Downtown Carpark Site Development Demolition and Construction

Transport Assessment

November 2025

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SUMMARY OF OUR ASSESSMENT

This report outlines and assesses the demolition and construction transportation effects of the Downtown Carpark Site Development ("**the Proposal/Project**"), located at 2 Lower Hobson Street, Auckland City Centre ("**Site**"), as shown in Figure S1.

The operational effects of the Project are assessed separately in an Integrated Transport Assessment report.

Figure S1: Site and immediately surrounding transport network

The Proposal's transportation effects are proposed to be managed and mitigated through the implementation of a Construction Traffic Management Plan ("**CTMP**"). This report describes how the Site and surrounding transport network can be managed across the various demolition and construction stages to ensure that the network can operate efficiently and safely for all transport users.

A draft CTMP is provided with this resource consent application. A final, more detailed CTMP will be provided prior to the start of demolition. Demolition of the Downtown Carpark will occur over an 11.5 to 12 month period. This will consist of the following stages, with indicative timeframes shown in brackets.

- Removal of the Lower Hobson Street pedestrian overbridge, requiring a full closure of Lower Hobson Street (x1 full weekend, 48 hours)
- Demolition of the of the Downtown Carpark building, utilising a top-down methodology (11.5 to 12 months, inclusive of 3 months of enabling works)
- Removal of Downtown Carpark ramp over Customs Street West onto Fanshawe Street, requiring a full closure of Customs Street West (x2 full weekends, 48 hours each).

The construction will consist of the following key phases

- Retention and excavation (10 to 12 months)
- Basement structure LB4 to L00 (10.5 to 12 months)
- Main construction L00 and up (including podium and towers) (24 to 27 months)

The total duration of demolition and construction is expected to be 56 to 64 months.

Our approach for construction traffic has been prepared based on the following principles

- Protect the public from demolition activities
- Contain the demolition works within the Site where possible
- Minimise unnecessary pedestrian, road and bus lane closures. Provide safe alternatives where any closures are required
- Undertake the demolition in an efficient manner to avoid prolonging any required road closures
- Set out the proposed duration, frequency and timing of demolition and construction works to manage disruption to the transport network, taking into account other construction related activities occurring in the vicinity
- Avoid Quay Street and those Viaduct Streets (annotated in yellow within Figure 13) as heavy construction vehicle routes.

Our assessment of the draft CTMP to enable the demolition of the Downtown Carpark building to take place, and construction of the Downtown Carpark development, concludes that, subject to a final CTMP being prepared and implemented by a contractor once appointed, the transport effects resulting from the demolition and construction can be safely and efficiently managed and mitigated:

- Construction vehicle loading can be safely provided on Lower Hobson Street, with the closure to general traffic of the existing southbound slip lane located adjacent to the Site. Construction vehicles will enter from Nelson Street or Fanshawe Street from the west, enter the Site from underneath the flyover, and exit through the Customs Street West end. There will be further construction vehicle access points in and out of the site, once inside the Lower Hobson Street construction zone.
- Short term full closures of Lower Hobson Street and Customs Street West will be required to facilitate the removal of the pedestrian overbridge and the Downtown Carpark ramp. With these works full road closures are unavoidable, but can be undertaken during a school holiday or public holiday weekend. This will require some bus routes to be temporarily diverted, and also require temporary alternative routes to be provided for vehicles, pedestrians and cyclists.

- Footpaths along the site frontages can be retained throughout the primary demolition and construction phases with the provision of Class B hoardings. The Customs Street West footpath will always be kept open, while the Lower Hobson Street footpath will be kept open when possible. There will be gated access points for construction vehicles in and out of the site along the footpaths to safely manage interactions between pedestrians and construction vehicles.
- Heavy construction vehicle movements can be accommodated during weekday peak periods, up to the 48 truck movements per hour. This can apply during any phase of construction or demolition as an upper limit. We have assessed that these construction vehicle movements will not have a noticeable impact on the local intersections around the site, or bus routes in the area.
- Throughout the primary demolition and construction phases, the impacts on the network are not expected to be noticeable. Our traffic modelling assessment predicts average vehicle journey times will increase by only 3 seconds. The majority of bus routes will not have any noticeable changes to travel times during these phases.

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APPENDICES

1 PURPOSE OF THIS ASSESSMENT

This report outlines and assesses the demolition and construction transportation effects of the Project.

The operational effects of the Project are assessed separately in an Integrated Transport Assessment report.

The Proposal's demolition and construction transportation effects are proposed to be managed and mitigated through the implementation of a CTMP. This report describes how the Site and surrounding transport network can be managed across the various demolition and construction stages to ensure that the network can operate efficiently and safely for all transport users. A draft CTMP has been provided with the resource consent application, and a final will be provided prior to construction commencing once a contractor has been appointed.

Our assessment includes the following matters

- Information providing context to our assessment, including a description of the location of the Site and the surrounding transport network
- An overview of Auckland Transport's Temporary Traffic Management Guidelines
- An outline of the proposed demolition and construction works, including the proposed staging and programming, construction hours, proposed heavy vehicle route and construction access
- A transport assessment of the demolition and construction works, including
  - details with regard to the transport aspects of each phase of the demolition and construction works and mitigation measures that will need to be implemented
  - an outline of pedestrian provisions and any necessary diversions to ensure a safe environment for pedestrians and cyclists
  - an assessment of impacts on public transport
  - an assessment of impacts on local access points
  - a prediction of the traffic generation
  - an assessment of the traffic effects resulting from the proposed road closures and construction vehicle movements, assessing both the network and the local area
  - a tracking assessment of construction vehicles over each phase
  - contractor parking and effects
  - a description of the transport-related works to be completed once the demolition has been completed.
- An assessment of the Proposal having regard to Auckland Transport's Temporary Traffic Management Guidelines
- An assessment of the works under the applicable Auckland Unitary Plan ("**Unitary Plan**") standards for demolition works.

In conclusion, we consider that the demolition and construction phases can be safely undertaken, subject to implementing a detailed CTMP once a contractor has been appointed.

We consider that subject to the implementation of this CTMP, the wider road network can be appropriately managed to safely and efficiently accommodate the traffic effects any road closures and construction vehicle movements.

2 BACKGROUND CONTEXT

2.1 Site location

As shown in Figure 1, the Site is located north of Customs Street West and east of Lower Hobson Street in the City Centre.

Figure 1: Site and immediately surrounding transport network

2.2 Land use activities around the Site

The land use of the area surrounding the Site is shown in Figure 1. Being located in the City Centre, there is a range of land use activities in the surrounding area. This includes commercial, residential, retail, and restaurants.

The main activities located near the Site, include

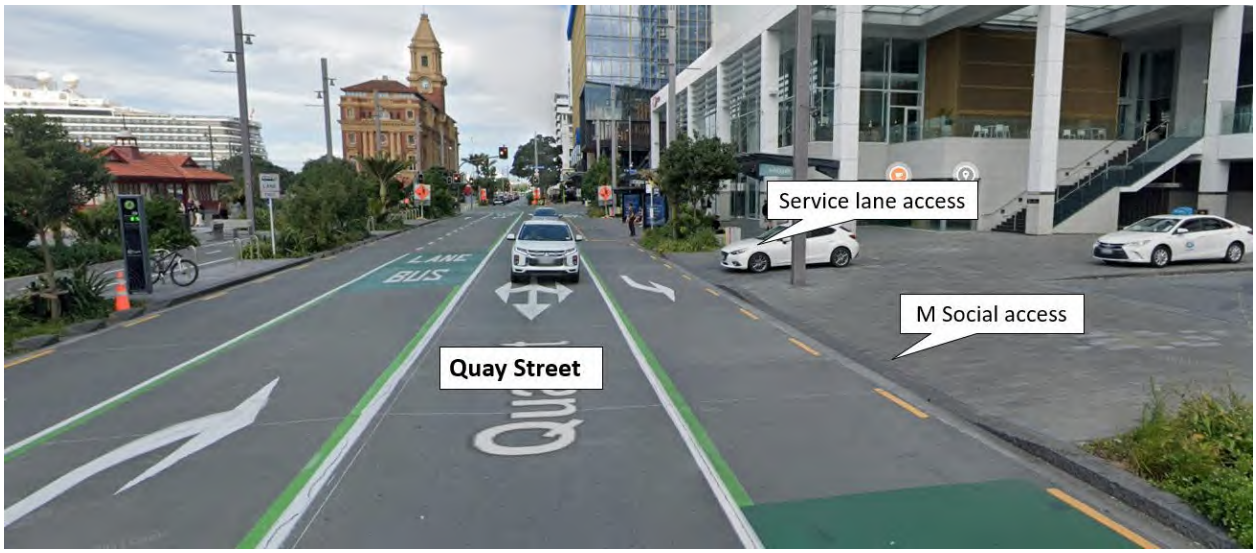
- M Social hotel immediately to the north
- Princes Wharf further to the north
- HSBC and Aon office buildings immediately to the east
- Commercial Bay development to the east, on the opposite side of Lower Albert Street
- The Viaduct area to the west, which contains commercial and residential activities.

2.3 Road network surrounding the Site

2.3.1 Quay Street

The existing layout of Quay Street in the vicinity of the Site is shown in Figure 2.

Figure 2: Quay Street layout near the Site (looking east)

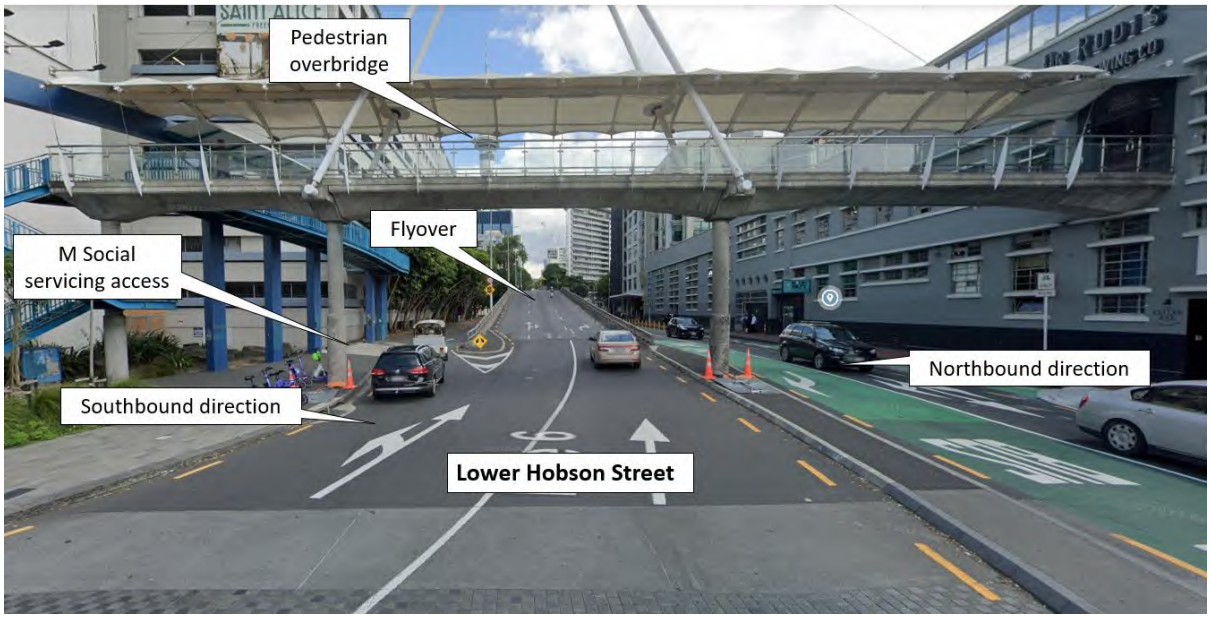


- Quay Street has 4 lanes in total in the vicinity of the Site. This consists of one general traffic lane in each direction and bus lanes in each direction
- Dedicated cycle lanes are provided on the northern side of Quay Street on the opposite side of Quay Street from the Site
- Wide footpaths are provided on each side
- Bus stops are provided on the south side, east of the service lane access
- The service lane highlighted in the figure provides access to existing HSBC and Aon buildings
- Quay Street has signposted heavy vehicle restrictions, which restrict trucks over 14.5 m in length (including trailers).

2.3.2 Lower Hobson Street

The existing layout of Lower Hobson Street in the vicinity of the Site is shown in Figure 3.

Figure 3: Lower Hobson Street layout near the Site (looking south)



- Lower Hobson Street is split into 3 distinct sections. This includes the flyover and northbound and southbound sections
- The flyover provides a connection from Quay Street to Hobson Street, which provides access to SH1 further to the south. The flyover initially has 2 lanes, which increases to 3 and then 4 lanes on the approach to the Fanshawe Street intersection
- The southbound direction section is located directly adjacent to the Site. It includes 1 to 2 traffic lanes and a footpath on the east side
- The northbound direction section has 1 general traffic lane and 1 bus lane. Bi-directional protected cycle lanes and footpaths are provided on the west side of the street
- A pedestrian overbridge is located at the north end of Lower Hobson Street, which provides a connection between the 204 Quay Street site on the west side to the Downtown Carpark and the footpath at ground level on the east side
- A vehicle access is located on the east side of Lower Hobson Street for M Social servicing
- There is a raised pedestrian crossing on the Lower Hobson Street slip lane (the southbound section) at its southern end, where the slip lane meets Customs Street West.

To confirm the vertical clearance under the flyover on the Lower Hobson Street slip lane (the southbound section), we undertook measurements as outlined in Figure 4 and Figure 5 below. The measurements show that the vertical clearance of the flyover ranges from about 5 m to 2 m for the length we surveyed.

Figure 4: Chainage of the Lower Hobson Street flyover bridge vertical clearance measurements

Figure 5: Vertical clearance of Lower Hobson Street Flyover

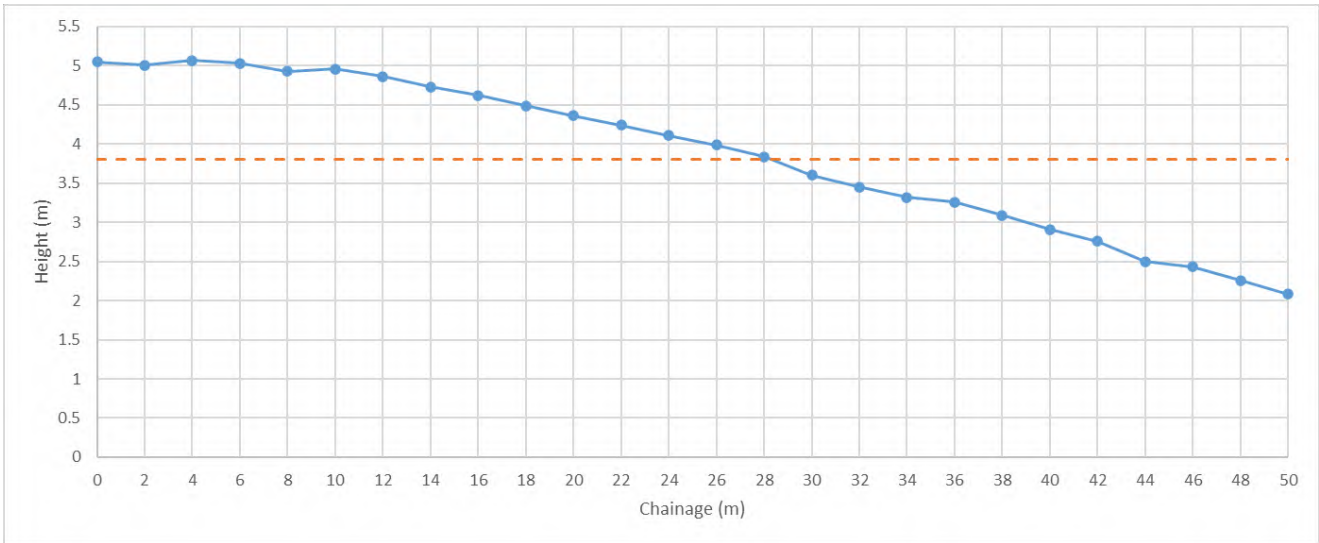


Figure 5 confirms that there is adequate bridge vertical clearance for a truck to pass under the bridge at least for the first 28 m (considering 3.8 m vertical clearance as a limit).

2.3.3 Customs Street West

The existing layout of Customs Street West in the vicinity of the Site is shown in Figure 6.

Figure 6: Customs Street West layout near the Site (looking west)

- The section of Customs Street West fronting the Site operates in a one-way eastbound direction. It includes 2 general traffic lanes and a bus lane
- Footpaths are provided on the north side only
- The Downtown Carpark has two primary access and egress points.
  - Vehicle crossings along the road frontage on ground level, with separate crossings accommodating inbound and outbound vehicle movements
  - An overhead ramp towards Fanshawe Street, accommodating outbound movements only.

2.3.4 Fanshawe Street

The existing layout of Fanshawe Street is shown in Figure 7.

Figure 7: Fanshawe Street layout near the Site (looking west)

- The section of Customs Street West fronting the Site operates in a one-way westbound direction. It includes 3 general traffic lanes and 1 bus lane
- The Downtown Carpark has an exit onto Fanshawe Street, which forms a signalised intersection
- Footpaths are provided on both sides. We note that the footpath on the north side is narrow and does not provide a proper connection between the Downtown Carpark exit and Albert Street to the east. Pedestrians can cross at the signalised intersection of Fanshawe Street / Hobson Street.

2.3.5 Future road network

The prospect of future changes to the transport environment is acknowledged (for example, enabling works for the Lower Hobson Street flyover removal, and the removal of the Lower Hobson Street flyover itself) but:

- such projects will be consented and will take place with awareness of this project
- it is expected that these can be managed by review and updates to the CTMP.

2.4 The existing Site

The Site currently accommodates the Auckland Transport Downtown Carpark.

It provides 1,944 parking spaces, which are generally available to the public. There is a mix between short-term public use and long-term leased spaces.

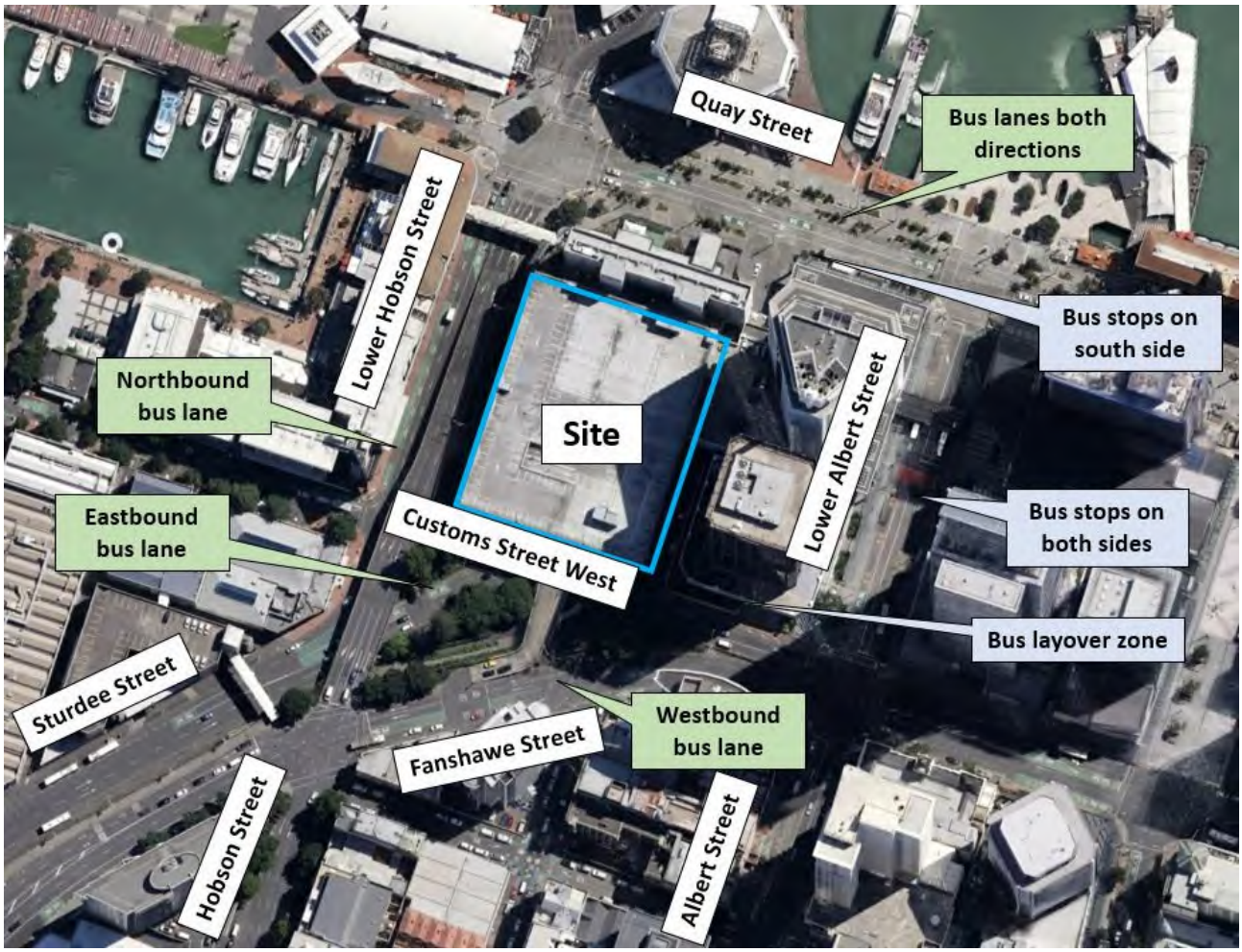
The Site has the following access points

- Two primary access points
  - Vehicle crossings along the road frontage on ground level, with separate crossings accommodating inbound and outbound vehicle movements
  - An overhead ramp towards Fanshawe Street, accommodating outbound movements only.
- Two secondary access points
  - A sliding door access onto the Customs Street West / Quay Street service lane
  - A roller door access onto the Quay Street frontage from the M Social site.

2.5 Public transport in the vicinity of the Site

A plan of the bus facilities in the area surrounding the Site is shown in Figure 8.

Figure 8: Bus facilities in the surrounding area



In summary, there are:

- bus lanes on
  - Lower Hobson Street, northbound direction
  - Quay Street, both directions
  - Lower Albert Street, both directions
  - Customs Street West, eastbound direction
  - Fanshawe Street, westbound direction.
- bus stops on
  - Quay Street, south side
  - Lower Albert Street, both sides.
  - Customs Street West contains a bus layover zone, although this is not signposted.

The following bus routes travel on the roads surrounding the Site.

- The Quay Street bus stops serve the 95 and 97 routes to the North Shore. These buses turn left onto the Lower Hobson Street flyover and then right onto Fanshawe Street
- The northbound bus stops on Lower Albert Street serve the NX1 route. These buses turn left onto Quay Street, then left onto the Lower Hobson Street flyover and then right onto Fanshawe Street
- The southbound bus stops on Lower Albert Street serve the 11, 105, 106, WX1, 18, 195 and 209 routes. These all travel directly south onto Albert Street
- A number of bus routes travel across the Site frontage on Customs Street West, including the City Link, Inner Link, 95, 97, 931, 933, and 939 routes.

As such, it is concluded that the roads surrounding the Site are busy bus routes, although there are no bus stops directly adjacent to the Site.

2.6 Pedestrian and cyclist facilities in the vicinity of the Site

The following facilities are provided for pedestrians and cyclists

- As outlined in Section 2.3, footpaths are generally provided on both sides of the road in the surrounding area. There are a number of signalised intersections that provide safe crossing facilities for pedestrians. Pedestrian volumes are high given the City Centre location.
- Separated cycle facilities are provided in the following areas near the Site
  - Quay Street has a bi-directional cycleway on the north side
  - Lower Hobson Street has a bi-directional cycleway on the west side between Customs Street West and Quay Street
  - Customs Street West (west of Lower Hobson Street) has a bi-directional cycleway on the north side.

Footpaths on Quay Street and Customs Street West adjacent to the Site are well-used by pedestrians and provide connectivity in an east-west direction.

Cycle paths on Lower Hobson Street and Quay Street are separated and located away from the immediate Site frontages.

3 OVERVIEW OF THE TEMPORARY TRAFFIC MANAGEMENT GUIDELINES

We have been provided the "Temporary Traffic Management Guidelines 2022 to 2025" ("**TTMG**") document from Auckland Transport. We have attached this document in Appendix G. We note that:

- The TTMG is non-statutory document and was prepared by Auckland Transport with the intention to assist developers in preparing Traffic Management Plans (TMP) typically required under the relevant Corridor Access Request (CAR) processes
- The purpose of the TTMG is to provide developers working with the City Centre with parameters, by way of a number of fundamental key principles to adhere to, in which to prepare their TMP through the CAR process, whilst ensuring that works can be enabled in a manner that suitably protects the safety and efficiency of the surrounding transport network
- The guidelines seek to apply key principles and apply the outcomes from the Auckland Network Operating Plan to manage construction works and effects within the City Centre.

The TTMG provides 9 broad rules that are designed to enable the Auckland Network Operating Plan outcomes.

We assess the proposed demolition and construction works against the TTMG in Section 16.

4 OVERVIEW OF THE PROPOSED DEMOLITION AND CONSTRUCTION WORKS

4.1 Overview of the demolition stage

The demolition of the Downtown Carpark will occur over an 11.5 to 12 month period. This will consist of the following stages, with indicative timeframes shown in brackets.

- Removal of the Lower Hobson Street pedestrian overbridge, requiring a full closure of Lower Hobson Street (x1 full weekend, 48 hours)
- Demolition of the of the Downtown Carpark building, utilising a top-down methodology (11.5 to 12 months, inclusive of 3 months of enabling works)
- Removal of Downtown Carpark ramp over Customs Street West onto Fanshawe Street, requiring a full closure of Customs Street West (x2 full weekends, 48 hours each).

4.2 Overview of the construction stage

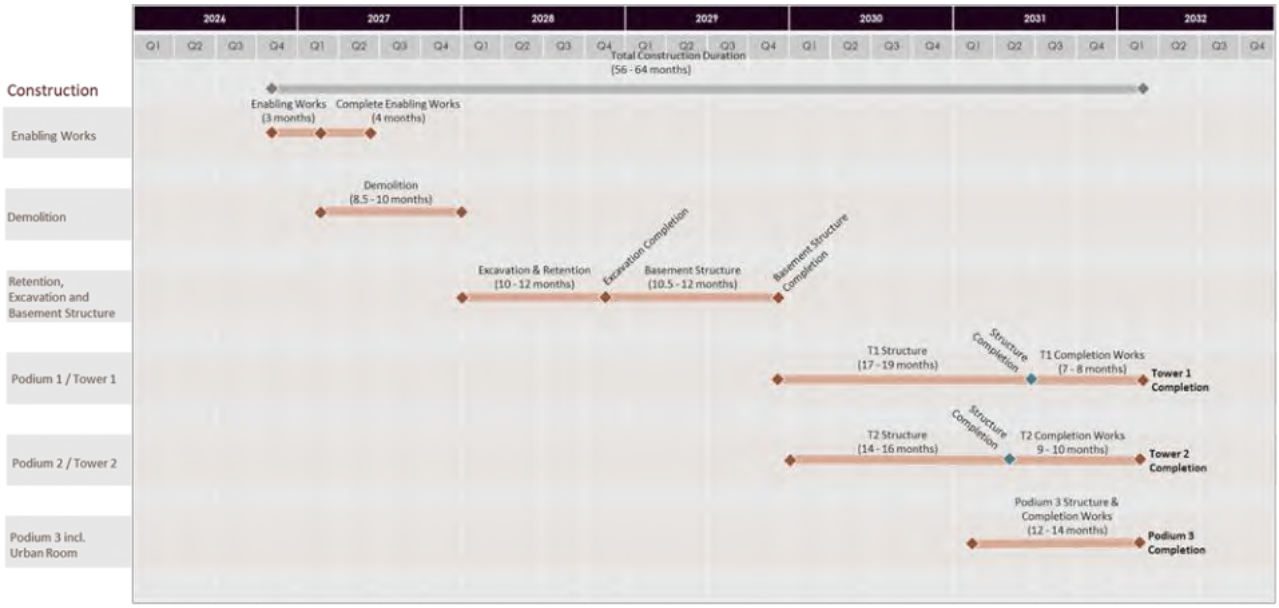
The construction will consist of the following key phases

- Retention and excavation (approximately 10 to 12 months)
- Basement structure LB4 to L00 (approximately 10.5 to 12 months)
- Main construction L00 and up (including podium and towers) (approximately 24 to 27 months).

The precise sequence and duration of each phase will be confirmed through contractor input.

An indicative summary programme is provided in Figure 9, accounting for both demolition and construction. The total duration is expected to be 56 to 64 months.

Figure 9: Indicative summary programme of construction and demolition



4.3 Construction hours

We anticipate that standard construction hours will be adequate for the Site throughout the majority of demolition and construction, namely

- 7:00 am to 6:00 pm, Monday to Friday
- 8:00 am to 5:00 pm Saturday.

Some works will be required over a full weekend period (48 hours, which will include Sunday), where the pedestrian overbridge and carpark ramps are removed. These will require full road closures over shorter periods, so utilising a full weekend will minimise any effects during weekday periods.

4.4 Heavy vehicle routes

As shown in Figure 1, the Site is located at the corner of Lower Hobson Street and Customs Street West in the City Centre. It, therefore, has good vehicle accessibility to/from the State Highway ("**SH**") network.

Figure 10 below illustrates how trucks are anticipated to enter and exit the Site based on loading areas provided on the Lower Hobson Street slip lane alongside the Site frontage.

- All trucks enter the Site from Fanshawe Street or Nelson Street from the SH network
- Construction vehicle access will be provided underneath the Lower Hobson Street flyover. The construction loading will be provided on the Lower Hobson Street slip lane
- Trucks will exit the Site onto Customs Street West/Beach Road towards SH16/Stanley Street.

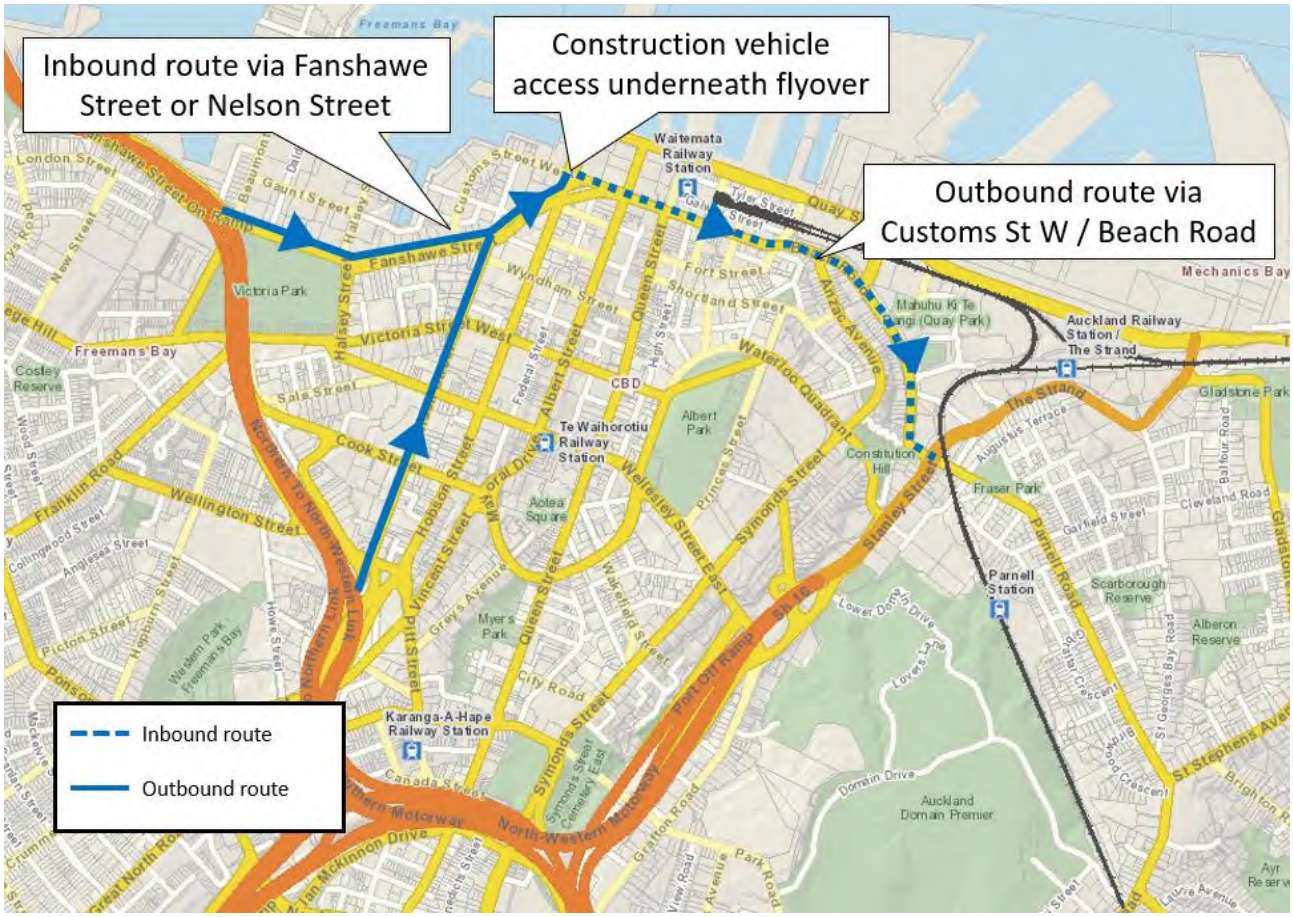
These routes are all classified in the Unitary Plan as arterial roads and have signalised intersections. This provides a road network designed to safely and efficiently accommodate heavy vehicles.

This heavy vehicle route avoids Quay Street, which is subject to vehicle size restrictions (up to 14.5 m in length).

