, we do not believe any further assessment of the Quay Street vehicle crossing is required. We have already assessed the Quay Street crossing during the operational phase, which will have higher volumes compared to the construction phase. Furthermore, there will be a local reduction of trips on the network during the construction phase, as the Downtown Carpark will not be operational.

4.1.4 Vehicle tracking for left turns from Sturdee Street into Customs Street West

Auckland Transport requested vehicle tracking for larger vehicles turning left from Sturdee Street into the western end of Customs Street West, as the proposed closure prevents larger vehicles turning into the western end of Customs Street West from under the Lower Hobson Street flyover.

Vehicle tracking is provided in sheet 6 of Appendix A. This shows that a 12.6 m truck can undertake this left turning movement.

4.2 Traffic modelling

SIDRA lane summary outputs

- As requested by Auckland Transport, we have provided SIDRA lane summary outputs for the construction modelling of heavy vehicle movements. This is provided in Appendix B. We understand this is to help understand potential effects on buses.
- However, we do not expect this will change any conclusions about our assessment of bus and heavy construction vehicle movements during the construction period. This is because our previous assessment provided travel times for bus routes, which would account for any potential delay for buses travelling through bus lanes.

Signal timing of construction modelling

- Auckland Transport noted an inconsistency of the cycle times of a SIDRA model for the PM peak of the construction modelling at Quay Street / Lower Hobson Street intersection. There was a minor input error which resulted in the cycle time in the base model being 103 seconds instead of 105 seconds. We have reviewed this change, and it has negligible difference on the conclusion of our assessment.

Residential vehicle servicing trip rates

- Auckland Transport considers that the trip generation rate for residential servicing trips is underestimated
- Based on our review of servicing trip generation rates in the City Centre and knowledge of how residential servicing generally operates, servicing trips are very low during weekday peak periods. This is because servicing vehicles generally aim to avoid peak period congestion
- Activities specific to residential such as furniture removal or delivery are unlikely to be concentrated during weekday peak periods, and these activities can be booked within the proposed servicing management plan
- We note that even if the residential servicing trip rate was increased, this is unlikely to have any material impact on the conclusion of our assessment.

4.3 Loading and servicing management plan

Following questions raised in Auckland Transport's memo, we provide the following clarifications

- Some loading access may occur outside of the core operating hours (where a loading dock manager will be on-site). Where deliveries are scheduled outside of these core hours, drivers will be provided with access cards
- For unscheduled or ad-hoc deliveries (assuming these are not pre-arranged) – there will be a 24/7 "concierge" available to provide access via intercom.

4.4 Internal casual parking spaces

Auckland Transport questioned how the 9 casual parking spaces on Level B01 would be managed, and whether a booking system would be required. These parking spaces will be internally managed by a concierge.

4.5 Quay Street service lane vehicle crossing

We have updated the Quay Street service lane vehicle crossing concept design to reflect the recent changes Precinct Properties have undertaken with the lane. Refer to sheet 7 of Appendix A.

In summary, the key features of the design do not change, which include

- Speed management measures, including those near the property boundary and retention of existing speed humps within the service lane
- Physical separation of traffic directions via a 0.5 m median strip, which could be implemented as a textured surface, low raised lip, or planter feature. This element provides both visual and functional separation, moderates speeds, and defines the vehicle path
- A low (lower than 900 mm) physical separation element at the corner boundary with M Social to maintain visibility between pedestrians and exiting vehicles
- Provision for bollards within the road reserve, to be implemented at Auckland Transport's discretion
- The existing lighting pole separating the M Social vehicle crossing and the service lane vehicle crossing will remain in place. The space between this pole and the new low physical separator at the corner boundary with M Social (where the bollard provisions are) will function as a pedestrian refuge area, as these two elements naturally define a swept path that avoids pedestrian movement through this space.

The recent changes to the service lane resulted in the following minor tweaks to the concept design, including

- The entry and exit portions of the vehicle crossing are slightly wider (3.5 m exit and 4.0 m entry)
- The recently constructed bollards within the service lane will be removed
- All other elements recently constructed would remain.

5 PLAN CHANGE 79 ASSESSMENT

The ITA assessed the notified version of Plan Change 79 (PC79). This section instead assesses the application against Chapter E27 of the Auckland Unitary Plan – Operative in Part, as amended by PC79 following the Environment Court Consent Order dated 6 March 2026. On that basis, PC79 is treated as operative for this assessment.

The only change arising from the Consent Order version that is relevant to this application relates to Rule E27.6.3.2(A), concerning the number and design of accessible parking spaces. In summary

- the accessible parking requirement for residential activity has been reduced

- the theoretical parking rate for office activity has changed from 1 space per 45m² to 1 space per 100m²
- our assessment of the retail and hotel components remains unchanged

As a result, fewer accessible parking spaces are required under PC79. The updated requirements are

- Residential: minimum 5 spaces (previously 8, a reduction of 3 spaces)
- Office: minimum 19 spaces (previously 40, a reduction of 21 spaces)
- Total across all activities: minimum 31 spaces (previously 55, a reduction of 24 spaces)

As outlined in the ITA, 21 accessible parking spaces are currently proposed.

Our assessment against the relevant PC79 criteria in the ITA remains applicable. In summary

- Office: 13 accessible spaces are proposed. This exceeds the 5 spaces required under NZS 4121:2001 based on the 170 office parking spaces provided and is considered appropriate given the limited parking supply and the site's highly accessible city-centre location.
- Retail: no accessible parking is proposed, as no parking is allocated to retail activity. This is considered appropriate given the pedestrian-oriented nature of the retail offer and the availability of nearby public accessible spaces on Customs Street West.
- Hotel: no dedicated accessible parking is proposed. Instead, the Customs Street West pick-up and drop-off area is considered capable of accommodating accessible passenger movements, with valet parking managed by staff in the basement where required. On that basis, dedicated accessible parking for the hotel is not considered necessary.

We note that the provision of accessible parking for the residential activity was 8 spaces, which was intended to meet the notified version of the PC79 standards. However, the requirement for residential accessible spaces has now been reduced to 5 spaces under the updated version of PC79.

- Therefore, we consider that it is appropriate to allow the option to convert 3 of the 8 residential accessible space to regular residential spaces. This would reduce the total number of accessible spaces to 18 spaces. The accessible parking provision will still comply for the residential component
- This change is independent of the accessible parking provision for the office, retail and hotel activities, which we have reassessed above.

6 SUMMARY OF UPDATES

As a result of our responses in this addendum, several updates to the management plans and design drawings will be required. These are summarised below.

- Hotel PUDO Management Plan
    - Updates to the management plan to include additional objectives, the inclusion of crashes as part of the monitoring, and an additional monitoring period within the first 3 months (see Section 3.3)
- CTMP

- Update to include a new east-west pedestrian route on Customs Street West during the construction and demolition phases (see Section 3.4.3)

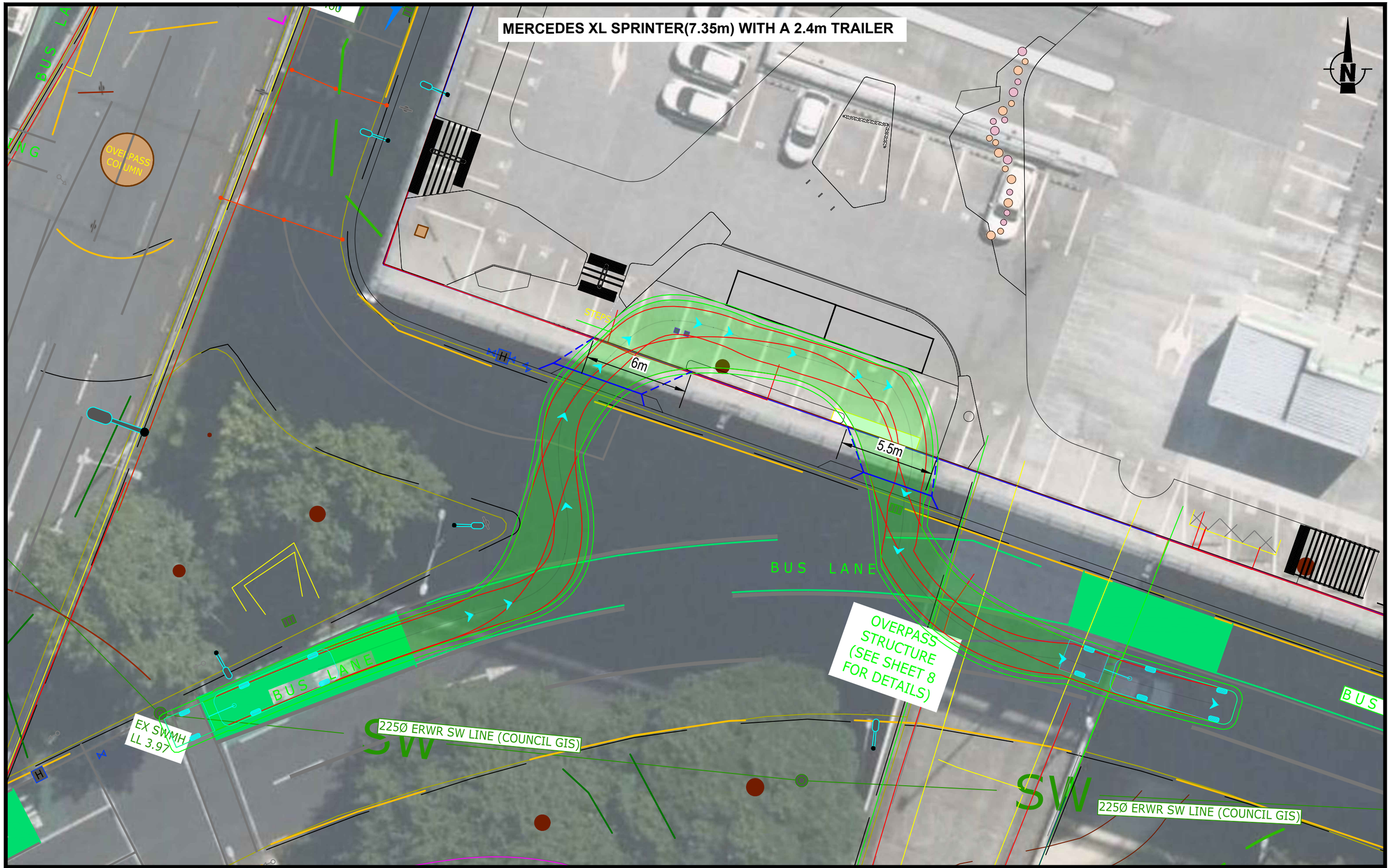
- Servicing and loading management plan
  - Clarifications about the after hours and ad-hoc deliveries (see Section 4.3).
- Design matters
  - Updates to the vehicle crossing splays for the hotel PUDO vehicle crossings (see Section 3.3)
  - An option to convert 3 residential accessible spaces to standard parking spaces (see Section 5).

Reference: P:\PREP\002 Downtown Carpark redevleopment\ITA and reporting\Technotes\Fast Track Response\T11B260407 FTAA Transport Responses.docx

APPENDIX A Vehicle tracking plans

P:\PREP\002 Downtown Carpark redevleopment\Drawings\Our Drawings\33. Updated Porte Cochere 2025.08.21\PREP002-DC-DW01- E.dwg 01 Ronak Gupta 02/04/2026 11:51 am

MERCEDES XL SPRINTER(7.35m) WITH A 2.4m TRAILER



REV	AMENDMENT	DATE OF ISSUE
A	First Issue	24/09/25
B	Second Issue	29/10/25
C	Third Issue	06/11/25
D	Forth Issue	24/03/2026
E	Fifth Issue	26/03/2026

DESIGN: KC | DRAWN: KC
CHECKED: HS | DATE: 24/09/25
SCALE: 0 20m
1:500 @ A3

CLIENT: PRECINCT PROPERTIES
PROJECT: DOWNTOWN CARPARK DEVELOPMENT
LOCATION: 2 LOWER HOBSON STREET, CBD

FOR RESOURCE CONSENT

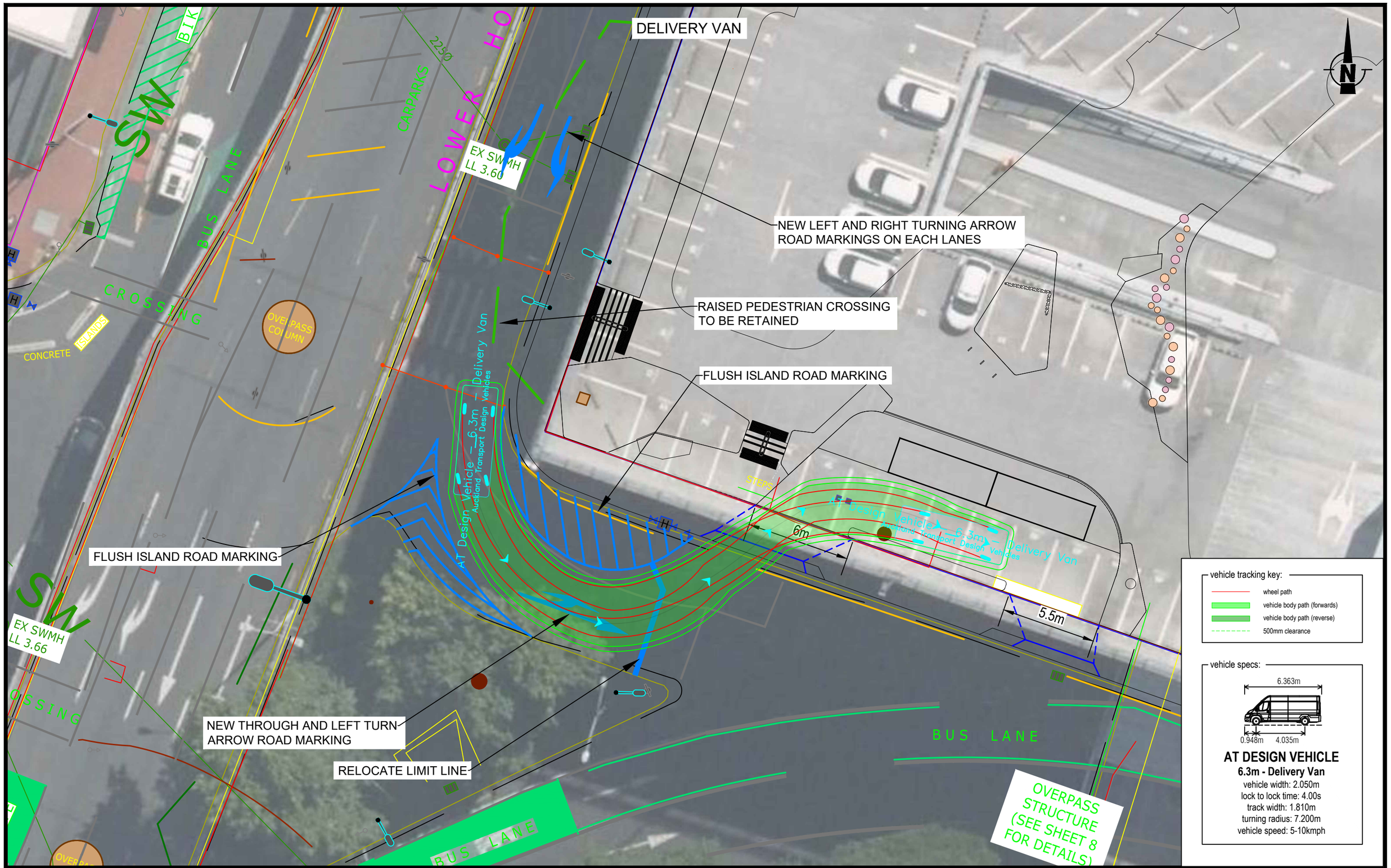
SHEET TITLE: PORTE COCHERE VEHICLE TRACKING MERCEDES SPRINTER XL WITH A TRAILER

DRAWING NUMBER: PREP002-DC-DW01

SHEET: 01 of 07

REV: E

flow
TRANSPORTATION SPECIALISTS
Level 1, 11 Blake Street, Ponsonby, Auckland | PO Box 47497 Ponsonby
p 09 970 3820 | f 09 970 3890 | www.flownz.com



vehicle tracking key:

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

vehicle specs:

AT DESIGN VEHICLE

6.3m - Delivery Van

vehicle width: 2.050m
lock to lock time: 4.00s
track width: 1.810m
turning radius: 7.200m
vehicle speed: 5-10kmph

REV	AMENDMENT	DATE OF ISSUE
A	First Issue	24/09/25
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C	Third Issue	06/11/25
D	Forth Issue	24/03/2026
E	Fifth Issue	26/03/2026

DESIGN: KC | DRAWN: KC
CHECKED: HS | DATE: 24/09/25
SCALE: 0 20m
1:500 @ A3

CLIENT: PRECINCT PROPERTIES
PROJECT: DOWNTOWN CARPARK DEVELOPMENT
LOCATION: 2 LOWER HOBSON STREET, CBD

FOR RESOURCE CONSENT

SHEET TITLE: PORTE COCHERE VEHICLE TRACKING AT - DELIVERY VAN

DRAWING NUMBER: PREP002-DC-DW01

SHEET: 02 of 07

REV: E

flow
TRANSPORTATION SPECIALISTS
Level 1, 11 Blake Street, Ponsonby, Auckland | PO Box 47497 Ponsonby
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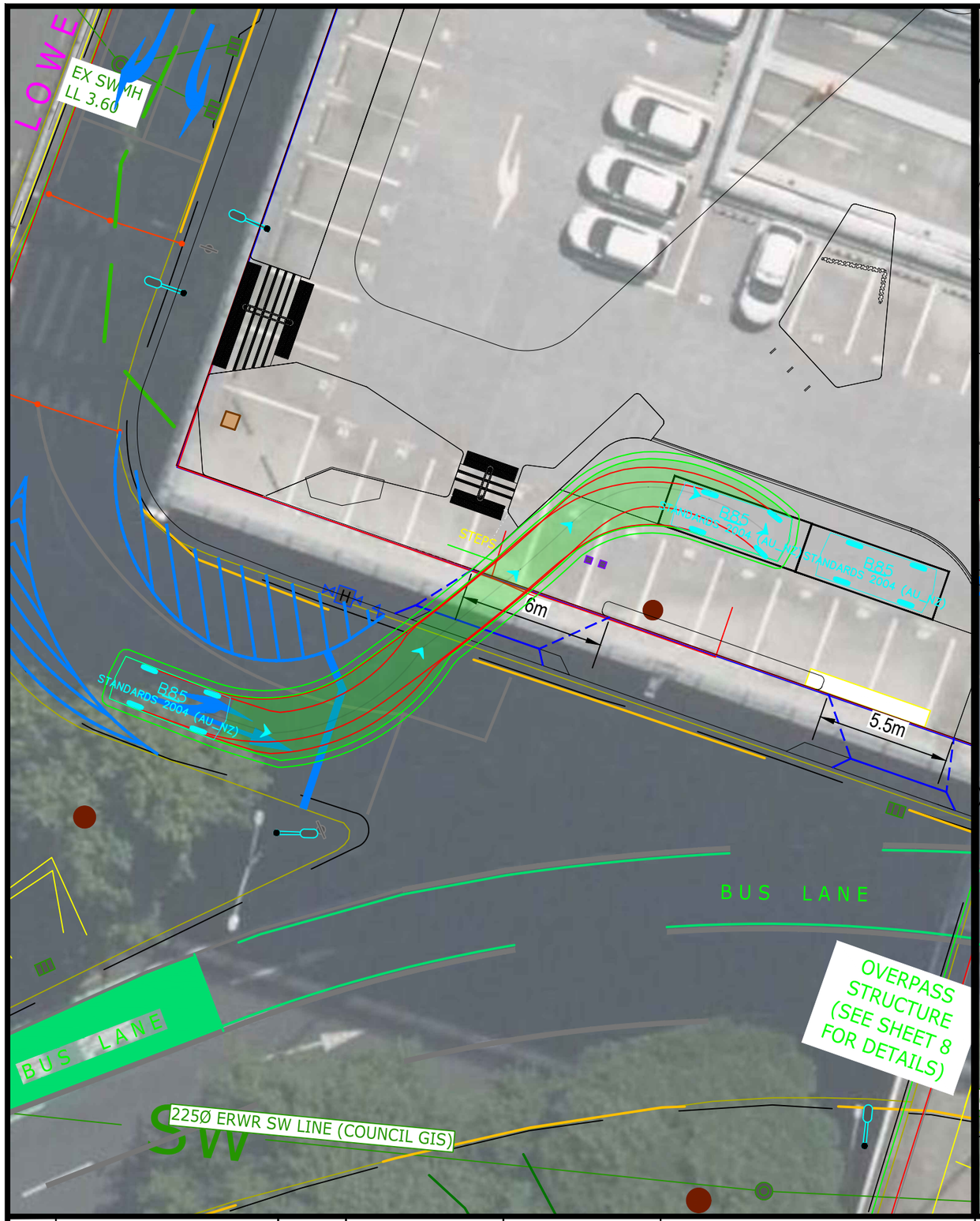

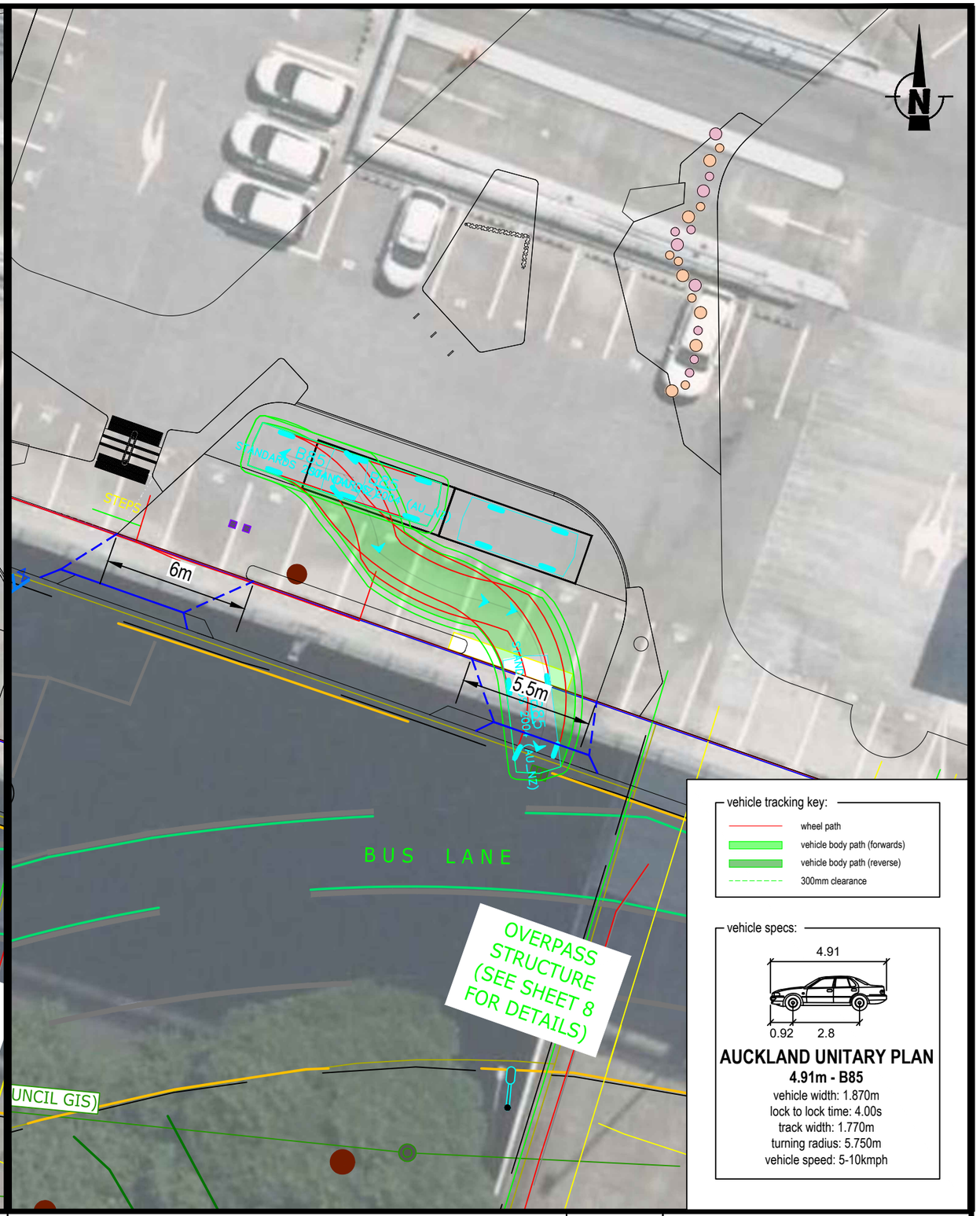

vehicle tracking key:

- wheel path
- vehicle body path (forwards)
- vehicle body path (reverse)
- 300mm clearance

vehicle specs:

AUCKLAND UNITARY PLAN

4.91m - B85

vehicle width: 1.870m
lock to lock time: 4.00s
track width: 1.770m
turning radius: 5.750m
vehicle speed: 5-10kmph

REV	AMENDMENT	DATE OF ISSUE
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D	Forth Issue	24/03/2026
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DESIGN: KC | DRAWN: KC
CHECKED: HS | DATE: 24/09/25
SCALE: 0 20m
1:500 @ A3

CLIENT: PRECINCT PROPERTIES
PROJECT: DOWNTOWN CARPARK DEVELOPMENT
LOCATION: 2 LOWER HOBSON STREET, CBD

FOR RESOURCE CONSENT

SHEET TITLE: PORTE COCHERE VEHICLE TRACKING
B85 DESIGN VEHICLE

DRAWING NUMBER: PREP002-DC-DW01

SHEET: 03 of 07
REV: E

flow
TRANSPORTATION SPECIALISTS
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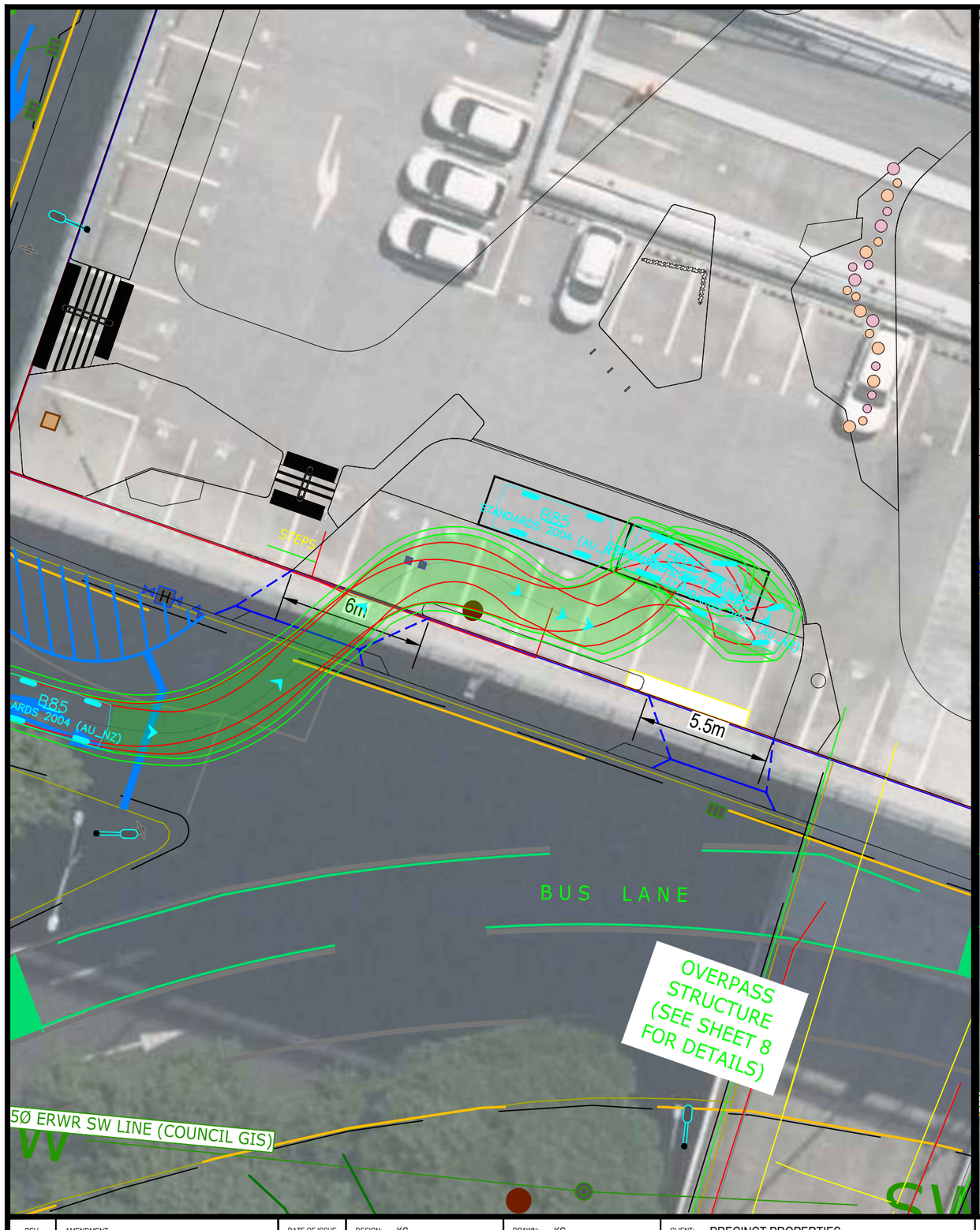