We note that it is not possible for construction vehicles to simultaneously enter and exit the City Centre via the west, which is one of the specifications of the TTMG document. While construction vehicles can enter via the west, they are unable to also exit via the west (and simultaneously avoid Quay Street) due to the one-way circulation of Customs Street West.

When approaching the Customs Street West/Lower Albert Street intersection, construction vehicles must continue straight through in the east direction, as left and right turns onto Lower Albert Street and Albert Street, respectively, are not permitted. This route results in construction vehicles continuing towards Beach Road towards SH16/Stanley Street.

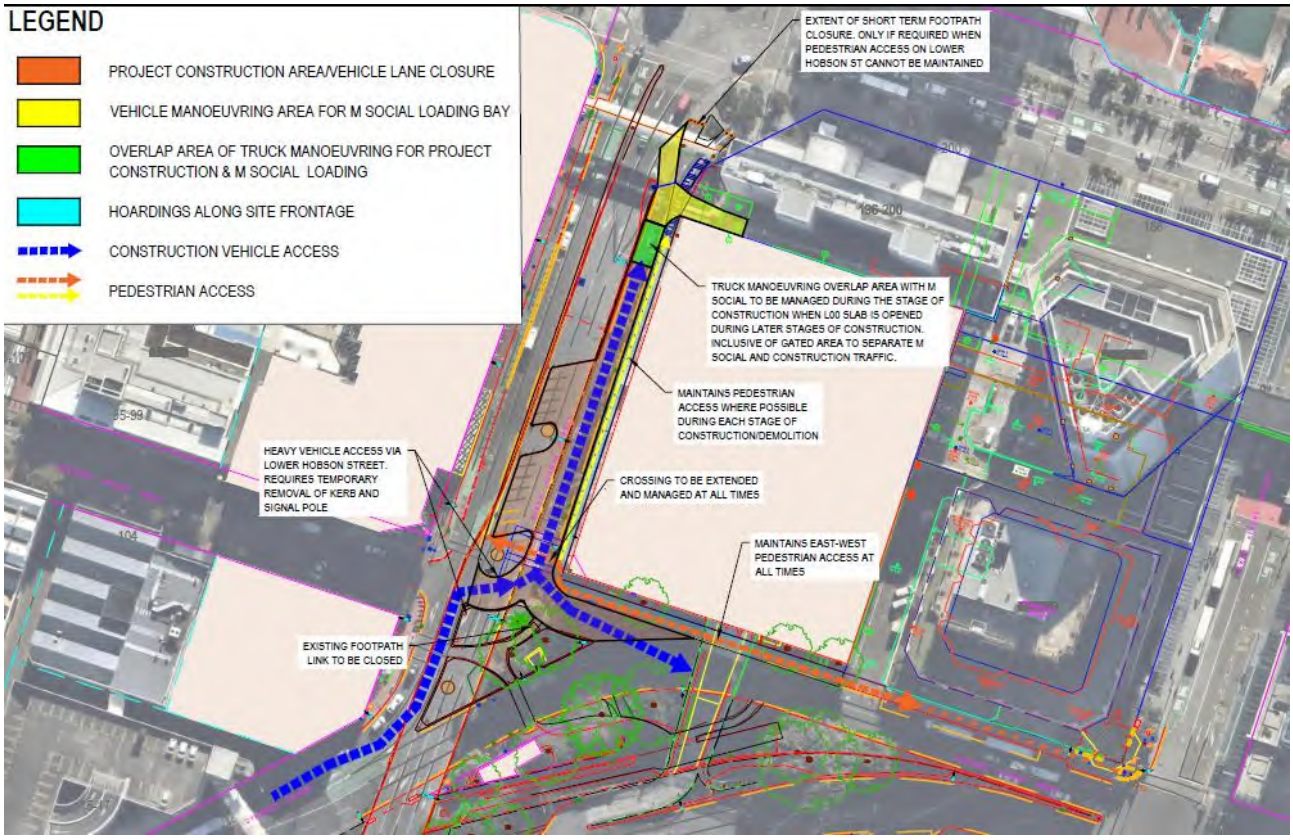
Figure 10: Heavy vehicle routes



4.5 Construction work zone and road closure overview

Figure 11 below shows the proposed construction work zones around the perimeter of the Site.

Figure 11: Road closures and pedestrian routes during demolition and construction



The following road closures are proposed

- The entire Lower Hobson Street slip lane (southbound direction)
- The 60-degree car parking spaces that are under the flyover, which are, accessed off the slip lane
- At the southern end of the slip lane, both the left turn (up to the intersection with Custom Street West/Sturdee Street) and right turn (up to the intersection with northbound Lower Hobson Street) towards Custom Street West will be closed.

Within the road closures, there will primarily be 3 work zone types as outlined in Figure 11

- Light orange – Work zone during demolition and construction to provide for vehicle access/circulation around the Site perimeter, as well as an opportunity to load or unload material
- Green – Overlap zone of M Social and construction truck manoeuvring
- Yellow – Manoeuvring area for M Social trucks only.

These road closures are expected to be in place for the entire demolition and construction phase.

The east-west pedestrian route will be maintained at all times through the construction zone, while the north-south pedestrian route will be maintained for the majority of the time. We provide a detailed overview of pedestrian provision in Section 8.

4.6 Overview of the construction vehicle access points

The construction work zone and Site are mainly accessed as follows (during both demolition and construction)

- Construction trucks can access the construction work zone underneath the Lower Hobson Street flyover, travelling from Sturdee Street, then turning left into Lower Hobson Street before making a right turn into the construction work zone underneath the flyover. Construction vehicles will be required to turn right in from the Lower Hobson Street bus lane, which is permitted 50 m prior to an intersection. This access will be an inbound-only access
- Construction trucks could also access the construction work zone by turning right from Sturdee Street towards Custom Street West, then turning left into the construction zone. Construction vehicles will be required to turn right in from the Sturdee Street bus lane, which is permitted 50 m prior to an intersection. This access will serve both inbound and outbound movements to the construction zone
- During the demolition phase only, there will be a construction truck exit point on the Custom Street West frontage in the same location where the existing Downtown Carpark exit is located
- Throughout the demolition and construction periods, the Site itself will be accessed from the construction work zones (i.e. only from the work zone) at various points along the frontage of Lower Hobson Street and Custom Street West.

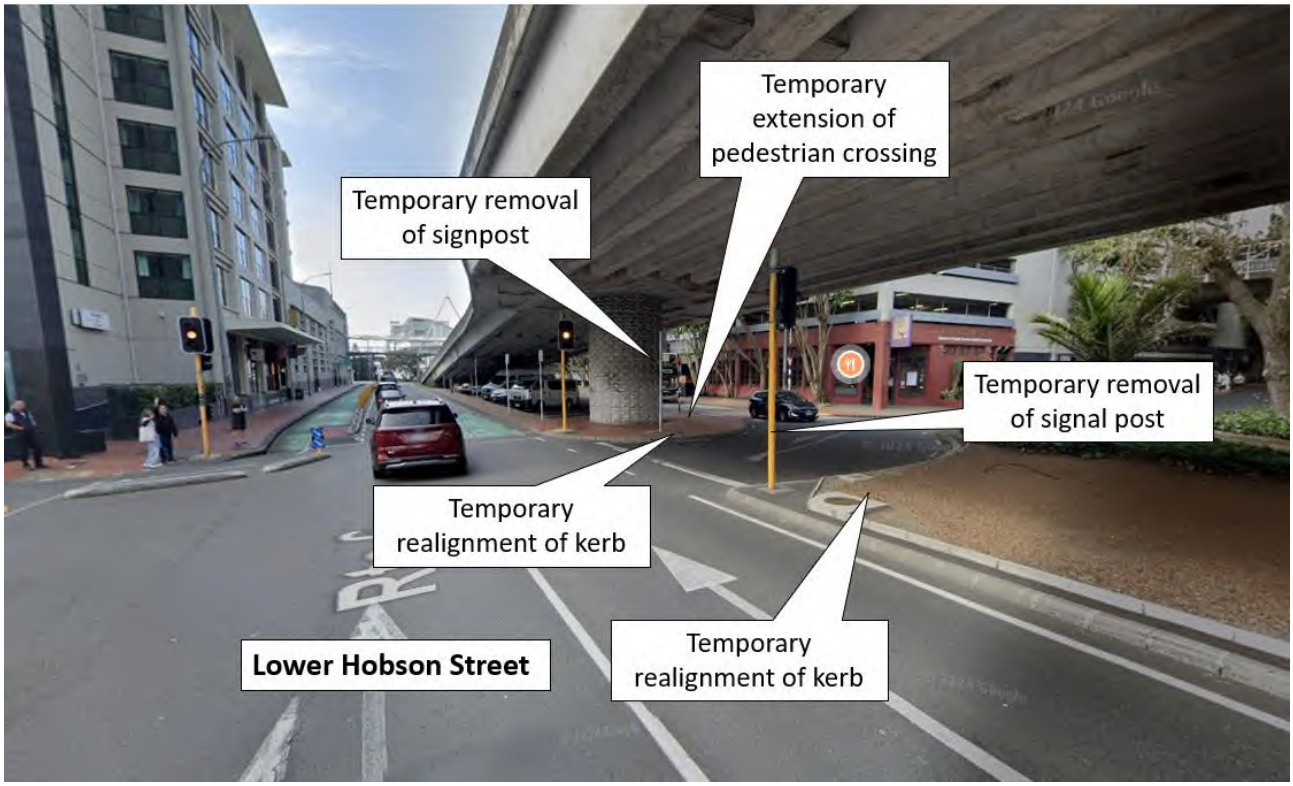
The details of vehicle movements to and from the Site will be described in greater detail in Sections 6 and 7 that follow, including provisions made for pedestrians.

To accommodate access to the construction work zones as outlined above, the following modifications to the existing roading environment will be required, as shown in Figure 12

- The signals on Lower Hobson Street will need to be reconfigured to account for the change in circulation. The section underneath the flyover currently accommodates westbound vehicles in a one-way direction, but this will need to change to allow for construction vehicles to travel in the eastbound direction
- The kerbs will require temporary realignment
- A signal post and signpost will need to be temporarily removed. Both of these posts are directed towards westbound vehicles underneath the flyover, which will not be served under the proposed construction vehicle access layout
- The raised pedestrian crossing will require a temporary extension.

The temporary modifications outlined above will be in place for the entire duration of the Project and will be reinstated after completion.

Figure 12: Changes required to accommodate construction vehicle access



Heavy construction vehicle routes will avoid the Viaduct streets, as highlighted in yellow in Figure 13. This is to address concerns raised by residents in this area as part of pre-application engagement with stakeholders. We note that these roads are not suitable for heavy construction traffic.

Figure 13: Viaduct Streets where Heavy Vehicle Construction Traffic is to be avoided

5 PRINCIPLES OF MANAGING TRANSPORT EFFECTS DURING DEMOLITION AND CONSTRUCTION

Our approach to managing construction traffic has been prepared based on the following principles:

- Protect the public from demolition and construction activities
- Contain the demolition and construction works within the Site where possible
- Minimise unnecessary pedestrian, road and bus lane closures. Provide safe alternatives where any closures are required
- Undertake the demolition and construction works in an efficient manner to avoid prolonging any required road closures
- Provide consideration to the TTMG
- Avoid Quay Street as a construction vehicle route.
- Set out the proposed duration, frequency and timing of demolition and construction works to manage disruption to the transport network taking into account other construction related activities occurring in the vicinity
- Avoid Quay Street and those Viaduct Streets (annotated in yellow within Figure 13) as heavy construction vehicle routes.

The Downtown Carpark site has significant constraints relating to the demolition and construction activities.

- There are only two direct road frontages, Lower Hobson Street and Customs Street West. Customs Street West contains a high-volume bus lane and a footpath with high pedestrian activity
- The existing Downtown Carpark building is built up to the property boundaries on Lower Hobson Street and Customs Street West
- These constraints mean that some closures and protections are necessary to protect the public from construction work zones, construction vehicles and overhead works.

The pedestrian overbridge and carpark ramp on Lower Hobson Street and Customs Street West, respectively, both have vehicles and pedestrians passing underneath. For these reasons, it is not possible to remove these structures without avoiding a full road closure.

Noting that as a contractor has not been appointed, we have assessed the transport implications of both construction and demolition based on the information currently available. It is anticipated that further details, as required, will be provided in the final CTMP.

6 DEMOLITION WORKS TRANSPORT ACCESS METHODOLOGY, ASSESSMENT AND MITIGATION

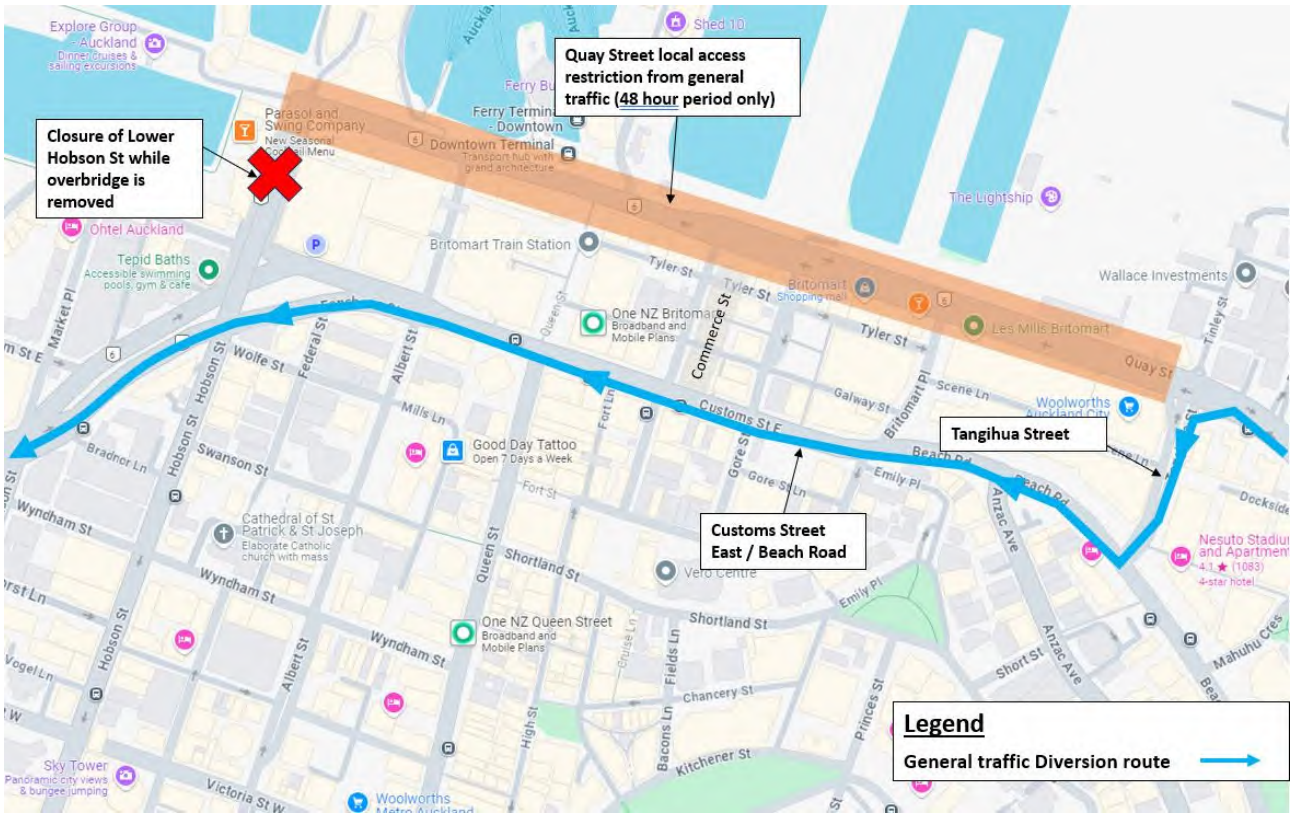
6.1 Demolition: Removal of Lower Hobson Street pedestrian overbridge

This work involves the removal of the Lower Hobson Street pedestrian overbridge:

- This is anticipated to occur near the beginning of the demolition phase. The works and road closures associated with the removal of the Lower Hobson Street pedestrian overbridge will not occur at the same time as the removal of the Downtown Carpark ramp over Customs Street West onto Fanshawe Street as detailed in Section 6.3
- The overbridge will require a full road closure of Lower Hobson Street as the bridge spans across all traffic lanes
- It is anticipated that the bridge can be removed within 48 hours. This work should be scheduled to occur in a weekend to minimise the impact on traffic. Extensions to the standard construction hours will be required to facilitate this. We also understand that this work can be scheduled either during a long public holiday weekend or school holiday weekend to minimise disruption to the network
- The full road closure of Lower Hobson Street will require the following:
  - At the southern end, northbound traffic on Lower Hobson Street will need to be diverted from Sturdee Street onto Customs Street West towards the west and east
  - At the northern end, all movements into Lower Hobson Street from Quay Street, Eastern Viaduct and Princes Wharf will be closed to the public. To minimise traffic entering this area and needing to undertake a U-turn, access into Quay Street (west of Commerce Street) will be limited to local traffic only.
    - A diagram of the local access restriction area is shown in Figure 14
    - This includes a general traffic diversion route to direct vehicles from Quay Street onto Customs Street East / Beach Road via Tangihua Street
    - Redirecting at Tangihua Street minimises traffic entering the local access restriction area, and Tangihua Street is designed to accommodate large vehicles.
  - The M Social servicing access on the Lower Hobson Street slip lane will need to be fully closed over this weekend due to the proximity to the bridge structure
  - The existing loading zone on the west side of Lower Hobson Street will need to be closed, as it will not be possible for vehicles to exit after loading. There existing loading zone on Customs Street West (west of Lower Hobson Street) can be used as an alternative during this time
- Construction vehicle access can be provided from underneath the Lower Hobson Street flyover. Construction vehicles can exit onto Customs Street West. Please refer to Sections 4.5 and 4.6 for additional discussion of this matter

- Pedestrian access on Lower Hobson Street and around the Site perimeter will need to be closed to the public to prevent pedestrians from entering a live work zone. Alternative pedestrian paths are available and will need to be signposted to divert pedestrians. Furthermore, the cycle lane on the west side of Lower Hobson Street will need to be closed. Please refer to Section 8 for additional discussion and assessment of this matter
- As Lower Hobson Street accommodates bus routes, buses will need to be diverted onto Customs Street West towards Lower Albert Street for the 48-hour duration. Please refer to Section 9 and Appendix E and F for details regarding bus diversions.

Figure 14: Lower Hobson Street pedestrian overbridge removal: Quay Street proposed local access restriction



6.2 Demolition: Primary demolition phase

This work involves the demolition of the Downtown Carpark building.

- This will utilise a top-down methodology, where cranes will be located on top of the building (and within the Site), as the building is demolished from top to down within the Site boundary
- Please refer to Sections 4.5 and 4.6 for a description of the proposed road closures, construction work zones and external access points from the road network
- For construction vehicle access within the wider construction zone
    - There will be two main drop zones within the site, where cranes will drop demolition material. The trucks will directly enter the site, so they can collect material from these drop zones

- Refer to Sheets 1 and 2 of Appendix B, which show how vehicle tracking and access will work for this phase
- Sheet 1 shows a drop zone along the Lower Hobson Street frontage, where construction vehicles can enter and exit
- Sheet 2 shows a drop zone near the Customs Street West frontage. Construction vehicles will enter the Site north of the pedestrian crossing and Lower Hobsons Street, and then exit onto Customs Street West
- The entry and exit points along the Site frontages are indicative, but will be provided along these frontages as generally shown. Ramps into the Site will be constructed to facilitate truck movements, and parts of the building near the ground can be cleared to provide truck access points.

w The existing M Social service access on Lower Hobson Street will need to have managed access restrictions. This will involve providing a gated area during demolition and construction at the north end of the Lower Hobson Street slip lane, to prevent access into the construction zone and permit access for M Social loading vehicles only. This will require coordination between the contractor and M Social. Please refer to Section 10.1 for additional discussion of this matter.

w Pedestrian access on the Lower Hobson Street and Customs Street site frontages can be maintained through the provision of Class B hoardings as outlined in Section 8.

6.3 Demolition: Removal of Downtown Carpark ramp over Customs Street West

This work involves the removal of the Downtown Carpark ramp over Customs Street West onto Fanshawe Street.

w This is expected to occur over 2 separate weekends, which will consist of 48 hours each
  - Weekend 1: The first weekend will involve installing temporary propping to support the ramp, which will separate this from the Downtown Carpark structure. This will be scheduled during a typical weekend
  - Weekend 2: The second weekend will involve the removal of the bridge structure. We understand that this work can be scheduled either during a long public holiday weekend or school holiday weekend to minimise disruption to the network

w This phase can be sequenced to occur within the primary demolition phase

w Please refer to Sections 4.5 and 4.6 for a description of the proposed road closures, construction work zones and external access points from the road network

w The following additional closures will apply to this phase
  - Weekend 1:
    - The Customs Street West bus lane along the site frontage will need to be closed to provide a safety zone while the temporary propping is installed. The bus lane can be closed and tapered northwest of the signalised pedestrian crossing to minimise the extent of the bus lane closure. The bus lane can then be east of the service lane

- Weekend 2:
  - Customs Street West along the Site frontage will be fully closed, as it will not be safe to have any traffic or vehicles passing underneath while the ramp is being removed. All eastbound traffic approaching from Sturdee Street will need to be diverted towards Lower Hobson Street. Heavy vehicles will need to be diverted earlier to avoid Quay Street. We have provided further details of these diversion routes in this section
  - The HSBC / AON service lane vehicle crossing on Customs Street West will need to be closed as a result of the full road closure, meaning vehicles will be diverted to the Quay Street access. This service lane is operated by Precinct Properties, who is the Applicant for this application
  - To provide a work zone buffer on Fanshawe Street when the ramp structure is removed, a general traffic lane on Fanshawe Street may need to be closed

- The existing M Social service access on Lower Hobson Street will need to have managed access restrictions. This will require coordination between the contractor and M Social. Please refer to Section 10.1 for additional discussion of this matter
- The pedestrian footpath on Customs Street West will need to be closed during both weekends due to the overhead works within the road reserve. Pedestrian access on the Lower Hobson Street site frontage can be maintained through the provision of Class B hoardings. The pedestrian diversion routes are outlined in Section 8.
- Cycle routes on Lower Hobson Street will not be affected.

As Customs Street West accommodates bus routes, buses will need to be diverted onto Lower Hobson Street for Weekend 2 when the full closure of Customs Street West will apply. Please refer to Section 9 and Appendix E and F for details about bus diversions.

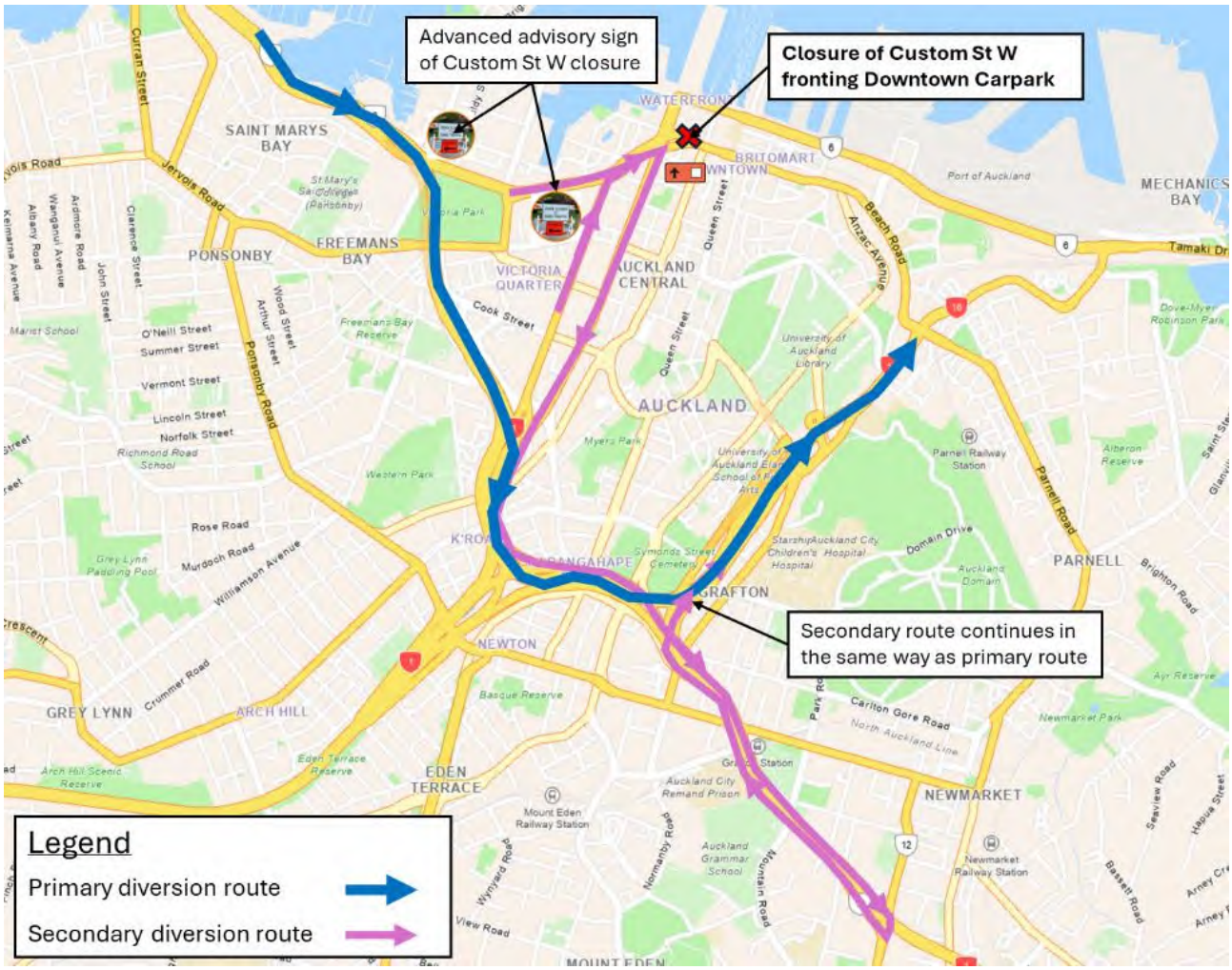
The road closure of Customs Street West during Weekend 2 will require heavy vehicles to be diverted early, in order to avoid Quay Street (which restricts vehicles over 14.5 m in length)

- Advance warning signs will be provided throughout the City Centre to advise drivers of the Customs Street West closure, so they can use an alternative route
- VMS signage on the motorway can advise drivers heading from the Harbour Bridge of the closure so they can access the City Centre via SH16, if they were originally planning to use Customs Street West as a through route. Other measures to encourage drivers to reroute could include messages on the radio. Our modelling assessment has shown that some vehicles will use SH16 as an alternative route
- If any drivers are not able to divert using the wider network and approach the Customs Street West closure, then it will be necessary to divert these vehicles onto Lower Hobson Street / Quay Street
- We note that heavy vehicles cannot be diverted onto Quay Street due to the sign posted restrictions of trucks over 14.5 m in length.

- The VMS signage can assist these vehicles in guiding them to use an alternative route to access the City Centre
- If any heavy vehicles are approaching from Fanshawe Street or Nelson Street, they should be diverted onto Fanshawe Street, and then turn right into Hobson Street. This will direct these vehicles back onto the motorway, where they can use an alternative route
- This diversion route is shown in Figure 15
- We note that as this route is designated for over-dimension trucks already, it is not necessary to demonstrate vehicle tracking for this route

w Details of the final diversion routes will be agreed with Auckland Transport in the final CTMP.

Figure 15: Customs Street West diversion route for heavy vehicles



7 CONSTRUCTION WORKS TRANSPORT ACCESS METHODOLOGY, ASSESSMENT AND MITIGATION

We anticipate the following key construction phases

- Retention and excavation
- Basement structure
- Main construction.

A detailed contractor methodology has not yet been developed due to the absence of an appointed contractor. Nevertheless, we have provided a high-level assessment of construction vehicle access for the 3 different phases of construction and outlined feasible loading/unloading options based on the current site constraints.

The following section outlines how vehicles will access the Site during construction for each key phase, including

- How access arrangements may vary by construction phase
- Anticipated vehicle types during each construction phase
- Road closure requirements
- Expected consistency in how road closures would be managed across phases (mitigation measures).

Appendix C (Sheet 3 to Sheet 15) includes the vehicle tracking assessment of each construction phase.

During all construction phases, the following applies

- Refer to Sections 4.5 and 4.6 for a description of the proposed road closures, construction work zones and external access points from the road network
- The existing M Social service access on Lower Hobson Street will need to have managed access restrictions. This will involve providing a gated area at the north end of the Lower Hobson Street slip lane, to prevent access into the construction zone and permit access for M Social loading vehicles only. This will require coordination between the contractor and M Social. Please refer to Section 10.1 for additional discussion of this matter
- The Lower Hobson Street construction zone will accommodate two-way movement of trucks where possible, including the provision of a holding area/passing bay underneath the flyover
- Truck movements during excavation are usually coordinated to limit conflict and waiting times on the Site. This coordination will involve the typical structured management system that will be later detailed in the final CTMP once a contractor has been appointed. The final CTMP will involve 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. In the rare instance where an unexpected truck is approaching when the holding areas are occupied, they would be instructed to circulate around the block until the holding area is available.

- Regarding all crane operations, the required crane platforms will be within the site boundaries and not affect the operation of live traffic lanes or areas used for construction vehicles
- Pedestrian access on the Lower Hobson Street and Customs Street site frontages can be maintained through the provision of Class B hoardings. Please refer to Section 8 for additional discussion and assessment of this matter.

7.1 Construction: Retention and excavation

This work involves the retention and excavation of the Site.

This phase of construction will require the following vehicle types

- Mostly 12-tonne tippers and large rigid vehicles, including some concrete trucks (refer to Sheets 3 to 5 for vehicle tracking assessment)
- Limited number of Semi-trailers for piles (refer to Sheets 8, 9, 12, and 13 for vehicle tracking assessment of semi-trailers).

There will be three main stages during this phase that follow

- A ramp load-out stage
    - Construction vehicles will enter the Site from the Lower Hobson Street construction zone via temporary ramps/access points into the Site
    - Sheet 3 shows a 12.6 m rigid truck entering the Site at two indicative locations and exiting at one of the indicative locations. The trucks will primarily enter the Site from Lower Hobson Street instead of Customs Street West. Entry from Customs Street West is shown as an alternative access option that trucks can be directed to minimise the potential for queuing onto the adjacent roading network
    - Trucks will turn around on-site and not reverse within the construction work zone
- A ramp platform stage
    - Multiple loading platforms within the Site will allow trucks to reverse into the Site from the Lower Hobson Street slip lane
    - Sheet 4 shows a 12.6 m rigid truck entering the construction work zone via Lower Hobson Street
    - Within the construction work zone, the truck then reverses into the Lower Hobson Street slip lane where it then reverses onto the loading platform locations (these are indicative)
    - Trucks will exit the Site in a forward direction and exit the construction work zone via Customs Street West
    - There is additional space within the construction zone to hold trucks if required

- Loading within the slip lane stage
    - During this stage, it will no longer be possible for trucks to manoeuvre into the Site from the Lower Hobson Street slip lane.
    - Sheet 5 shows a 12.6 m rigid truck entering the construction work zone via Lower Hobson Street
    - Trucks will enter the construction work zone via Lower Hobson Street, turn right underneath the flyover towards Customs Street West, and then reverse into the Lower Hobson Street slip lane
    - There will be indicative positions where trucks will load from within the construction work zone
    - Trucks will exit the construction work zone via Customs Street West
    - There is additional space within the construction to hold trucks if required.

7.2 Construction: Basement structure

This work involves the construction of the basement structure up to the ground level.

This phase of construction will require the following vehicle types

- Large rigid vehicles, including concrete trucks and transporting reinforced concrete components (refer to Sheets 6 and 7 for vehicle tracking assessment)
- Semi-trailers will be used to deliver reinforced concrete elements and structural steel (refer to Sheets 8 and 9 for vehicle tracking assessment of semi-trailers).

Trucks will access the Site as follows

- Large rigid truck and semi-trailer loading from Customs Street West frontage
    - Trucks will enter the construction work zone via Lower Hobson Street, turn right underneath the flyover towards Customs Street West
    - Sheet 6/Sheet 8 shows a 12.6 m rigid truck/semi-trailer entering the construction work zone via Lower Hobson Street
    - Trucks will exit the construction work zone via Customs Street West
- Large rigid truck and semi-trailer loading from the Lower Hobson slip lane
    - Trucks will enter the construction work zone via Lower Hobson Street, turn right underneath the flyover towards Customs Street West, and then reverse into the Lower Hobson Street slip lane
    - Sheet 7/Sheet 9 shows a 12.6 m rigid truck/semi-trailer entering the construction work zone via Lower Hobson Street
    - There will be indicative positions where trucks will load from within the construction work zone
    - Trucks will exit the construction work zone via Customs Street West

- There is additional space within the construction to hold trucks if required.

7.3 Construction: Main construction

This work involves the main stage of construction that includes all work from the ground level and up.

This phase of construction will require the following vehicle types

- Some large and medium rigid trucks may also be used for transporting reinforced concrete components, as well as services and finishes (refer to Sheets 10, 11, 12, and 14 for vehicle tracking assessment)
- Semi-trailers will be used to deliver reinforced concrete elements, façade elements and structural steel (refer to Sheets 12, 13 and 15 for vehicle tracking assessment of semi-trailers).