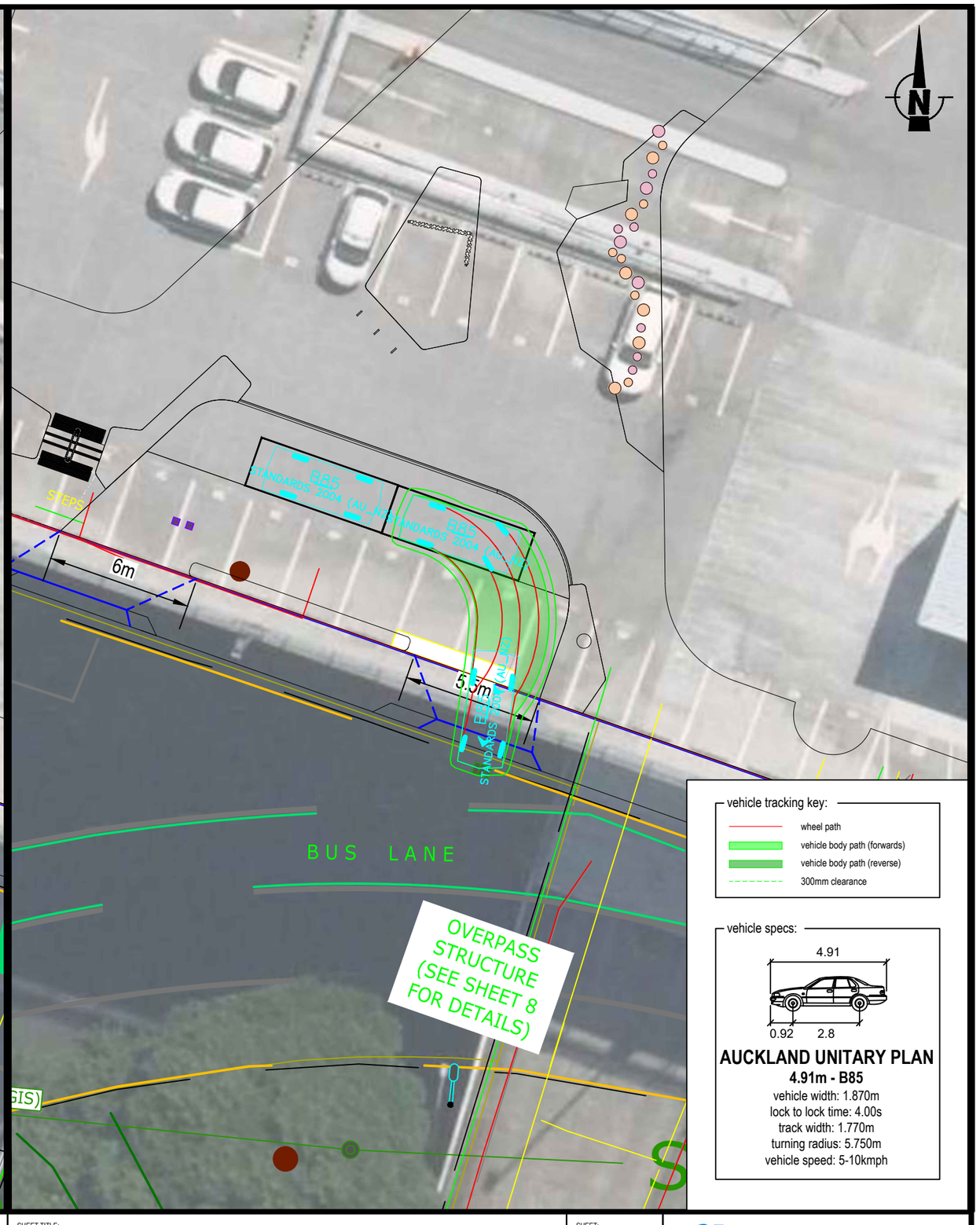

vehicle tracking key:

- wheel path
- vehicle body path (forwards)
- vehicle body path (reverse)
- 300mm clearance

vehicle specs:

AUCKLAND UNITARY PLAN

4.91m - B85

vehicle width: 1.870m
lock to lock time: 4.00s
track width: 1.770m
turning radius: 5.750m
vehicle speed: 5-10kmph

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CHECKED: HS | DATE: 24/09/25
SCALE: 0 20m
1:500 @ A3

CLIENT: PRECINCT PROPERTIES
PROJECT: DOWNTOWN CARPARK DEVELOPMENT
LOCATION: 2 LOWER HOBSON STREET, CBD

FOR RESOURCE CONSENT

SHEET TITLE: PORTE COCHERE VEHICLE TRACKING
B85 DESIGN VEHICLE

DRAWING NUMBER: PREP002-DC-DW01

SHEET: 04 of 07

REV: E

flow
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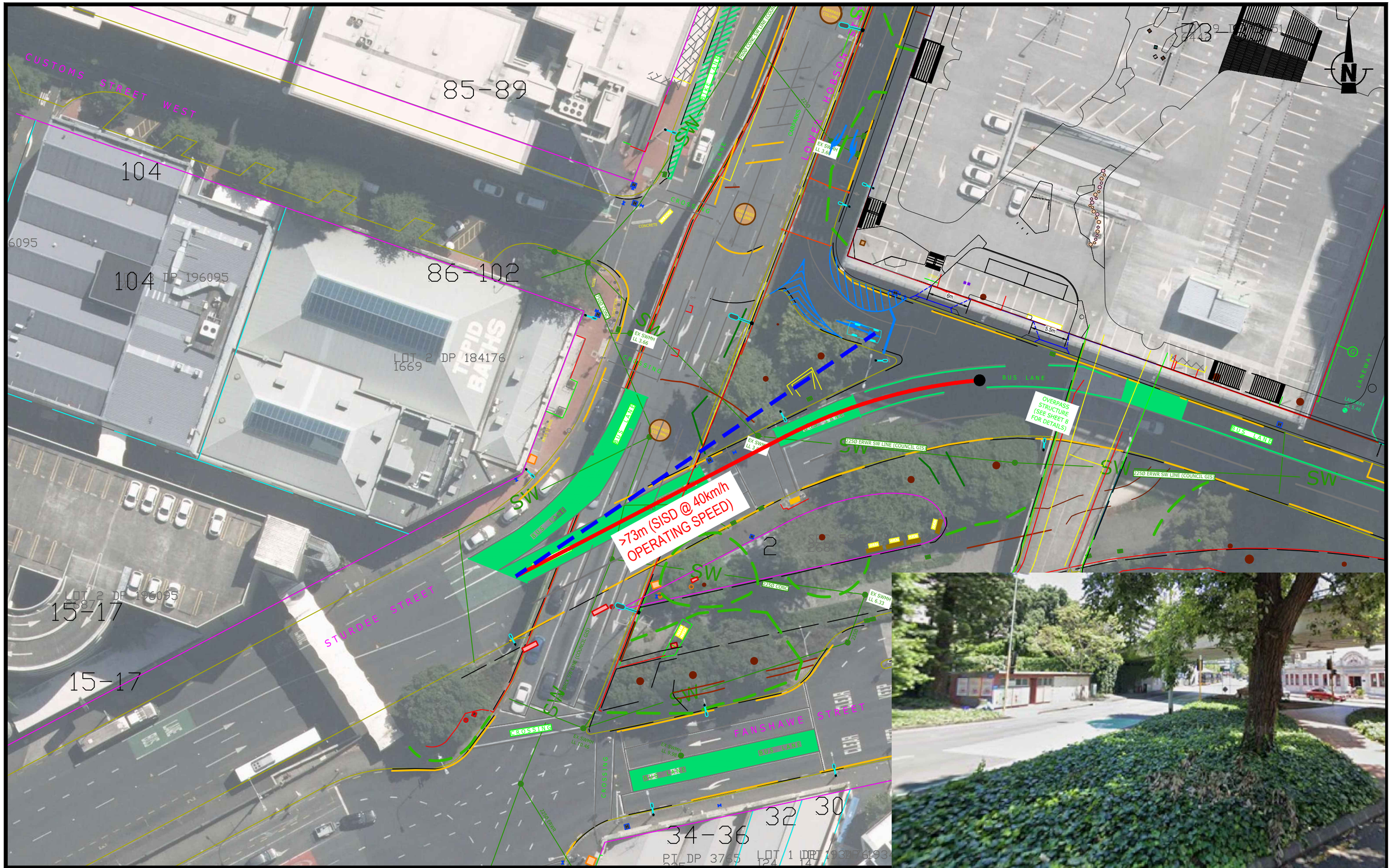
P:\PREP\002 Downtown Carpark redevleopment\Drawings\Our Drawings\33. Updated Porte Cochere 2025.08.21\PREP002-DC-DW01- E.dwg 05 Ronak Gupta 02/04/2026 11:52 am



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DESIGN: KC | DRAWN: KC
CHECKED: HS | DATE: 24/09/25
SCALE: 0 20m
1:500 @ A3

CLIENT: PRECINCT PROPERTIES
PROJECT: DOWNTOWN CARPARK DEVELOPMENT
LOCATION: 2 LOWER HOBSON STREET, CBD

FOR RESOURCE CONSENT

SHEET TITLE: VISIBILITY PLAN

DRAWING NUMBER: PREP002-DC-DW01

SHEET: 05 of 07

REV: E

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vehicle tracking key:

- wheel path
- vehicle body path (forwards)
- vehicle body path (reverse)
- 300mm clearance

vehicle specs:

AT DESIGN VEHICLE
12.6m - Truck - No hitch
vehicle width: 2.550m
lock to lock time: 6.00s
track width: 2.550m
Max Steering Angle (Virtual): 49.00°
vehicle speed: 5-10kmph

REV	AMENDMENT	DATE OF ISSUE
A	First Issue	24/09/25
B	Second Issue	29/10/25
C	Third Issue	06/11/25
D	Forth Issue	24/03/2026
E	Fifth Issue	26/03/2026

DESIGN: KC | DRAWN: KC
CHECKED: HS | DATE: 24/09/25
SCALE: 0 10m
1:250 @ A3

CLIENT: PRECINCT PROPERTIES
PROJECT: DOWNTOWN CARPARK DEVELOPMENT
LOCATION: 2 LOWER HOBSON STREET, CBD

FOR RESOURCE CONSENT

SHEET TITLE: LEFT TURN INTO CUSTOM STREET WEST
12.6m LARGE RIGID TRUCK

DRAWING NUMBER: PREP002-DC-DW01

SHEET: 06 of 07
REV: E

flow
TRANSPORTATION SPECIALISTS
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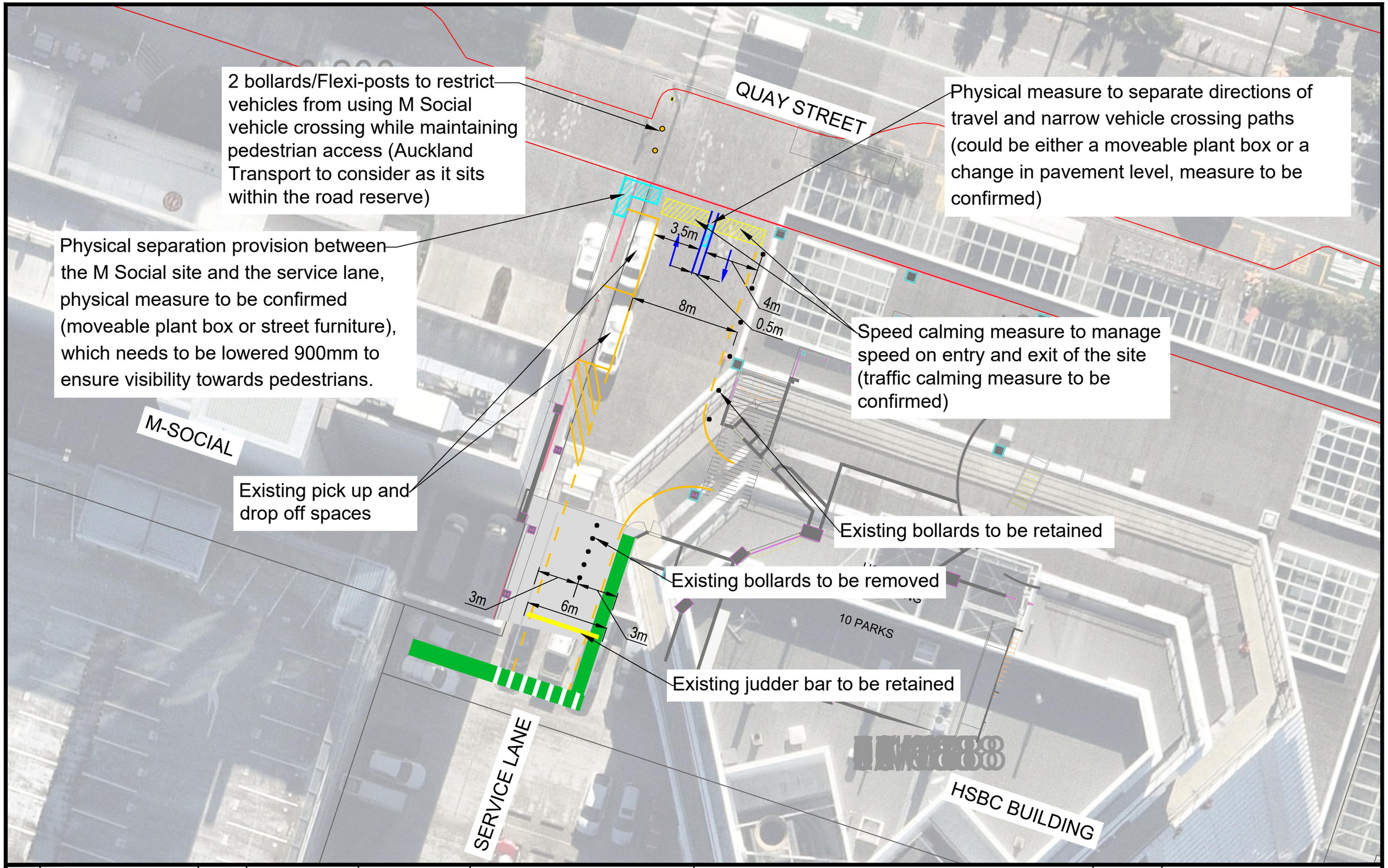

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DESIGN: KC | DRAWN: KC
CHECKED: HS | DATE: 24/09/25
SCALE: 0 10m
1:250 @ A3

CLIENT: PRECINCT PROPERTIES
PROJECT: DOWNTOWN CARPARK DEVELOPMENT
LOCATION: 2 LOWER HOBSON STREET, CBD

FOR RESOURCE CONSENT

SHEET TITLE: SERVICE LANE HSBC QUAY STREET ACCESS GENERAL OVERVIEW

DRAWING NUMBER: PREP002-DC-DW01

SHEET: 07 of 07

REV: E

flow
TRANSPORTATION SPECIALISTS
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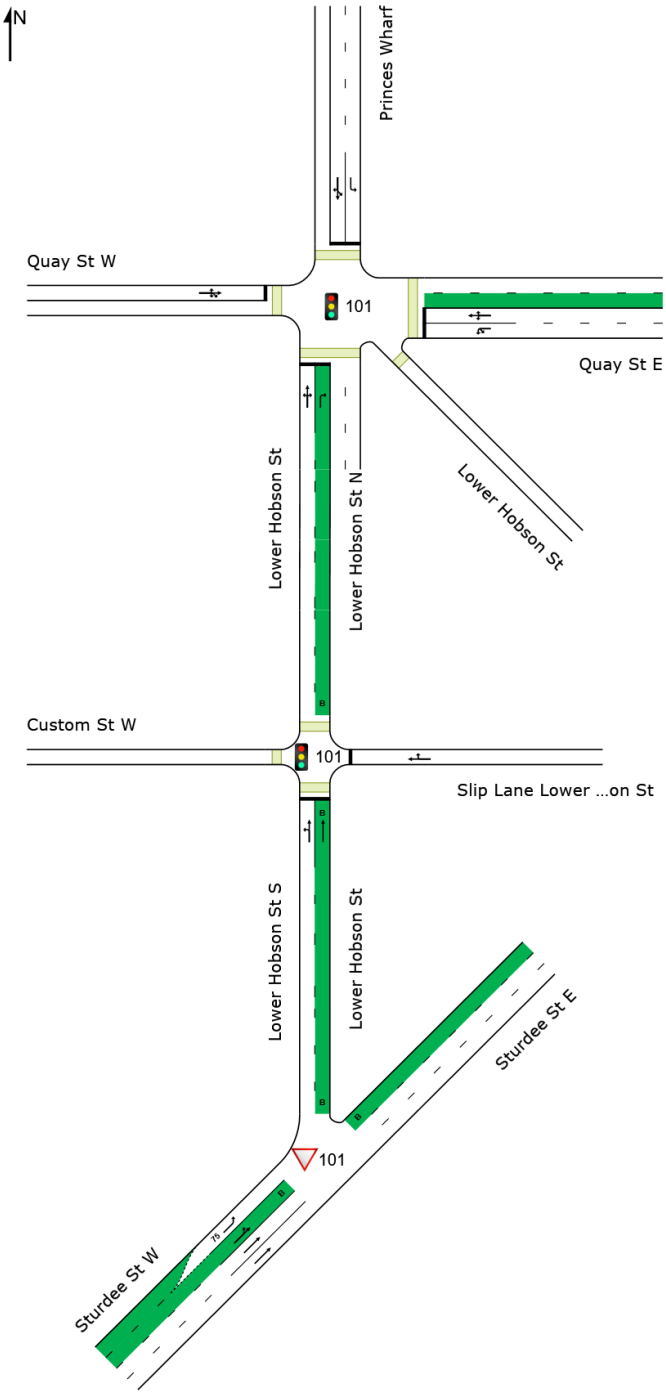
APPENDIX B SIDRA lane summary outputs