Trucks will access the Site as follows

- Large rigid truck and semi-trailer loading from the Customs Street West frontage
  - Trucks will enter the construction work zone via Lower Hobson Street, turn right underneath the flyover towards Customs Street West
  - Sheet 10/Sheet 12 shows a 12.6 m rigid truck/semi-trailer entering the construction work zone via Lower Hobson Street
  - Trucks will exit the construction work zone via Customs Street West
- Large rigid truck and semi-trailer loading from the Lower Hobson slip lane
  - Trucks will enter the construction work zone via Lower Hobson Street, turn right underneath the flyover towards Customs Street West, and then reverse into the Lower Hobson Street slip lane
  - Sheet 11/Sheet 13 shows a 12.6 m rigid truck/semi-trailer entering the construction work zone via Lower Hobson Street
  - There will be indicative positions where trucks will load from within the construction work zone
  - Trucks will exit the construction work zone via Customs Street West
  - There is additional space within the construction to hold trucks if required
- Large rigid truck and semi-trailer loading from the Site
  - Trucks will enter the construction work zone via Lower Hobson Street, turn right underneath the flyover towards Customs Street West, and then continue onto the Lower Hobson Street slip lane and enter the Site at the northern end.
  - The truck will follow a path between the main towers before exiting the site in a forward direction at Customs Street West
  - Sheet 14/Sheet 15 shows a 12.6 m rigid truck/semi-trailer entering the construction work zone via Lower Hobson Street.

8 PEDESTRIAN AND CYCLIST SAFETY ASSESSMENT AND DIVERSION MITIGATION

As previously mentioned, the Site is located in the heart of the Auckland City Centre, and the Site frontages are part of a busy pedestrian environment. To protect the public from a live work zone while maintaining pedestrian accessibility, overhead works and construction vehicles, appropriate barriers and other safeguards will need to be in place to prevent unauthorised access into the Site by pedestrians, where they may be exposed to safety hazards. This includes Class B hoardings along the perimeter of the Site, which will safely accommodate pedestrian movements.

Figure 16, Figure 17 and Figure 18 show pedestrian footpath provisions throughout different demolition and construction stages to ensure that pedestrian effects are safely managed.

We specifically note the following about pedestrian access.

w Primary demolition and construction phases

Throughout the majority of the demolition and construction phases, pedestrian access on the Lower Hobson Street and Customs Street site frontages can be maintained through the provision of Class B hoardings as outlined in Figure 16 below

- These will be placed around the Site perimeter over the existing pedestrian footpaths, which will contain the Site and protect pedestrians from overhead risks
- Where there are direct construction vehicle access points into the Site, there will be gated entry points within the hoardings. These will be managed by contractors, to temporarily stop pedestrians when a construction vehicle is entering or exiting the Site
- The Customs Street West pedestrian route can be maintained at all times, which provides an east-west link from Lower Albert Street to the Viaduct area.
- The raised pedestrian crossing over the Lower Hobson Street slip lane will need to be managed by contractors when construction vehicles are entering and exiting through this area.
    - Communication between contractors, truck drivers, and traffic management staff overseeing the pedestrian crossing will be maintained through radio communication devices and appropriate associated safety procedures. During construction, the raised pedestrian crossing will not operate as a typical standard zebra crossing, where pedestrians can cross freely, but rather managed by the contractor staff.
    - Traffic management will continue to prioritise pedestrian movements over truck access. If a truck is approaching the Site while pedestrians are waiting or preparing to cross, traffic controllers will ensure pedestrians are allowed to cross first. Trucks will only proceed once an all-clear signal has been given. The same applies to trucks exiting the site.

- The crossing will not be left unattended at any time when construction truck access is expected.

- Irrespective of the sizes of trucks accessing the Site, all trucks will be managed in a similar way The Lower Hobson Street pedestrian route can be maintained throughout most of the demolition period, but we have allowed for some temporary closures if absolutely necessary. We note that if a pedestrian closure were to occur, it would not include the frontage of M Social's restaurant on the corner of Quay Street / Lower Hobson Street
- There is a small length of footpath connection between the Lower Hobson Street slip lane and Customs Street West that will be closed. This closure will include safety provisions in the form of physical barriers such as fencing and signage to prevent any form of pedestrian access.

w Lower Hobson Street pedestrian overbridge removal

When the pedestrian overbridge is removed, both sides of Lower Hobson Street will have pedestrian closures as outlined in Figure 17 below

- The Customs Street West pedestrian route can be maintained at all times, which provides an east-west link from Lower Albert Street to the Viaduct area (using Class B hoardings)
- Pedestrian diversions could occur via Customs Street West (West of Lower Hobson Street) towards the Viaduct or via Lower Albert Street and Quay Street
- The raised pedestrian crossing over the Lower Hobson Street slip lane will need to be managed by contractors when construction vehicles are entering and exiting through this area
- There is a small length of footpath connection between the Lower Hobson Street slip lane and Customs Street West that will always be closed, to prevent pedestrians from walking through manoeuvring areas for construction vehicles

w Downtown Carpark ramp removal

When the Downtown Carpark ramp that connects to Fanshawe Street is removed, the Customs Street West frontage of the Site will have a pedestrian closure as outlined in Figure 18 below

- The Lower Hobson Street pedestrian route can be maintained at all times during this period, which provides a north-south link (using Class B hoardings)
- Pedestrian diversions could occur via Fanshawe Street towards the Viaduct or via Lower Albert Street and Quay Street
- The raised pedestrian crossing over the Lower Hobson Street slip lane will need to be managed
- There is a small length of footpath connection between the Lower Hobson Street slip lane and Customs Street West that will be closed
- We note that these closures will occur over 2 weekends only.

Cycle facilities will be unaffected during most of the demolition and construction. The only instance where a cycleway will need to be closed is during demolition, for a 48-hour period only, when the Lower Hobson Street pedestrian overbridge is being removed.

- This will require the closure of the bi-directional cycleway on the west side of Lower Hobson Street
- To provide a connection between Quay Street and Sturdee Street, cyclists may need to dismount and travel through the Viaduct to avoid conflicts with pedestrians
- Alternatively, cyclists could be redirected to the bus lane on Customs Street West
- Another option is for cyclists to use the pedestrian diversion routes during the same period, as shown in Figure 17, but this would involve cyclists needing to use stairs. If this did occur, additional mitigation such as wheeling ramps, could be provided for cyclists
- Given that this phase is anticipated to occur for a very short duration of 48 hours and during a weekend, we consider that cycle diversions can be managed for this period. We recommend that the final CTMP clearly outlines how cyclists will be diverted during this phase, which will require consultation with Auckland Transport.

Figure 16: Pedestrian closures and diversions for the primary demolition and construction phases

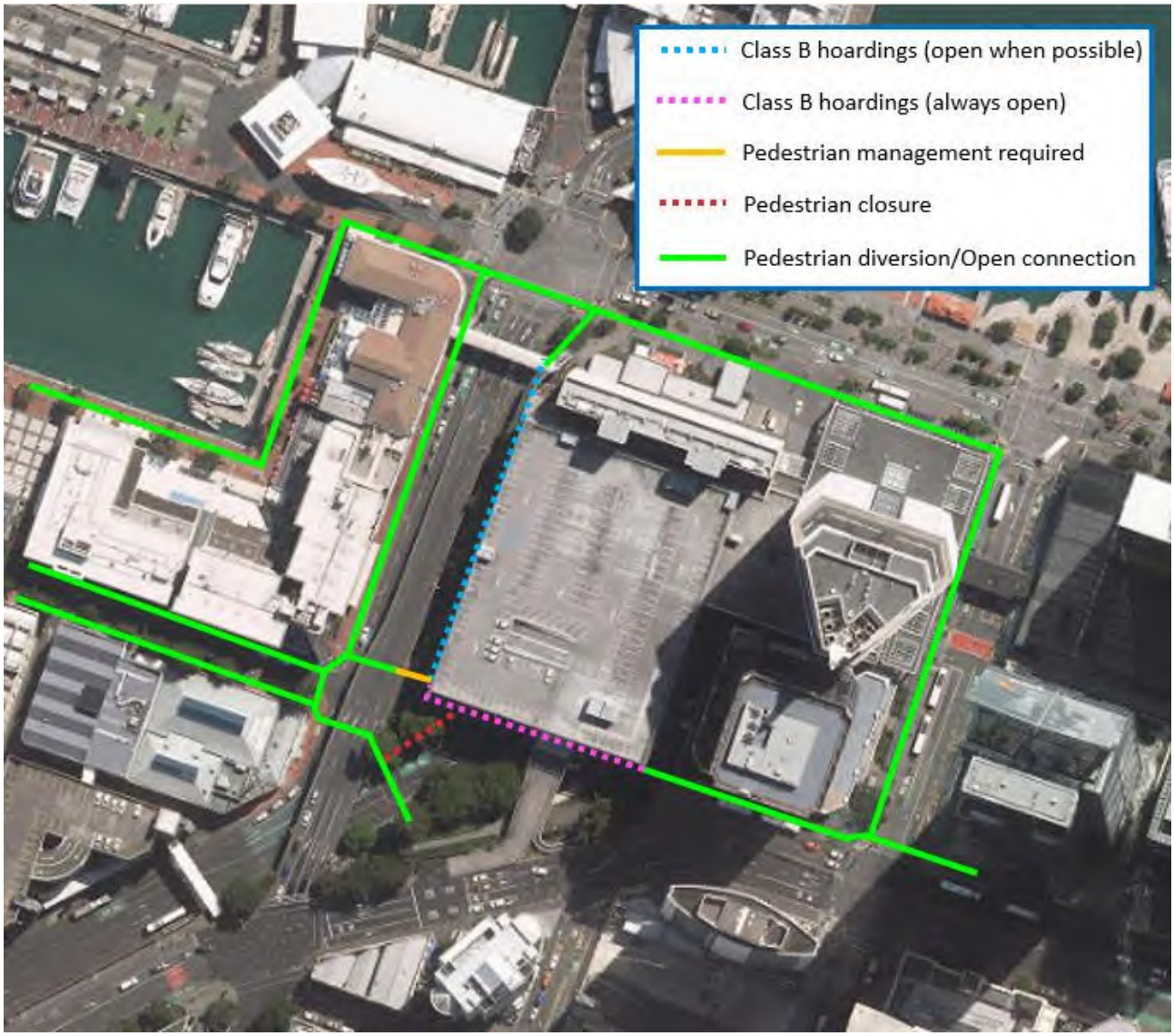


Figure 17: Pedestrian closures and diversions when Lower Hobson Street pedestrian overbridge is removed

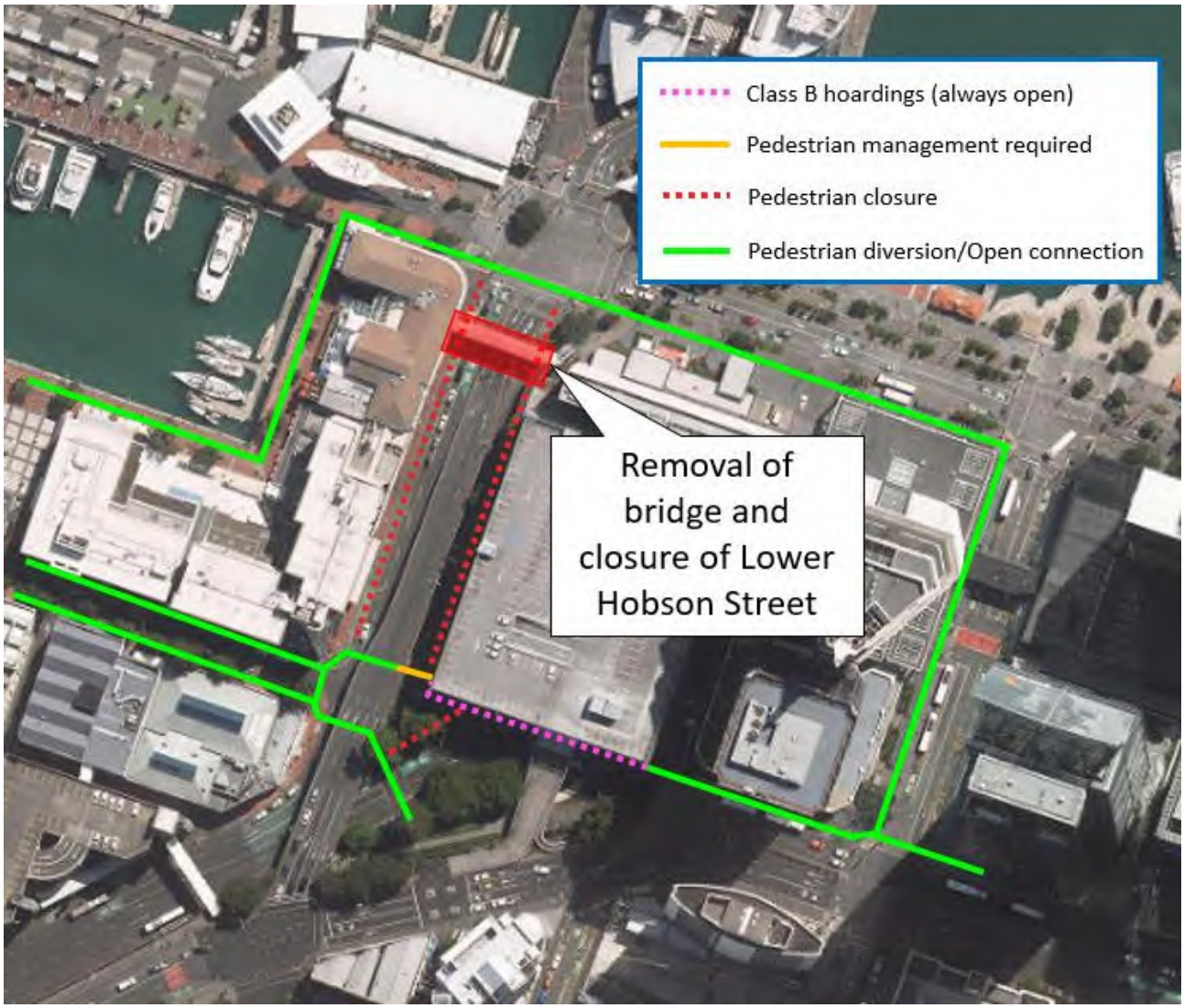
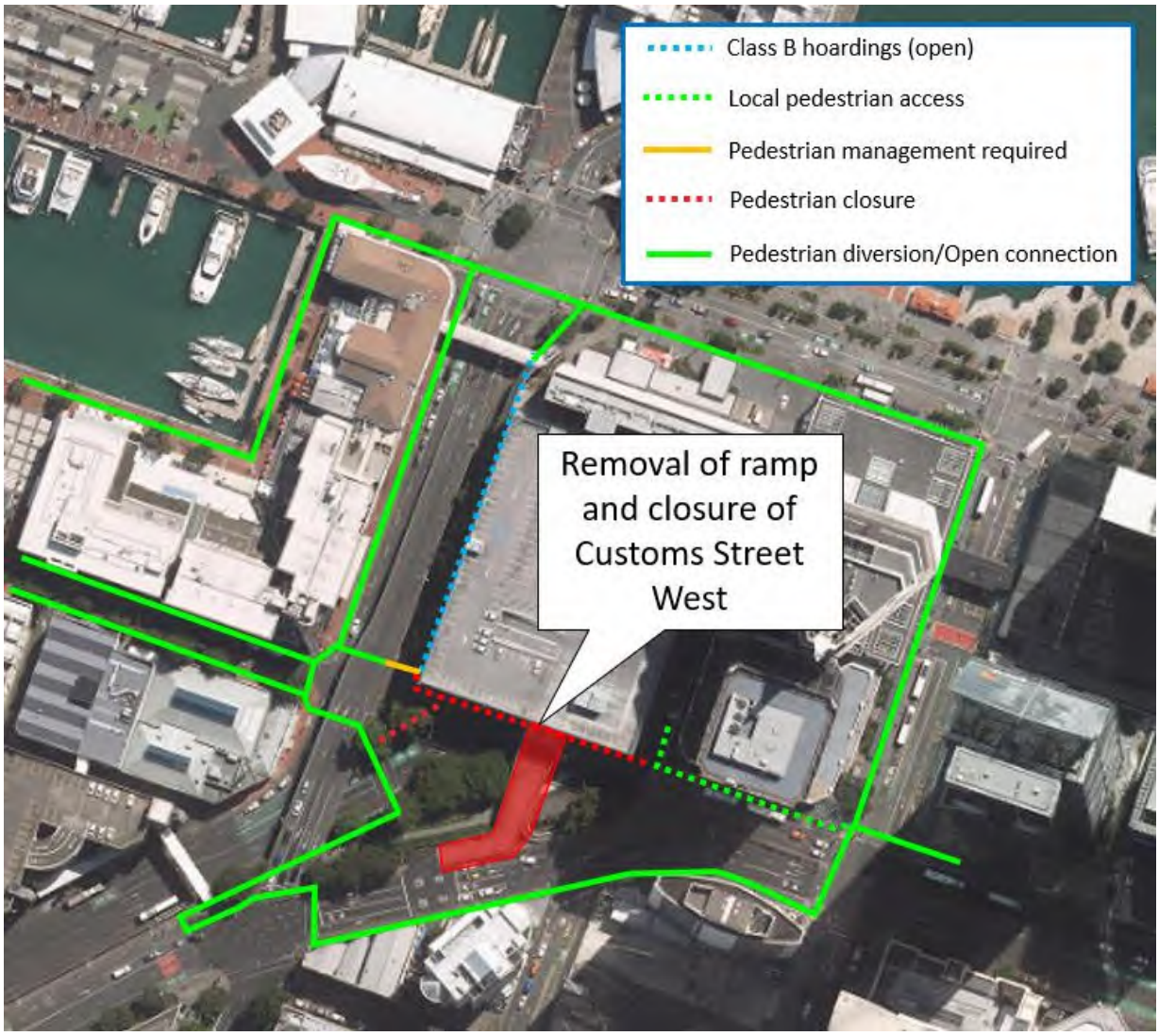


Figure 18: Pedestrian closures and diversions when Downtown Carpark ramp is removed



9 PUBLIC TRANSPORT ASSESSMENT

9.1 Overview of public transport assessment

The bus routes and bus lanes that will be directly affected during the various stages of the demolition and construction are as follows.

- Removal of Lower Hobson Street pedestrian overbridge
  - A full road closure will be required on Lower Hobson Street, which will require some bus routes to be rerouted. This will occur over a single weekend, which will be scheduled during a long public holiday or school holiday period.
- Removal of Downtown Carpark ramp over Customs Street West
  - Weekend 1: The Customs Street West bus lane along the Site frontage will need to be closed to provide a safety zone while the temporary propping is installed. The bus lane can be closed and tapered northwest of the signalised pedestrian crossing to minimise the extent of the bus lane closure. No bus rerouting will be required
  - Weekend 2: A full road closure will be required on Customs Street West, which will require some bus routes to be rerouted. This will be scheduled during a long public holiday or school holiday period.

An assessment of the effects of the above on all bus journey times in the City Centre (using the City Centre SATURN model) is provided in Section 13.2.3. We note that the City Centre SATURN model assesses weekday peak periods, whereas the above works affecting buses will occur over a weekend. Therefore, this assessment is conservative given this part of the road network is not as congested during a weekend when compared to weekday peak periods.

We have also undertaken an assessment of bus route travel times in the local area surrounding the Site, using the SIDRA Network modelling software. This assesses the travel time effects on bus routes in the immediate area as a result of changes to the construction vehicle access points, and construction traffic volumes. This is provided in Section 14.

9.2 Bus route diversions

We have provided an assessment of alternative bus routes that will be required for the removal of the pedestrian overbridge and carpark ramp. Please refer to Appendix E, which contains details of potential alternative bus route solutions. In this regard, the following is noted.

- It is not possible to avoid the rerouting of buses during removal of the overbridge and ramp respectively, as it will not be safe to maintain public transport access on Lower Hobson Street and Fanshawe Street while the overhead structures are being demolished
- Given the layout of the road network in this area of the City Centre, there are limited options for where buses can be rerouted
- Solutions 1 and 2 address the Lower Hobson Street closure, while Solutions 3 to 5 address the Customs Street West closure. These closures largely rely on buses using Commerce Street as an

alternative route. We have also indicated that Tangihua Street could be used if Commerce Street is not appropriate, but this would result in a longer detour route

- Alternative bus routes generally rely on using the same bus stops as the existing ones and being able to access them in the same direction.
- As identified for solution 2 during the Lower Hobson Street closure, it will be necessary to find an alternative for Stop 1006 Stop E Lower Albert
    - It is not possible to keep this bus stop open due to the Lower Hobson Street closure
    - This will result in a change in how the buses arrive at the temporary bus stop during the 'Not in Service' period, as shown in Appendix E
    - We have provided an assessment of the potential change in bus travel time using output from the SATURN model (e.g. intersection turning delays and journey speeds along links)
    - We have provided this information in Table 1, which shows that the bus route travel time could increase by 306 – 375 seconds (approximately 5 – 6 minutes)
    - This is due to needing to travel extra distance and through additional intersections, to reach the start of the new outbound route
    - We note that the models are for a weekday AM and PM peak period. This closure will be scheduled during a weekend, which will likely have less congestion compared to a weekday peak period. Therefore, the delay may not be as high as noted
    - Furthermore, this closure will be scheduled over a weekend, meaning it will only apply for 2 days.
- For the vehicle tracking for alternative bus routes.
    - The majority of our alternative bus route solutions utilise areas which already accommodate buses, which does not need additional vehicle tracking
    - Solution 1 as part of the Lower Hobson Street closure proposes that buses undertake turning movements at Commerce Street and Quay Street which are not part of existing bus routes.
        - Vehicle tracking for these intersections is shown in Appendix E. This shows vehicle tracking for a 12.6 m bus, which has a tighter turning radius compared to a 13.5 m bus. We note that as-built surveys of kerblines are not currently available, but the tracking shows aerials with the current road layout
        - At the Commerce Street / Customs Street East intersection, buses can turn left into Commerce Street without issues
        - At the Commerce Street / Quay Street intersection, buses may need to use both lanes to turn left into Quay Street
        - If Commerce Street is not suitable then another option is utilising Tangihua Street, although this would require a longer detour
        - At the Quay Street / Lower Albert Street intersection, buses are able to turn left into Quay Street while staying in their lane, but the clearance envelope has some

overlap with the northbound lane on Quay Street. We note that these movements will not occur at the same time due to the signal phasing

- We note that Solution 1 will only be required for the Lower Hobson Street closure which will likely occur for 48 hours during a weekend
- We also note that there will be opportunity to agree the final bus routes with Auckland Transport when the final CTMP is prepared, should a more suitable solution be identified.

Table 1: Bus route travel time difference for Solution 2 during full closure of Lower Hobson Street

Peak period	Time (seconds)		
	Base	Stage 1	Difference
AM peak	70	445	375
PM peak	70	376	306

The final alternative bus routes for the full road closures of Lower Hobson Street and Customs Street West will be agreed with Auckland Transport as part of the final CTMP if more suitable routes are potentially identified.

10 LOCAL ACCESS ASSESSMENT

As outlined in Section 6, the proposed demolition works will affect the operation of local access points on neighbouring land.

We summarise the impacts on the local accesses and identified measures to manage these effects below.

10.1 M Social servicing access on Lower Hobson Street

The M Social service access on the Lower Hobson Street slip lane will be affected during both the demolition and construction works

- M Social has a servicing access on Lower Hobson Street, which is located along the north boundary of the Downtown Carpark site
- Lower Hobson Street will be fully closed to remove the pedestrian overbridge. The M Social servicing access will need to be closed during this time. We note that this phase is anticipated to occur for only 48 hours, and will be scheduled during a long public holiday or school holiday weekend period
- Throughout all of the demolition and construction phases, the M Social access will operate via a managed access arrangement, which will require coordination between M Social and the appointed contractors. We explain how this is intended to operate in this section.

We have undertaken a vehicle tracking assessment to illustrate how M Social will be provided with service access during both construction and demolition phases, as shown in Appendix D.

The M Social service access will operate as follows:

- There will be a temporary boom gate installed at the start of the Lower Hobson Street slip lane. This will limit access to the construction zone / loading bay to the public
- An intercom system will allow a loading vehicle to request the contractors to open the gate
- There is space for a truck to wait prior to the gate, to minimise queuing back onto the flyover lanes
    - While it is theoretically possible for two trucks to arrive at once, the low loading volumes make this highly unlikely; the bay only accommodates one vehicle, so any overlap would result in minor queueing within the Lower Hobson Street slip lane, and providing additional space is not practical or desirable, as it could attract unauthorised use.
- The layout is sufficient to allow trucks up to 8 m in length to enter and exit via the flyover in a forward direction
- Some minor widening to the M Social vehicle crossing splay may be required to provide more space for vehicle manoeuvring. Furthermore, the raised island at the base of Lower Hobson Street could potentially be modified
- There is not sufficient space to accommodate trucks over 8.3 m in length, which means they would need to be escorted through the construction zone by contractors when exiting

- The maximum size of M Social's loading vehicles is unknown, but based on the existing space available at the service access, it is unlikely that there are large trucks utilising the service access
- During later stages of construction, there will be an overlap of truck manoeuvring areas for M Social loading vehicles and construction vehicles. This will require contractor management
- The supports for the overhead hoardings will need to be designed to accommodate vehicle access.

Sheets 1 to 5 in Appendix D show the vehicle tracking

- Sheet 1 provides a high level overview of the road closures and pedestrian routes/closures
    - The yellow area shows the area which is required for M Social loading bay vehicle manoeuvres. This is intended to be closed to the public
    - The green areas show overlaps between truck manoeuvring areas that will be required for both the M Social loading bay and for construction
    - This will apply during later stages of construction, where a vehicle access point will need to be provided near the proposed Podium 3
    - Contractors will need to manage this zone to avoid overlapping conflicts of M Social loading vehicles and construction vehicles
    - Pedestrian access will be retained on Lower Hobson Street where possible
    - In the event that a pedestrian closure is required on Lower Hobson Street, we have shown the extent of the pedestrian closure near Quay Street (in response to M Social's concern about the extent of the closure near their restaurant)
- Sheet 2 shows how access into the M Social loading bay will be provided for an 8 m truck
    - A portable boom gate will limit access into the loading bay and construction zone from the public
    - There is space for a truck to wait before the gate, without blocking the main traffic lanes on the flyover
    - Once parked, an intercom (or similar system) can allow a loading vehicle to call the contractors to lift the boom gate. This prevents the need for someone to continuously monitor this location
    - An 8 m truck will need to reverse into the loading space, so that it can then exit onto the flyover in a forward direction. This manoeuvre can occur when there is a pedestrian crossing phase at the Quay Street intersection, which means there will be no oncoming vehicles
    - The vehicle crossing splay will need to be temporarily widened to accommodate vehicle tracking. These details will be captured in the final CTMP
- Sheet 3 shows access for a 6.4 m van
    - The tracking is easier as the vehicle is smaller than an 8 m truck
- Sheet 4 shows vehicle tracking for a 10.3 m and 8.3 m truck attempting to enter the loading bay by reversing in.

- This type of manoeuvre is necessary if a truck is to exit back onto the flyover in a forward direction
- As noted in the tracking diagram, these manoeuvres can't be accommodated, as there will not be sufficient space while maintaining pedestrian access and sufficient clearance from the flyover
- This means that a truck over 8.3 m in length will not be able to exit back onto the flyover in a forward direction

- Sheet 5 shows that a truck over 8.3 m in length will not be able to exit onto the flyover in a forward direction
  - Larger trucks can access the loading bay (up to 10.3 m in length)
  - These larger trucks will need to exit south through the construction zone, which means that they will need to be escorted through the construction zone
  - However, as noted previously, we don't expect there will be many large vehicles due to the constraints of the existing layout.

In summary, the CTMP should ensure vehicle access is maintained into the M Social loading bay as follows:

- Access into the area is managed by contractors with a gate to prevent access by the public
- Exit manoeuvres occur with a contractor acting as a spotter. Any gates can be closed after a vehicle has exited the loading zone
- Vehicles should be directed to exit onto the Lower Hobson Street flyover where possible, to avoid needing to go through the construction zone. These manoeuvres must occur in a forward direction, to avoid reversing onto live traffic lanes.
- Oversized vehicles will need to be escorted through the construction zone by a contractor (indicatively trucks over 8.3 m in length, to be confirmed in the final CTMP).
- The vehicle crossing splay and traffic island at the base of the Lower Hobson Street flyover should be modified to provide more manoeuvring space where safe and practical. This will provide greater flexibility for vehicles to exit onto the flyover, instead of needing to be escorted through the construction zone.

10.2 Customs Street West service lane

The service lane has vehicle crossings on Quay Street and Customs Street West and serves the AON and HSBC buildings.

- The service lane access on Customs Street West will need to be closed when the full road closure of Customs Street West will apply (when the Downtown Carpark ramp is removed during Weekend 2).
- Vehicles using the service lane will be directed to use the Quay Street vehicle access. We note that this is anticipated to occur for a relatively short period of time 48 hours during a weekend

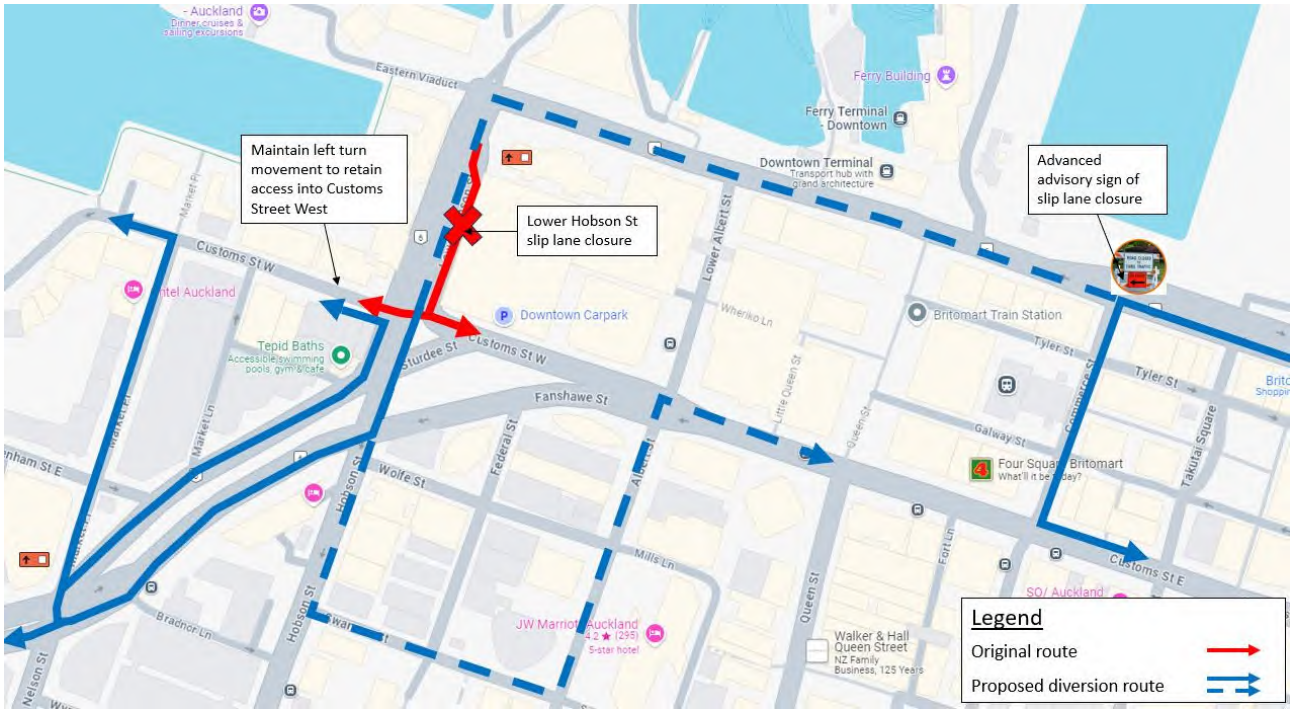
- The parking spaces on the service lane are primarily for office activities, which are unlikely to be highly used during a weekend.

10.3 Lower Hobson Street slip lane diversion route

The Lower Hobson Street slip lane along the west frontage of the Site will be closed throughout demolition and construction. This will require diversion routes to be provided and signposted.

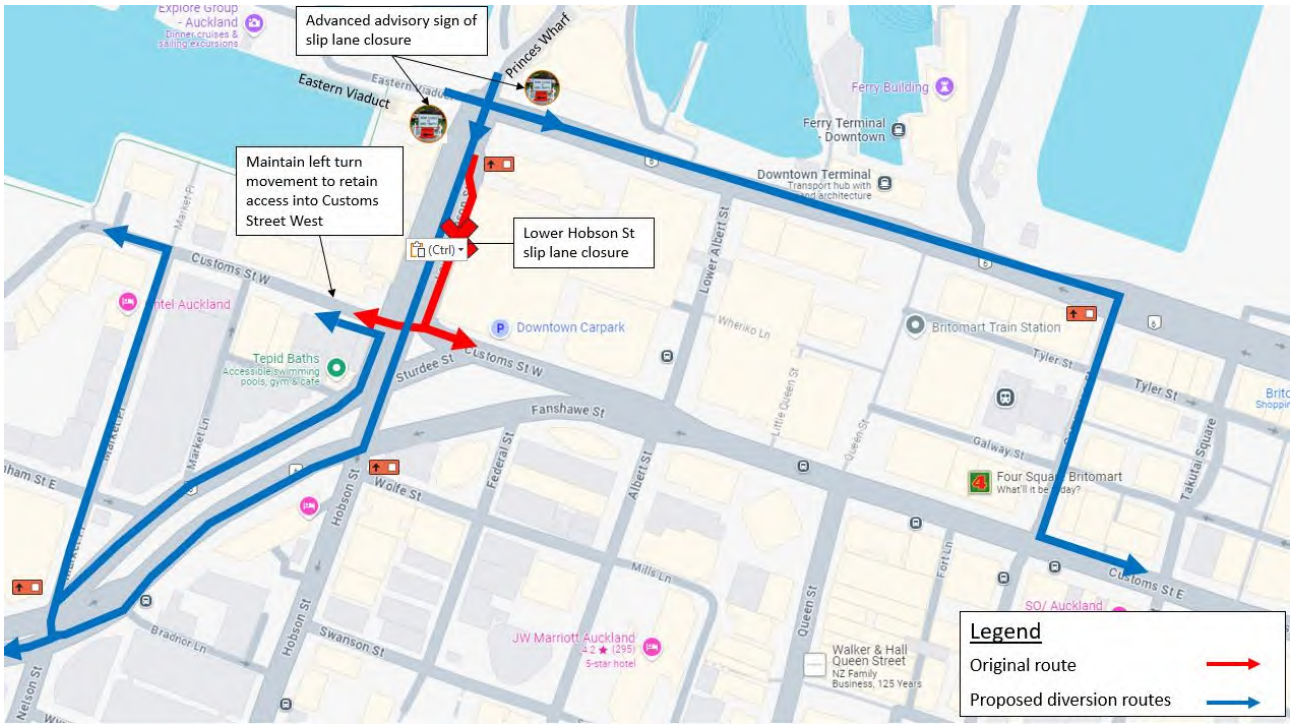
- The Lower Hobson Street slip lane is primarily used as a route to access the Downtown Carpark or access the Viaduct / Wynyard Quarter to the west. It may also be used by vehicles on Quay Street effectively undertaking a u-turn around the Quay Street / Customs Street block.
- We have shown diversion routes for general traffic in Figure 19. This consists of providing an advance advisory sign on Quay Street so drivers can avoid the closure in advance. If a driver proceeds to Lower Hobson Street, then the alternative routes should be signposted

Figure 19: Lower Hobson Street slip lane diversion routes for general traffic



- The Lower Hobson Street slip lane is also currently used by vehicles exiting Princes Wharf or Eastern Viaduct. These diversion routes are shown in Figure 20.

Figure 20: Lower Hobson Street slip lane diversion routes for Princes Wharf and Eastern Viaduct



We also note that the section of Customs Street West between Lower Hobson Street and Market Lane can only be accessed through two routes based on the existing road layout. If the Lower Hobson Street slip lane is closed, then the only available route remaining will be via the left turn from Lower Hobson Street into Customs Street West. Therefore, we recommend that this left turning movement is kept open during construction to maintain access into this section of Customs Street West.

To assess the potential effects of this diversion route, we have used the City Centre SATURN model to estimate the delays of a vehicle travelling from the Quay Street / Lower Hobson Street intersection to the Customs Street West / Lower Hobson Street intersection. This movement is predicted to take around 100 seconds more as a result of the diversion route. However, this is on the assumption that drivers will select the same route. As this lane closure will apply throughout demolition and construction, drivers will become accustomed to this closure and select alternative routes in advance.

11 CONTRACTOR PARKING ASSESSMENT AND MITIGATION

The Site is located in the Auckland City Centre, where on-street parking on the surrounding streets is limited, in high demand and typically subject to high hourly cost rates.

Workers and sub-contractors will be encouraged to use public transport to travel to and from the work site where possible. The Site is located very close to the Britomart Transport Centre, the main public transport interchange in Auckland. Many public transport bus and train services to all parts of the city arrive and depart from the Britomart Transport Centre, and ferry services can be accessed directly across Quay Street. Furthermore, the City Rail Link is expected to be operational in 2026, which will further improve accessibility for public transport.

Where construction staff must travel by private vehicle, they will be directed to park off-site in one of the surrounding parking building facilities. Existing facilities include (but are not exclusive to) the Fanshawe Street Carpark and various Wilson Parking areas (Princes Wharf, Federal Street, Hobson Street, Swanson Street, Queen Street, Fort Street, Durham Lane). It may prove practical for some companies with a small number of staff to shuttle staff to the Site via mini-vans or similar.

Workers and sub-contractors will be advised that any off-site parking must comply with standard traffic and parking regulations. They will be reminded that the use of nearby time-restricted parking spaces for all-day parking is not permitted. It is acknowledged that there are concerns from local residents regarding potential contractor parking within the Viaduct Streets; however, this area is outside the control of Precinct Properties, and standard parking enforcement measures will continue to apply.

12 CONSTRUCTION TRAFFIC GENERATION

12.1 Heavy vehicle generation

The anticipated types of trucks and estimated peak truck movements during each demolition and construction phase are summarised in Table 2 below.

This information is based on the peak truck movement histogram in the "Downtown Carpark Site Development Draft Construction Management Plan" (CMP), which shows the daily peak truck movements per month and phase. We have estimated the peak hour trips as 20% of the daily peak for the purpose of assessing transport effects.

As these movements reflect the daily peak per month, these volumes may not always occur throughout each phase on a daily basis. In reference to Figure 17 of the CMP, Table 2 below reflects the highest peak movements expected for each construction and demolition phases. In reality, the average movements throughout the construction and demolition phases will be lower than the number of truck movements as part of this assessment.

Table 2: Summary of expected trip generation during demolition and construction

Phase	Duration (approx.)	Estimated Peak Daily Truck Trips	Estimated Peak Hourly Truck Trips
Enabling works and demolition	11.5 to 12 months	60 trucks per day or 120 truck movements per day	12 trucks per hour or 24 truck movements per hour
Retention and Excavation	10 to 12 months	90 trucks per day or 180 truck movements per day	18 trucks per hour or 36 truck movements per hour
Basement Structure	10.5 to 12 months	80 trucks per day or 160 truck movements per day	16 trucks per hour or 36 truck movements per hour
Tower 1, Tower 2, and Podium Construction	24 to 27 months	120 trucks per day or 240 truck movements per day	24 trucks per hour or 48 truck movements per hour

12.1.1 Demolition Phase

As summarised in Table 2, a peak of 60 trucks per day (equivalent to 120 truck movements) will be generated during demolition. This corresponds to around a peak of 24 truck movements per hour.

We note the following

- The contractor will be able to manage truck scheduling to avoid excessive queuing or clustering of arrivals
- Given the low daily and hourly volumes, it is not considered necessary to impose specific peak-hour restrictions on demolition truck movements. This is further illustrated through our modelling, which assumes a higher hourly traffic flow for construction vehicles (up to 48 truck movements per hour).

12.1.2 Construction Phases

The subsequent construction phases will generate additional heavy vehicle movements for the delivery of materials and equipment. These include excavation, structural works, and tower construction.

The Tower 1, Tower 2, and Podium phases represent the highest construction traffic demand, as these activities will occur concurrently. A worst-case peak of 48 truck movements per hour (24 trucks per hour inbound and 24 trucks per hour outbound) has been adopted for modelling purposes to assess potential effects on general traffic and bus operations.

This represents the maximum expected peak during construction, noting that average daily truck volumes will not always be as high as 48 truck movements per hour.

As per the demolition phase, the contractor will be able to manage truck scheduling to avoid excessive queuing or clustering of arrivals. As described in Section 7, the wider construction zone provides areas to hold trucks and allow trucks to pass each other, if there are two trucks travelling in the opposite direction.

12.2 Light vehicle generation

In addition to heavy vehicle activity, demolition and construction works will also generate light vehicle movements associated with contractor staff and site management personnel.

Key assumptions are as follows

- Contractors will be encouraged to use public transport or park in nearby City Centre facilities where possible
- Some staff may be required to drive directly to the Site. Personnel vehicle access will primarily be via the Customs Street West service lane from Sturdee Street. Sometimes, staff may use the Lower Hobson Street construction access. These moments are expected to be infrequent and unlikely to impact the operation of Lower Hobson Street
- As the contractor has not yet been appointed and staff numbers remain uncertain, a conservative assumption of up to 50 light vehicle trips per hour has been adopted (for the purposes of undertaking a traffic modelling assessment) for weekday peak periods. The cumulative effects of these light vehicles, together with the highest heavy truck movements described above, and their potential impacts on bus operations, have been accounted for in the modelling analysis. We note that this is still significantly less than the vehicle trips that are currently generated by the Downtown Carpark.

13 TRANSPORT NETWORK EFFECTS OF ROAD AND LANE CLOSURES

13.1 Assessment methodology

We have used the City Centre SATURN model to assess the transport network effects of each stage of the demolition. This model is a tool used to assess vehicle movements in the City Centre.

The City Centre SATURN model has been prepared by the Auckland Forecasting Centre ("**AFC**") and assesses the morning ("**AM**") and ("**PM**") peak hours during a weekday.

To assess the effects of the demolition and construction, we have prepared models for the 'existing environment' and several scenarios of the construction / demolition for both AM and PM peak periods. The 'existing environment' will be compared against each stage to assess the effects of the proposed road closures.

For the 'existing environment' baseline model,

- The Auckland Forecasting Centre's ("**AFC**") 2031 City Centre SATURN model has been used.
  - This accounts for the City Rail Link ("**CRL**") being completed. All current road closures associated with the CRL have, therefore, been removed. The model also accounts for future bus routes that will apply to the City Centre once the CRL is completed
  - The model only includes committed and funded road projects in the City Centre, which can be considered as part of the existing legal environment
  - No unfunded or uncertain projects are included in the model, such as the removal of the Lower Hobson Street flyover.

We have prepared models for the following scenarios, which each have different road closures

- Scenario A: Removal of the Lower Hobson Street overbridge
  - Full closure of Lower Hobson Street over a weekend
- Scenario B: Removal of the Downtown Carpark ramp over Customs Street West
  - Full closure of Customs Street West for Weekend 2
  - We note that we have not modelled Weekend 1, as outlined in Section 6.3. This consists of a short bus lane closure on Customs Street West across the site frontage. Given this is a short lane closure and that it will be over a single weekend only, we have not modelled this scenario (noting the SATURN model is for a weekday peak period). No buses will need to be rerouted during Weekend 1
- Scenario C: Primary demolition and construction phase
  - Closure of the Lower Hobson Street slip lane throughout the majority of the demolition and construction phases

For the demolition and construction models, we have used the 'existing environment model' as a baseline and made the following further changes.

All demolition / construction phase models (Scenarios A to C)

- Removed all trips from the Downtown Carpark
- Closed the Lower Hobson Street southbound lane adjacent to the Site
- Added construction truck trips. Construction truck trips have been modelled as 24 trucks per hour, or 48 truck movements per hour. This is outlined in Section 12.1
- Added light vehicle construction trips. In this regard, we assumed 50 vehicles per hour as per Section 12.2, noting that this assumption was made for modelling purposes only. These were added to the AON/HSBC service lane to simulate travelling to and from the Site
- Downtown Carpark trip redistribution. We have allowed for a 'worst-case' traffic effects scenario, assuming that 100 % of the existing Downtown Carpark trips will be redistributed to other parking areas within the City Centre. We consider this a worst-case scenario, as it is likely that not all of these existing Downtown Carpark trips will be redistributed, as some people may choose to travel into the City Centre via a different transport mode, such as public transport. The methodology for redistributing these trips was provided and developed by AFC based on carpark occupancy data originally provided by Auckland Transport Parking for privately owned parking sites in the City Centre
- Existing M Social trips have been reassigned from the Downtown Carpark to the AON / HSBC service lane
- Reconfigure the Lower Hobson Street / Customs Street West signalised intersection to provide construction vehicle access, as outlined in Section 4.6.

Scenario A: Removal of the Lower Hobson Street overbridge

- Fully close all links on Lower Hobson Street between Quay Street and Customs Street West
- Adjust signal phasing to Quay Street / Lower Hobson Street, Quay Street / Commerce Street and Lower Hobson Street / Fanshawe Street, accounting for rerouted traffic
- Buses have been rerouted, as outlined in Section 9 and Appendix E. We note that the 2031 model includes up to date bus routes for the post-CRL road network, compared to the previous version of the City Centre model. As such, the updated modelling allows for proposed changes to the bus routes once the CRL is operational.

Scenario B: Removal of the Downtown Carpark ramp over Customs Street West

- Fully close Customs Street West between Lower Hobson Street and Lower Albert Street
- Close one westbound lane on Fanshawe Street on approach to the Fanshawe Street / Hobson Street intersection
- Redirect all service lane trips (between Customs Street West and Quay Street) to the Quay Street access
- Adjust signal phasing to Lower Albert Street / Customs Street West, accounting for rerouted traffic
- Buses have been rerouted, as outlined in Section 9 and Appendix E. We note that the 2031 model includes up to date bus routes for the post-CRL road network, compared to the previous version

of the City Centre model. As such, the updated modelling allows for proposed changes to the bus routes once the CRL is operational.

Scenario C: Primary demolition / construction phase

- No additional changes compared to "All demolition / construction phase models".

13.2 Modelling results

SATURN model outputs are provided in Appendix A. The following outputs are provided.

- SATURN network volume and delay difference diagrams.
  - Actual volume differences between the 'existing environment' scenario and Scenarios A to C. The differences are shown in 'PCUs' per hour, where a standard vehicle is 1 PCU (Passenger Car Unit) and a heavy vehicle is 2 PCUs. Only differences of over 10 PCUs are shown
  - Delay differences between the 'existing environment' scenario and each of Scenarios A to C, in seconds. Only differences of over 10 seconds are shown
  - Diagrams are provided for each Scenario for the AM and PM weekday peak period
  - The blue lines represent a decrease in volume/delay when compared to the 'existing environment', whereas the green line represents an increase
- Average travel time per vehicle per modelled scenario, showing actual and percentage change differences compared to the baseline
- Bus route travel times per modelled scenario, showing actual and percentage change differences compared to the baseline.

13.2.1 Network volume and delay differences

We summarise the results for each Scenario and peak period below.

Scenario A: Removal of the Lower Hobson Street overbridge

- We note that this scenario will occur over a single weekend, and will be scheduled during a public holiday / school holiday weekend. The City Centre SATURN model assesses weekday peak periods, which are much more congested compared to a weekend. No weekend model is available. Therefore, this assessment is conservative, and the effects will likely not be as noticeable as described in this section
- AM peak
  - Vehicles reroute away from Quay Street and Lower Hobson Street towards Customs Street East and Fanshawe Street
  - The delay decreases along Quay Street, but increases on Customs Street West and Fanshawe Street by 20 – 60 seconds at the approaches to some intersections along the corridor. This increase corresponds to less than one traffic signal cycle
  - There are increases in delays to Commerce Street and Gore Street

- Delay increases are predicted at the SH16 / Alten Road intersection of up to 45 seconds. This intersection is signalised, and there are already some delays in the base scenario. In the City Centre model, the intersection operates with a 150 second cycle time, so a delay of around 40 seconds is 27% of a single cycle. We note that this area is typically congested during a weekday peak, but not during a weekend
- There are no increases in delays in the area surrounding the Site.

w PM peak

- Vehicles reroute away from Quay Street and Lower Hobson Street towards Customs Street East and Fanshawe Street
- The delay decreases along Quay Street but increases on Customs Street West by 10 – 90 seconds between Lower Albert Street and Commerce Street. This increase corresponds to less than one traffic signal cycle
- There is an increase in delays to Commerce Street, Queen Street and Wyndham Street
- There is an increase in delays on SH16 of around 30 seconds. This applies to southbound traffic at the merging point of the Wellesley Street on-ramp. We note that the base model already has delays of around 110 seconds at this location in the PM peak, so there is already some delay and queueing at this location. We note that this area is typically congested during a weekday peak, but not during a weekend
- Delay increases are predicted at the SH16 / Alten Road intersection of up to 45 seconds. This intersection is signalised, and there are already some delays in the base scenario. In the City Centre model, the intersection operates with a 150 second cycle time, so a delay of around 45 seconds is 30% of a single cycle. We note that this area is typically congested during a weekday peak, but not during a weekend
- There are no noticeable increases in delays in the area surrounding the Site.

<u>Scenario B: Removal of the Downtown Carpark ramp over Customs Street West</u>

w We note that this scenario will occur over a single weekend, and will be scheduled during a public holiday / school holiday weekend. The City Centre SATURN model assesses weekday peak periods, which are much more congested compared to a weekend. No weekend model is available. Therefore, this assessment is conservative, and the effects will likely not be as noticeable as described in this section

w AM peak

- Vehicles reroute away from Customs Street West, and towards Lower Hobson Street (northbound). In the wider network, vehicles approach the City Centre from Stanley Street instead of through Nelson Street. Southbound vehicles on Lower Hobson Street reroute to the Lower Hobson Street flyover and Fanshawe Street
- Delays are predicted to increase on Lower Hobson Street (northbound) by 110 seconds. This is due to Customs Street West being closed

- Other delay increases are predicted, including on Fanshawe Street, Quay Street and Queen Street.

- PM peak
  - Vehicles reroute away from Lower Hobson Street lane adjacent to the building and Customs Street West (in the Viaduct area) and towards Fanshawe Street and the Lower Hobson Street flyover
  - Delays are predicted to cumulatively increase on Lower Hobson Street (northbound) by 150 seconds. This is due to Customs Street West being closed
  - Other delay increases are predicted, including on Fanshawe Street, Quay Street and Queen Street.

Scenario C: Primary demolition / construction phase

- AM peak
  - Vehicles reroute away from Lower Hobson Street slip lane adjacent to the building and Customs Street West (in the Viaduct area) and towards Fanshawe Street and the Lower Hobson Street flyover
  - No noticeable changes in delays are predicted around the local area or on the network.
- PM peak
  - Vehicles reroute away from Lower Hobson Street slip lane adjacent to the building and Customs Street West (in the Viaduct area) and towards Fanshawe Street and the Lower Hobson Street flyover.
  - No noticeable changes in delays are predicted around the local area or on the network.

In summary, we highlight the following key findings.

- The Scenario A to C models generally predict that traffic will be rerouted from Lower Hobson Street onto Fanshawe Street
- Scenarios A and B see different rerouting patterns, given they involve full closures of Lower Hobson Street and Customs Street West, respectively. Moderate delay increases are predicted due to these full road closures. In some cases, the delay increases are in the range of 2 minutes at some intersections. We note that both of these scenarios will occur over a weekend (48 hours), so will be of a short duration. Furthermore, the effects will likely not be as significant over a weekend compared to a weekday (which the modelling assessment is based on)
- No notable delay increases are predicted during Scenario C, which will occur throughout the majority of demolition and construction
- While the demolition and construction works will generate construction traffic and result in road closures, this will be offset by the significant reduction in local traffic demand due to the closure of the Downtown Carpark, even when considering redistribution of the existing Downtown Carpark trips to other parking facilities in the area.

13.2.2 Average travel times

Please refer to Appendix A, which provides the average journey times for all vehicles for each of the modelled scenarios. A comparison is provided for each scenario against the baseline. We highlight the following key findings.

- During Scenario A and B, which will involve temporary road closures on Lower Hobson Street and Customs Street West, when compared to the baseline, the results predict an average travel time increase per vehicle of 2 – 5%, or 9 to 15 seconds on average. Both of these stages will be of short duration and occur over a weekend when it will not be as congested as a weekday peak period
- For Scenario C, average travel time increases per vehicle are predicted to increase by up to 1 %, or around 3 seconds. We consider these are very small increases in average travel times, and therefore insignificant.

13.2.3 Bus route travel times

Please refer to Appendix A which provides the modelled bus route travel times.

- A comparison is provided for Scenario A to C against the baseline
- Each route is included as per the City Centre SATURN model. Each route typically has an inbound and outbound route
- We note that the travel times for each route are limited to the area of the City Centre model. Some bus routes extend beyond the modelled area, which means the total travel time of each bus route will be greater (in both the baseline and Scenarios A to C). However, any travel time impacts to buses due to demolition or construction are unlikely to extend outside of the City Centre network, as our modelling assessment has shown that any impacts to vehicle delays will be contained within the City Centre area
- The results predict an increase in bus delays for multiple routes during Scenarios A and B. These mostly apply where buses need to change routes due to temporary road closures. The delay for some routes may increase by around 3 to 7 minutes. Some of these delays can't be avoided as the full road closures are necessary during these scenarios, and some buses will require alternative routes. We note that these stages will be of relatively short duration, and works will be scheduled during weekends to avoid any impacts during weekdays. We also note that the modelling assessment is based on a weekday peak period, meaning the changes to travel time may not be as high as they will occur during a weekend with less congestion
- No notable bus delay changes are predicted for Scenario C. In general, most bus routes do not experience any delay. The highest predicted delay is around 23 seconds, but we also note some bus routes improve their travel time by up to 23 seconds. On balance, we consider the effects on buses is neutral or not noticeable during this phase.

14 LOCAL TRANSPORT EFFECTS OF CONSTRUCTION VEHICLE ACCESS AND TRUCK MOVEMENTS DURING PEAK PERIODS

14.1 Overview of this assessment

The TTMG document states that AM/PM peak periods must not be affected by temporary traffic management works on weekdays. To respond to this point, we have undertaken an assessment of allowing construction vehicles to access the site during demolition and construction during weekday peak periods.

This section addresses the localised impacts of construction vehicle movements at the access points and the potential effects on the nearby bus lanes, which would apply during the demolition and construction phases. The wider network effects are addressed in Section 13.

For the purpose of this assessment, we have adopted the highest peak hour truck movements that is expected to occur over both demolition and construction. As outlined in Section 12, this is 24 trucks per hour, or 48 truck movements per hour.

14.2 Modelling assessment methodology

SATURN models

For this assessment we have used the existing environment baseline and Scenario C SATURN models, as outlined in Section 13.1. The Scenario C model accounts for the road closures and peak truck movements that will occur throughout demolition and construction.

SIDRA Network models

Using the vehicle volume outputs of the SATURN models, we have prepared SIDRA Network models to assess the AM and PM weekday peak hour operation of the road network immediately surrounding the Site, without and with the construction of the Development. The SIDRA Network modelling software enables more detailed assessments to be undertaken at a local level compared to the SATURN modelling software, which focuses on the network level.

- The SIDRA network layout of each scenario is shown in Figure 21 to Figure 24 below.
  - Network 1 enables an assessment of the block back effect from Quay Street towards Lower Hobson Street, Custom Street West and Sturdee Street
  - Network 2 enables an assessment of the block back effect from Lower Albert Street towards Custom Street West and Sturdee Street
- The bus routes that were taken into consideration for each network are shown in Figure 25 to Figure 26.
  - In Network 1, we considered the road layout between Sturdee Street and Lower Hobson Street, where general traffic must weave around bus lanes. Since trucks are required (and legally permitted) to use the bus lane for the final 50 m before turning right into the Lower Hobson Street slip lane for construction access, we have accounted for the

weaving movements of trucks and the resulting impacts on buses travelling towards Quay Street

- Network 1 includes the signalised pedestrian crossing at the Customs Street West/Lower Hobson Street/Lower Hobson Street slip lane intersection. We have analysed 2025 SCATS data from the Auckland Transport Operations Centre to assess the pedestrian crossing signal timings, ensuring the model reflects existing conditions and that pedestrians receive the correct amount of green time. These timings were further validated using survey footage collected in May 2025. The pedestrian signal phase remains consistent between the construction and non-construction modelling scenarios, which allows sufficient time for pedestrians to safely cross
- Similarly, Network 2 includes a signalised pedestrian crossing at the midblock of Sturdee Street, located just beyond the Lower Hobson Street overbridge. SCATS data was also obtained and applied to assess the crossing operation
- We modelled 4 scenarios
  - Scenario 1 – AM peak traffic volumes without construction and road closures (AM Do minimum)
  - Scenario 2 – PM peak traffic volumes without construction and road closures (PM Do Minimum)
  - Scenario 3 – AM peak traffic with road closures plus construction traffic (AM With Construction)
  - Scenario 4 – PM peak traffic with road closures plus construction traffic (PM with Construction).

The full SIDRA outputs for construction, including detailed intersection movement summaries, signal phasing summaries and bus route performance results, are included in Appendix A.

Figure 21: Network layout 1 - Lower Hobson Street to Quay Street for Scenarios 1 and 2 (Do Minimum, without construction)

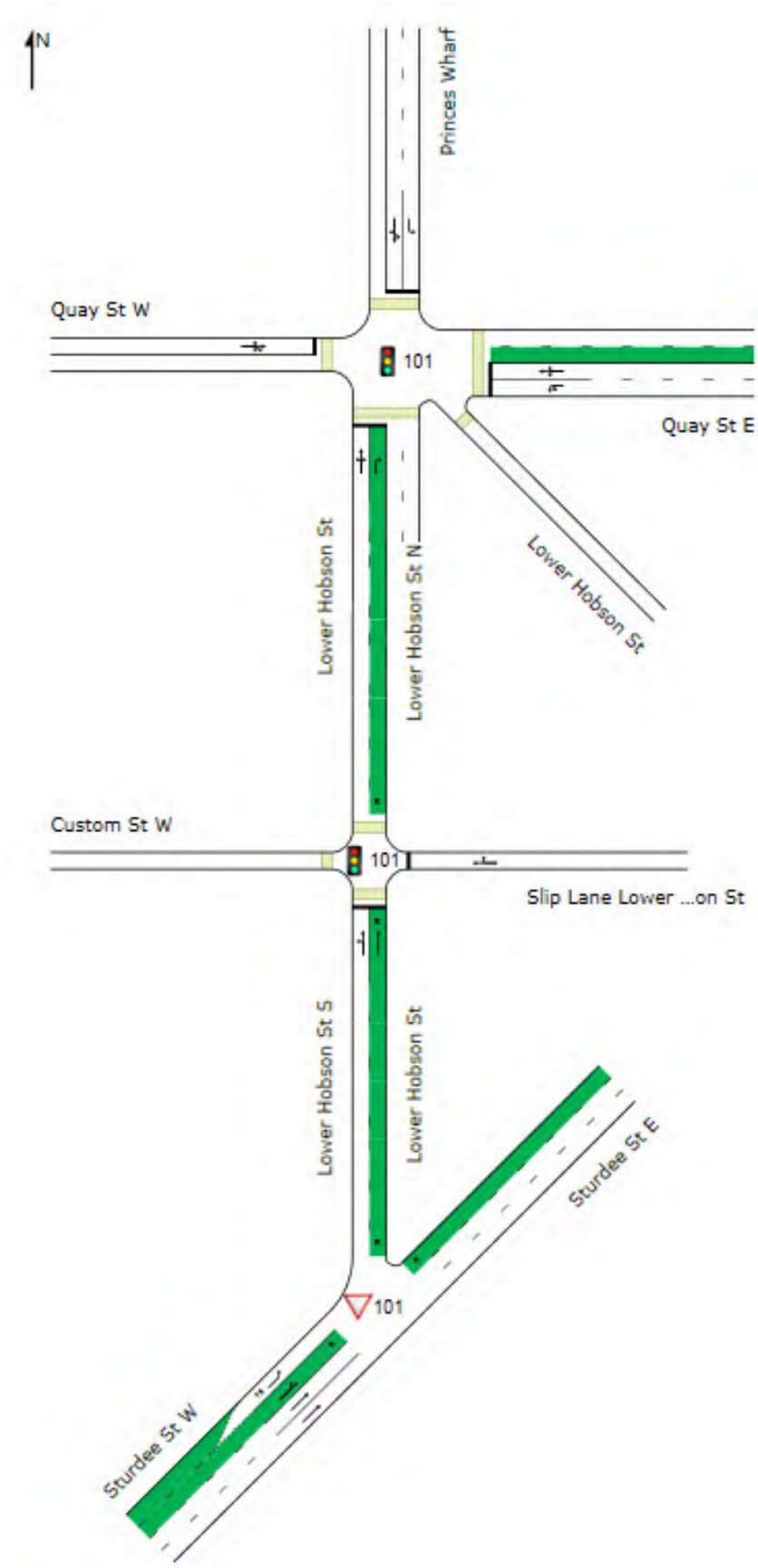


Figure 22: Network layout 1 - Lower Hobson Street to Quay Street for Scenarios 3 and 4 (With Construction traffic)

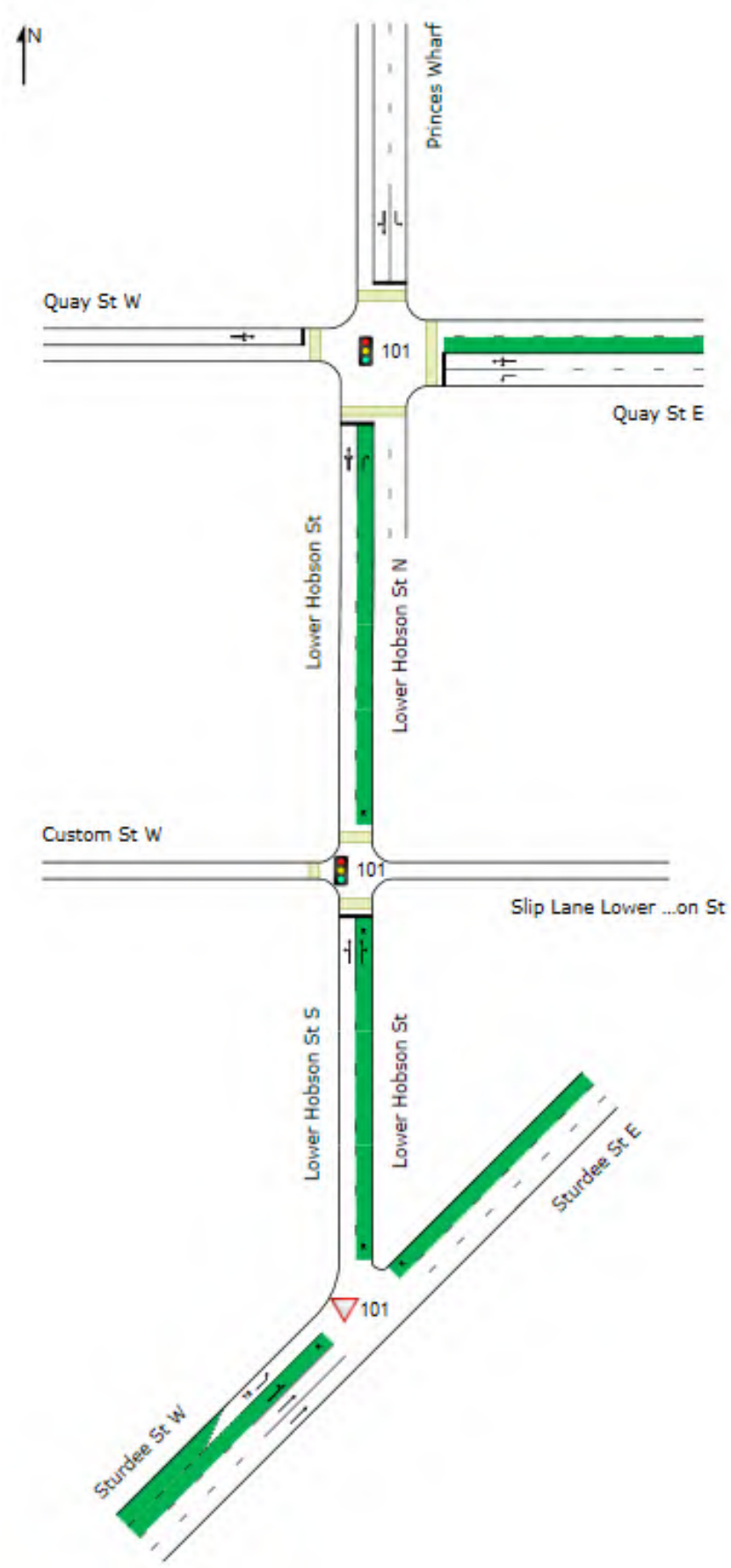


Figure 23: Network Layout 2 – Lower Albert Street to Sturdee Street for Scenarios 1 and 2 (Do Minimum without construction traffic)

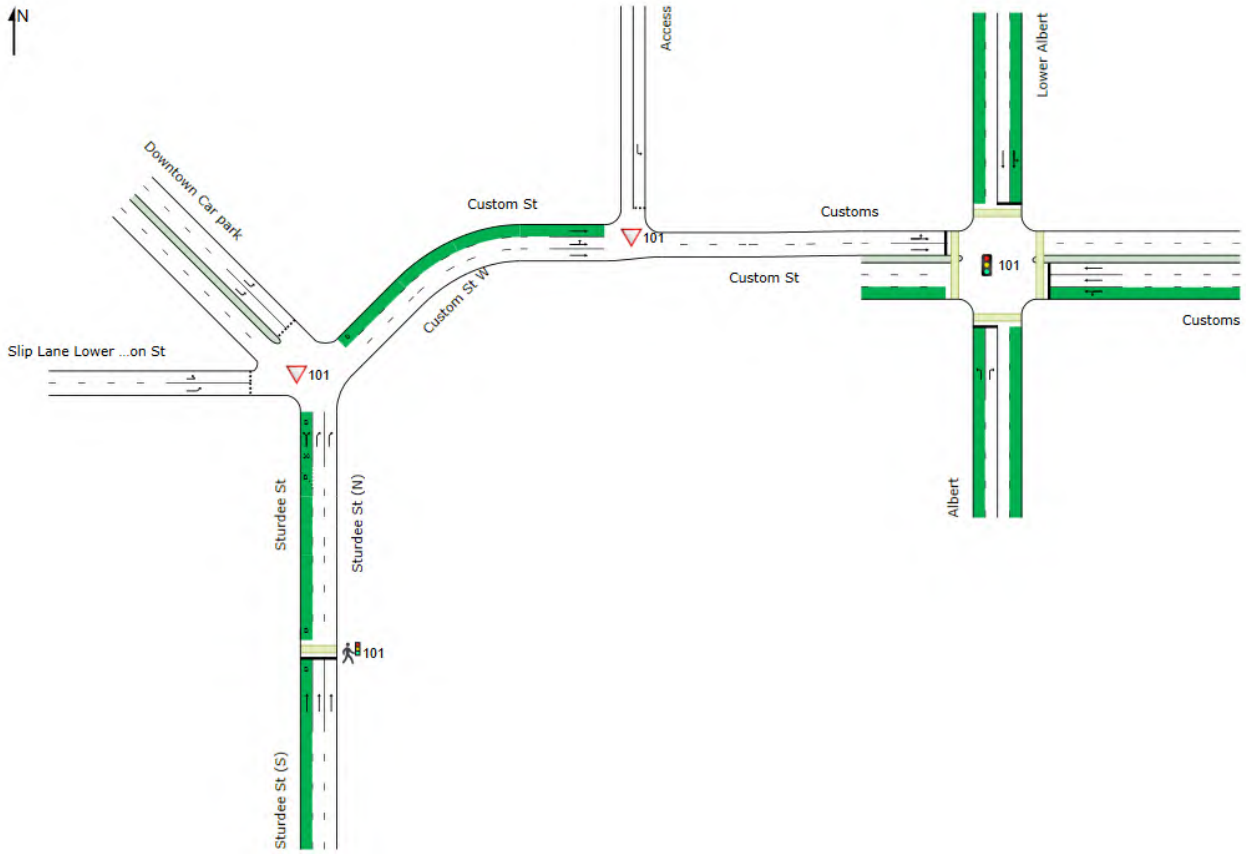


Figure 24: Network Layout 2 – Lower Albert Street to Sturdee Street for Scenarios 3 and 4 (With construction traffic)