NETWORK LAYOUT

Network: N101 [Lower Hobson St Network AM (Network Folder: Do min Base)]

New Network
Network Category: (None)

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



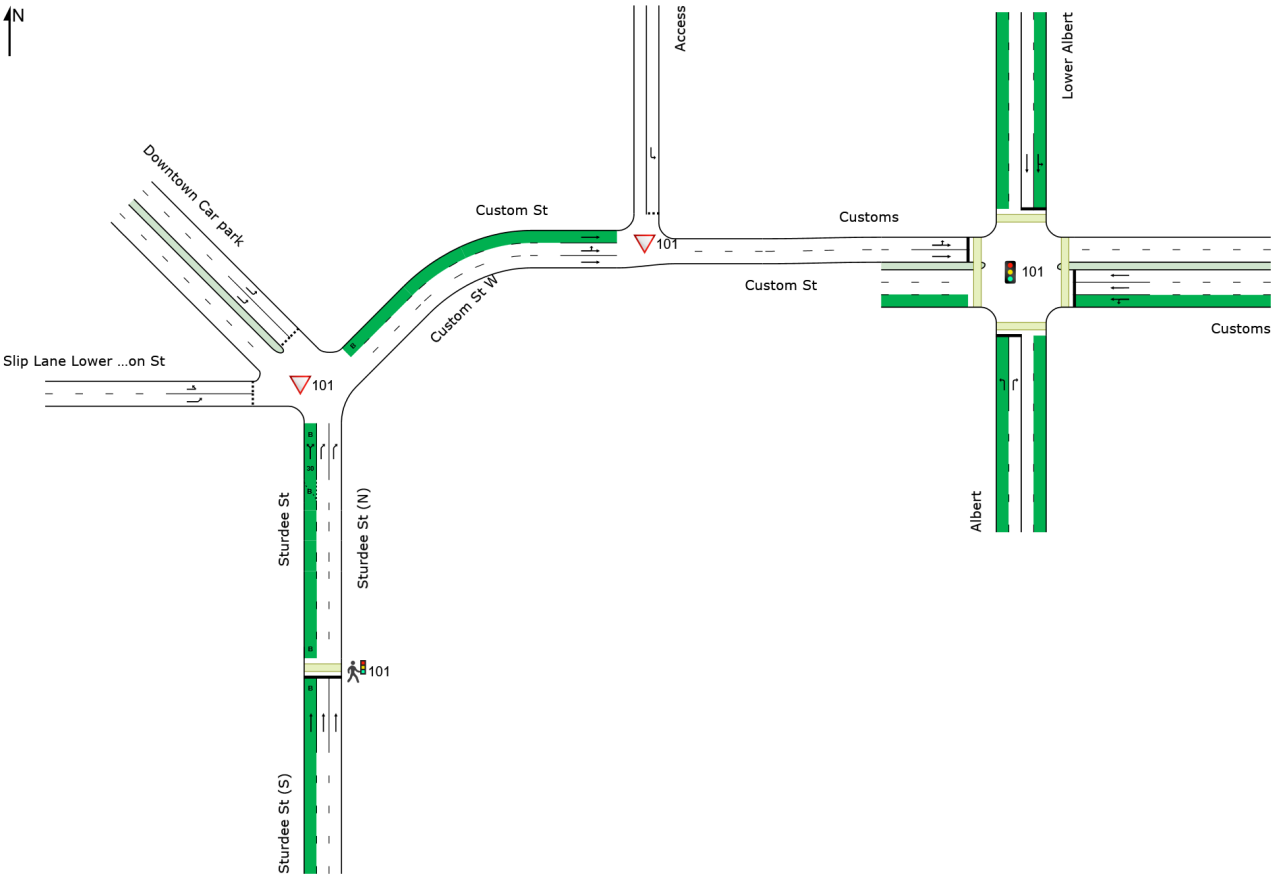
SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
101	NA	Lower Hobston St/Slip lane/Custom St W - DmAM
101	NA	Quay St / Lower Hobson St - DmAM
101	NA	Sturdee Street DmAM

NETWORK LAYOUT

Network: N101 [Custom St W Network AM (Network Folder: Do min Base)]

New Network
Network Category: (None)

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



SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
101	NA	Sturdee St Ped - DmAM
101	NA	Sturdee St/Slip Lane Lower Hobson St/Custom St W - DmAM
101	NA	Custom Street Service Lane - DmAM
101	NA	Customs / Albert / Lower Albert - DmAM

LANE SUMMARY

Site: 101 [Lower Hobston St/Slip lane/Custom St W - DmAM (Site Folder: Do Min AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Lower Hobson St Network AM (Network Folder: Do min Base)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 77 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Lower Hobson St S															
Lane 1	240	33.3	240	33.3	436	0.550	100	26.7	LOS C	5.4[N4]	49.0[N4]	Full	30	0.0	50.0
Lane 2 (B)	38	100.0	38	100.0	322	0.118	100	23.3	LOS C	1.1	14.4	Full	30	0.0	0.0
Approach	278	42.4	278	42.4		0.550		26.2	LOS C	5.4	49.0				
East: Slip Lane Lower Hobson St															
Lane 1	197	11.7	197	11.7	399	0.494	100	29.1	LOS C	6.7	51.4	Full	500	0.0	0.0
Approach	197	11.7	197	11.7		0.494		29.1	LOS C	6.7	51.4				
All Vehicles	475	29.7	475	29.7		0.550		27.4	LOS C	6.7	51.4				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

N4 Average back of queue has been restricted to the available queue storage space.

Approach Lane Flows (veh/h)

South: Lower Hobson St S

Mov. From S To Exit:	L2 W	T1 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	11	229	240	33.3	436	0.550	100	NA	NA
Lane 2	-	38	38	100.0	322	0.118	100	NA	NA
Approach	11	267	278	42.4		0.550			

East: Slip Lane Lower Hobson St

Mov. From E To Exit:	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	196	1	197	11.7	399	0.494	100	NA	NA
Approach	196	1	197	11.7		0.494			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	475	29.7	0.550

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Lower Hobson St S				
Lane 1	0.0	0.0	0.0	0.0
Lane 2 (B)	0.0	0.0	0.0	0.0
East: Slip Lane Lower Hobson St				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Quay St / Lower Hobson St - DmAM (Site Folder: Do Min AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Lower Hobson St Network AM (Network Folder: Do min Base)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Lower Hobson St															
Lane 1	229	34.1	229	34.1	347	0.659	100	43.1	LOS D	10.5	95.1	Full	500	0.0	0.0
Lane 2	38	100.0	38	100.0	249	0.152	23[5]	39.4	LOS D	1.5	19.8	Full	500	0.0	0.0
Approach	267	43.4	267	43.4		0.659		42.5	LOS D	10.5	95.1				
East: Quay St E															
Lane 1	441	13.4	441	13.4	562	0.785	100	39.1	LOS D	20.7	161.2	Full	60	0.0	98.4
Lane 2	208	15.8	208	15.8	265	0.785	100	53.0	LOS D	10.7	85.1	Full	60	0.0	36.9
Approach	649	14.2	649	14.2		0.785		43.6	LOS D	20.7	161.2				
North: Princes Wharf															
Lane 1	18	16.7	18	16.7	332	0.054	100	39.8	LOS D	0.7	5.7	Full	100	0.0	0.0
Lane 2	68	11.8	68	11.8	108	0.627	100	54.3	LOS D	3.5	27.3	Full	100	0.0	0.0
Approach	86	12.8	86	12.8		0.627		51.3	LOS D	3.5	27.3				
West: Quay St W															
Lane 1	38	13.2	38	13.2	68	0.556	100	61.0	LOS E	2.0	15.9	Full	80	0.0	0.0
Approach	38	13.2	38	13.2		0.556		61.0	LOS E	2.0	15.9				
All Vehicles	1040	21.5	1040	21.5		0.785		44.6	LOS D	20.7	161.2				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

5 Lane under-utilisation found by the program

Approach Lane Flows (veh/h)

South: Lower Hobson St

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	21	43	165	229	34.1	347	0.659	100	NA	NA
Lane 2	-	-	38	38	100.0	249	0.152	23[5]	NA	NA
Approach	21	43	203	267	43.4		0.659			

East: Quay St E

Mov. From E To Exit:	L3 SE	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.

Lane 1	280	161	-	-	441	13.4	562	0.785	100	NA	NA
Lane 2	-	173	1	34	208	15.8	265	0.785	100	NA	NA
Approach	280	334	1	34	649	14.2		0.785			

North: Princes Wharf

Mov. From N To Exit:	L2 E	L1 SE	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	18	-	-	-	18	16.7	332	0.054	100	NA	NA
Lane 2	-	4	63	1	68	11.8	108	0.627	100	NA	NA
Approach	18	4	63	1	86	12.8		0.627			

West: Quay St W

Mov. From W To Exit:	L2 N	T1 E	R1 SE	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	1	1	7	29	38	13.2	68	0.556	100	NA	NA
Approach	1	1	7	29	38	13.2		0.556			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	1040	21.5	0.785

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

5 Lane under-utilisation found by the program

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Lower Hobson St				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
East: Quay St E				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
North: Princes Wharf				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Quay St W				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Sturdee Street DmAM (Site Folder: Do Min AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Lower Hobson St Network AM (Network Folder: Do min Base)]

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
SouthWest: Sturdee St W															
Lane 1	240	33.3	240	33.3	1551	0.155	100	5.8	LOS A	2.5[N5]	22.6[N5]	Two Seg[10]	500	0.0	0.0
Lane 2 (B)	90	100.0	90	100.0	1157	0.078	50[5]	2.7	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 3	362	22.3	362	22.3	1703	0.212	100	0.1	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 4	361	22.3	361	22.3	1703	0.212	100	0.1	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	1053	31.4	1053	31.4		0.212		1.6	NA	2.5	22.6				
All Vehicles	1053	31.4	1053	31.4		0.212		1.6	NA	2.5	22.6				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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.

5 Lane under-utilisation found by the program
10 Some Movement Classes allocated to Segment 1 are not allocated to Segment 2. Segment 1 of this Two-Segment Lane has been modelled as a short lane.
N5 Results for this lane are determined by Back of Queue values of downstream lanes (proportional to lane movement flows).

Approach Lane Flows (veh/h)

SouthWest: Sturdee St W

Mov. From SW To Exit:	L1 N	T1 NE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	240	-	240	33.3	1551	0.155	100	0.0	2
Lane 2	38	52	90	100.0	1157	0.078	50[5]	NA	NA
Lane 3	-	362	362	22.3	1703	0.212	100	NA	NA
Lane 4	-	361	361	22.3	1703	0.212	100	NA	NA
Approach	278	775	1053	31.4		0.212			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	1053	31.4	0.212

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

5 Lane under-utilisation found by the program

Merge Analysis

Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.											

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
SouthWest: Sturdee St W				
Lane 1	0.0	0.0	0.0	0.0
Lane 2 (B)	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
Lane 4	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Lower Hobston St/Slip lane/Custom St W - DmPM (Site Folder: Do Min PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Lower Hobson St Network PM (Network Folder: Do min Base)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 104 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Lower Hobson St S															
Lane 1	465	9.2	465	9.2	860	0.541	100	21.2	LOS C	6.5[N4]	49.0[N4]	Full	30	0.0	50.0
Lane 2 (B)	38	100.0	38	100.0	557	0.068	100	16.1	LOS B	1.0	13.6	Full	30	0.0	0.0
Approach	503	16.1	503	16.1		0.541		20.8	LOS C	6.5	49.0				
East: Slip Lane Lower Hobson St															
Lane 1	105	14.3	105	14.3	290	0.363	100	42.8	LOS D	4.9	38.2	Full	500	0.0	0.0
Approach	105	14.3	105	14.3		0.363		42.8	LOS D	4.9	38.2				
All Vehicles	608	15.8	608	15.8		0.541		24.6	LOS C	6.5	49.0				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

N4 Average back of queue has been restricted to the available queue storage space.

Approach Lane Flows (veh/h)

South: Lower Hobson St S

Mov. From S To Exit:	L2 W	T1 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	47	418	465	9.2	860	0.541	100	NA	NA
Lane 2	-	38	38	100.0	557	0.068	100	NA	NA
Approach	47	456	503	16.1		0.541			

East: Slip Lane Lower Hobson St

Mov. From E To Exit:	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	104	1	105	14.3	290	0.363	100	NA	NA
Approach	104	1	105	14.3		0.363			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	608	15.8	0.541

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Lower Hobson St S				
Lane 1	0.0	0.0	0.0	0.0
Lane 2 (B)	0.0	0.0	0.0	0.0
East: Slip Lane Lower Hobson St				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Quay St / Lower Hobson St - DmPM (Site Folder: Do Min PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Lower Hobson St Network PM (Network Folder: Do min Base)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 101 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Lower Hobson St															
Lane 1	417	6.2	417	6.2	426	0.980	100	91.7	LOS F	31.8	234.8	Full	500	0.0	0.0
Lane 2	38	100.0	38	100.0	258	0.147	15[5]	39.0	LOS D	1.5	19.8	Full	500	0.0	0.0
Approach	455	14.1	455	14.1		0.980		87.3	LOS F	31.8	234.8				
East: Quay St E															
Lane 1	380	17.5	380	17.5	575	0.661	100	33.7	LOS C	15.8	127.2	Full	60	0.0	75.0
Lane 2	218	18.6	218	18.6	330	0.661	100	45.4	LOS D	10.2	83.2	Full	60	0.0	34.8
Approach	598	17.9	598	17.9		0.661		38.0	LOS D	15.8	127.2				
North: Princes Wharf															
Lane 1	98	9.2	98	9.2	345	0.284	100	42.4	LOS D	4.2	31.6	Full	100	0.0	0.0
Lane 2	71	12.7	71	12.7	107	0.665	100	55.4	LOS E	3.8	29.2	Full	100	0.0	0.0
Approach	169	10.7	169	10.7		0.665		47.8	LOS D	4.2	31.6				
West: Quay St W															
Lane 1	23	13.0	23	13.0	68	0.339	100	60.2	LOS E	1.2	9.5	Full	80	0.0	0.0
Approach	23	13.0	23	13.0		0.339		60.2	LOS E	1.2	9.5				
All Vehicles	1245	15.4	1245	15.4		0.980		57.7	LOS E	31.8	234.8				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

5 Lane under-utilisation found by the program

Approach Lane Flows (veh/h)

South: Lower Hobson St

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	8	50	359	417	6.2	426	0.980	100	NA	NA
Lane 2	-	-	38	38	100.0	258	0.147	15[5]	NA	NA
Approach	8	50	397	455	14.1		0.980			

East: Quay St E

Mov. From E To Exit:	L3 SE	L2 S	T1 W	R2 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.

Lane 1	149	231	-	-	380	17.5	575	0.661	100	NA	NA
Lane 2	-	194	1	23	218	18.6	330	0.661	100	NA	NA
Approach	149	425	1	23	598	17.9		0.661			
North: Princes Wharf											
Mov. From N To Exit:	L2 E	L1 SE	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	98	-	-	-	98	9.2	345	0.284	100	NA	NA
Lane 2	-	4	66	1	71	12.7	107	0.665	100	NA	NA
Approach	98	4	66	1	169	10.7		0.665			
West: Quay St W											
Mov. From W To Exit:	L2 N	T1 E	R1 SE	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	1	1	5	16	23	13.0	68	0.339	100	NA	NA
Approach	1	1	5	16	23	13.0		0.339			
	Total	%HV	Deg.Satn (v/c)								
All Vehicles	1245	15.4	0.980								

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

5 Lane under-utilisation found by the program

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Lower Hobson St				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
East: Quay St E				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
North: Princes Wharf				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Quay St W				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Sturdee Street DmPM (Site Folder: Do Min PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Lower Hobson St Network PM (Network Folder: Do min Base)]

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
SouthWest: Sturdee St W															
Lane 1	465	9.2	465	9.2	1796	0.259	100	5.5	LOS A	10.2 N5	76.8 N5	Two Seg 10	500	0.0	0.0
Lane 2 (B)	90	100.0	90	100.0	1157	0.078	30 5	2.7	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 3	246	30.3	246	30.3	1629	0.151	100	0.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 4	246	30.3	246	30.3	1629	0.151	100	0.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	1046	27.0	1046	27.0		0.259		2.7	NA	10.2	76.8				
All Vehicles	1046	27.0	1046	27.0		0.259		2.7	NA	10.2	76.8				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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.

5 Lane under-utilisation found by the program
10 Some Movement Classes allocated to Segment 1 are not allocated to Segment 2. Segment 1 of this Two-Segment Lane has been modelled as a short lane.
N5 Results for this lane are determined by Back of Queue values of downstream lanes (proportional to lane movement flows).

Approach Lane Flows (veh/h)

SouthWest: Sturdee St W

Mov. From SW To Exit:	L1 N	T1 NE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	465	-	465	9.2	1796	0.259	100	0.0	2
Lane 2	38	52	90	100.0	1157	0.078	30 5	NA	NA
Lane 3	-	246	246	30.3	1629	0.151	100	NA	NA
Lane 4	-	246	246	30.3	1629	0.151	100	NA	NA
Approach	503	543	1046	27.0		0.259			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	1046	27.0	0.259

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

5 Lane under-utilisation found by the program

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
SouthWest: Sturdee St W				
Lane 1	0.0	0.0	0.0	0.0
Lane 2 (B)	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
Lane 4	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Sturdee St Ped - DmAM (Site Folder: Do Min AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Custom St W Network AM (Network Folder: Do min Base)]

New Site
Site Category: (None)
Pedestrian Crossing (Signalised) - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Sturdee St (S)															
Lane 1 (B)	52	100.0	52	100.0	567	0.092	100	7.8	LOS A	0.7	9.2	Full	500	0.0	0.0
Lane 2	361	22.3	361	22.3	818	0.442	100	9.5	LOS A	6.0	49.7	Full	500	0.0	0.0
Lane 3	362	22.3	362	22.3	818	0.442	100	9.5	LOS A	6.0	49.7	Full	500	0.0	0.0
Approach	775	27.5	775	27.5		0.442		9.3	LOS A	6.0	49.7				
All Vehicles	775	27.5	775	27.5		0.442		9.3	LOS A	6.0	49.7				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

Approach Lane Flows (veh/h)

South: Sturdee St (S)

Mov. From S To Exit:	T1 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	52	52	100.0	567	0.092	100	NA	NA
Lane 2	361	361	22.3	818	0.442	100	NA	NA
Lane 3	362	362	22.3	818	0.442	100	NA	NA
Approach	775	775	27.5		0.442			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	775	27.5	0.442

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis				
	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Sturdee St (S)				
Lane 1 (B)	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Sturdee St/Slip Lane Lower Hobson St/Custom St W - DmAM (Site Folder: Do Min AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Custom St W Network AM (Network Folder: Do min Base)]

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Sturdee St															
Lane 1 (B-B)	207	43.0	207	43.0	1470	0.141	100	2.5	LOS A	0.0	0.0	Two Seg[10]	40	0.0	0.0
Lane 2	284	21.8	284	21.8	1659	0.171	100	2.5	LOS A	0.0	0.0	Full	40	0.0	0.0
Lane 3	284	21.8	284	21.8	1659	0.171	100	2.5	LOS A	0.0	0.0	Full	40	0.0	0.0
Approach	775	27.5	775	27.5		0.171		2.5	NA	0.0	0.0				
NorthWest: Downtown Car park															
Lane 1	14	13.6	14	13.6	1438	0.010	100	4.9	LOS A	0.0	0.4	Full	500	0.0	0.0
Lane 2	8	13.6	8	13.6	800	0.010	100	7.6	LOS A	0.0	0.3	Full	500	0.0	0.0
Approach	22	13.6	22	13.6		0.010		5.9	LOS A	0.0	0.4				
West: Slip Lane Lower Hobson St															
Lane 1	94	17.0	94	17.0	1299	0.072	100	6.2	LOS A	0.3	2.7	Full	500	0.0	0.0
Lane 2	1	0.0	1	0.0	844	0.001	100	6.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	95	16.8	95	16.8		0.072		6.2	LOS A	0.3	2.7				
All Vehicles	892	26.0	892	26.0		0.171		3.0	NA	0.3	2.7				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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.

10 Some Movement Classes allocated to Segment 1 are not allocated to Segment 2. Segment 1 of this Two-Segment Lane has been modelled as a short lane.

Approach Lane Flows (veh/h)

South: Sturdee St

Mov. From S To Exit:	L1 NW	R1 NE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	155	52	207	43.0	1470	0.141	100	0.0	2
Lane 2	-	284	284	21.8	1659	0.171	100	NA	NA
Lane 3	-	284	284	21.8	1659	0.171	100	NA	NA
Approach	155	620	775	27.5		0.171			
NorthWest: Downtown Car park									

Mov. From NW To Exit:	L2 NE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	14	14	13.6	1438	0.010	100	NA	NA
Lane 2	8	8	13.6	800	0.010	100	NA	NA
Approach	22	22	13.6		0.010			
West: Slip Lane Lower Hobson St								
Mov. From W To Exit:	L3 NW	L1 NE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	94	-	94	17.0	1299	0.072	100	NA	NA
Lane 2	-	1	1	0.0	844	0.001	100	NA	NA
Approach	94	1	95	16.8		0.072			
	Total	%HV	Deg.Satn (v/c)						
All Vehicles	892	26.0		0.171					

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Sturdee St				
Lane 1 (B-B)	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
NorthWest: Downtown Car park				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Slip Lane Lower Hobson St				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Custom Street Service Lane - DmAM (Site Folder: Do Min AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Custom St W Network AM (Network Folder: Do min Base)]

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
North: Access															
Lane 1	20	10.0	20	10.0	761	0.026	100	5.7	LOS A	0.1	0.5	Full	500	-35.0 N3	0.0
Approach	20	10.0	20	10.0		0.026		5.7	LOS A	0.1	0.5				
West: Custom St															
Lane 1	41	100.0	41	100.0	769	0.053	20 6	0.0	LOS A	0.0	0.0	Full	25	-35.0 N3	0.0
Lane 2	327	22.0	327	22.0	1236	0.264	100	1.0	LOS A	0.0	0.0	Full	25	-25.9 N3	0.0
Lane 3	278	24.3	278	24.3	1052	0.264	100	0.0	LOS A	0.0	0.0	Full	25	-37.5 N3	0.0
Approach	645	27.9	645	27.9		0.264		0.5	NA	0.0	0.0				
All Vehicles	665	27.4	665	27.4		0.264		0.7	NA	0.1	0.5				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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.

6 Lane under-utilisation due to downstream effects
N3 Capacity Adjustment due to downstream lane blockage determined by the program.

Approach Lane Flows (veh/h)

North: Access

Mov. From N To Exit:	L2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	20	20	10.0	761	0.026	100	NA	NA
Approach	20	20	10.0		0.026			

West: Custom St

Mov. From W To Exit:	L2 N	T1 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	-	41	41	100.0	769	0.053	20 6	NA	NA
Lane 2	114	213	327	22.0	1236	0.264	100	NA	NA
Lane 3	-	278	278	24.3	1052	0.264	100	NA	NA
Approach	114	531	645	27.9		0.264			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	665	27.4	0.264

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

6 Lane under-utilisation due to downstream effects

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
North: Access				
Lane 1	0.0	0.0	0.0	0.0
West: Custom St				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Customs / Albert / Lower Albert - DmAM (Site Folder: Do Min AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Custom St W Network AM (Network Folder: Do min Base)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 85 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Albert															
Lane 1	41	92.7	41	92.7	211	0.195	100	38.1	LOS D	1.5	18.9	Full	500	0.0	0.0
Lane 2	74	20.3	74	20.3	115	0.646	100	50.8	LOS D	3.3	27.3	Full	500	0.0	0.0
Approach	115	46.1	115	46.1		0.646		46.2	LOS D	3.3	27.3				
East: Customs															
Lane 1	45	62.2	45	62.2	457	0.098	15[5]	23.3	LOS C	1.3	13.8	Full	500	0.0	0.0
Lane 2	358	14.3	358	14.3	546	0.655	100	28.0	LOS C	13.1	102.8	Full	500	0.0	0.0
Lane 3	358	14.3	358	14.3	546	0.655	100	28.0	LOS C	13.1	102.8	Full	500	0.0	0.0
Approach	760	17.1	760	17.1		0.655		27.8	LOS C	13.1	102.8				
North: Lower Albert															
Lane 1	20	95.0	20	95.0	85	0.235	100	44.6	LOS D	0.9	11.0	Full	130	0.0	0.0
Lane 2	20	95.0	20	95.0	85	0.235	100	44.3	LOS D	0.9	11.0	Full	130	0.0	0.0
Approach	40	95.0	40	95.0		0.235		44.4	LOS D	0.9	11.0				
West: Customs															
Lane 1	263	32.3	263	32.3	472	0.557	100	29.8	LOS C	9.3	83.3	Full	60	0.0	35.0
Lane 2	287	24.0	287	24.0	516	0.557	100	27.0	LOS C	10.1	85.7	Full	60	0.0	37.5
Approach	550	28.0	550	28.0		0.557		28.4	LOS C	10.1	85.7				
All Vehicles	1465	25.6	1465	25.6		0.655		29.9	LOS C	13.1	102.8				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

5 Lane under-utilisation found by the program

Approach Lane Flows (veh/h)

South: Albert

Mov. From S To Exit:	L2 W	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	41	-	41	92.7	211	0.195	100	NA	NA
Lane 2	-	74	74	20.3	115	0.646	100	NA	NA
Approach	41	74	115	46.1		0.646			
East: Customs									

Mov. From E To Exit:	L2 S	T1 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	24	21	45	62.2	457	0.098	15[5]	NA	NA
Lane 2	-	358	358	14.3	546	0.655	100	NA	NA
Lane 3	-	358	358	14.3	546	0.655	100	NA	NA
Approach	24	736	760	17.1		0.655			
North: Lower Albert									
Mov. From N To Exit:	L2 E	T1 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	1	19	20	95.0	85	0.235	100	NA	NA
Lane 2	-	20	20	95.0	85	0.235	100	NA	NA
Approach	1	39	40	95.0		0.235			
West: Customs									
Mov. From W To Exit:	L2 N	T1 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	163	100	263	32.3	472	0.557	100	NA	NA
Lane 2	-	287	287	24.0	516	0.557	100	NA	NA
Approach	163	387	550	28.0		0.557			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	1465	25.6	0.655

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

5 Lane under-utilisation found by the program

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Critical Gap pcu/h	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.											

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Albert				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
East: Customs				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
North: Lower Albert				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Customs				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Sturdee St Ped - DmPM (Site Folder: Do Min PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Custom St W Network PM (Network Folder: Do min Base)]

New Site
Site Category: (None)
Pedestrian Crossing (Signalised) - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 65 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Sturdee St (S)															
Lane 1 (B)	52	100.0	52	100.0	691	0.075	100	6.4	LOS A	0.7	9.4	Full	500	0.0	0.0
Lane 2	246	30.3	246	30.3	952	0.258	100	7.1	LOS A	3.8	33.7	Full	500	0.0	0.0
Lane 3	246	30.3	246	30.3	952	0.258	100	7.1	LOS A	3.8	33.7	Full	500	0.0	0.0
Approach	543	37.0	543	37.0		0.258		7.1	LOS A	3.8	33.7				
All Vehicles	543	37.0	543	37.0		0.258		7.1	LOS A	3.8	33.7				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

Approach Lane Flows (veh/h)

South: Sturdee St (S)

Mov. From S To Exit:	T1 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	52	52	100.0	691	0.075	100	NA	NA
Lane 2	246	246	30.3	952	0.258	100	NA	NA
Lane 3	246	246	30.3	952	0.258	100	NA	NA
Approach	543	543	37.0		0.258			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	543	37.0	0.258

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis				
	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Sturdee St (S)				
Lane 1 (B)	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Sturdee St/Slip Lane Lower Hobson St/Custom St W - DmPM (Site Folder: Do Min PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Custom St W Network PM (Network Folder: Do min Base)]

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Sturdee St															
Lane 1 (B-B)	163	46.0	163	46.0	1447	0.113	100	2.5	LOS A	0.0	0.0	Two Seg[10]	40	0.0	0.0
Lane 2	209	33.2	209	33.2	1552	0.135	100	2.5	LOS A	0.0	0.0	Full	40	0.0	0.0
Lane 3	171	33.2	171	33.2	1266	0.135	100	2.5	LOS A	0.0	0.0	Full	40	-18.4[N7]	0.0
Approach	543	37.0	543	37.0		0.135		2.5	NA	0.0	0.0				
NorthWest: Downtown Car park															
Lane 1	54	11.1	54	11.1	1453	0.037	100	4.9	LOS A	0.2	1.3	Full	500	0.0	0.0
Lane 2	36	11.1	36	11.1	968	0.037	100	6.6	LOS A	0.1	1.1	Full	500	0.0	0.0
Approach	90	11.1	90	11.1		0.037		5.6	LOS A	0.2	1.3				
West: Slip Lane Lower Hobson St															
Lane 1	52	17.3	52	17.3	1353	0.038	100	6.0	LOS A	0.2	1.4	Full	500	0.0	0.0
Lane 2	1	0.0	1	0.0	995	0.001	100	5.2	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	53	17.0	53	17.0		0.038		6.0	LOS A	0.2	1.4				
All Vehicles	686	32.1	686	32.1		0.135		3.2	NA	0.2	1.4				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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.

10 Some Movement Classes allocated to Segment 1 are not allocated to Segment 2. Segment 1 of this Two-Segment Lane has been modelled as a short lane.
N7 The capacity reduction has been determined from the queue blockage probability based on the Back of Queue value of a Site further downstream.

Approach Lane Flows (veh/h)

South: Sturdee St

Mov. From S To Exit:	L1 NW	R1 NE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	111	52	163	46.0	1447	0.113	100	0.0	2
Lane 2	-	209	209	33.2	1552	0.135	100	NA	NA
Lane 3	-	171	171	33.2	1266	0.135	100	NA	NA

Approach	111	432	543	37.0		0.135			
NorthWest: Downtown Car park									
Mov. From NW To Exit:	L2 NE	Total	%HV		Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	54	54	11.1		1453	0.037	100	NA	NA
Lane 2	36	36	11.1		968	0.037	100	NA	NA
Approach	90	90	11.1			0.037			
West: Slip Lane Lower Hobson St									
Mov. From W To Exit:	L3 NW	L1 NE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	52	-	52	17.3	1353	0.038	100	NA	NA
Lane 2	-	1	1	0.0	995	0.001	100	NA	NA
Approach	52	1	53	17.0		0.038			
	Total	%HV	Deg.Satn (v/c)						
All Vehicles	686	32.1		0.135					

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Sturdee St				
Lane 1 (B-B)	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
NorthWest: Downtown Car park				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Slip Lane Lower Hobson St				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Custom Street Service Lane - DmPM (Site Folder: Do Min PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Custom St W Network PM (Network Folder: Do min Base)]

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
North: Access															
Lane 1	29	6.9	29	6.9	679	0.043	100	5.2	LOS A	0.1	0.6	Full	500	-49.9 N3	0.0
Approach	29	6.9	29	6.9		0.043		5.2	LOS A	0.1	0.6				
West: Custom St															
Lane 1	23	100.0	23	100.0	593	0.039	20 6	0.0	LOS A	0.0	0.0	Full	25	-49.9 N3	0.0
Lane 2	196	26.4	196	26.4	1011	0.193	100	1.1	LOS A	0.0	0.0	Full	25	-37.8 N3	0.0
Lane 3	304	37.3	304	37.3	1569	0.193	100	0.0	LOS A	0.1 N5	0.5 N5	Full	25	0.0	18.6
Approach	522	36.0	522	36.0		0.193		0.4	NA	0.1	0.5				
All Vehicles	551	34.5	551	34.5		0.193		0.7	NA	0.1	0.6				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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.