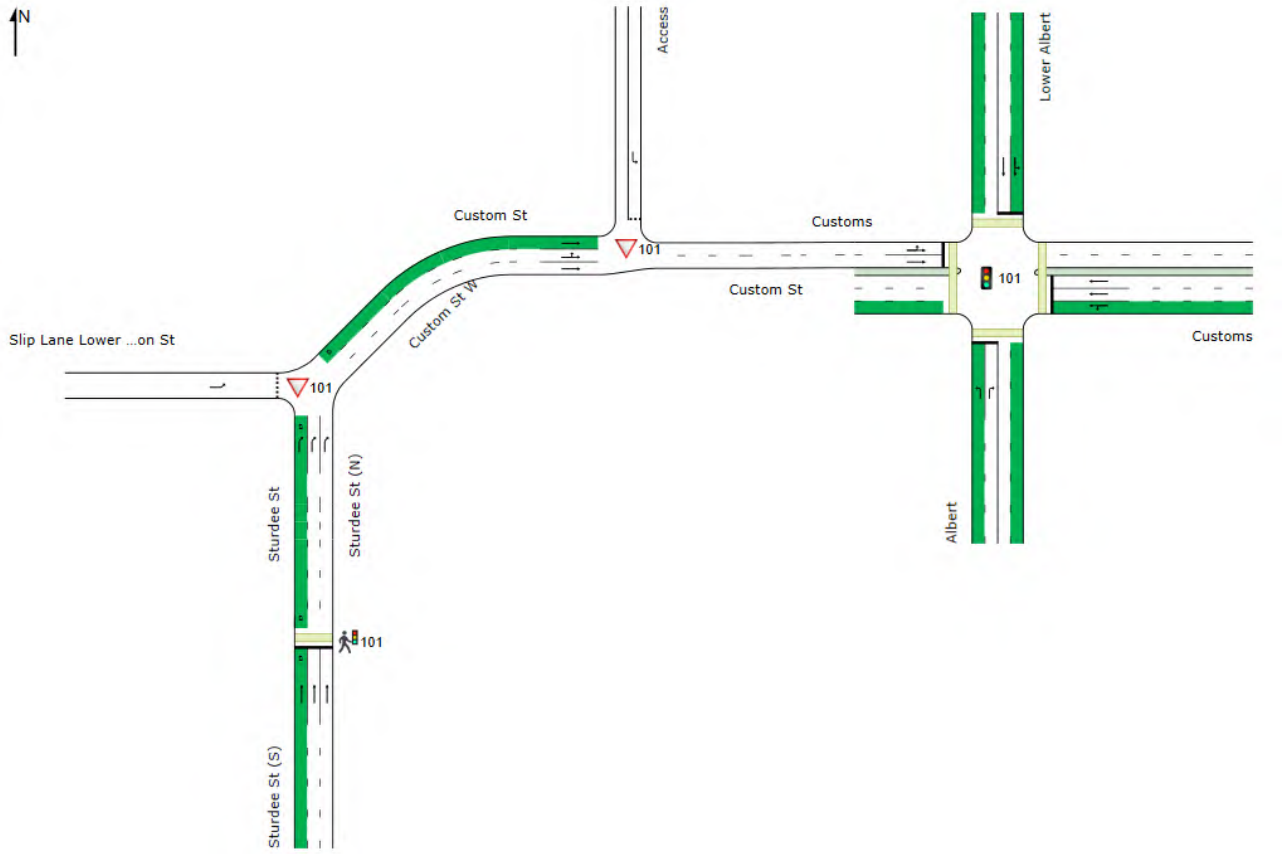


Figure 25: Network 1 Bus Route

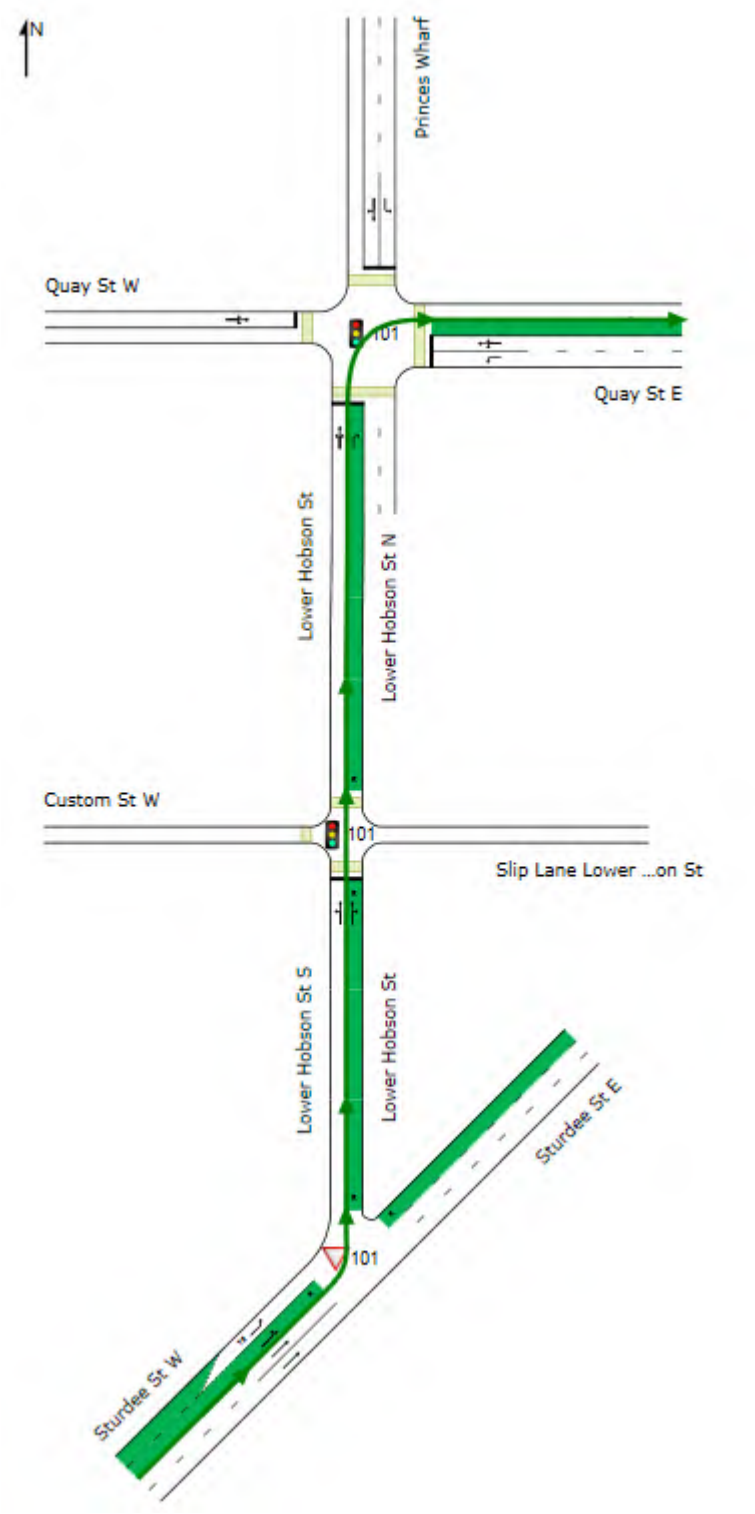
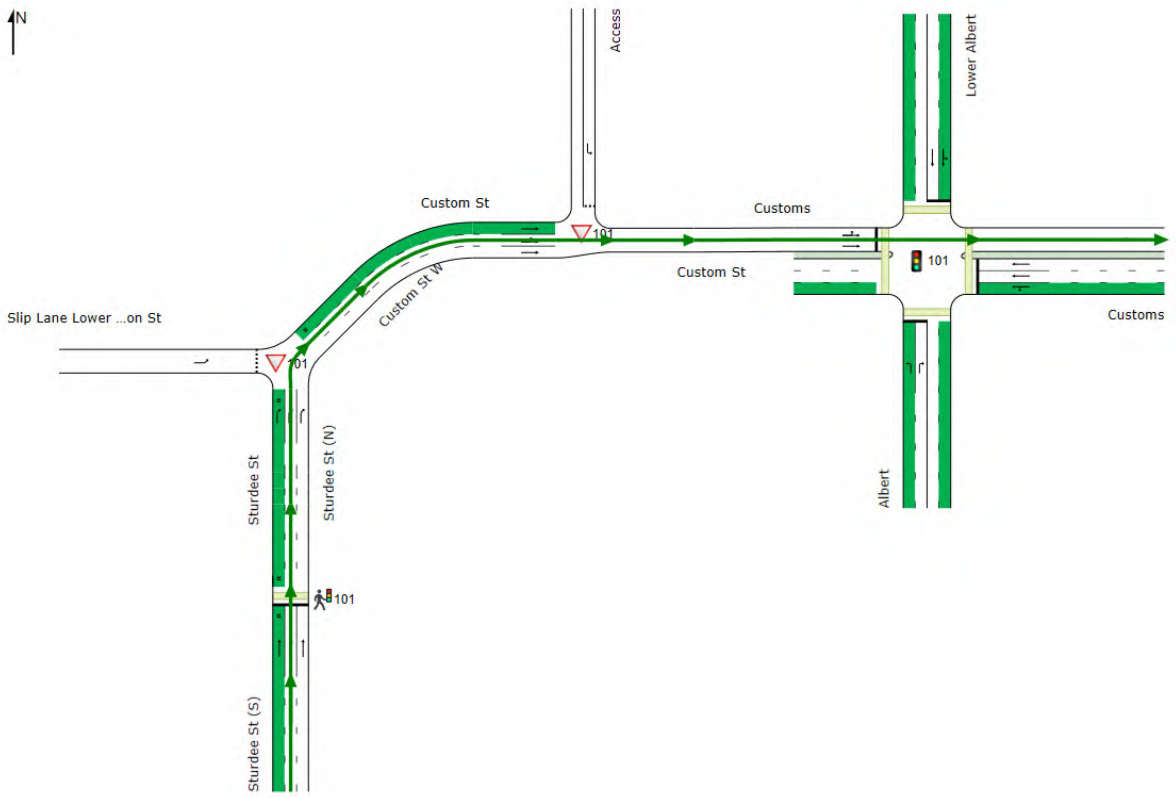


Figure 26: Network 2 Bus Route



14.3 Transport effects

14.3.1 Effects to the operation of key intersections during construction

The SIDRA movement comparison for key intersections under both the Construction Do Minimum (without construction traffic) and With Construction (with construction traffic) scenarios is presented in Table 3 below.

In summary, the SIDRA results show the following about intersection performance during the construction period.

- **Lower Hobson Street/Slip Lane/Customs Street West intersection**
  - Removing the slip lane improves the intersection performance, with average delays reducing by 17 seconds in both the AM peak and PM peak. Queue lengths are also predicted to reduce noticeably by around 30 to 40 m, due to providing more green time to northbound movements and removing the signal phase associated with the east approach underneath the flyover.
- **Quay Street/Lower Hobson Street/Princes Wharf intersection**
  - Performance improves slightly, with average delays reducing by 3 seconds in the AM peak and 13 seconds in the PM peak, along with shorter queues (25 to 50 m) due to optimised signal phasing.

- **Sturdee Street/Slip Lane Lower Hobson Street/Customs Street West intersection**
  - No change in average delay across both AM and PM peaks; the intersection continues to operate well within capacity.
- **Customs Street West/Albert Street/Lower Albert Street intersection**
  - A very minor increase in average delay is observed, 1 second in the AM peak and 3 seconds in the PM peak, which is attributed to network rerouting rather than construction traffic.

The analysis demonstrates that the With Construction scenario, which includes up to 48 construction truck movements (24 inbound and 24 outbound), either improves or maintains the level of service at the assessed intersections. The only observed increase in delay is negligible (1 to 3 seconds) and occurs at 1 intersection (**Customs Street West/Albert Street/Lower Albert Street)**, and this is not due to construction vehicle activity but network rerouting as a result of the road closures.

Overall, the construction-related traffic effects are minimal and can be appropriately accommodated within the existing road network.

Table 3: AM and PM peak hour SIDRA results for key intersections

Network Layout	Intersection	Peak hour	Construction Do Minimum scenario (Without Construction traffic)				Construction scenario (With Construction traffic) Changes compared to Do Minimum shown in brackets			
			Degree of Saturation	Average Delay (s)	LOS	95th Back of Queue (m)	Degree of Saturation	Average Delay (s)	LOS	95th Back of Queue (m)
1	Lower Hobson St/Slip lane/Custom St W	AM	0.55	27	C	75	0.27 (-0.28)	10 (-17)	A	45 (-30)
		PM	0.54	25	C	125	0.39 (-0.15)	8 (-17)	A	85 (-40)
	Quay St/Lower Hobson St/Princes Wharf	AM	0.79	45	D	160	0.7 (-0.09)	42 (0)	D	135 (-25)
		PM	0.98	58	E	235	0.88 (-0.10)	45 (-13)	D	185 (-50)
2	Sturdee St/Slip Lane Lower Hobson St/Custom St W	AM	0.17	3	A	5	0.23 (+0.06)	3 (0)	A	5 (0)
		PM	0.14	3	A	0	0.15 (+0.01)	3 (0)	A	5 (+5)
	Customs St W/Albert St/Lower Albert St	AM	0.66	30	C	105	0.68 (+0.02)	31 (+1)	C	105 (0)
		PM	0.70	40	D	110	0.79 (=0.15)	43 (+3)	D	130 (+20)

14.3.2 Effects to bus travel times during construction

A summary of the SIDRA bus route performance through this section of the network is provided in Table 4 below.

Table 4: Peak hour SIDRA Bus route performance results

Bus Route	Peak hour	Construction Do Minimum		With Construction	
		Average route delay (seconds per vehicle)	LOS	Average route delay (seconds per vehicle) (changes to Do Minimum shown in brackets)	LOS
Quay St via Lower Hobson St	AM	69	D	56 (-13)	D
	PM	61	D	49 (-12)	D
Custom St W via Sturdee St	AM	37	D	39 (+2)	D
	PM	47	D	48 (+1)	D

In summary, the SIDRA results predict the following with regard to bus travel times during construction

- Quay Street via Lower Hobson Street bus route
  - Removing the slip lane approach improves signal phasing and reduces average delays for buses, particularly by allowing more green time for northbound through movements
  - Average route delay improves by 13 seconds in the AM peak and 12 seconds in the PM peak, due to the increase in green time for northbound movements.
- Customs Street West via Sturdee Street bus route
  - Minor changes in routing result in a very small increase in average delay, 2 seconds in the AM peak and 1 second in the PM peak, which is considered negligible.

Overall, the construction of the Development will not have a noticeable effect on bus route performance around the Site. The results of our traffic modelling assessment predict that existing delays to buses are either improved or remain within a comparable range.

14.3.3 Summary of traffic effects during construction

Based on our assessment, we consider that heavy construction vehicle movements can be accommodated during weekday peak periods, up to the 48 truck movements per hour that we have assessed. This can apply during any phase of construction or demolition as an upper limit.

Based on our assessment, we consider there is no reason why peak period construction vehicle restrictions should be imposed during weekday peak periods, as indicated by the TTMG document.

- Our assessment has shown that the effects of heavy construction vehicle movements at the intersections surrounding the local intersections are either negligible or improve slightly compared to without construction
- Our assessment has also predicted that bus route travel times using the Quay Street / Lower Hobson Street route will improve slightly, whereas a negligible increase is predicted for the Customs Street West / Sturdee Street route.

The results of our assessment are not unexpected due to the following reasons

- To provide a construction vehicle access point underneath the flyover at the Lower Hobson Street / Customs Street West intersection, the existing westbound approach under the flyover will be closed to the public. This means a traffic signal phase can be removed, which enables northbound traffic on Lower Hobson Street to operate more efficiently
- There will be a reduction in local traffic volumes in the area during construction and demolition due to the removal of the Downtown Carpark.

We understand that implementing peak hour construction vehicle restrictions may result in significant extensions to the duration of the construction programme. This will prolong any effects associated with road closures such as vehicle and pedestrian diversions. Further, the assessment above confirms that heavy construction vehicle movements can be accommodated during weekday peak periods, up to the 48 truck movements per hour. Therefore, enabling truck movements during peak periods enables the programme to be completed in an efficient manner with negligible effects on intersections and bus routes.

15 MAKE GOOD AND REMEDIATION WORKS

During and after the demolition, there will be 'make good' works. These ‘make good’ works will ensure that the work areas are left to an acceptable standard following the demolition and are suitable for use by the public.

We note that once the Downtown Carpark ramp over Customs Street West is removed, the signalised intersection exit onto Fanshawe Street will no longer be required.

- We recommend that this intersection be removed and reinstated as a road for through traffic. The works will involve removing the signal posts, and the associated road markings
- The footpath on the north side of Fanshawe Street will also require modification or removal. As the footpath on the northern side does not have sufficient width to provide a proper pedestrian facility near Lower Albert Street, we recommend that it is not required and reinstated as kerb and berm once the Downtown Carpark is demolished
- We recommend that the future design of this intersection be addressed at a later Engineering Plan Approval stage.

During and after the construction of the project, there will be additional remediation works required. These works include

- Reinstating the public footpath around the perimeter of the Site to an appropriate standard
- Reinstating the changes made to Lower Hobson Street to accommodate demolition and construction truck movements underneath the flyover. These include
    - Changes to the signal operation on Lower Hobson Street
    - The kerbs
    - A signal post and signpost
    - The raised pedestrian crossing.
- The pavement along the Site’s perimeter (Lower Hobson Street slip lane and Customs Street West), where construction work zones were located, will need to be reinstated to an acceptable condition (as per existing)
- The M Social vehicle crossing changes, including changes to the kerbs/signage near the flyover need to be reinstated as per the existing layout
- We note that all reinstating works may not be needed if the Lower Hobson Street flyover were to be removed by Auckland Transport, however, we acknowledge that this is not a committed project. We note for completeness that reinstatement works will need to be reconsidered in the future if the removal of the flyover were to occur before construction of this project is finalised.

16 ASSESSMENT OF THE TEMPORARY TRAFFIC MANAGEMENT GUIDELINES

We have reviewed the TTMG and have provided responses to the principles applicable to the proposed demolition and construction works

- We agree with the Auckland Network Operation Plan's key principles to enable good accessibility to the City Centre during demolition and construction, and we have attempted to take this into account where safe to do so. Any road, footpath, cycle lane or bus lane closure was considered necessary to protect the public from live construction zone works
- We provide the following comments on the key points specific and applicable to the proposed demolition and construction works. We have copied these points in italics and then presented our comments.
- Where possible, the final CTMP should be prepared to adopt the TTMG. However, as outlined in our assessment below, some flexibility in the approach in the TTMG may be required due to constraints of the site and the need to undertake the demolition and construction works in a safe and efficient manner.

1 - No bus lanes are to be compromised.

- *However, if unavoidable and agreed by AT Metro, appropriate mitigation is required to ensure bus operations are unaffected. This could typically necessitate the provision of a bus lane on the temporary route, and relocated bus shelters, with ample pre-warning to enable*
- *Close liaison and agreement with AT Metro is necessary*

Bus lane closures have been minimised, and will only apply when the Lower Hobson Street pedestrian overbridge and Downtown Carpark ramp over Customs Street West need to be removed. As outlined in Section 6.1 and 6.3, these works will be of short duration and will be scheduled to occur over weekends. Some bus routes will need to be temporarily rerouted during these periods, due to full road closures of Lower Hobson Street and Customs Street West.

Refer to Section 9 for our assessment of impacts to public transport.

We have also provided a traffic modelling assessment of the construction vehicle access points in 13.2.3, which considers the travel time to buses.

2 – No pedestrian access is to be compromised

- *In general, available unobstructed footpath widths must be maintained at 2.2m at all times, or at the width of the existing footpath if less than 2.2m.*
- *The Albert Street, Victoria Street, Wellesley Street, Mayoral Drive, Wyndham Street, Shortland Street and Customs Street footpath width must be maintained at 3m*
- *Crossing points at intersections and across streets are to be provided, and of similar widths to footpaths no less than 3m wide.*

- *Footpath surfaces provided are to be devoid of any trip hazards, and with minimal clutter albeit signage and/or construction-related equipment*

Refer to Section 7 for our assessment of impacts to pedestrians.

- Class B hoardings will be utilised along the Customs Street West and Lower Hobson Street site frontages. These hoardings will be placed over the existing footpaths to utilise the existing width available
- This means pedestrian access can be maintained throughout the majority of demolition and construction
- The Customs Street West footpath will be open at all times. The only exception is during 2 weekends to allow for the removal of the Downtown Carpark ramp over Customs Street West, when it will not be safe to allow pedestrians to pass underneath
- The Lower Hobson Street footpath along the site frontage will be kept open when possible. We expect this can be kept open throughout most of demolition and construction, but there could be periods when it may be disruptive to keep the pedestrian footpath open while also allowing for construction vehicles to enter and exit the site. We also note that the footpaths on both sides of Lower Hobson Street will be closed when the pedestrian overbridge is removed during a weekend
- Contractors will manage construction vehicle access points into the site to safely manage overlaps with pedestrians and construction vehicles.

3 – No cycle lanes/facilities are to be compromised

- *Existing facilities are to be retained and provided for*
- *A minimum lane width of 1.5m is required for any temporary cycle lane.*

Refer to Section 7 for our assessment of impacts to cyclists.

During the removal of the Lower Hobson Street pedestrian overbridge, a full road closure of Lower Hobson Street will be necessary. It will not be safe to keep the cycle facilities on Lower Hobson Street open during this phase. We note that this is expected to occur for a short duration of 48 hours over a weekend. Cyclists will be required to take alternative routes during this period.

4 – The number of lanes available to general access and traffic movements is to be closely considered, in particular for east-west movements across the Queen Street valley

- *Downtown: The number of lanes on Quay Street and Customs Street are to be considered as a subsystem comprising 3 lanes per direction, one of which is shared by buses on Customs Street.*
    - *i. This effectively represents 1 lane for buses and 2 lanes for general access and traffic movements per direction. This is to be retained as such. A reduction thereof may be considered during interpeak periods, if deemed necessary and under close monitoring.*
    - *ii. Between Lower Albert Street and Lower Hobson Street, there is an additional lane per direction provided for bus movements, which is to remain.*
    - *iii. Bus stop requirements are to be agreed with AT Metro.*

No lane closures on Quay Street will apply.

As outlined in Section 6.3, there will be temporary lane closures when the Downtown Carpark ramp over Customs Street West will be removed. Weekend 1 will consist of a bus lane closure along the Site frontage. Weekend 2 will consist of a full road closure, which will occur over a school holiday / public holiday weekend. This scheduling is aimed to minimise the impacts of these lane closures.

5 – Close monitoring is undertaken by AT. Adherence to the above requirements is expected to enable the city centre to operate to an acceptable level despite construction disruption.

This can be undertaken during the final CTMP.

6 - Temporary Traffic Management Plans (TTMPs) are required to be approved as per standard AT requirements and outlined below. Within the city centre this is actively managed through the City Centre Network Operations (CCNO) team

AM/PM peak periods must not be affected by TTM/works on weekdays.

We have assessed that construction vehicle movements will occur during AM and PM peak periods during weekdays.

As concluded in Section 14.3.3, we consider that heavy construction vehicle movements can be accommodated during weekday peak periods, up to the 48 truck movements per hour that we have assessed. This can apply during any phase of construction or demolition as an upper limit.

We have assessed the impacts on the wider network and of the local network during the primary demolition and construction phases, and consider there is no reason to restrict construction vehicle movements during weekday peak periods.

We understand that implementing peak hour construction vehicle restrictions may result in significant extensions to the duration of the construction programme. This will prolong any effects associated with road closures such as vehicle and pedestrian diversions. Further, the assessment in this report confirms that heavy construction vehicle movements can be accommodated during weekday peak periods, up to the 48 truck movements per hour. Therefore, enabling truck movements during peak periods enables the programme to be completed in an efficient manner with negligible effects on intersections and bus routes.

We also note that the lane closure of Lower Hobson Street along the Site frontage will remain in place throughout the working day to provide a construction working zone. Due to the modifications required to provide a construction vehicle entrance underneath the flyover, and to provide construction vehicle access in and out of the site, it will not be possible to keep this lane open. This will therefore apply during weekday peak periods.

TTMP must ensure mobility parking spaces and loading bays are provided and approved by AT parking prior to submitting for Road Corridor Access (RCA) approval.

Any changes to parking will need to be agreed with AT Parking.

NO night works are to take place from Thursday to Saturday night

As described in Sections 6.1 and 6.3 for the removal of the Lower Hobson Street pedestrian overbridge and the Downtown Carpark ramp over Customs Street West will be scheduled during weekends. These will be scheduled to occur for continuous 48 hour periods, to minimise the effects of full road closures, and to avoid undertaking works during weekdays.

Any proposed road closures will be subject to the availability of identified detour routes, and to be discussed and pre-approved by CCNO

This will need to be accounted for during the full road closures of Lower Hobson Street and Customs Street West. See Sections 6.1 and 6.3 for discussions about diversion routes.

7 –Early engagement with AT Works Coordination is strongly encouraged to facilitate appropriate coordination of construction activity and avoid delays in obtaining TTMP approvals.

This can be undertaken during the preparation of the final CTMP.

8 – Construction vehicle movements are to be deliberately managed upon accessing and travel within the city centre

No construction vehicles are to use Queen Street

Construction vehicles are not to cross Queen Street. Construction sites to the east of Queen Street are to be accessed from and to the east, and similar those sites to the west are to be accessed from the west and to the west, via the traffic network as per Future Connect and the ANOP.

Construction vehicles are to keep to higher order streets and avoid shared spaces and local streets.

Construction vehicles must enter the construction site on arrival. There is to be no idling on side streets nor in close proximity to the site.

A construction vehicle travel plan must be provided for approval by CCNO. All project-related construction vehicle movements must adhere to the approved construction vehicle routes identified in the construction vehicle travel plan.

Refer to Section 4.4 for the heavy vehicle route.

This route avoids Quay Street, and requires construction vehicles to enter from the west. However, we note that with this route construction vehicles must exit via the east and cross Queen Street.

It is not possible to have a construction vehicle route that both enters and exits from the west, due to the existing road network layout.

9 – Parking and Loading is an important element of the city centre.

Any changes or impact on parking and loading must be discussed and agreed by AT Parking.

TTMP drawing must ensure mobility parking spaces and loading bays are shown and approved by AT.

Any changes to parking will need to be discussed and agreed with Auckland Transport Parking while the final CTMP is being prepared. This will include the parking underneath the Lower Hobson Street flyover for all stages, and the Lower Hobson Street loading bays during the removal of the pedestrian overbridge.

17 AUCKLAND UNITARY PLAN ASSESSMENT

17.1 Demolition stage

The Site is located in the Business – City Centre Zone in the Unitary Plan. Demolition of buildings is a controlled activity in the City Centre zone.

Standard H8.7.1(1) specifies the following matters of control for demolition of buildings. Standards (a) and (d) are applicable to this construction traffic assessment.

- **(a) pedestrian amenity and safety**
- (b) reuse of building materials
- (c) site condition post-demolition
- **(d) traffic generation.**

The applicable assessment criteria are provided in Standard H8.7.2(1). We have provided our assessment against these criteria in Table 5.

In summary, we believe that the demolition proposal adequately addresses the assessment criteria.

Table 5: Unitary Plan H8.7.2(1) assessment criteria for demolition of buildings

Assessment Criteria	Assessment
(a) pedestrian amenity and safety: (i) whether sites containing buildings that are proposed to be demolished have significant adverse effects on the quality and amenity of the public realm and the safety and efficiency of the surrounding transport network. In particular: 1 whether a high-quality and safe temporary hard or landscaped edge is provided along the site boundaries so that a defined boundary to streets and public open spaces is maintained. Including the provision and maintenance of continuous pedestrian cover within areas subject to the veranda standard; and 2 whether an edge treatment designed to reduce its vulnerability to graffiti and vandalism is maintained.	Refer to Section 8 for an assessment of pedestrian access. The provision of Class B hoardings will allow pedestrian access on Customs Street West to always be retained during demolition. Pedestrian access on Lower Hobson Street is expected to be kept open the majority of the time where possible. There will be gated access points for construction vehicles into the site, where contractors can temporarily stop pedestrians to manage potential conflicts. The only exceptions to the above will apply when full road closures of Lower Hobson Street and Customs Street West are required. These works will be scheduled during weekends. Safe and alternative pedestrian routes can and will be provided.
(d) traffic generation: (i) with regard to the effects of building demolition on the transport network: 1. proposed hours of operation; 2. the frequency and timing of truck movements to and from the site; and 3. the location of vehicle access.	1. Standard construction hours are proposed, as outlined in Section 4.3. The only exceptions when full road closures are required, which require works during weekends.

	2. As outlined in Section 12, we have assessed up to 24 trucks or 48 truck movements per hour could occur as an upper limit. We have assessed the effects of these movements in Section 14.3, and consider these movements can be managed with no noticeable impact to the local access points or surrounding intersections. 3. As outlined in Section 4.5, vehicle access for construction traffic will be provided underneath the flyover on Lower Hobson Street. This option allows construction vehicles to avoid Quay Street and means no additional lane closures on Customs Street West are required. There will be additional direct access points into the site during the demolition phase, as described in Section 6.2.

17.2 Construction phase

Chapter E40 of the Unitary Plan contains rules for temporary activities. Activity A20 in Table E40.4.1 outlines that temporary activities associated with building construction up to 24 months are classified as Permitted activities. Other activities not provided for as Permitted activities are classified as Restricted Discretionary activities.

Given that construction of the Development will take longer than 24 months, a Restricted Discretionary activity status applies under E40.

The relevant transport related assessment criteria are set out in E40.8.2(2) of the Unitary Plan and are as follows.

> *(2) the extent to which the activity will have adverse effects on traffic movement, parking, public transport and pedestrian safety and access, and the extent to which these effects can be adequately addressed through:*
>
> > *(a) the location, scale and intensity of the activity;*
> >
> > *(b) the duration, hours, times and day/s of the week on which the event will occur;*
> >
> > *(c) the provision made to address any impacts from traffic generated by the activity, including impacts on public transport, and other activities at the location;*
> >
> > *(d) [deleted]*
> >
> > *(e) the provision made for pedestrian safety and to address any restrictions on public access.*

Our assessment against these assessment criteria is provided in Table 6.

In summary, we believe that the construction phase proposal adequately addresses the assessment criteria

Table 6: Chapter E40 Temporary Activities Restricted Discretionary Assessment Criteria

Assessment Criteria	Comment
(2) the extent to which the activity will have adverse effects on traffic movement, parking, public transport and pedestrian safety and access, and the extent to which these effects can be adequately addressed through: (a) the location, scale and intensity of the activity; (b) the duration, hours, times and day/s of the week on which the event will occur; (c) the provision made to address any impacts from traffic generated by the activity, including impacts on public transport, and other activities at the location; (d) [deleted] (e) the provision made for pedestrian safety and to address any restrictions on public access.	Refer to Section 7 for an assessment of the construction phase (a) The construction is anticipated to primarily affect the Lower Hobson Street and Customs Street West frontages. The scale and intensity of constructing a development of this size means that there may be potential road lane and pedestrian footpath closures required during some parts of construction, to safely separate the public from construction activity. These closures have been minimised, as pedestrian access along these frontages can be largely retained during construction. The only road closure is the Lower Hobson Street slip lane, to provide a construction working zone. (b) Construction will occur during standard operating hours during weekdays and weekends. Full use of these hours will be required to minimise the overall duration of construction. Construction is anticipated to occur over a period of around 4.5 years due to the scale of the development. (c) As outlined in Section 12, we have assessed up to 24 trucks or 48 truck movements per hour could occur as an upper limit. We have assessed the effects of these movements in Section 14.3, and consider these movements can be managed with no noticeable impact to the local access points or surrounding intersections, including bus services that use these roads. We note that there will be a reduction in vehicle demands in the local road network as the Downtown Carpark will not be operational during construction. (d) n/a (e) Refer to Section 8 for an assessment of pedestrian access. The provision of Class B hoardings will allow pedestrian access on

Assessment Criteria	Comment
	Customs Street West to always be retained during construction. Pedestrian access on Lower Hobson Street is expected to be kept open the majority of the time where possible. There will be gated access points for construction vehicles into the site, where contractors can temporarily stop pedestrians to manage potential conflicts.