6 Lane under-utilisation due to downstream effects
N3 Capacity Adjustment due to downstream lane blockage determined by the program.
N5 Results for this lane are determined by Back of Queue values of downstream lanes (proportional to lane movement flows).

Approach Lane Flows (veh/h)

North: Access

Mov. From N To Exit:	L2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	29	29	6.9	679	0.043	100	NA	NA
Approach	29	29	6.9		0.043			

West: Custom St

Mov. From W To Exit:	L2 N	T1 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	-	23	23	100.0	593	0.039	20 6	NA	NA
Lane 2	76	120	196	26.4	1011	0.193	100	NA	NA
Lane 3	-	304	304	37.3	1569	0.193	100	NA	NA
Approach	76	446	522	36.0		0.193			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	551	34.5	0.193

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

6 Lane under-utilisation due to downstream effects

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
North: Access				
Lane 1	0.0	0.0	0.0	0.0
West: Custom St				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Customs / Albert / Lower Albert - DmPM (Site Folder: Do Min PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Custom St W Network PM (Network Folder: Do min Base)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Albert															
Lane 1	45	86.7	45	86.7	333	0.135	100	33.9	LOS C	1.7	20.1	Full	500	0.0	0.0
Lane 2	218	9.6	218	9.6	313	0.697	100	48.4	LOS D	10.5	79.5	Full	500	0.0	0.0
Approach	263	22.8	263	22.8		0.697		45.9	LOS D	10.5	79.5				
East: Customs															
Lane 1	59	47.5	59	47.5	411	0.144	21[5]	32.4	LOS C	2.2	21.5	Full	500	0.0	0.0
Lane 2	295	16.6	295	16.6	422	0.697	100	38.8	LOS D	13.6	108.5	Full	500	0.0	0.0
Lane 3	295	16.6	295	16.6	422	0.697	100	38.8	LOS D	13.6	108.5	Full	500	0.0	0.0
Approach	648	19.4	648	19.4		0.697		38.2	LOS D	13.6	108.5				
North: Lower Albert															
Lane 1	22	95.5	22	95.5	72	0.305	100	53.7	LOS D	1.1	14.5	Full	130	0.0	0.0
Lane 2	24	75.0	24	75.0	79	0.305	100	53.2	LOS D	1.2	14.2	Full	130	0.0	0.0
Approach	46	84.8	46	84.8		0.305		53.4	LOS D	1.2	14.5				
West: Customs															
Lane 1	230	41.0	230	41.0	362	0.635	100	38.5	LOS D	10.3	97.8	Full	60	0.0	49.9
Lane 2	245	32.9	245	32.9	385	0.635	100	37.5	LOS D	10.9[N4]	97.9[N4]	Full	60	0.0	50.0
Approach	475	36.8	475	36.8		0.635		38.0	LOS D	10.9	97.9				
All Vehicles	1432	27.9	1432	27.9		0.697		40.0	LOS D	13.6	108.5				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

5 Lane under-utilisation found by the program
N4 Average back of queue has been restricted to the available queue storage space.

Approach Lane Flows (veh/h)

South: Albert

Mov. From S To Exit:	L2 W	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	45	-	45	86.7	333	0.135	100	NA	NA
Lane 2	-	218	218	9.6	313	0.697	100	NA	NA
Approach	45	218	263	22.8		0.697			

East: Customs									
Mov. From E To Exit:	L2 S	T1 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	38	21	59	47.5	411	0.144	21[5]	NA	NA
Lane 2	-	295	295	16.6	422	0.697	100	NA	NA
Lane 3	-	295	295	16.6	422	0.697	100	NA	NA
Approach	38	610	648	19.4		0.697			
North: Lower Albert									
Mov. From N To Exit:	L2 E	T1 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	1	21	22	95.5	72	0.305	100	NA	NA
Lane 2	-	24	24	75.0	79	0.305	100	NA	NA
Approach	1	45	46	84.8		0.305			
West: Customs									
Mov. From W To Exit:	L2 N	T1 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	47	183	230	41.0	362	0.635	100	NA	NA
Lane 2	-	245	245	32.9	385	0.635	100	NA	NA
Approach	47	428	475	36.8		0.635			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	1432	27.9	0.697

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

5 Lane under-utilisation found by the program

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Critical Gap pcu/h	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.											

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Albert				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
East: Customs				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
North: Lower Albert				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Customs				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Lower Hobston St/Slip lane/Custom St W - PrAM (Site Folder: Proposed Construction AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Lower Hobson St Network AM (Network Folder: Proposed Construction)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 77 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Lower Hobson St S															
Lane 1	245	33.1	245	33.1	894	0.274	100	9.7	LOS A	4.8	43.1	Full	30	0.0	38.1
Lane 2 (B)	62	100.0	62	100.0	527	0.118	100	10.0	LOS A	1.1	19.7	Full	30	0.0	0.0
Approach	307	46.6	307	46.6		0.274		9.7	LOS A	4.8	43.1				
All Vehicles	307	46.6	307	46.6		0.274		9.7	LOS A	4.8	43.1				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

Approach Lane Flows (veh/h)

South: Lower Hobson St S

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	13	232	-	245	33.1	894	0.274	100	NA	NA
Lane 2	-	38	24	62	100.0	527	0.118	100	NA	NA
Approach	13	270	24	307	46.6		0.274			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	307	46.6	0.274

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Critical Gap pcu/h	Follow-up Headway sec	Lane Flow Rate sec	Capacity veh/h	Deg. Satn veh/h	Min. Delay v/c	Merge Delay sec	sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial	Residual	Time for	Duration

	Queued Demand veh	Queued Demand veh	Residual Demand to Clear sec	of Oversatn sec
South: Lower Hobson St S				
Lane 1	0.0	0.0	0.0	0.0
Lane 2 (B)	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Quay St / Lower Hobson St - PrAM (Site Folder: Proposed Construction AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Lower Hobson St Network AM (Network Folder: Proposed Construction)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Lower Hobson St															
Lane 1	233	33.9	233	33.9	332	0.701	100	45.1	LOS D	11.1	99.9	Full	500	0.0	0.0
Lane 2	38	100.0	38	100.0	239	0.159	23[5]	40.3	LOS D	1.5	20.1	Full	500	0.0	0.0
Approach	271	43.2	271	43.2		0.701		44.4	LOS D	11.1	99.9				
East: Quay St E															
Lane 1	427	9.2	427	9.2	627	0.680	100	33.7	LOS C	17.8	134.2	Full	60	0.0	80.2
Lane 2	174	13.1	174	13.1	256	0.680	100	50.2	LOS D	8.5	66.3	Full	60	0.0	14.0
Approach	601	10.3	601	10.3		0.680		38.5	LOS D	17.8	134.2				
North: Princes Wharf															
Lane 1	18	16.7	18	16.7	349	0.052	100	38.8	LOS D	0.7	5.6	Full	100	0.0	0.0
Lane 2	68	13.2	68	13.2	108	0.632	100	54.2	LOS D	3.5	27.6	Full	100	0.0	0.0
Approach	86	14.0	86	14.0		0.632		51.0	LOS D	3.5	27.6				
West: Quay St W															
Lane 1	37	13.5	37	13.5	68	0.545	100	61.2	LOS E	2.0	15.5	Full	80	0.0	0.0
Approach	37	13.5	37	13.5		0.545		61.2	LOS E	2.0	15.5				
All Vehicles	995	19.7	995	19.7		0.701		42.0	LOS D	17.8	134.2				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

5 Lane under-utilisation found by the program

Approach Lane Flows (veh/h)

South: Lower Hobson St

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	20	43	170	233	33.9	332	0.701	100	NA	NA
Lane 2	-	-	38	38	100.0	239	0.159	23[5]	NA	NA
Approach	20	43	208	271	43.2		0.701			

East: Quay St E

Mov.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.

From E To Exit:	S	W	N			Cap. veh/h	Satn v/c	Util. %	SL Ov. %	Lane No.
Lane 1	427	-	-	427	9.2	627	0.680	100	NA	NA
Lane 2	139	1	34	174	13.1	256	0.680	100	NA	NA
Approach	566	1	34	601	10.3		0.680			
North: Princes Wharf										
Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	18	-	-	18	16.7	349	0.052	100	NA	NA
Lane 2	-	67	1	68	13.2	108	0.632	100	NA	NA
Approach	18	67	1	86	14.0		0.632			
West: Quay St W										
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	1	1	35	37	13.5	68	0.545	100	NA	NA
Approach	1	1	35	37	13.5		0.545			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	995	19.7	0.701

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

5 Lane under-utilisation found by the program

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Lower Hobson St				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
East: Quay St E				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
North: Princes Wharf				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Quay St W				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Sturdee Street PrAM (Site Folder: Proposed Construction AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Lower Hobson St Network AM (Network Folder: Proposed Construction)]

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
SouthWest: Sturdee St W															
Lane 1	269	39.0	269	39.0	876	0.307	100	6.0	LOS A	0.0	0.0	Two Seg[10]	500	-38.1[N3]	0.0
Lane 2 (B)	90	100.0	90	100.0	1157	0.078	25[5]	2.7	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 3	315	21.7	315	21.7	1709	0.184	100	0.1	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 4	315	21.7	315	21.7	1709	0.184	100	0.1	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	989	33.6	989	33.6		0.307		1.9	NA	0.0	0.0				
All Vehicles	989	33.6	989	33.6		0.307		1.9	NA	0.0	0.0				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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.

5 Lane under-utilisation found by the program
10 Some Movement Classes allocated to Segment 1 are not allocated to Segment 2. Segment 1 of this Two-Segment Lane has been modelled as a short lane.
N3 Capacity Adjustment due to downstream lane blockage determined by the program.

Approach Lane Flows (veh/h)

SouthWest: Sturdee St W

Mov. From SW To Exit:	L1 N	T1 NE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	269	-	269	39.0	876	0.307	100	0.0	2
Lane 2	38	52	90	100.0	1157	0.078	25[5]	NA	NA
Lane 3	-	315	315	21.7	1709	0.184	100	NA	NA
Lane 4	-	315	315	21.7	1709	0.184	100	NA	NA
Approach	307	682	989	33.6		0.307			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	989	33.6	0.307

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

5 Lane under-utilisation found by the program

Merge Analysis										
	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Critical Gap pcu/h	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.											

Variable Demand Analysis				
	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
SouthWest: Sturdee St W				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
(B)				
Lane 3	0.0	0.0	0.0	0.0
Lane 4	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Lower Hobston St/Slip lane/Custom St W - PrPM (Site Folder: Proposed Construction PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Lower Hobson St Network PM (Network Folder: Proposed Construction)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 104 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Lower Hobson St S															
Lane 1	474	13.7	474	13.7	1212	0.391	100	7.9	LOS A	6.3[N4]	49.0[N4]	Full	30	0.0	50.0
Lane 2 (B)	62	100.0	62	100.0	644	0.096	100	7.2	LOS A	1.1	18.8	Full	30	0.0	0.0
Approach	536	23.7	536	23.7		0.391		7.8	LOS A	6.3	49.0				
All Vehicles	536	23.7	536	23.7		0.391		7.8	LOS A	6.3	49.0				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

N4 Average back of queue has been restricted to the available queue storage space.

Approach Lane Flows (veh/h)

South: Lower Hobson St S

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	52	422	-	474	13.7	1212	0.391	100	NA	NA
Lane 2	-	38	24	62	100.0	644	0.096	100	NA	NA
Approach	52	460	24	536	23.7		0.391			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	536	23.7	0.391

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Lower Hobson St S				
Lane 1	0.0	0.0	0.0	0.0
Lane 2 (B)	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Quay St / Lower Hobson St - PrPM (Site Folder: Proposed Construction PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Lower Hobson St Network PM (Network Folder: Proposed Construction)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 105 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Lower Hobson St															
Lane 1	421	10.9	421	10.9	479	0.879	100	54.9	LOS D	24.4	186.6	Full	500	0.0	0.0
Lane 2	38	100.0	38	100.0	299	0.127	14[5]	36.6	LOS D	1.5	19.3	Full	500	0.0	0.0
Approach	459	18.3	459	18.3		0.879		53.3	LOS D	24.4	186.6				
East: Quay St E															
Lane 1	410	15.4	410	15.4	669	0.612	100	31.3	LOS C	16.7	132.4	Full	60	0.0	78.9
Lane 2	186	15.5	186	15.5	304	0.612	100	47.4	LOS D	9.0	71.4	Full	60	0.0	20.8
Approach	596	15.4	596	15.4		0.612		36.3	LOS D	16.7	132.4				
North: Princes Wharf															
Lane 1	98	9.2	98	9.2	332	0.295	100	44.6	LOS D	4.4	33.1	Full	100	0.0	0.0
Lane 2	70	12.9	70	12.9	103	0.681	100	57.7	LOS E	3.9	30.1	Full	100	0.0	0.0
Approach	168	10.7	168	10.7		0.681		50.1	LOS D	4.4	33.1				
West: Quay St W															
Lane 1	22	13.6	22	13.6	48	0.454	100	65.6	LOS E	1.3	9.8	Full	80	0.0	0.0
Approach	22	13.6	22	13.6		0.454		65.6	LOS E	1.3	9.8				
All Vehicles	1245	15.8	1245	15.8		0.879		45.0	LOS D	24.4	186.6				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

5 Lane under-utilisation found by the program

Approach Lane Flows (veh/h)

South: Lower Hobson St

Mov. From S To Exit:	L2 W	T1 N	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	8	50	363	421	10.9	479	0.879	100	NA	NA
Lane 2	-	-	38	38	100.0	299	0.127	14[5]	NA	NA
Approach	8	50	401	459	18.3		0.879			

East: Quay St E

Mov.	L2	T1	R2	Total	%HV		Deg.	Lane	Prob.	Ov.

From E To Exit:	S	W	N			Cap. veh/h	Satn v/c	Util. %	SL Ov. %	Lane No.
Lane 1	410	-	-	410	15.4	669	0.612	100	NA	NA
Lane 2	162	1	23	186	15.5	304	0.612	100	NA	NA
Approach	572	1	23	596	15.4		0.612			
North: Princes Wharf										
Mov. From N To Exit:	L2 E	T1 S	R2 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	98	-	-	98	9.2	332	0.295	100	NA	NA
Lane 2	-	69	1	70	12.9	103	0.681	100	NA	NA
Approach	98	69	1	168	10.7		0.681			
West: Quay St W										
Mov. From W To Exit:	L2 N	T1 E	R2 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	1	1	20	22	13.6	48	0.454	100	NA	NA
Approach	1	1	20	22	13.6		0.454			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	1245	15.8	0.879

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

5 Lane under-utilisation found by the program

Merge Analysis

Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.											

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Lower Hobson St				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
East: Quay St E				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
North: Princes Wharf				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Quay St W				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Sturdee Street PrPM (Site Folder: Proposed Construction PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Lower Hobson St Network PM (Network Folder: Proposed Construction)]

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
SouthWest: Sturdee St W															
Lane 1	498	17.9	498	17.9	1638	0.304	100	5.6	LOS A	4.0 N5	34.5 N5	Two Seg 10	500	0.0	0.0
Lane 2 (B)	90	100.0	90	100.0	1157	0.078	26 5	2.7	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 3	201	27.9	201	27.9	1651	0.122	100	0.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Lane 4	201	27.9	201	27.9	1651	0.122	100	0.0	LOS A	0.0	0.0	Full	500	0.0	0.0
Approach	990	29.4	990	29.4		0.304		3.1	NA	4.0	34.5				
All Vehicles	990	29.4	990	29.4		0.304		3.1	NA	4.0	34.5				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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.

5 Lane under-utilisation found by the program
10 Some Movement Classes allocated to Segment 1 are not allocated to Segment 2. Segment 1 of this Two-Segment Lane has been modelled as a short lane.
N5 Results for this lane are determined by Back of Queue values of downstream lanes (proportional to lane movement flows).

Approach Lane Flows (veh/h)

SouthWest: Sturdee St W

Mov. From SW To Exit:	L1 N	T1 NE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	498	-	498	17.9	1638	0.304	100	0.0	2
Lane 2	38	52	90	100.0	1157	0.078	26 5	NA	NA
Lane 3	-	201	201	27.9	1651	0.122	100	NA	NA
Lane 4	-	201	201	27.9	1651	0.122	100	NA	NA
Approach	536	454	990	29.4		0.304			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	990	29.4	0.304

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

5 Lane under-utilisation found by the program

Merge Analysis										
	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Critical Gap pcu/h	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.											

Variable Demand Analysis				
	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
SouthWest: Sturdee St W				
Lane 1	0.0	0.0	0.0	0.0
Lane 2 (B)	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
Lane 4	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Sturdee St Ped - PrAM (Site Folder: Proposed Construction AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Custom St W Network AM (Network Folder: Proposed Construction)]

New Site
Site Category: (None)
Pedestrian Crossing (Signalised) - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 50 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Sturdee St (S)															
Lane 1 (B)	52	100.0	52	100.0	567	0.092	100	7.8	LOS A	0.7	9.2	Full	500	0.0	0.0
Lane 2	315	21.7	315	21.7	820	0.384	100	9.1	LOS A	5.0	41.6	Full	500	0.0	0.0
Lane 3	315	21.7	315	21.7	820	0.384	100	9.1	LOS A	5.0	41.6	Full	500	0.0	0.0
Approach	682	27.7	682	27.7		0.384		9.0	LOS A	5.0	41.6				
All Vehicles	682	27.7	682	27.7		0.384		9.0	LOS A	5.0	41.6				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

Approach Lane Flows (veh/h)

South: Sturdee St (S)

Mov. From S To Exit:	T1 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	52	52	100.0	567	0.092	100	NA	NA
Lane 2	315	315	21.7	820	0.384	100	NA	NA
Lane 3	315	315	21.7	820	0.384	100	NA	NA
Approach	682	682	27.7		0.384			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	682	27.7	0.384

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis				
	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Sturdee St (S)				
Lane 1 (B)	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Sturdee St/Slip Lane Lower Hobson St/Custom St W - PrAM (Site Folder: Proposed Construction AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Custom St W Network AM (Network Folder: Proposed Construction)]

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Sturdee St															
Lane 1 (B)	52	100.0	52	100.0	1126	0.046	100	2.5	LOS A	0.0	0.0	Full	40	0.0	0.0
Lane 2	317	21.7	317	21.7	1395	0.227	100	2.5	LOS A	0.0	0.0	Full	40	-15.9 N7	0.0
Lane 3	313	21.7	313	21.7	1375	0.227	100	2.5	LOS A	0.0	0.0	Full	40	-17.2 N7	0.0
Approach	682	27.7	682	27.7		0.227		2.5	NA	0.0	0.0				
West: Slip Lane Lower Hobson St															
Lane 1	24	100.0	24	100.0	481	0.050	100	6.6	LOS A	0.2	4.6	Full	500	-15.9 N7	0.0
Approach	24	100.0	24	100.0		0.050		6.6	LOS A	0.2	4.6				
All Vehicles	706	30.2	706	30.2		0.227		2.7	NA	0.2	4.6				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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.

N7 The capacity reduction has been determined from the queue blockage probability based on the Back of Queue value of a Site further downstream.

Approach Lane Flows (veh/h)

South: Sturdee St

Mov. From S To Exit:	R1 NE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	52	52	100.0	1126	0.046	100	NA	NA
Lane 2	317	317	21.7	1395	0.227	100	NA	NA
Lane 3	313	313	21.7	1375	0.227	100	NA	NA
Approach	682	682	27.7		0.227			

West: Slip Lane Lower Hobson St

Mov. From W To Exit:	L1 NE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	24	24	100.0	481	0.050	100	NA	NA
Approach	24	24	100.0		0.050			

Total	%HV	Deg.Satn (v/c)

All Vehicles	706	30.2	0.227

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Critical Gap pcu/h sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.											

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Sturdee St				
Lane 1 (B)	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
West: Slip Lane Lower Hobson St				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Custom Street Service Lane - PrAM (Site Folder: Proposed Construction AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Custom St W Network AM (Network Folder: Proposed Construction)]

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
North: Access															
Lane 1	21	9.5	21	9.5	708	0.030	100	5.2	LOS A	0.1	0.5	Full	500	-46.7 N3	0.0
Approach	21	9.5	21	9.5		0.030		5.2	LOS A	0.1	0.5				
West: Custom St															
Lane 1	31	100.0	31	100.0	630	0.049	20 6	0.0	LOS A	0.0	0.0	Full	25	-46.7 N3	0.0
Lane 2	289	23.9	289	23.9	1182	0.244	100	1.6	LOS A	0.0 N5	0.0 N5	Full	25	-26.3 N3	15.8
Lane 3	388	29.2	388	29.2	1586	0.244	100	0.0	LOS A	0.2 N5	1.8 N5	Full	25	0.0	17.4
Approach	707	30.1	707	30.1		0.244		0.7	NA	0.2	1.8				
All Vehicles	728	29.5	728	29.5		0.244		0.8	NA	0.2	1.8				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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.

6 Lane under-utilisation due to downstream effects
N3 Capacity Adjustment due to downstream lane blockage determined by the program.
N5 Results for this lane are determined by Back of Queue values of downstream lanes (proportional to lane movement flows).

Approach Lane Flows (veh/h)

North: Access

Mov. From N To Exit:	L2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	21	21	9.5	708	0.030	100	NA	NA
Approach	21	21	9.5		0.030			

West: Custom St

Mov. From W To Exit:	L2 N	T1 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	-	31	31	100.0	630	0.049	20 6	NA	NA
Lane 2	165	124	289	23.9	1182	0.244	100	NA	NA
Lane 3	-	388	388	29.2	1586	0.244	100	NA	NA
Approach	165	542	707	30.1		0.244			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	728	29.5	0.244

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

6 Lane under-utilisation due to downstream effects

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
North: Access				
Lane 1	0.0	0.0	0.0	0.0
West: Custom St				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Customs / Albert / Lower Albert - PrAM (Site Folder: Proposed Construction AM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Custom St W Network AM (Network Folder: Proposed Construction)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 85 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Albert															
Lane 1	41	92.7	41	92.7	224	0.183	100	37.0	LOS D	1.5	18.5	Full	500	0.0	0.0
Lane 2	81	21.0	81	21.0	133	0.609	100	49.2	LOS D	3.6	29.4	Full	500	0.0	0.0
Approach	122	45.1	122	45.1		0.609		45.1	LOS D	3.6	29.4				
East: Customs															
Lane 1	41	68.3	41	68.3	425	0.096	14[5]	23.9	LOS C	1.2	13.2	Full	500	0.0	0.0
Lane 2	353	16.7	353	16.7	517	0.682	100	29.4	LOS C	13.3	106.5	Full	500	0.0	0.0
Lane 3	353	16.7	353	16.7	517	0.682	100	29.4	LOS C	13.3	106.5	Full	500	0.0	0.0
Approach	747	19.5	747	19.5		0.682		29.1	LOS C	13.3	106.5				
North: Lower Albert															
Lane 1	20	95.0	20	95.0	85	0.235	100	44.6	LOS D	0.9	11.0	Full	130	0.0	0.0
Lane 2	20	95.0	20	95.0	85	0.235	100	44.3	LOS D	0.9	11.0	Full	130	0.0	0.0
Approach	40	95.0	40	95.0		0.235		44.4	LOS D	0.9	11.0				
West: Customs															
Lane 1	276	34.0	276	34.0	444	0.621	100	31.1	LOS C	10.1	94.5	Full	60	0.0	46.7
Lane 2	287	29.0	287	29.0	463	0.621	100	28.6	LOS C	10.4[N4]	97.9[N4]	Full	60	0.0	50.0
Approach	563	31.4	563	31.4		0.621		29.8	LOS C	10.4	97.9				
All Vehicles	1472	28.3	1472	28.3		0.682		31.1	LOS C	13.3	106.5				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

5 Lane under-utilisation found by the program
N4 Average back of queue has been restricted to the available queue storage space.

Approach Lane Flows (veh/h)

South: Albert

Mov. From S To Exit:	L2 W	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	41	-	41	92.7	224	0.183	100	NA	NA
Lane 2	-	81	81	21.0	133	0.609	100	NA	NA
Approach	41	81	122	45.1		0.609			

East: Customs									
Mov. From E To Exit:	L2 S	T1 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	20	21	41	68.3	425	0.096	14[5]	NA	NA
Lane 2	-	353	353	16.7	517	0.682	100	NA	NA
Lane 3	-	353	353	16.7	517	0.682	100	NA	NA
Approach	20	727	747	19.5		0.682			
North: Lower Albert									
Mov. From N To Exit:	L2 E	T1 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	1	19	20	95.0	85	0.235	100	NA	NA
Lane 2	-	20	20	95.0	85	0.235	100	NA	NA
Approach	1	39	40	95.0		0.235			
West: Customs									
Mov. From W To Exit:	L2 N	T1 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	163	113	276	34.0	444	0.621	100	NA	NA
Lane 2	-	287	287	29.0	463	0.621	100	NA	NA
Approach	163	400	563	31.4		0.621			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	1472	28.3	0.682

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

5 Lane under-utilisation found by the program

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Critical Gap pcu/h	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.											

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Albert				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
East: Customs				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
North: Lower Albert				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Customs				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Sturdee St Ped - PrPM (Site Folder: Proposed Construction PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Custom St W Network PM (Network Folder: Proposed Construction)]

New Site
Site Category: (None)
Pedestrian Crossing (Signalised) - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 65 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Sturdee St (S)															
Lane 1 (B)	52	100.0	52	100.0	691	0.075	100	6.4	LOS A	0.7	9.4	Full	500	0.0	0.0
Lane 2	201	27.9	201	27.9	965	0.208	100	6.9	LOS A	3.0	26.2	Full	500	0.0	0.0
Lane 3	201	27.9	201	27.9	965	0.208	100	6.9	LOS A	3.0	26.2	Full	500	0.0	0.0
Approach	454	36.1	454	36.1		0.208		6.8	LOS A	3.0	26.2				
All Vehicles	454	36.1	454	36.1		0.208		6.8	LOS A	3.0	26.2				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

Approach Lane Flows (veh/h)

South: Sturdee St (S)

Mov. From S To Exit:	T1 N	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	52	52	100.0	691	0.075	100	NA	NA
Lane 2	201	201	27.9	965	0.208	100	NA	NA
Lane 3	201	201	27.9	965	0.208	100	NA	NA
Approach	454	454	36.1		0.208			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	454	36.1	0.208

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis				
	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Sturdee St (S)				
Lane 1	0.0	0.0	0.0	0.0
(B)				
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Sturdee St/Slip Lane Lower Hobson St/Custom St W - PrPM (Site Folder: Proposed Construction PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Custom St W Network PM (Network Folder: Proposed Construction)]

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Sturdee St															
Lane 1 (B)	52	100.0	52	100.0	859	0.061	100	2.5	LOS A	0.0	0.0	Full	40	-23.7 N7	0.0
Lane 2	204	27.9	204	27.9	1343	0.152	100	2.5	LOS A	0.0	0.0	Full	40	-16.1 N7	0.0
Lane 3	198	27.9	198	27.9	1303	0.152	100	2.5	LOS A	0.0	0.0	Full	40	-18.6 N7	0.0
Approach	454	36.1	454	36.1		0.152		2.5	NA	0.0	0.0				
West: Slip Lane Lower Hobson St															
Lane 1	24	100.0	24	100.0	477	0.050	100	6.6	LOS A	0.2	4.5	Full	500	-16.1 N7	0.0
Approach	24	100.0	24	100.0		0.050		6.6	LOS A	0.2	4.5				
All Vehicles	478	39.3	478	39.3		0.152		2.7	NA	0.2	4.5				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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.

N7 The capacity reduction has been determined from the queue blockage probability based on the Back of Queue value of a Site further downstream.

Approach Lane Flows (veh/h)

South: Sturdee St

Mov. From S To Exit:	R1 NE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	52	52	100.0	859	0.061	100	NA	NA
Lane 2	204	204	27.9	1343	0.152	100	NA	NA
Lane 3	198	198	27.9	1303	0.152	100	NA	NA
Approach	454	454	36.1		0.152			

West: Slip Lane Lower Hobson St

Mov. From W To Exit:	L1 NE	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	24	24	100.0	477	0.050	100	NA	NA
Approach	24	24	100.0		0.050			

Total	%HV	Deg.Satn (v/c)

All Vehicles	478	39.3	0.152

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Critical Gap pcu/h sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.											

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Sturdee St				
Lane 1 (B)	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
West: Slip Lane Lower Hobson St				
Lane 1	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Custom Street Service Lane - PrPM (Site Folder: Proposed Construction PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Custom St W Network PM (Network Folder: Proposed Construction)]

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

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
North: Access															
Lane 1	45	8.9	45	8.9	649	0.069	100	5.3	LOS A	0.1	1.1	Full	500	-50.0 N3	0.0
Approach	45	8.9	45	8.9		0.069		5.3	LOS A	0.1	1.1				
West: Custom St															
Lane 1	35	100.0	35	100.0	1182	0.029	20 6	0.0	LOS A	0.0 N5	0.2 N5	Full	25	0.0	23.7
Lane 2	227	29.2	227	29.2	1556	0.146	100	1.0	LOS A	0.1 N5	0.6 N5	Full	25	0.0	16.0
Lane 3	216	40.3	216	40.3	1481	0.146	100	0.0	LOS A	0.2 N5	2.4 N5	Full	25	0.0	18.6
Approach	478	39.3	478	39.3		0.146		0.5	NA	0.2	2.4				
All Vehicles	523	36.7	523	36.7		0.146		0.9	NA	0.2	2.4				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Minor Road Approach LOS values are based on average delay for all lanes.
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.

6 Lane under-utilisation due to downstream effects
N3 Capacity Adjustment due to downstream lane blockage determined by the program.
N5 Results for this lane are determined by Back of Queue values of downstream lanes (proportional to lane movement flows).

Approach Lane Flows (veh/h)

North: Access

Mov. From N To Exit:	L2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	45	45	8.9	649	0.069	100	NA	NA
Approach	45	45	8.9		0.069			

West: Custom St

Mov. From W To Exit:	L2 N	T1 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	-	35	35	100.0	1182	0.029	20 6	NA	NA
Lane 2	86	141	227	29.2	1556	0.146	100	NA	NA
Lane 3	-	216	216	40.3	1481	0.146	100	NA	NA
Approach	86	392	478	39.3		0.146			

	Total	%HV	Deg.Satn (v/c)
All Vehicles	523	36.7	0.146

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

6 Lane under-utilisation due to downstream effects

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Opposing Flow Rate pcu/h	Critical Gap sec	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.												