18 CONCLUSIONS

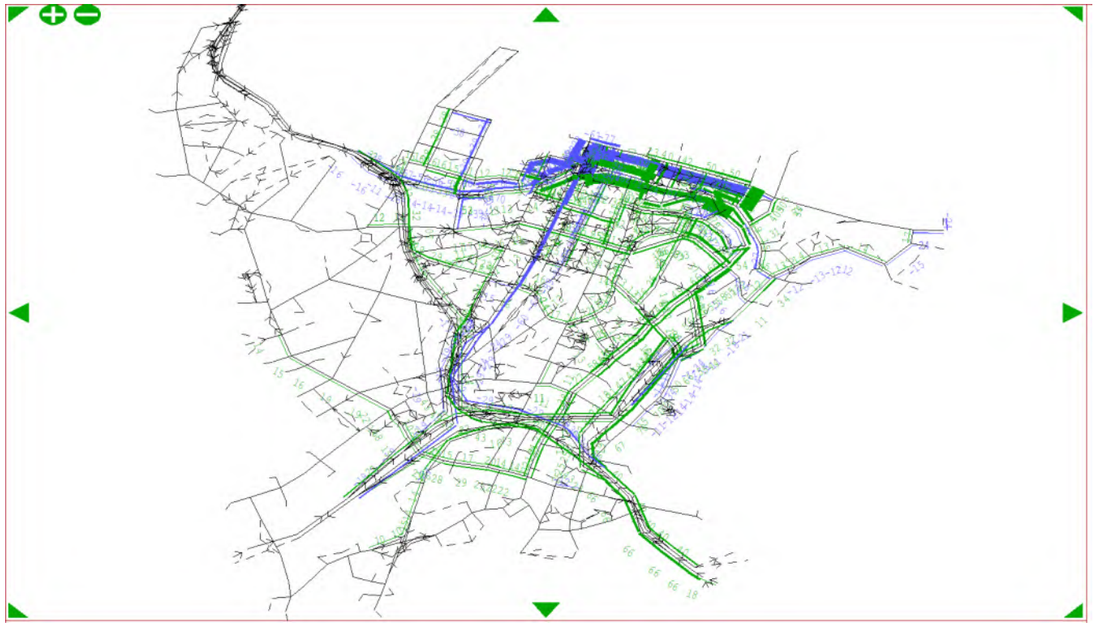
Our assessment of the works to enable the demolition of the Downtown Carpark building to take place and construction of the development project, concludes that, subject to implementation of a range of measures including a CTMP (with a draft being provided with the application, and a final CTMP to be prepared and implemented by a contractor once appointed), the transport effects resulting from the demolition and construction can be safely and efficiently managed and mitigated. In particular:

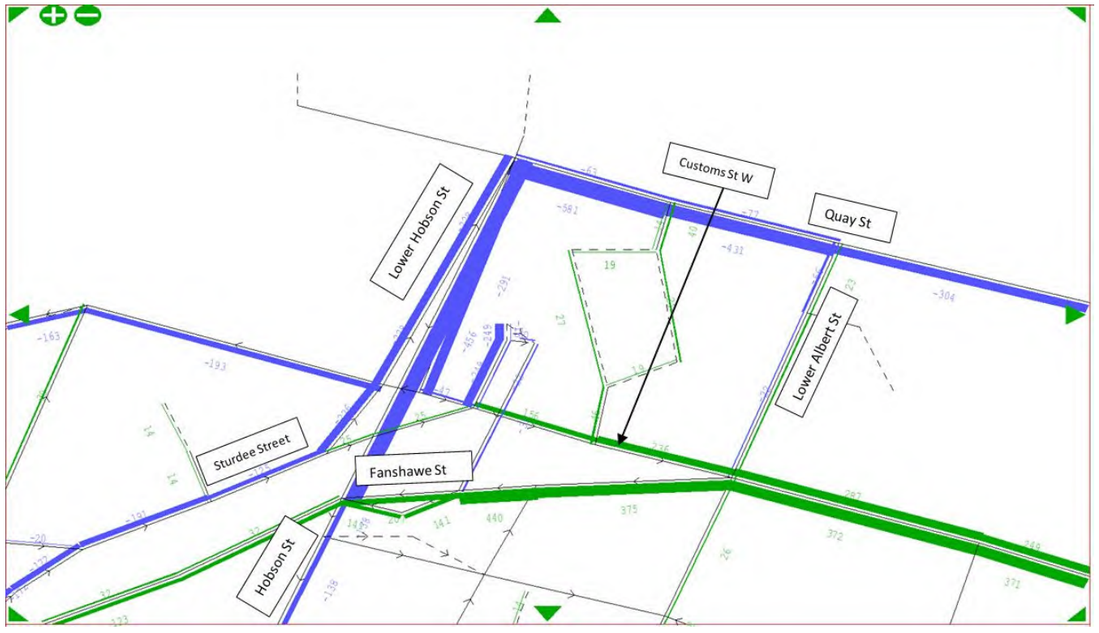
- Construction vehicle loading can be safely provided on Lower Hobson Street, with the closure to general traffic of the existing southbound slip lane located adjacent to the Site. Construction vehicles will enter from Nelson Street or Fanshawe Street from the west, enter the Site from underneath the flyover, and exit through the Customs Street West end. There will be further construction vehicle access points in and out of the site, once inside the Lower Hobson Street construction zone.
- Short term full closures of Lower Hobson Street and Customs Street West will be required to facilitate the removal of the pedestrian overbridge and the Downtown Carpark ramp. With these works full road closures are unavoidable, but can be undertaken during a school holiday or public holiday weekend. This will require some bus routes to be temporarily diverted, and also require temporary alternative routes to be provided for vehicles, pedestrians and cyclists.
- Footpaths along the site frontages can be retained throughout the primary demolition and construction phases with the provision of Class B hoardings. The Customs Street West footpath will always be kept open, while the Lower Hobson Street footpath will be kept open when possible. There will be gated access points for construction vehicles in and out of the site along the footpaths to safely manage interactions between pedestrians and construction vehicles.
- Heavy construction vehicle movements can be accommodated during weekday peak periods, up to the 48 truck movements per hour. This can apply during any phase of construction or demolition as an upper limit. We have assessed that these construction vehicle movements will not have a noticeable impact on the local intersections around the site, or bus routes in the area.
- Throughout the primary demolition and construction phases, the impacts on the network are not expected to be noticeable. Our traffic modelling assessment predicts average vehicle journey times will increase by only 3 seconds. The majority of bus routes will not have any noticeable changes to travel times during these phases.

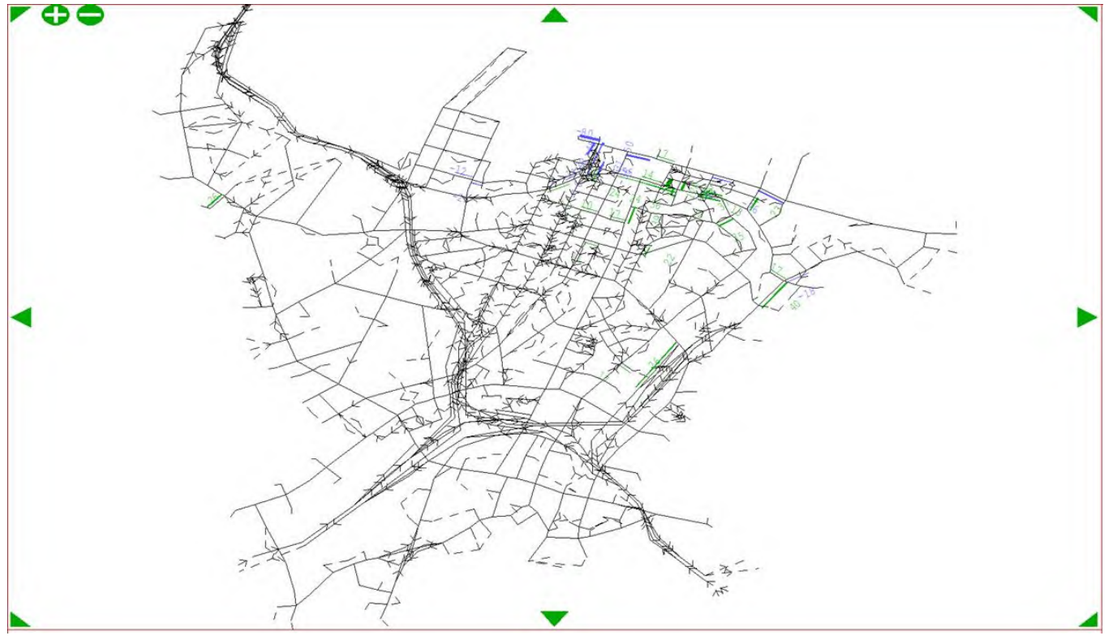
APPENDIX A SATURN and SIDRA model results

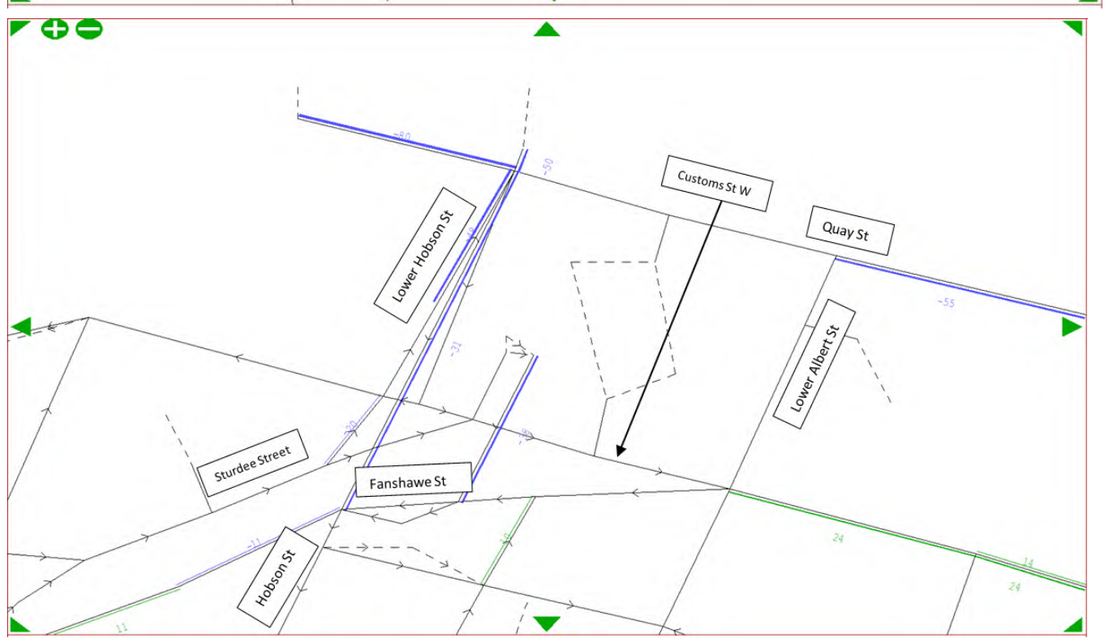
SATURN model volume (in Passenger Car Units / PCUs per hour) and delay difference (in seconds) diagrams between the baseline scenario and demolition scenarios

Scenario A vs Baseline AM	
Volume difference diagram (PCUs per hour)	**Delay difference diagram (seconds)**

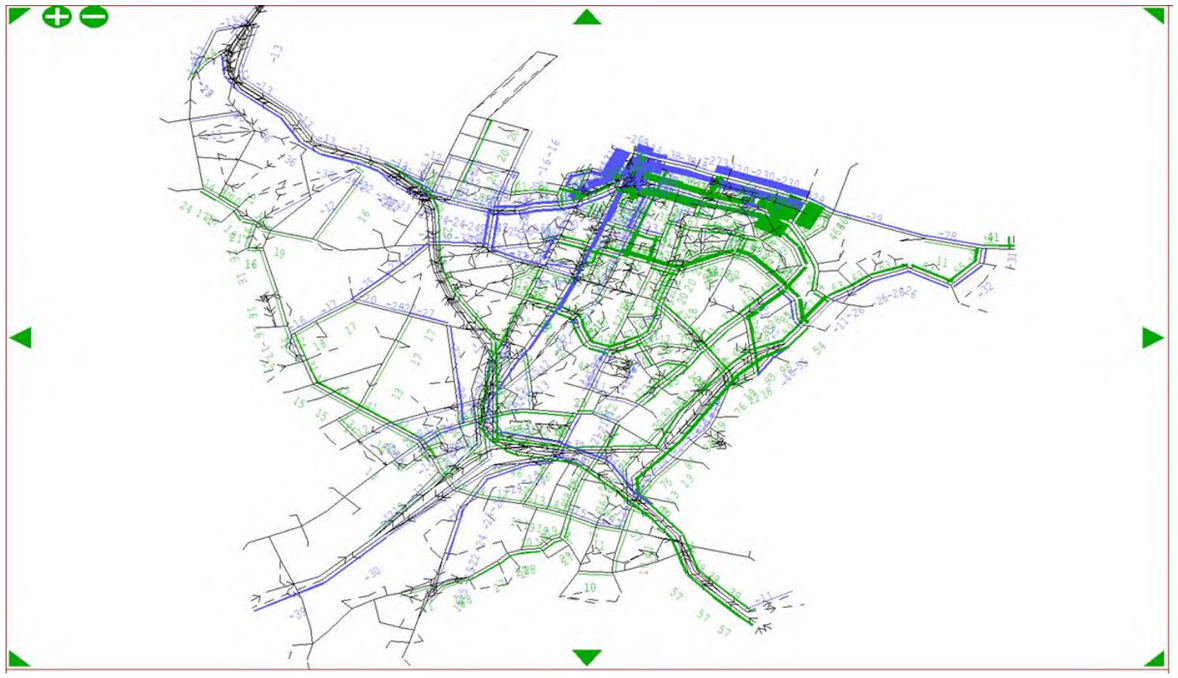


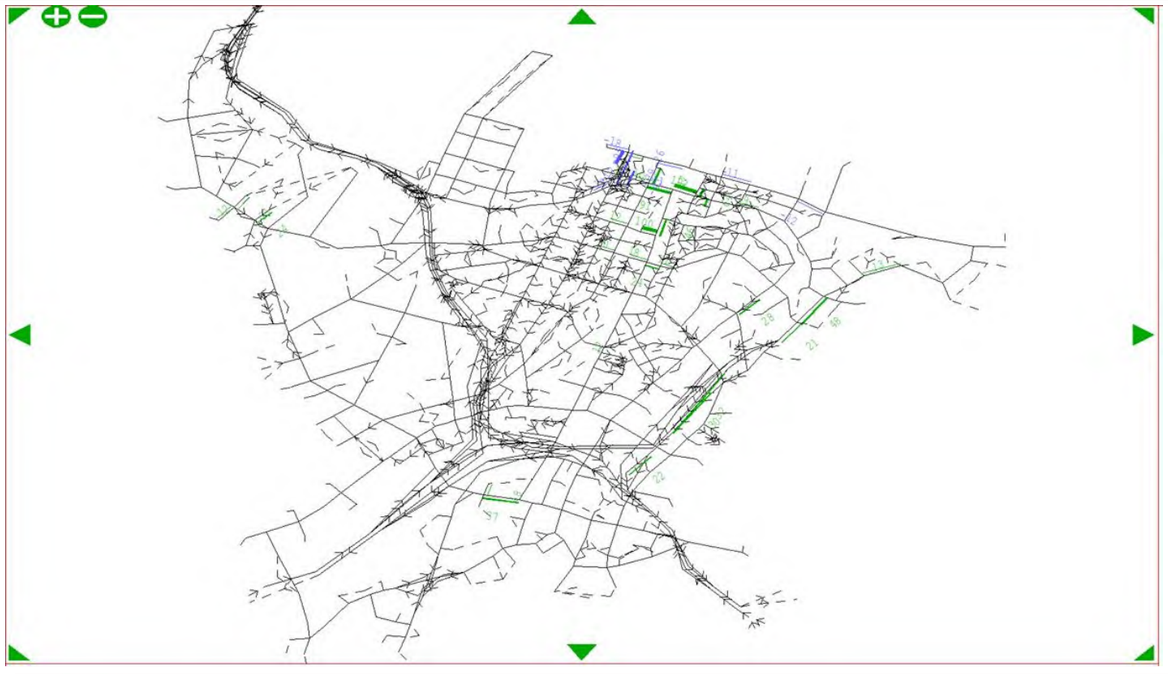


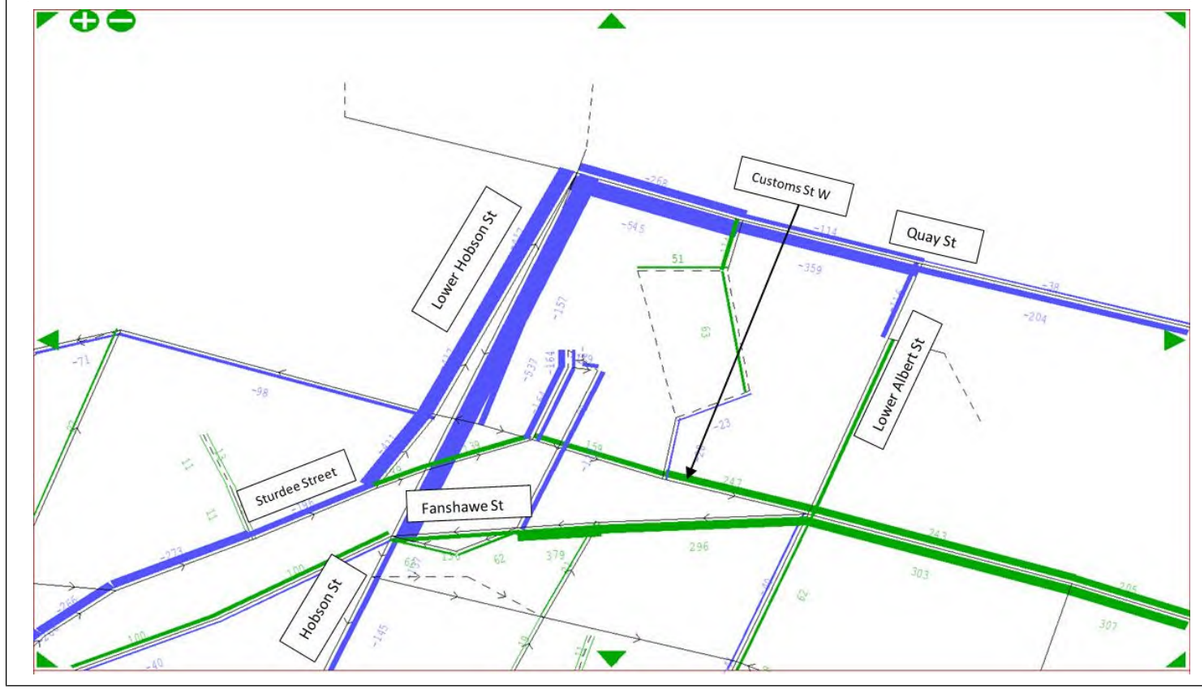


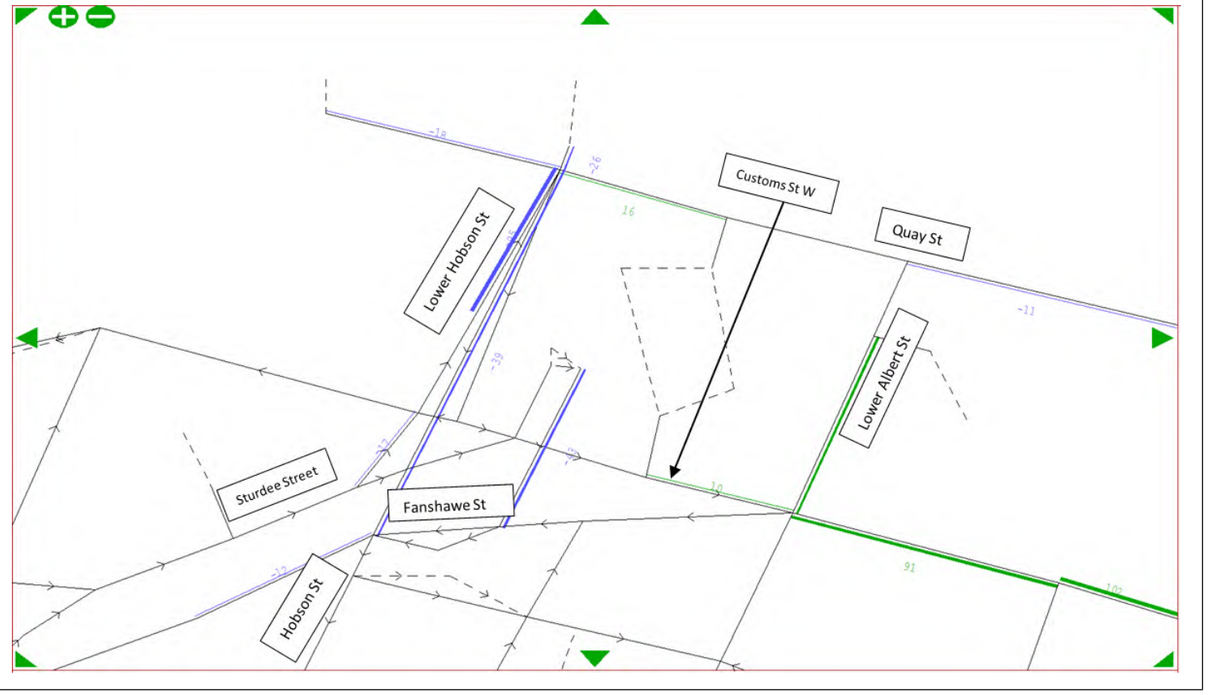


Scenario A vs Baseline PM	
Volume difference diagram (PCUs per hour)	**Delay difference diagram (seconds)**

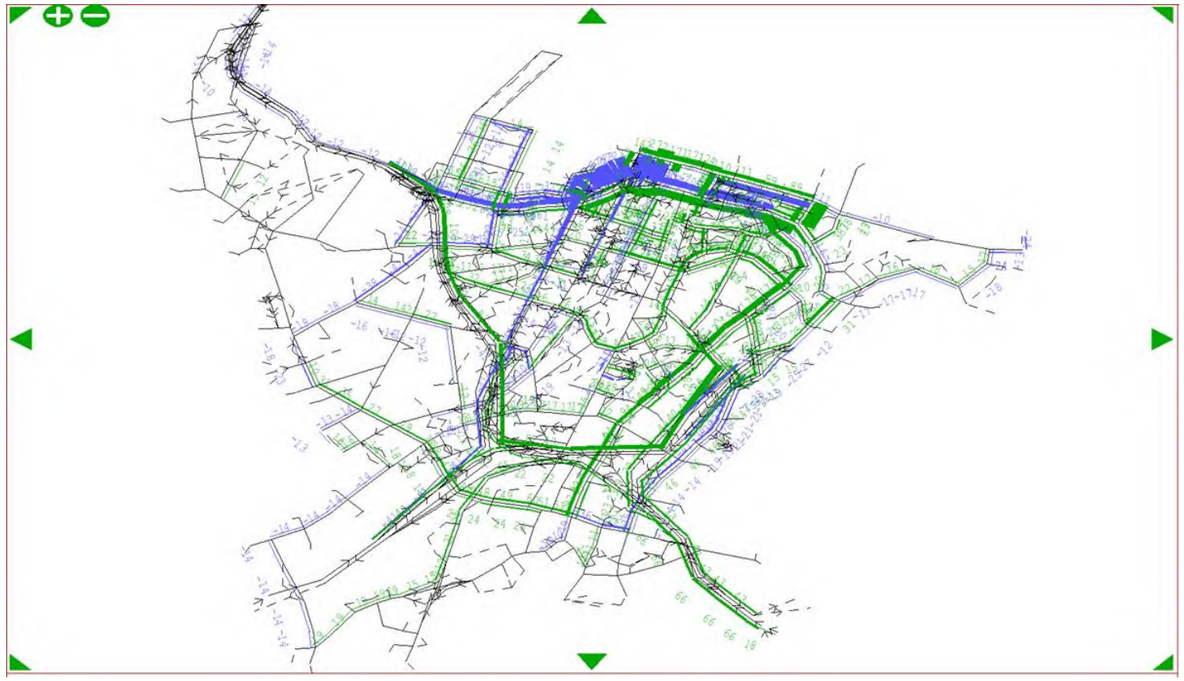


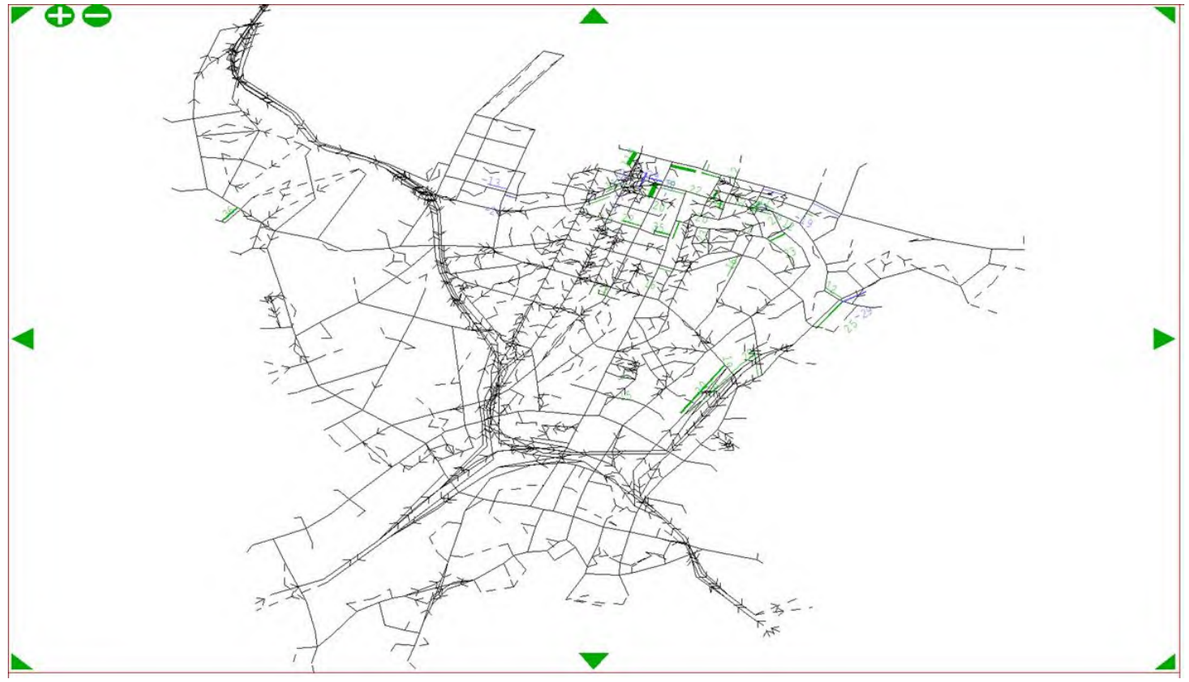


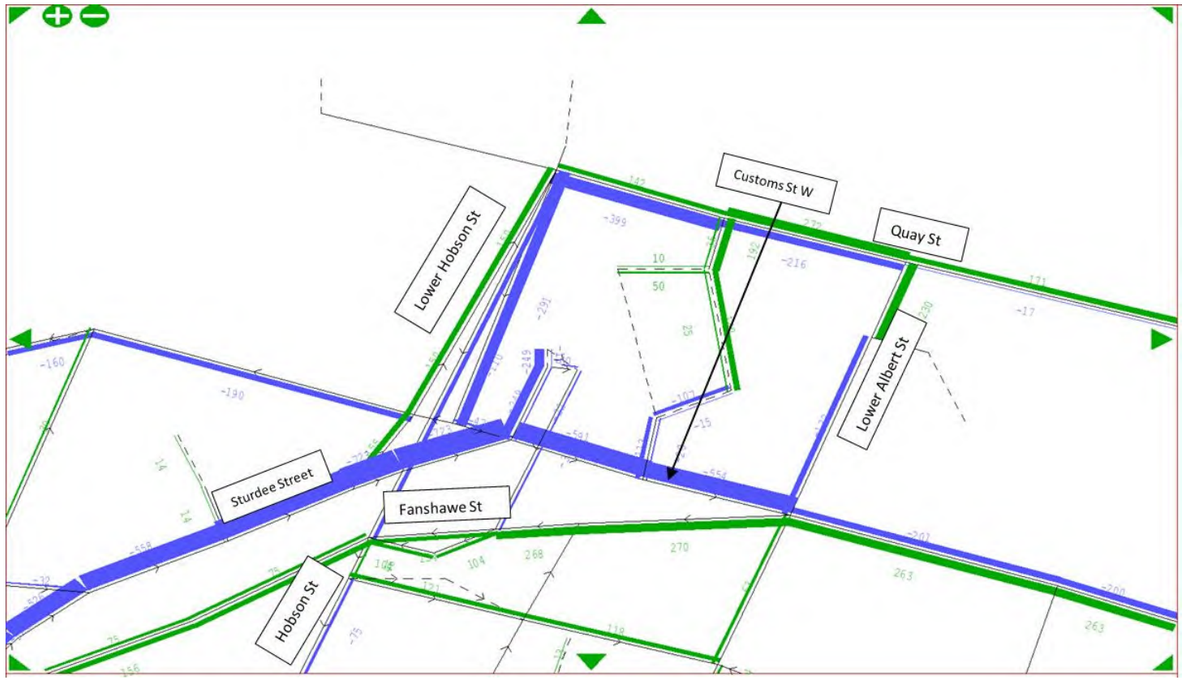


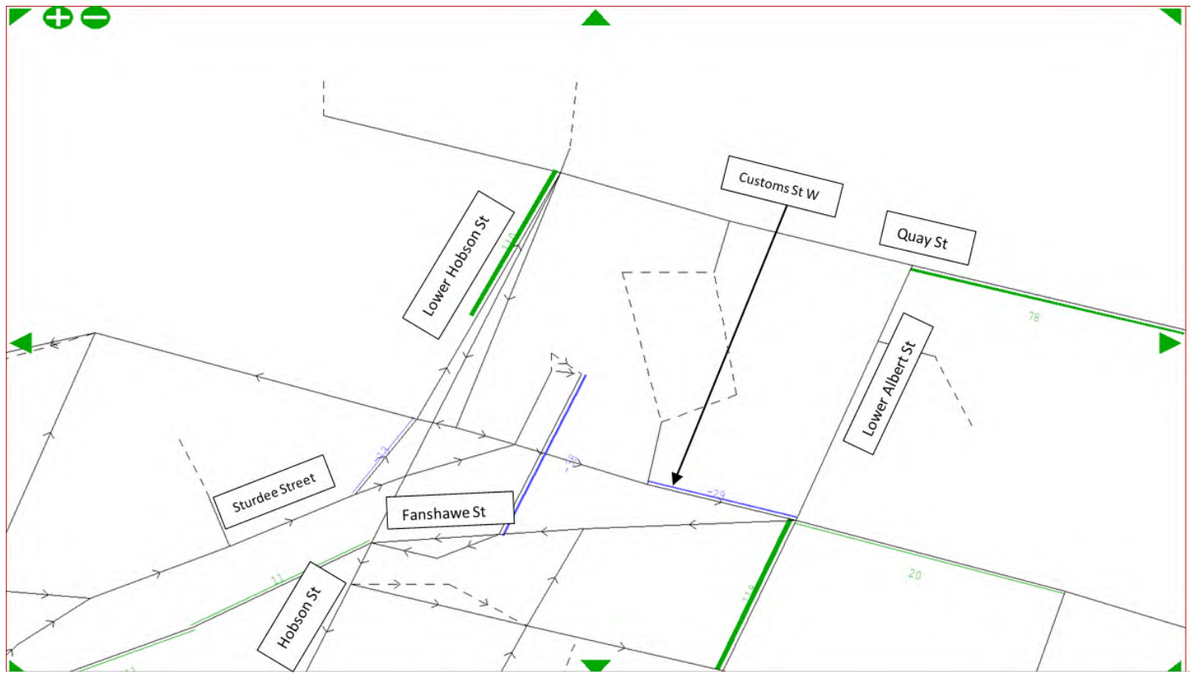


Scenario B vs Baseline AM	
Volume difference diagram (PCUs per hour)	**Delay difference diagram (seconds)**