Variable Demand Analysis

	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
North: Access				
Lane 1	0.0	0.0	0.0	0.0
West: Custom St				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0

LANE SUMMARY

Site: 101 [Customs / Albert / Lower Albert - PrPM (Site Folder: Proposed Construction PM)]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

Network: N101 [Custom St W Network PM (Network Folder: Proposed Construction)]

New Site
Site Category: (None)
Signals - EQUISAT (Fixed-Time/SCATS) Isolated Cycle Time = 100 seconds (Site User-Given Phase Times)

Lane Use and Performance

	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh	Dist] m	Lane Config	Lane Length m	Cap. Adj. %	Prob. Block. %
South: Albert															
Lane 1	46	84.8	46	84.8	347	0.132	100	33.1	LOS C	1.7	20.1	Full	500	0.0	0.0
Lane 2	240	9.2	240	9.2	331	0.725	100	48.3	LOS D	11.7	88.0	Full	500	0.0	0.0
Approach	286	21.3	286	21.3		0.725		45.9	LOS D	11.7	88.0				
East: Customs															
Lane 1	55	50.9	55	50.9	384	0.143	18[5]	33.1	LOS C	2.1	20.7	Full	500	0.0	0.0
Lane 2	316	19.3	316	19.3	398	0.793	100	43.7	LOS D	15.8	129.1	Full	500	0.0	0.0
Lane 3	316	19.3	316	19.3	398	0.793	100	43.7	LOS D	15.8	129.1	Full	500	0.0	0.0
Approach	687	21.8	687	21.8		0.793		42.9	LOS D	15.8	129.1				
North: Lower Albert															
Lane 1	22	95.5	22	95.5	72	0.305	100	53.7	LOS D	1.1	14.5	Full	130	0.0	0.0
Lane 2	24	75.0	24	75.0	79	0.305	100	53.2	LOS D	1.2	14.2	Full	130	0.0	0.0
Approach	46	84.8	46	84.8		0.305		53.4	LOS D	1.2	14.5				
West: Customs															
Lane 1	212	44.2	212	44.2	331	0.640	100	39.7	LOS D	9.6[N4]	97.9[N4]	Full	60	0.0	50.0
Lane 2	223	36.0	223	36.0	349	0.640	100	38.6	LOS D	9.9[N4]	97.9[N4]	Full	60	0.0	50.0
Approach	435	40.0	435	40.0		0.640		39.1	LOS D	9.9	97.9				
All Vehicles	1454	29.2	1454	29.2		0.793		42.7	LOS D	15.8	129.1				

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).
Lane LOS values are based on average delay per lane.
Intersection and Approach LOS values are based on average delay for all lanes.
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.

5 Lane under-utilisation found by the program
N4 Average back of queue has been restricted to the available queue storage space.

Approach Lane Flows (veh/h)

South: Albert

Mov. From S To Exit:	L2 W	R2 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	46	-	46	84.8	347	0.132	100	NA	NA
Lane 2	-	240	240	9.2	331	0.725	100	NA	NA
Approach	46	240	286	21.3		0.725			

East: Customs									
Mov. From E To Exit:	L2 S	T1 W	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	34	21	55	50.9	384	0.143	18[5]	NA	NA
Lane 2	-	316	316	19.3	398	0.793	100	NA	NA
Lane 3	-	316	316	19.3	398	0.793	100	NA	NA
Approach	34	653	687	21.8		0.793			
North: Lower Albert									
Mov. From N To Exit:	L2 E	T1 S	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	1	21	22	95.5	72	0.305	100	NA	NA
Lane 2	-	24	24	75.0	79	0.305	100	NA	NA
Approach	1	45	46	84.8		0.305			
West: Customs									
Mov. From W To Exit:	L2 N	T1 E	Total	%HV	Cap. veh/h	Deg. Satn v/c	Lane Util. %	Prob. SL Ov. %	Ov. Lane No.
Lane 1	46	166	212	44.2	331	0.640	100	NA	NA
Lane 2	-	223	223	36.0	349	0.640	100	NA	NA
Approach	46	389	435	40.0		0.640			
	Total	%HV	Deg.Satn (v/c)						
All Vehicles	1454	29.2		0.793					

Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

5 Lane under-utilisation found by the program

Merge Analysis

	Exit Lane Number	Short Lane Length m	Percent Opng in Lane %	Opposing Flow Rate veh/h	Critical Gap pcu/h	Follow-up Headway sec	Lane Flow Rate veh/h	Capacity veh/h	Deg. Satn v/c	Min. Delay sec	Merge Delay sec
There are no Exit Short Lanes for Merge Analysis at this Site.											

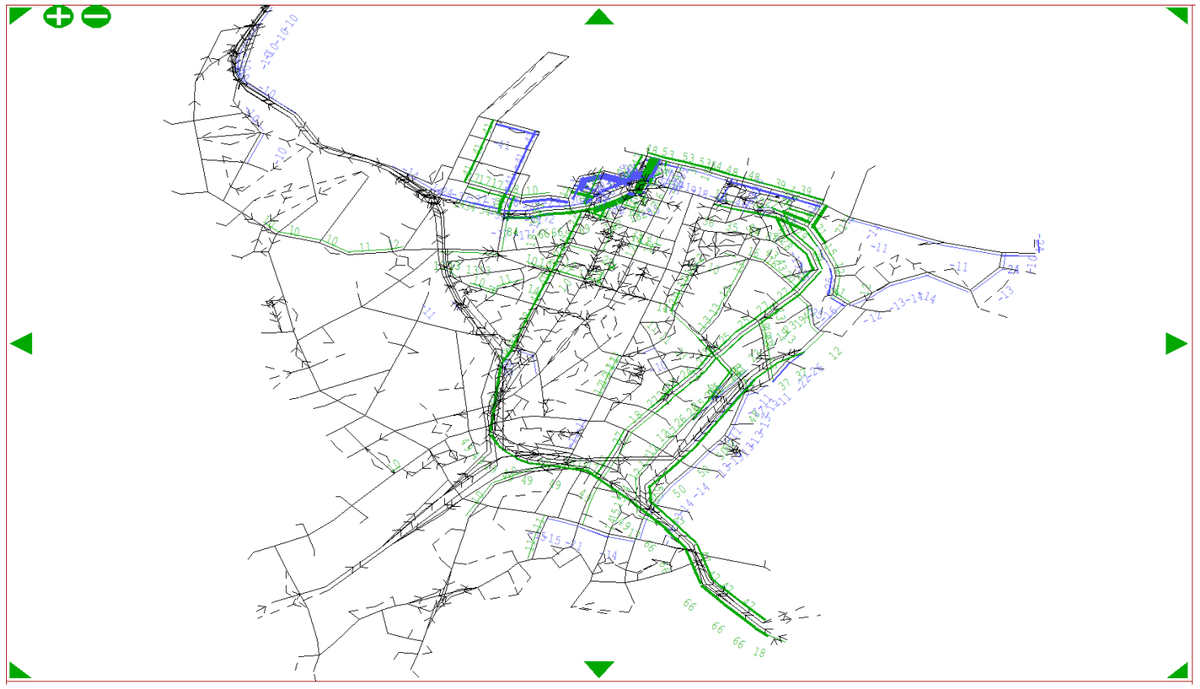
Variable Demand Analysis

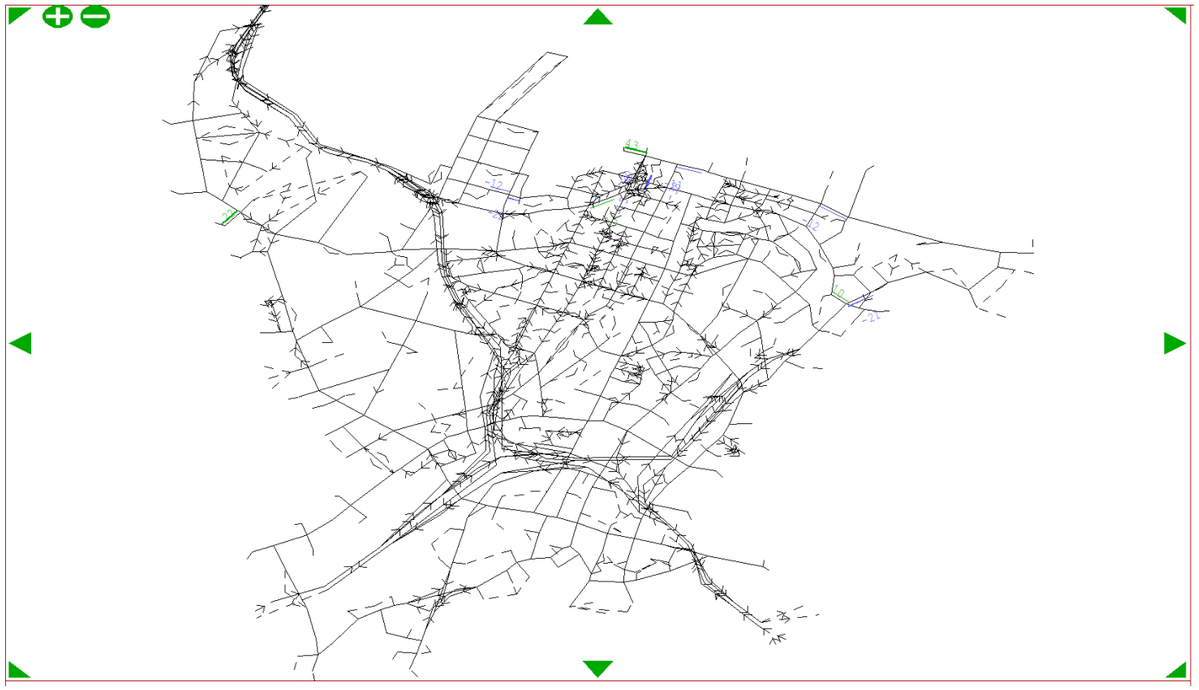
	Initial Queued Demand veh	Residual Queued Demand veh	Time for Residual Demand to Clear sec	Duration of Oversatn sec
South: Albert				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
East: Customs				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
Lane 3	0.0	0.0	0.0	0.0
North: Lower Albert				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0
West: Customs				
Lane 1	0.0	0.0	0.0	0.0
Lane 2	0.0	0.0	0.0	0.0

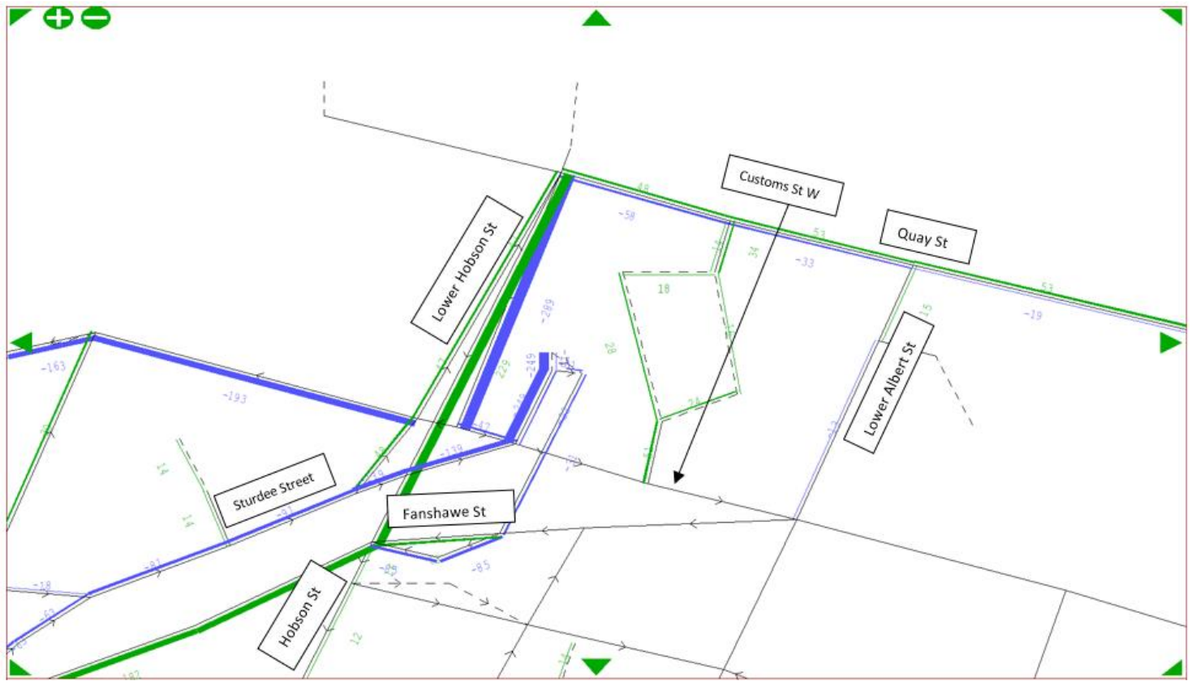
APPENDIX C SATURN modelling sensitivity test for retaining wall

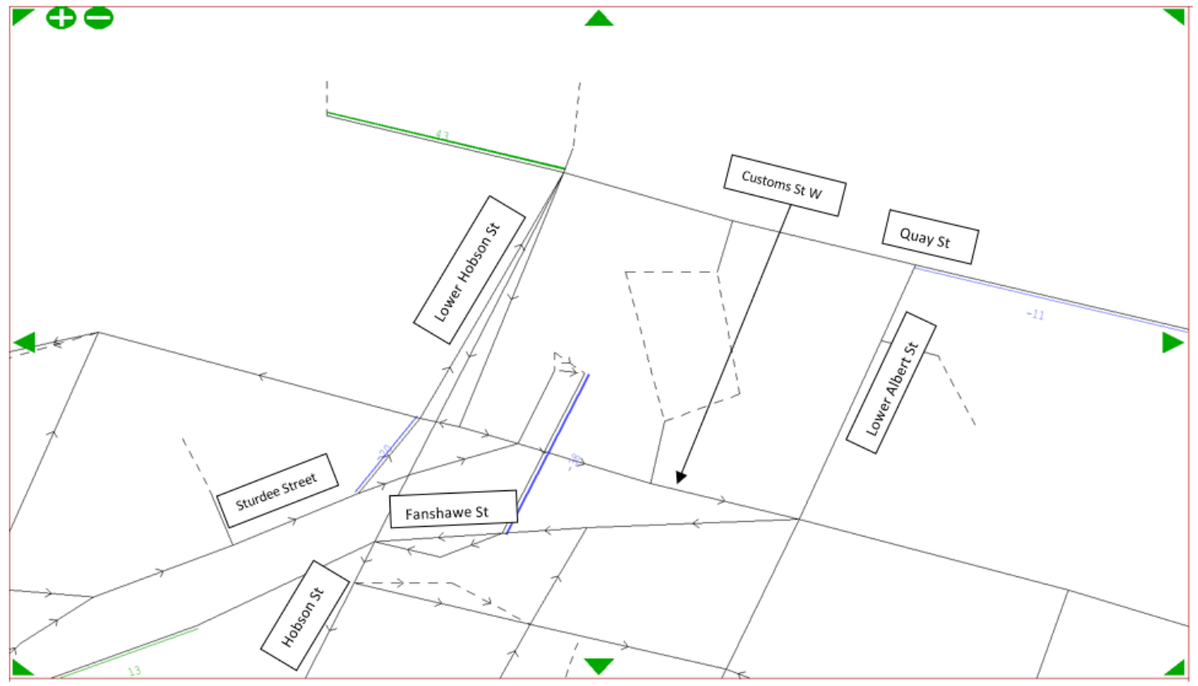
SATURN model volume (in Passenger Car Units / PCUs per hour) and delay difference (in seconds) diagrams between the baseline scenario and demolition scenarios – high level sensitivity test during retaining wall works

Scenario C vs Baseline AM – high level sensitivity test during retaining wall works	
Volume difference diagram (PCUs per hour)	Delay difference diagram (seconds)









Scenario C vs Baseline PM – high level sensitivity test during retaining wall works	
Volume difference diagram (PCUs per hour)	**Delay difference diagram (seconds)**