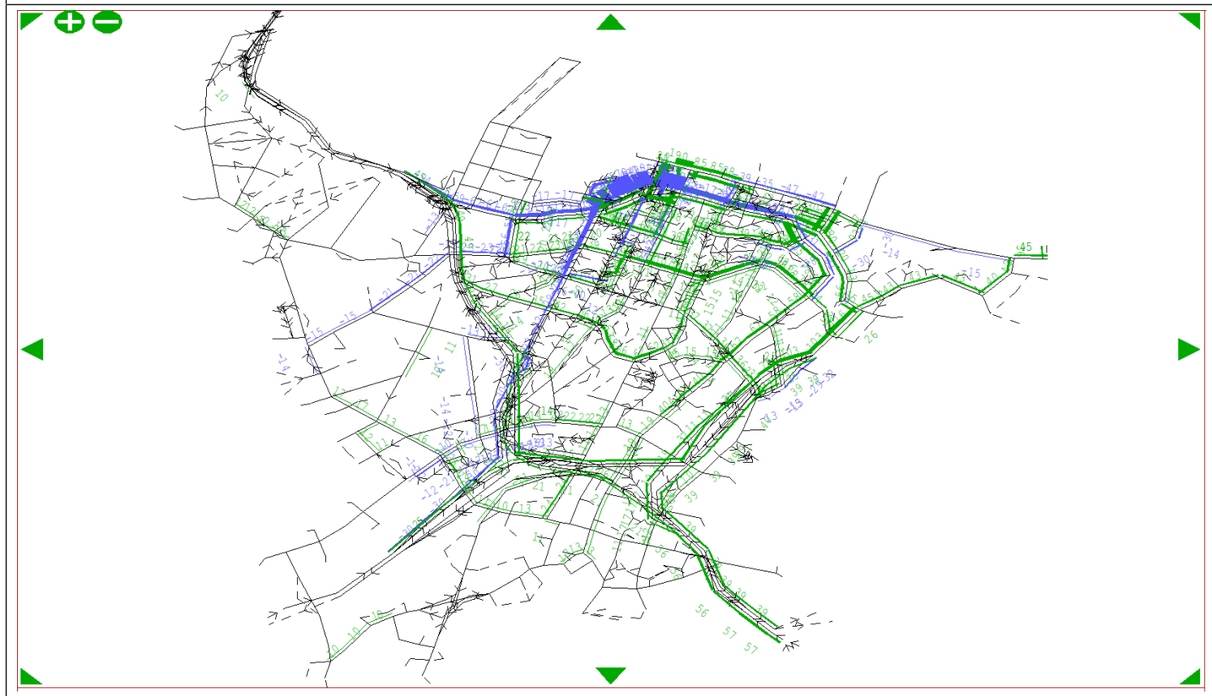




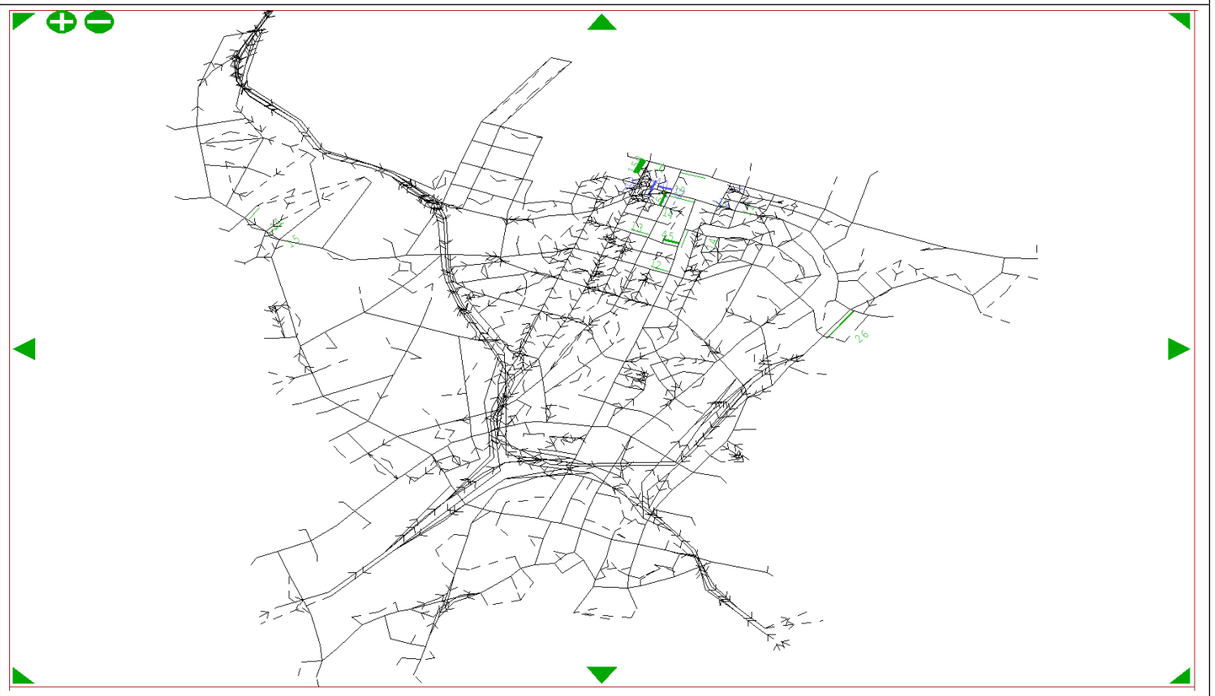


Scenario B vs Baseline PM

Volume difference diagram (PCUs per hour)

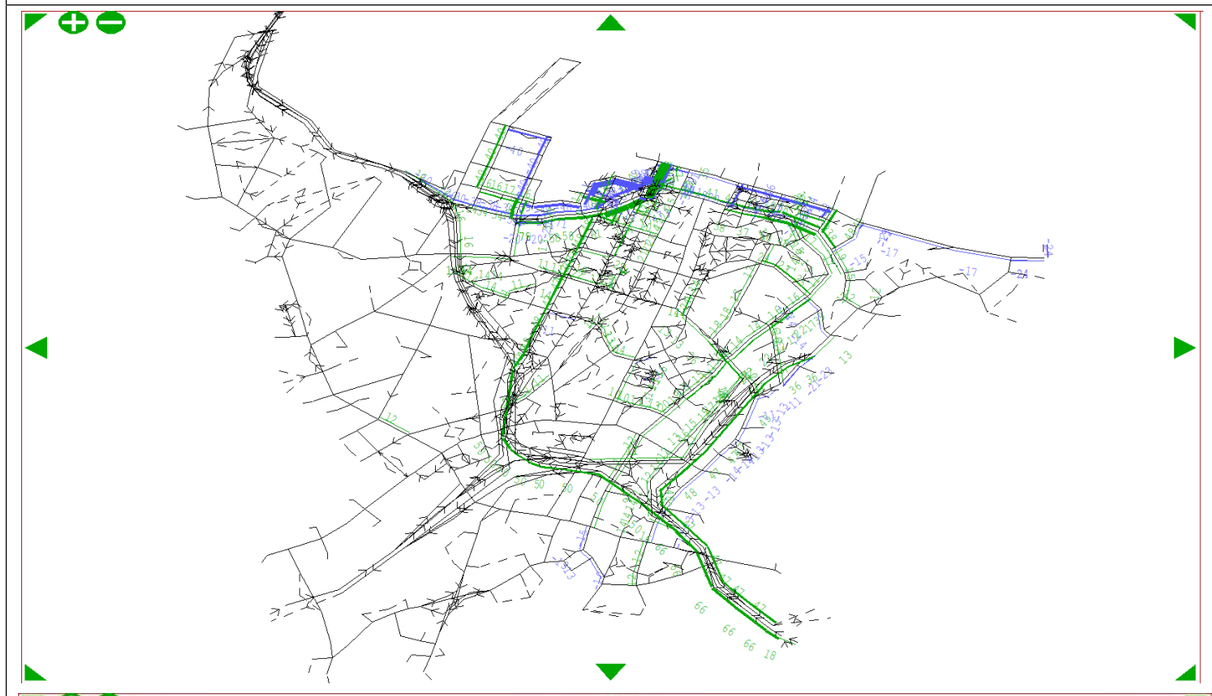


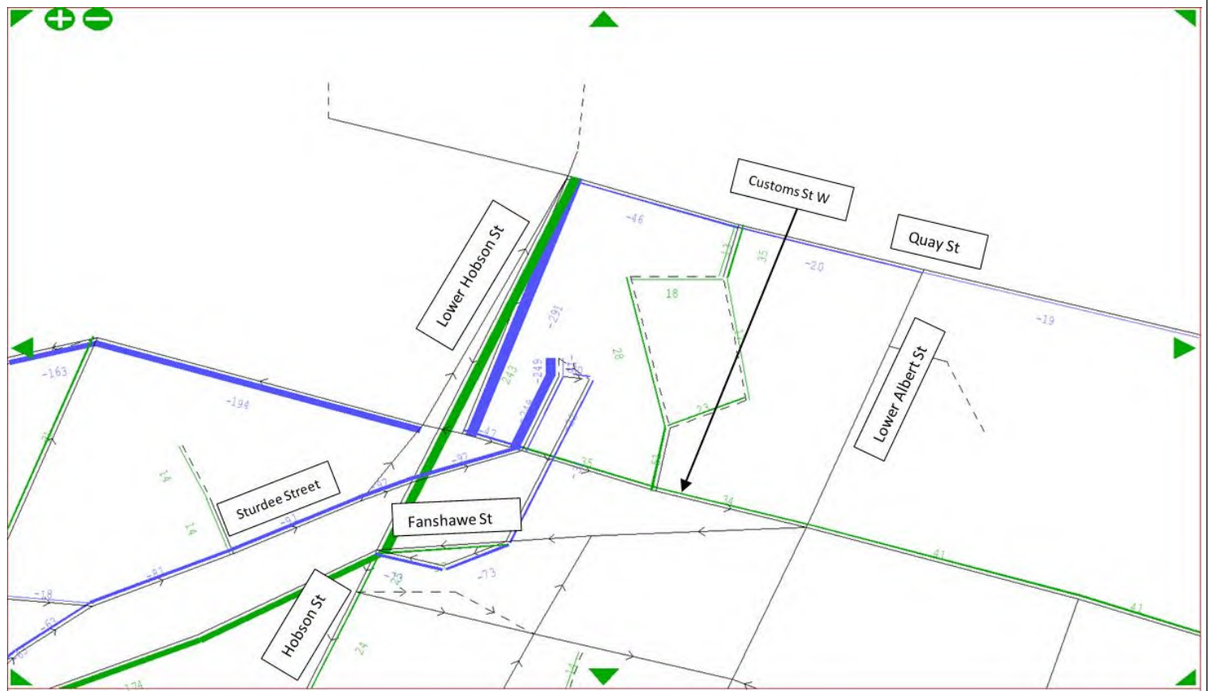
Delay difference diagram (seconds)



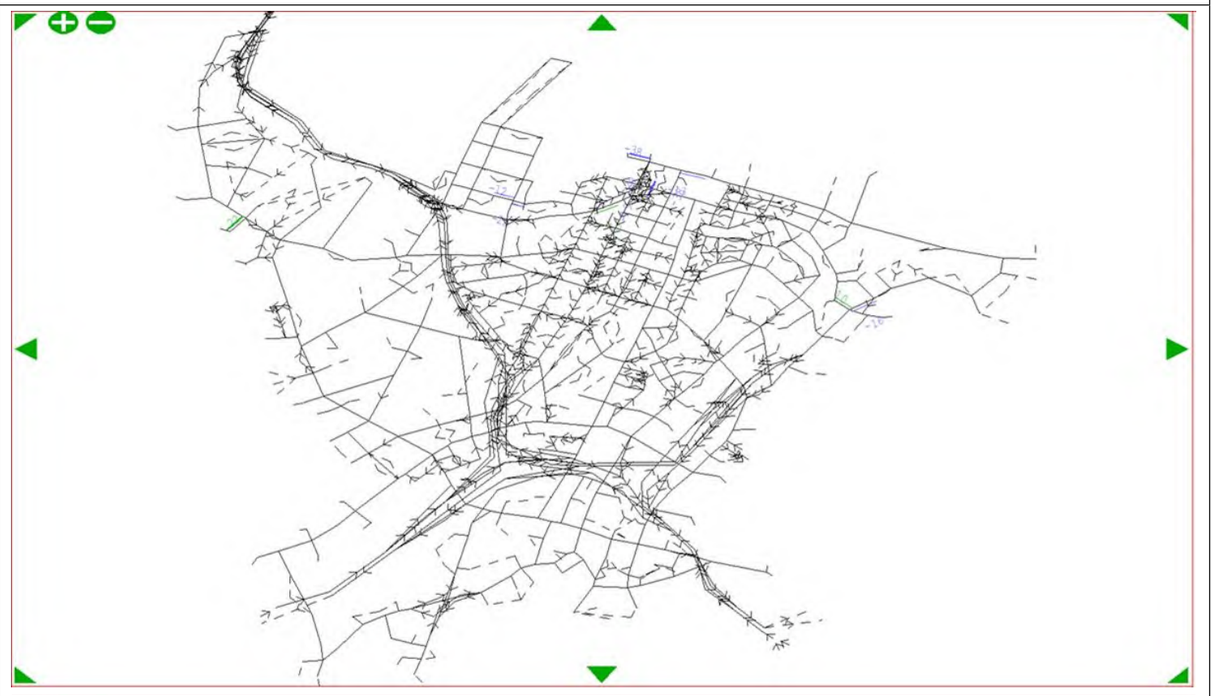
Scenario C vs Baseline AM

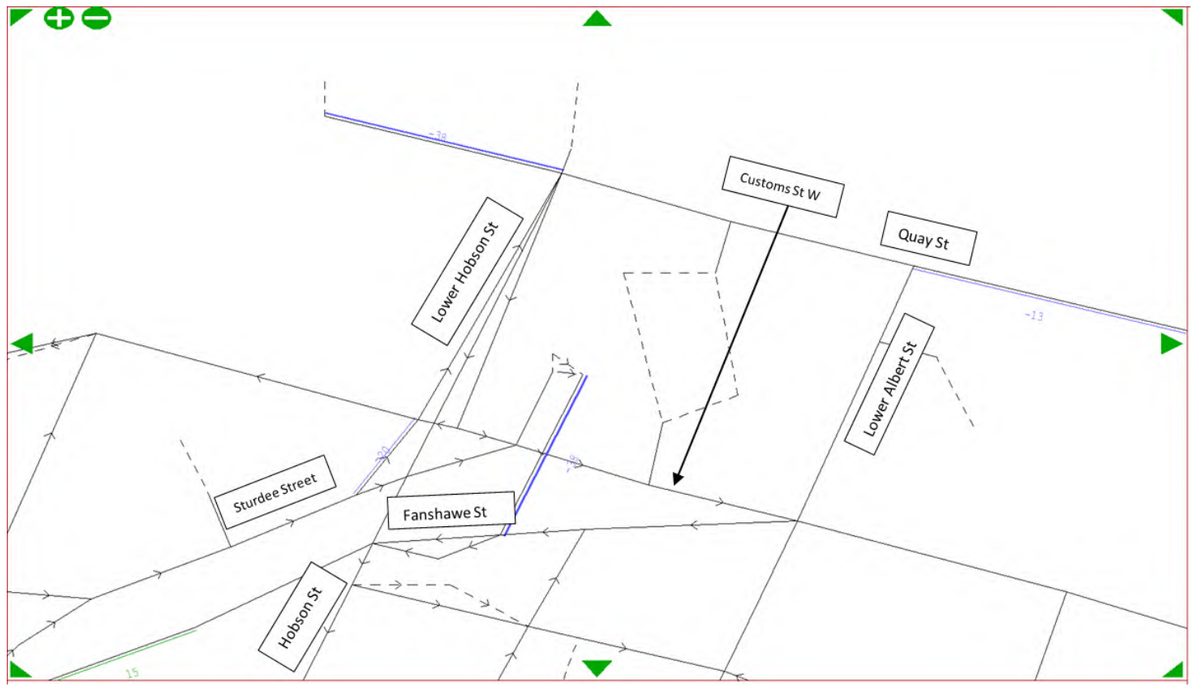
Volume difference diagram (PCUs per hour)





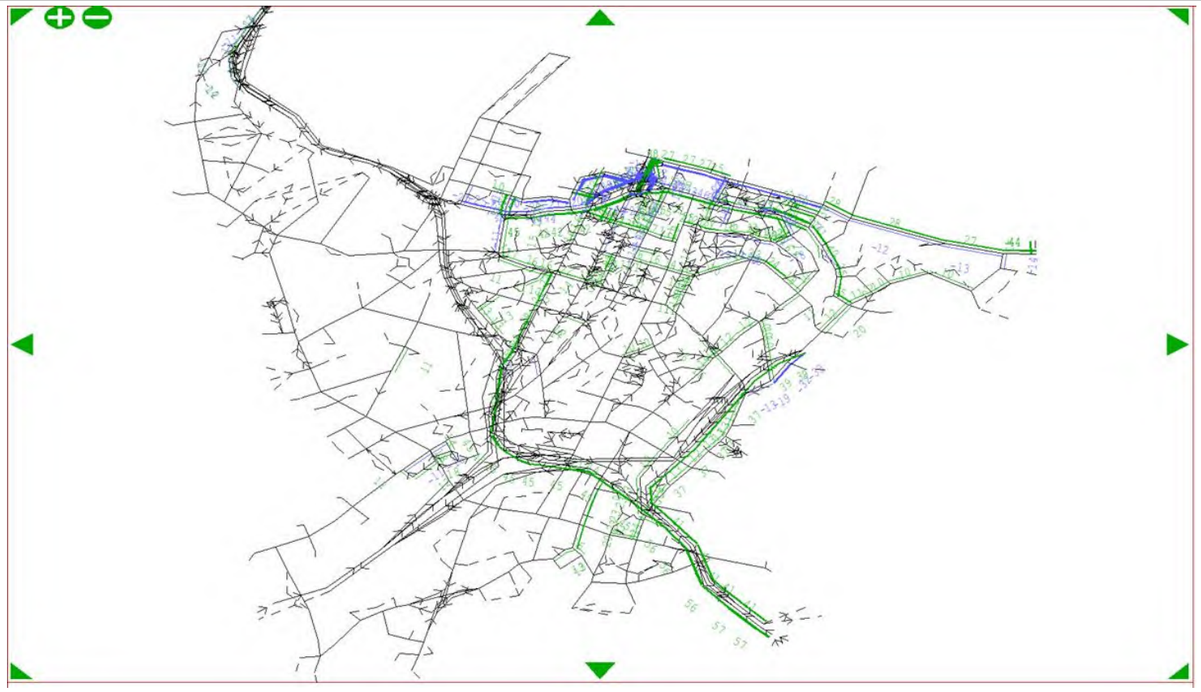
Delay difference diagram (seconds)



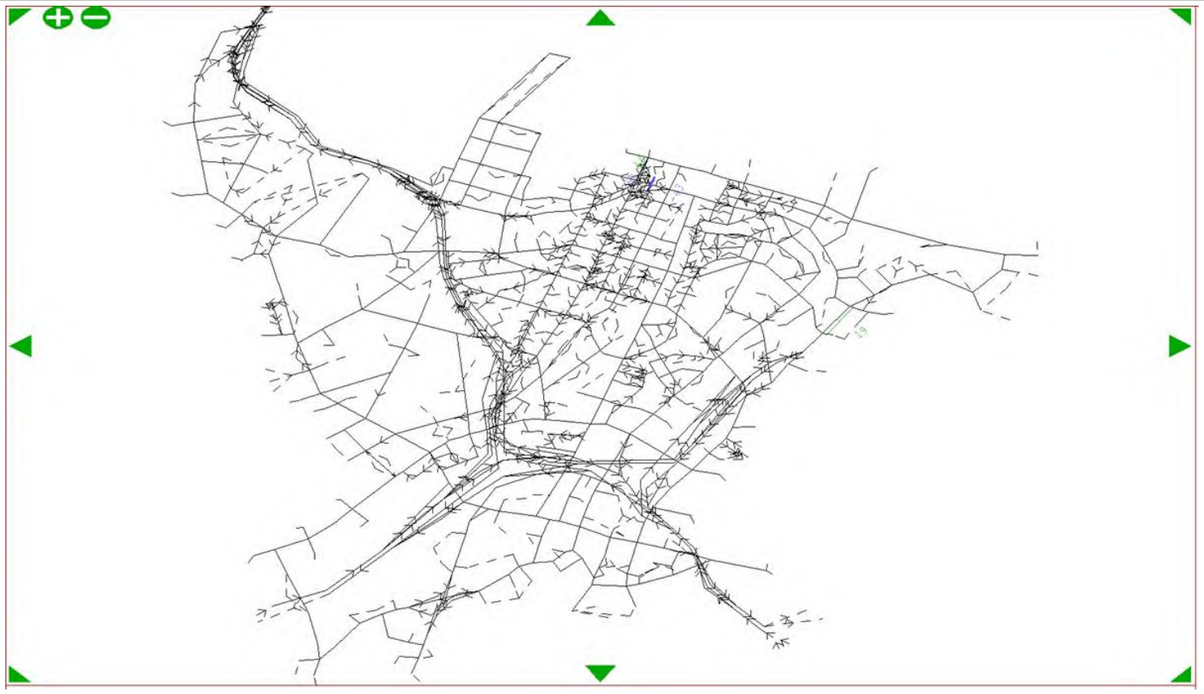


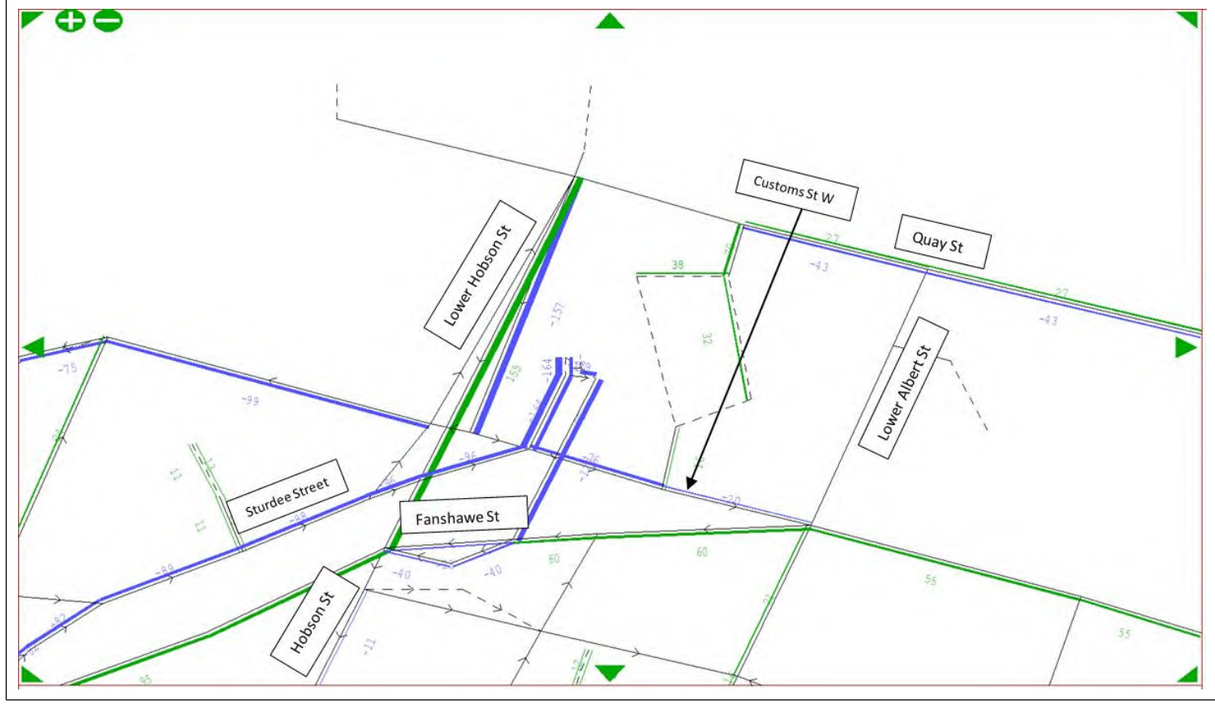
Scenario C vs Baseline PM

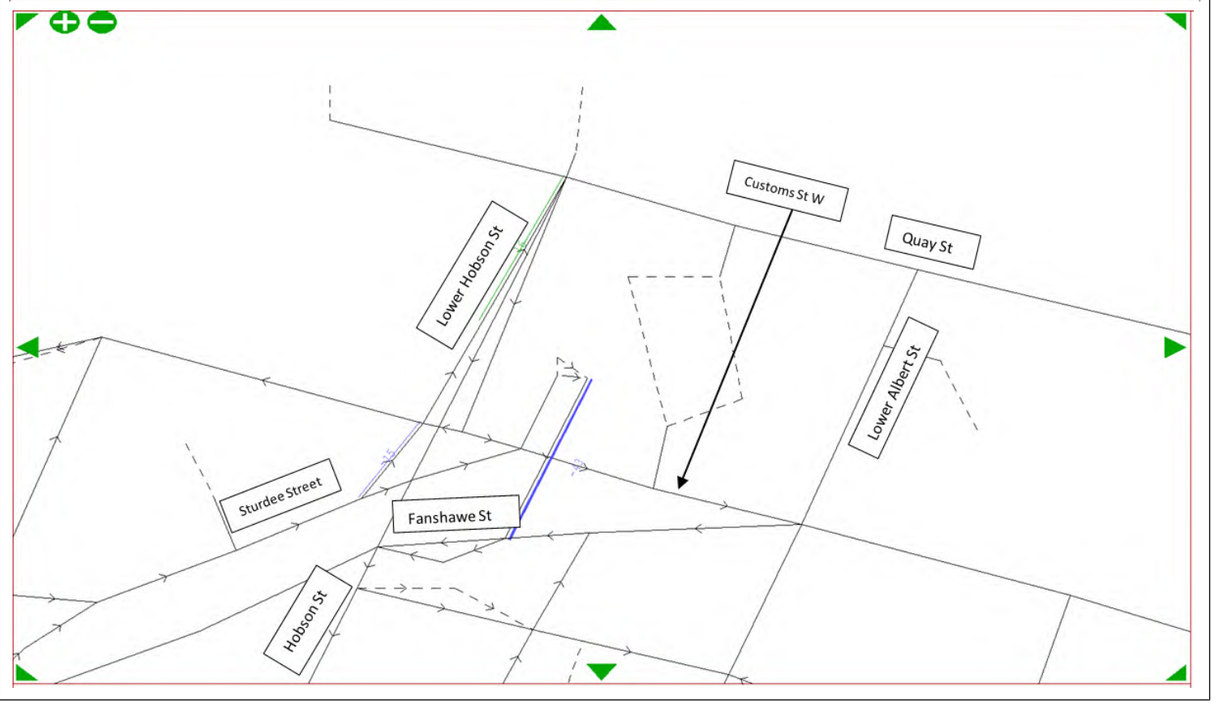
Volume difference diagram (PCUs per hour)



Delay difference diagram (seconds)







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										AM	Baseline
										Modelled Bus Route i = inbound o = outbound	**Travel Time (Min:Sec)**
										27Ho	**12:18**
										27Ti	**12:27**
										27To	**12:18**
										27Wi	**12:27**
										27Wo	**12:18**
										295i	**10:20**
										295o	**12:12**
										30i	**10:20**
										30o	**12:12**
										309i	**10:20**
										309o	**12:12**
										321i	**10:10**
										321o	**09:19**
										70i	**19:10**
										70o	**10:52**
										72Xi	**18:58**
										72Xo	**11:34**
										75i	**15:41**
										75o	**15:51**
										755i	**08:40**
										755o	**07:49**
										76i	**06:30**
										76o	**06:33**
										774i	**06:30**
										774o	**06:33**
										775i	**06:30**
										775o	**06:33**
										802i	**12:53**
										802o	**11:50**
										82i	**12:53**
										82o	**11:50**
										866i	**15:56**
										866o	**18:31**
										923i	**12:53**
										923o	**11:50**
										924i	**12:53**
										924o	**11:50**
										931i	**17:04**
										931o	**13:20**
										933i	**17:04**
										933o	**13:20**
										939i	**17:04**
										939o	**13:20**

										PM	Baseline
										Modelled Bus Route i = inbound o = outbound	Travel Time (Min:Sec)
										195i	19:39
										195o	13:57
										20i	15:10
										20o	14:39
										209i	19:10
										209o	14:01
										22Ni	13:11
										22No	14:34
										22Ri	13:11
										22Ro	14:34
										24Bi	13:20
										24Bo	14:02
										24Ri	13:20
										24Ro	14:02
										252i	17:23
										252o	09:17
										253i	17:23
										253o	09:17
										25Bi	10:20
										25Bo	07:28
										25Li	10:20
										25Lo	07:28
										27Hi	12:23
										27Ho	12:23
										27Ti	12:23
										27To	12:23
										27Wi	12:23
										27Wo	12:23
										295i	10:38
										295o	12:06
										30i	10:38
										30o	12:06
										309i	10:38
										309o	12:06
										321i	08:59
										321o	09:32
										70i	19:09
										70o	09:52
										72Xi	18:58
										72Xo	10:53
										75i	15:23
										75o	14:56
										755i	07:22

										PM	Baseline
										Modelled Bus Route i = inbound o = outbound	Travel Time (Min:Sec)
										755o	07:38
										76i	06:08
										76o	07:14
										774i	06:08
										774o	07:14
										775i	06:08
										775o	07:14
										802i	13:48
										802o	11:35
										82i	13:48
										82o	11:35
										866i	17:59
										866o	18:34
										923i	13:48
										923o	11:35
										924i	13:48
										924o	11:35
										931i	19:11
										931o	12:01
										933i	19:11
										933o	12:01
										939i	19:11
										939o	12:01
										95Bi	08:40
										95Bo	07:28
										95Ci	08:40
										95Co	07:28
										966i	17:59
										966o	18:34
										97Bi	08:40
										97Bo	07:28
										97Ri	08:40
										97Ro	07:28
										CTY	35:59
										INNi	30:37
										INNo	33:43
										NX1i	08:40
										NX1o	07:28
										NX2i	14:59
										NX2o	13:15
										OUTi	21:12
										OUTo	20:38
										TMKi	06:08

PM	Baseline	Scenario A Removal of the Lower Hobson Street overbridge			Scenario B Removal of the Downtown Carpark ramp over Customs Street West			Scenario C Primary demolition / construction phase		
Modelled Bus Route i = inbound o = outbound	Travel Time (Min:Sec)	Travel Time (Min:Sec)	Travel Time Change (Min:Sec)	Percentage Change Compared to Base	Travel Time (Min:Sec)	Travel Time Change (Min:Sec)	Percentage Change Compared to Base	Travel Time (Min:Sec)	Travel Time Change (Min:Sec)	Percentage Change Compared to Base
TMKo	07:14	08:09	00:55	13%	07:25	00:11	3%	07:22	00:08	2%
WX1i	19:14	24:19	05:05	26%	19:03	-00:11	-1%	18:51	-00:23	-2%
WX1o	14:55	15:03	00:08	1%	14:55	00:00	0%	14:52	-00:03	0%

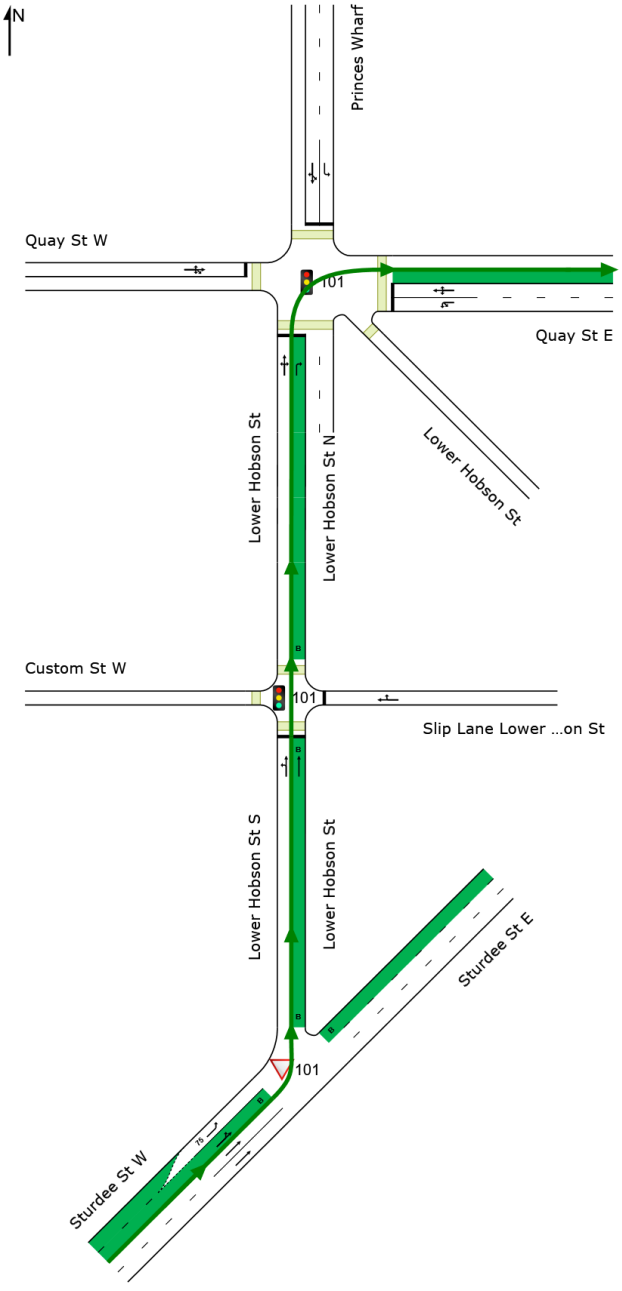
ROUTE LAYOUT

Route: R102 [Route2]

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

New Route
Network Category: (None)

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



Route line positions do not imply specific lane use.

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

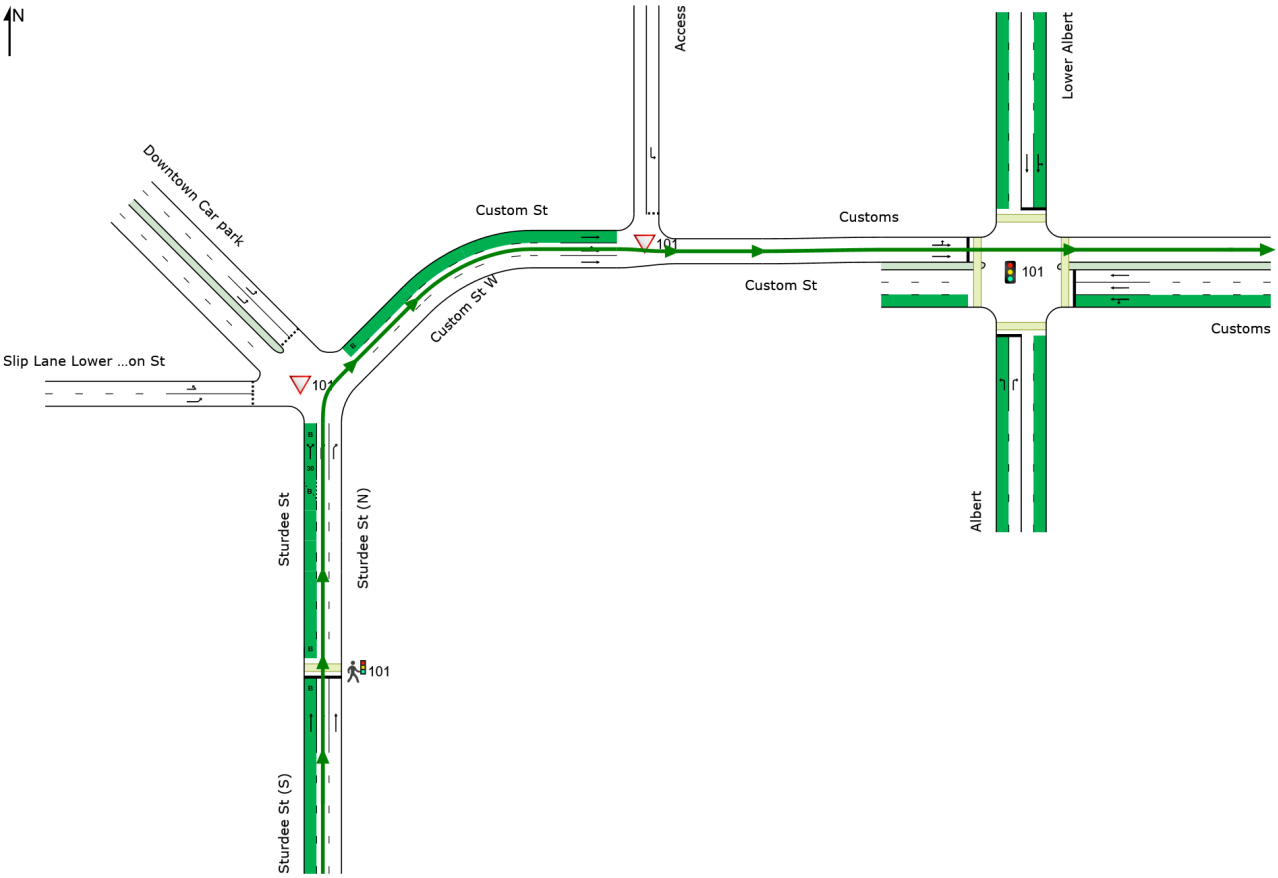
ROUTE LAYOUT

Route: R101 [Route1]

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

New Route
Network Category: (None)

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



Route line positions do not imply specific lane use.

SITES ON ROUTE		
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

ROUTE TRAVEL PERFORMANCE

Route: R102 [Route2]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

New Route
Network Category: (None)

The results for All MCs are for the MCs that travel the whole Route.

Route Travel Performance				
Performance Measure	**Vehicles:**	**All MCs (Route)**	**Buses**	**Persons**
Travel Speed (Average)	km/h	26.9	28.0	28.1
Travel Distance (Average)	m	1126.4	1125.6	1125.7
Travel Time (Average)	sec	150.7	144.7	144.4
Desired Speed	km/h	54.8	54.1	
Route Delay (Average)	sec	75.1	69.1	70.2
Route Stop Rate		2.11	NA	1.69
Route Level of Service (LOS)		LOS E	LOS D	
Speed Efficiency		0.49	0.52	
Travel Time Index		4.34	4.64	
Congestion Coefficient		2.04	1.93	

Route Travel Movement Performance													
Mov ID	Turn	Mov Class	Trav Dist m	Midbl. Delay sec	Trav Time sec	Aver. Speed km/h	Aver. Delay sec	Prop. Queued	Eff. Stop Rate	Aver. No. of Cycles	Dem. Flow Rate veh/h	Arv. Flow Rate veh/h	Deg. of Satn
Site ID: 101 Site Name: Sturdee Street DmAM													
SouthWest Approach													
30a	L1	All MCs	510.0	0.0	35.6	51.6	5.8	0.00	0.55	0.00	278	278	0.155
		Buses	510.0	0.0	36.1	50.8	6.4	NA	NA	NA	38	38	0.078
Site ID: 101 Site Name: Lower Hobston St/Slip lane/Custom St W - DmAM													
South Approach													
2	T1	All MCs	40.3	0.0	29.1	5.0	26.1	0.89	0.74	0.89	267	267	0.550
		Buses	40.0	0.0	26.4	5.5	23.3	NA	NA	NA	38	38	0.118
Site ID: 101 Site Name: Quay St / Lower Hobson St - DmAM													
South Approach													
3	R2	All MCs	576.1	0.0	86.0	24.1	43.1	0.94	0.82	0.96	203	203	0.659
		Buses	575.6	0.0	82.2	25.2	39.4	NA	NA	NA	38	38	0.152

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

ROUTE TRAVEL PERFORMANCE

Route: R102 [Route2]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

New Route
Network Category: (None)

The results for All MCs are for the MCs that travel the whole Route.

Route Travel Performance				
Performance Measure	**Vehicles:**	**All MCs (Route)**	**Buses**	**Persons**
Travel Speed (Average)	km/h	21.4	29.4	26.7
Travel Distance (Average)	m	1126.2	1125.6	1125.8
Travel Time (Average)	sec	189.5	137.7	151.9
Desired Speed	km/h	54.6	54.1	
Route Delay (Average)	sec	113.2	61.4	77.2
Route Stop Rate		2.49	NA	1.77
Route Level of Service (LOS)		LOS E	LOS D	
Speed Efficiency		0.39	0.54	
Travel Time Index		3.24	4.93	
Congestion Coefficient		2.55	1.84	

Route Travel Movement Performance													
Mov ID	Turn	Mov Class	Trav Dist m	Midbl. Delay sec	Trav Time sec	Aver. Speed km/h	Aver. Delay sec	Prop. Queued	Eff. Stop Rate	Aver. No. of Cycles	Dem. Flow Rate veh/h	Arv. Flow Rate veh/h	Deg. of Satn
Site ID: 101 Site Name: Sturdee Street DmPM													
SouthWest Approach													
30a	L1	All MCs	510.0	0.0	35.8	51.3	5.6	0.00	0.57	0.00	503	503	0.259
		Buses	510.0	0.0	36.6	50.2	6.4	NA	NA	NA	38	38	0.078
Site ID: 101 Site Name: Lower Hobston St/Slip lane/Custom St W - DmPM													
South Approach													
2	T1	All MCs	40.4	0.0	23.6	6.2	20.5	0.75	0.67	0.75	456	456	0.541
		Buses	40.0	0.0	19.2	7.6	16.1	NA	NA	NA	38	38	0.068
Site ID: 101 Site Name: Quay St / Lower Hobson St - DmPM													
South Approach													
3	R2	All MCs	575.9	0.0	130.1	15.9	87.1	0.98	1.25	1.68	397	397	0.980
		Buses	575.6	0.0	81.9	25.3	39.0	NA	NA	NA	38	38	0.147

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

ROUTE TRAVEL PERFORMANCE

Route: R101 [Route1]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

New Route
Network Category: (None)

The results for All MCs are for the MCs that travel the whole Route.

Route Travel Performance

Performance Measure	Vehicles:	All MCs (Route)	Buses	Persons
Travel Speed (Average)	km/h	33.9	34.4	34.3
Travel Distance (Average)	m	1172.6	1174.5	1173.9
Travel Time (Average)	sec	124.4	122.9	123.2
Desired Speed	km/h	50.0	50.0	
Route Delay (Average)	sec	39.0	37.4	38.0
Route Stop Rate		1.90	NA	1.73
Route Level of Service (LOS)		LOS D	LOS D	
Speed Efficiency		0.68	0.69	
Travel Time Index		6.43	6.54	
Congestion Coefficient		1.47	1.45	

Route Travel Movement Performance

Mov ID	Turn	Mov Class	Trav Dist m	Midbl. Delay sec	Trav Time sec	Aver. Speed km/h	Aver. Delay sec	Prop. Queued	Eff. Stop Rate	Aver. No. of Cycles	Dem. Flow Rate veh/h	Arv. Flow Rate veh/h	Deg. of Satn
Site ID: 101 Site Name: Sturdee St Ped - DmAM													
South Approach													
2	T1	All MCs	510.0	0.0	46.1	39.9	9.3	0.69	0.59	0.69	775	775	0.442
		Buses	510.0	0.0	44.5	41.2	7.8	NA	NA	NA	52	52	0.092
Site ID: 101 Site Name: Sturdee St/Slip Lane Lower Hobson St/Custom St W - DmAM													
South Approach													
3a	R1	All MCs	50.5	0.0	6.2	29.5	2.5	0.00	0.47	0.00	620	620	0.171
		Buses	53.1	0.0	6.2	29.5	2.5	NA	NA	NA	52	52	0.141
Site ID: 101 Site Name: Custom Street Service Lane - DmAM													
West Approach													
11	T1	All MCs	35.8	0.0	3.0	43.5	0.0	0.00	0.07	0.00	531	531	0.264
		Buses	35.0	0.0	3.0	43.5	0.0	NA	NA	NA	52	52	0.264
Site ID: 101 Site Name: Customs / Albert / Lower Albert - DmAM													
West Approach													
11	T1	All MCs	576.4	0.0	69.2	30.0	27.1	0.89	0.77	0.89	387	387	0.557
		Buses	576.4	0.0	69.2	30.0	27.1	NA	NA	NA	21	21	0.557

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

ROUTE TRAVEL PERFORMANCE

Route: R101 [Route1]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

New Route
Network Category: (None)

The results for All MCs are for the MCs that travel the whole Route.

Route Travel Performance

Performance Measure	Vehicles:	All MCs (Route)	Buses	Persons
Travel Speed (Average)	km/h	32.0	32.2	32.2
Travel Distance (Average)	m	1172.7	1174.3	1173.9
Travel Time (Average)	sec	132.1	131.4	131.4
Desired Speed	km/h	50.0	50.0	
Route Delay (Average)	sec	47.2	46.5	46.7
Route Stop Rate		1.76	NA	1.64
Route Level of Service (LOS)		LOS D	LOS D	
Speed Efficiency		0.64	0.64	
Travel Time Index		5.99	6.04	
Congestion Coefficient		1.56	1.55	

Route Travel Movement Performance

Mov ID	Turn	Mov Class	Trav Dist m	Midbl. Delay sec	Trav Time sec	Aver. Speed km/h	Aver. Delay sec	Prop. Queued	Eff. Stop Rate	Aver. No. of Cycles	Dem. Flow Rate veh/h	Arv. Flow Rate veh/h	Deg. of Satn
Site ID: 101 Site Name: Sturdee St Ped - DmPM													
South Approach													
2	T1	All MCs	510.0	0.0	43.8	41.9	7.1	0.51	0.43	0.51	543	543	0.258
		Buses	510.0	0.0	43.1	42.6	6.4	NA	NA	NA	52	52	0.075
Site ID: 101 Site Name: Sturdee St/Slip Lane Lower Hobson St/Custom St W - DmPM													
South Approach													
3a	R1	All MCs	50.5	0.0	6.2	29.5	2.5	0.00	0.47	0.00	432	432	0.135
		Buses	52.9	0.0	6.2	29.5	2.5	NA	NA	NA	52	52	0.113
Site ID: 101 Site Name: Custom Street Service Lane - DmPM													
West Approach													
11	T1	All MCs	35.6	0.0	2.9	44.5	0.0	0.00	0.05	0.00	446	446	0.193
		Buses	35.0	0.0	2.9	44.5	0.0	NA	NA	NA	52	52	0.193
Site ID: 101 Site Name: Customs / Albert / Lower Albert - DmPM													
West Approach													
11	T1	All MCs	576.5	0.0	79.3	26.2	37.6	0.95	0.80	0.95	428	428	0.635
		Buses	576.5	0.0	79.3	26.2	37.6	NA	NA	NA	21	21	0.635

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

ROUTE TRAVEL PERFORMANCE

Route: R102 [Route2]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

New Route
Network Category: (None)

The results for All MCs are for the MCs that travel the whole Route.

This Route has some Movement Classes (MCs) excluded from the tables because they do not travel the whole Route.

Route Travel Performance

Performance Measure	Vehicles:	All MCs (Route)	Buses	Persons
Travel Speed (Average)	km/h	29.8	30.9	30.8
Travel Distance (Average)	m	1126.0	1125.6	1125.7
Travel Time (Average)	sec	136.2	131.2	131.6
Desired Speed	km/h	54.8	54.1	
Route Delay (Average)	sec	60.5	55.5	56.4
Route Stop Rate		1.88	NA	1.57
Route Level of Service (LOS)		LOS D	LOS D	
Speed Efficiency		0.54	0.57	
Travel Time Index		4.93	5.23	
Congestion Coefficient		1.84	1.75	

Route Travel Movement Performance

Mov ID	Turn	Mov Class	Trav Dist m	Midbl. Delay sec	Trav Time sec	Aver. Speed km/h	Aver. Delay sec	Prop. Queued	Eff. Stop Rate	Aver. No. of Cycles	Dem. Flow Rate veh/h	Arv. Flow Rate veh/h	Deg. of Satn
Site ID: 101 Site Name: Sturdee Street PrAM													
SouthWest Approach													
30a	L1	All MCs	510.0	0.0	35.7	51.4	6.1	0.00	0.55	0.00	283	283	0.307
		Buses	510.0	0.0	36.1	50.9	6.4	NA	NA	NA	38	38	0.078
Site ID: 101 Site Name: Lower Hobston St/Slip lane/Custom St W - PrAM													
South Approach													
2	T1	All MCs	40.3	0.0	12.7	11.5	9.4	0.55	0.49	0.55	270	270	0.274
		Buses	40.0	0.0	12.0	12.1	8.8	NA	NA	NA	38	38	0.118
Site ID: 101 Site Name: Quay St / Lower Hobson St - PrAM													
South Approach													
3	R2	All MCs	575.7	0.0	87.8	23.6	45.0	0.95	0.84	1.00	208	208	0.701
		Buses	575.6	0.0	83.2	24.9	40.3	NA	NA	NA	38	38	0.159

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

ROUTE TRAVEL PERFORMANCE

Route: R102 [Route2]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

New Route
Network Category: (None)

The results for All MCs are for the MCs that travel the whole Route.

This Route has some Movement Classes (MCs) excluded from the tables because they do not travel the whole Route.

Route Travel Performance

Performance Measure	Vehicles:	All MCs (Route)	Buses	Persons
Travel Speed (Average)	km/h	28.3	32.4	31.2
Travel Distance (Average)	m	1126.1	1125.6	1125.7
Travel Time (Average)	sec	143.0	125.2	129.9
Desired Speed	km/h	54.7	54.1	
Route Delay (Average)	sec	66.8	48.9	54.4
Route Stop Rate		2.00	NA	1.59
Route Level of Service (LOS)		LOS D	LOS D	
Speed Efficiency		0.52	0.60	
Travel Time Index		4.65	5.54	
Congestion Coefficient		1.93	1.67	

Route Travel Movement Performance

Mov ID	Turn	Mov Class	Trav Dist m	Midbl. Delay sec	Trav Time sec	Aver. Speed km/h	Aver. Delay sec	Prop. Queued	Eff. Stop Rate	Aver. No. of Cycles	Dem. Flow Rate veh/h	Arv. Flow Rate veh/h	Deg. of Satn
Site ID: 101 Site Name: Sturdee Street PrPM													
SouthWest Approach													
30a	L1	All MCs	510.0	0.0	35.8	51.3	5.7	0.00	0.57	0.00	512	512	0.304
		Buses	510.0	0.0	36.5	50.3	6.4	NA	NA	NA	38	38	0.078
Site ID: 101 Site Name: Lower Hobston St/Slip lane/Custom St W - PrPM													
South Approach													
2	T1	All MCs	40.4	0.0	10.7	13.6	7.4	0.46	0.44	0.46	460	460	0.391
		Buses	40.0	0.0	9.2	15.8	6.0	NA	NA	NA	38	38	0.096
Site ID: 101 Site Name: Quay St / Lower Hobson St - PrPM													
South Approach													
3	R2	All MCs	575.6	0.0	96.6	21.5	53.6	0.98	0.99	1.21	401	401	0.879
		Buses	575.6	0.0	79.5	26.1	36.6	NA	NA	NA	38	38	0.127

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

ROUTE TRAVEL PERFORMANCE

Route: R101 [Route1]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

New Route
Network Category: (None)

The results for All MCs are for the MCs that travel the whole Route.

This Route has some Movement Classes (MCs) excluded from the tables because they do not travel the whole Route.

Route Travel Performance

Performance Measure	Vehicles:	All MCs (Route)	Buses	Persons
Travel Speed (Average)	km/h	33.6	33.9	33.9
Travel Distance (Average)	m	1172.3	1171.6	1171.8
Travel Time (Average)	sec	125.6	124.4	124.5
Desired Speed	km/h	50.0	50.0	
Route Delay (Average)	sec	40.1	38.9	39.3
Route Stop Rate		1.89	NA	1.77
Route Level of Service (LOS)		LOS D	LOS D	
Speed Efficiency		0.67	0.68	
Travel Time Index		6.36	6.43	
Congestion Coefficient		1.49	1.47	

Route Travel Movement Performance

Mov ID	Turn	Mov Class	Trav Dist m	Midbl. Delay sec	Trav Time sec	Aver. Speed km/h	Aver. Delay sec	Prop. Queued	Eff. Stop Rate	Aver. No. of Cycles	Dem. Flow Rate veh/h	Arv. Flow Rate veh/h	Deg. of Satn
Site ID: 101 Site Name: Sturdee St Ped - PrAM													
South Approach													
2	T1	All MCs	510.0	0.0	45.7	40.1	9.0	0.67	0.57	0.67	682	682	0.384
		Buses	510.0	0.0	44.5	41.2	7.8	NA	NA	NA	52	52	0.092
Site ID: 101 Site Name: Sturdee St/Slip Lane Lower Hobson St/Custom St W - PrAM													
South Approach													
3a	R1	All MCs	50.2	0.0	6.1	29.4	2.5	0.00	0.47	0.00	682	682	0.227
		Buses	50.2	0.0	6.1	29.4	2.5	NA	NA	NA	52	52	0.046
Site ID: 101 Site Name: Custom Street Service Lane - PrAM													
West Approach													
11	T1	All MCs	35.7	0.0	2.9	43.7	0.0	0.00	0.06	0.00	518	518	0.244
		Buses	35.0	0.0	2.9	43.7	0.0	NA	NA	NA	52	52	0.244
Site ID: 101 Site Name: Customs / Albert / Lower Albert - PrAM													
West Approach													
11	T1	All MCs	576.4	0.0	70.7	29.3	28.6	0.92	0.79	0.92	376	376	0.621
		Buses	576.4	0.0	70.7	29.3	28.6	NA	NA	NA	21	21	0.621

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

ROUTE TRAVEL PERFORMANCE

Route: R101 [Route1]

Output produced by SIDRA INTERSECTION Version: 9.1.6.228

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

New Route
Network Category: (None)

The results for All MCs are for the MCs that travel the whole Route.

This Route has some Movement Classes (MCs) excluded from the tables because they do not travel the whole Route.

Route Travel Performance

Performance Measure	Vehicles:	All MCs (Route)	Buses	Persons
Travel Speed (Average)	km/h	31.7	31.8	31.9
Travel Distance (Average)	m	1172.6	1171.7	1171.9
Travel Time (Average)	sec	133.0	132.6	132.3
Desired Speed	km/h	50.0	50.0	
Route Delay (Average)	sec	48.0	47.5	47.7
Route Stop Rate		1.76	NA	1.67
Route Level of Service (LOS)		LOS D	LOS D	
Speed Efficiency		0.63	0.64	
Travel Time Index		5.94	5.96	
Congestion Coefficient		1.58	1.57	

Route Travel Movement Performance

Mov ID	Turn	Mov Class	Trav Dist m	Midbl. Delay sec	Trav Time sec	Aver. Speed km/h	Aver. Delay sec	Prop. Queued	Eff. Stop Rate	Aver. No. of Cycles	Dem. Flow Rate veh/h	Arv. Flow Rate veh/h	Deg. of Satn
Site ID: 101 Site Name: Sturdee St Ped - PrPM													
South Approach													
2	T1	All MCs	510.0	0.0	43.5	42.2	6.8	0.50	0.41	0.50	454	454	0.208
		Buses	510.0	0.0	43.1	42.6	6.4	NA	NA	NA	52	52	0.075
Site ID: 101 Site Name: Sturdee St/Slip Lane Lower Hobson St/Custom St W - PrPM													
South Approach													
3a	R1	All MCs	50.2	0.0	6.1	29.4	2.5	0.00	0.47	0.00	454	454	0.152
		Buses	50.2	0.0	6.1	29.4	2.5	NA	NA	NA	52	52	0.061
Site ID: 101 Site Name: Custom Street Service Lane - PrPM													
West Approach													
11	T1	All MCs	35.9	0.0	3.0	42.9	0.0	0.00	0.07	0.00	368	368	0.146
		Buses	35.0	0.0	3.0	42.9	0.0	NA	NA	NA	52	52	0.146
Site ID: 101 Site Name: Customs / Albert / Lower Albert - PrPM													
West Approach													
11	T1	All MCs	576.5	0.0	80.3	25.8	38.7	0.96	0.81	0.97	365	365	0.640
		Buses	576.5	0.0	80.3	25.8	38.7	NA	NA	NA	21	21	0.640

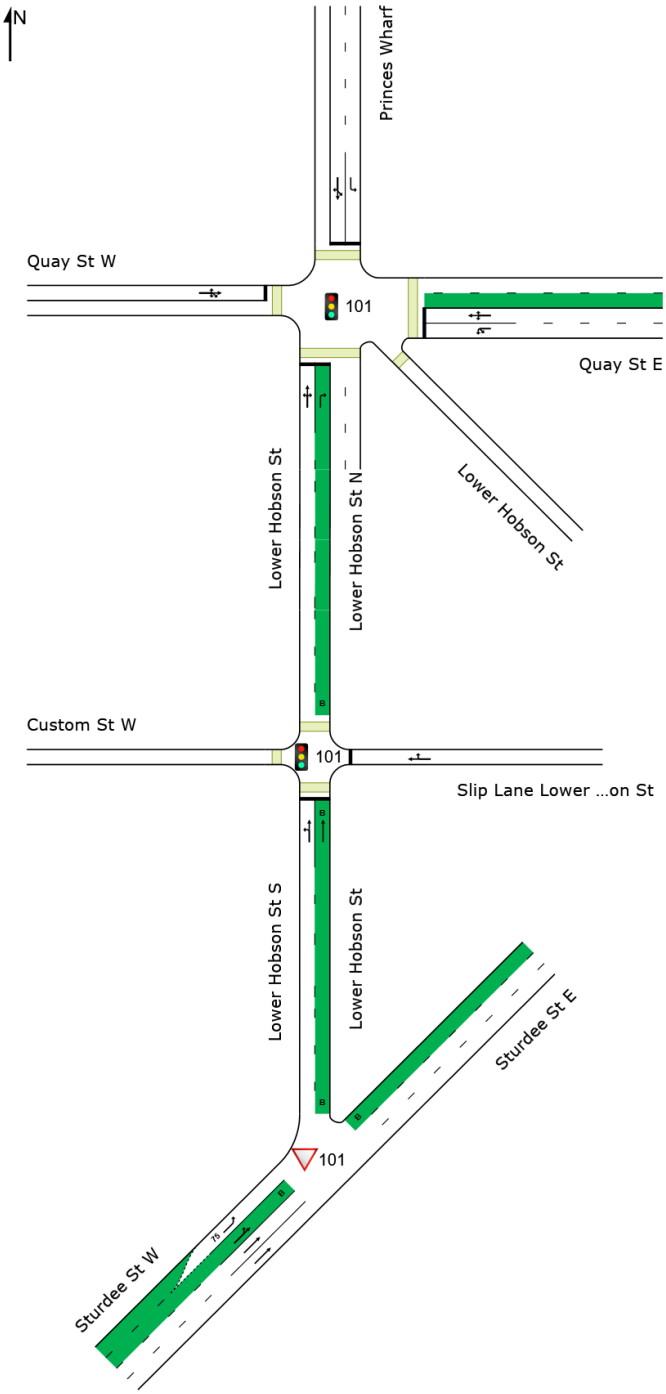
Arrival Flows used in performance calculations are adjusted to include any Initial Queued Demand and Upstream Capacity Constraint effects.

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.



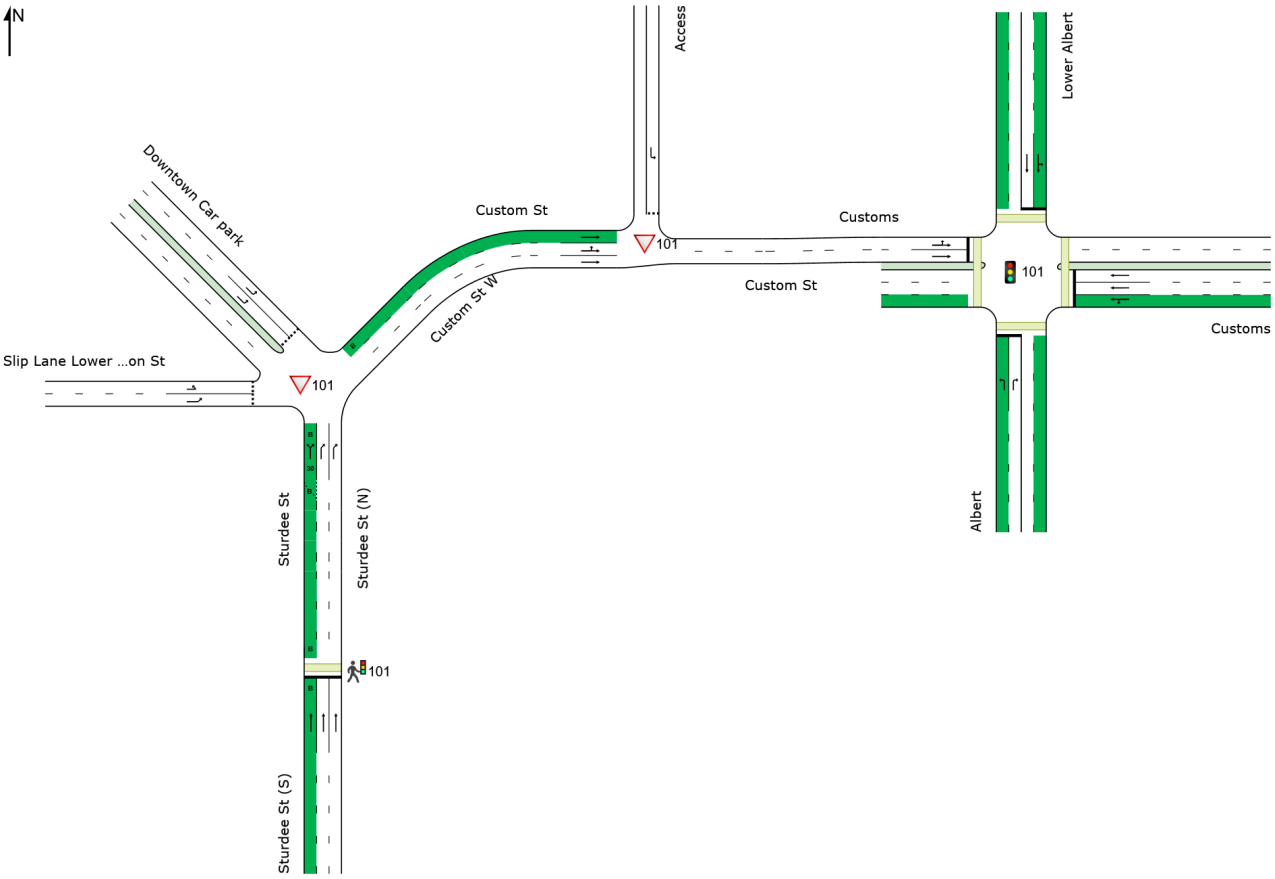
SITES IN NETWORK		
Site ID	**CCG ID**	**Site Name**
101	NA	Lower Hobston St/Slip lane/Custom St W - DmAM
101	NA	Quay St / Lower Hobson St - DmAM
101	NA	Sturdee Street DmAM

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

MOVEMENT 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Lower Hobson St S															
1	L2	All MCs	11	18.2	11	18.2	0.550	29.5	LOS C	5.4	49.0	0.91	0.76	0.91	28.6
2	T1	All MCs	267	43.4	267	43.4	* 0.550	26.1	LOS C	5.4	49.0	0.89	0.74	0.89	5.0
Approach			278	42.4	278	42.4	0.550	26.2	LOS C	5.4	49.0	0.89	0.74	0.89	7.0
East: Slip Lane Lower Hobson St															
5	T1	All MCs	196	11.7	196	11.7	0.494	29.1	LOS C	6.7	51.4	0.92	0.76	0.92	35.7
6	R2	All MCs	1	0.0	1	0.0	* 0.494	40.1	LOS D	6.7	51.4	0.92	0.76	0.92	27.9
Approach			197	11.7	197	11.7	0.494	29.1	LOS C	6.7	51.4	0.92	0.76	0.92	35.7
All Vehicles			475	29.7	475	29.7	0.550	27.4	LOS C	6.7	51.4	0.90	0.75	0.90	27.1

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID		Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Lower Hobson St S											
P1	Full	50	32.8	LOS D	0.1	0.1	0.92	0.92	186.6	200.0	1.07
North: Lower Hobson St N											
P3	Full	50	32.8	LOS D	0.1	0.1	0.92	0.92	186.6	200.0	1.07
West: Custom St W											
P4	Full	50	32.8	LOS D	0.1	0.1	0.92	0.92	186.6	200.0	1.07
All Pedestrians		150	32.8	LOS D	0.1	0.1	0.92	0.92	186.6	200.0	1.07

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Lower Hobson St															
1	L2	All MCs	21	23.8	21	23.8	0.659	43.9	LOS D	10.5	95.1	0.96	0.84	0.98	24.3
2	T1	All MCs	43	23.3	43	23.3	0.659	39.1	LOS D	10.5	95.1	0.96	0.84	0.98	25.5
3	R2	All MCs	203	49.8	203	49.8	0.659	43.1	LOS D	10.5	95.1	0.94	0.82	0.96	24.1
Approach			267	43.4	267	43.4	0.659	42.5	LOS D	10.5	95.1	0.94	0.82	0.96	24.4
East: Quay St E															
4b	L3	All MCs	280	13.6	280	13.6	0.785	39.4	LOS D	20.7	161.2	0.96	0.90	1.04	25.2
4	L2	All MCs	334	13.2	334	13.2	* 0.785	42.3	LOS D	20.7	161.2	0.98	0.92	1.11	23.1
5	T1	All MCs	1	0.0	1	0.0	0.785	85.2	LOS F	10.7	85.1	1.00	0.93	1.18	8.7
6	R2	All MCs	34	29.4	34	29.4	0.785	89.4	LOS F	10.7	85.1	1.00	0.93	1.18	9.2
Approach			649	14.2	649	14.2	0.785	43.6	LOS D	20.7	161.2	0.97	0.91	1.08	23.4
North: Princes Wharf															
7	L2	All MCs	18	16.7	18	16.7	0.054	39.8	LOS D	0.7	5.7	0.84	0.69	0.84	11.6
7a	L1	All MCs	4	0.0	4	0.0	0.627	57.4	LOS E	3.5	27.3	1.00	0.81	1.11	22.3
8	T1	All MCs	63	12.7	63	12.7	* 0.627	54.1	LOS D	3.5	27.3	1.00	0.81	1.11	22.5
9	R2	All MCs	1	0.0	1	0.0	0.627	58.6	LOS E	3.5	27.3	1.00	0.81	1.11	10.1
Approach			86	12.8	86	12.8	0.627	51.3	LOS D	3.5	27.3	0.97	0.79	1.05	21.0
West: Quay St W															
10	L2	All MCs	1	0.0	1	0.0	0.556	61.3	LOS E	2.0	15.9	1.00	0.77	1.09	9.1
11	T1	All MCs	1	0.0	1	0.0	* 0.556	56.7	LOS E	2.0	15.9	1.00	0.77	1.09	7.7
12a	R1	All MCs	7	14.3	7	14.3	0.556	59.8	LOS E	2.0	15.9	1.00	0.77	1.09	20.4
12	R2	All MCs	29	13.8	29	13.8	0.556	61.4	LOS E	2.0	15.9	1.00	0.77	1.09	20.2
Approach			38	13.2	38	13.2	0.556	61.0	LOS E	2.0	15.9	1.00	0.77	1.09	19.8
All Vehicles			1040	21.5	1040	21.5	0.785	44.6	LOS D	20.7	161.2	0.96	0.87	1.05	23.3

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Lower Hobson St											
P1	Full	50	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
SouthEast: Lower Hobson St											
P5	Full	50	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
East: Quay St E											
P2	Full	50	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
North: Princes Wharf											
P3	Full	50	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
West: Quay St W											
P4	Full	50	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians		250	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthWest: Sturdee St W															
30a	L1	All MCs	278	42.4	278	42.4	0.155	5.8	LOS A	2.5	22.6	0.00	0.55	0.00	51.6
31	T1	All MCs	775	27.5	775	27.5	0.212	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.7
Approach			1053	31.4	1053	31.4	0.212	1.6	NA	2.5	22.6	0.00	0.16	0.00	58.3
All Vehicles			1053	31.4	1053	31.4	0.212	1.6	NA	2.5	22.6	0.00	0.16	0.00	58.3

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Lower Hobson St S															
1	L2	All MCs	47	36.2	47	36.2	0.541	23.9	LOS C	6.5	49.0	0.76	0.69	0.76	31.0
2	T1	All MCs	456	14.0	456	14.0	* 0.541	20.5	LOS C	6.5	49.0	0.75	0.67	0.75	6.2
Approach			503	16.1	503	16.1	0.541	20.8	LOS C	6.5	49.0	0.75	0.67	0.75	11.5
East: Slip Lane Lower Hobson St															
5	T1	All MCs	104	14.4	104	14.4	0.363	42.7	LOS D	4.9	38.2	0.93	0.74	0.93	31.5
6	R2	All MCs	1	0.0	1	0.0	* 0.363	53.6	LOS D	4.9	38.2	0.93	0.74	0.93	23.1
Approach			105	14.3	105	14.3	0.363	42.8	LOS D	4.9	38.2	0.93	0.74	0.93	31.4
All Vehicles			608	15.8	608	15.8	0.541	24.6	LOS C	6.5	49.0	0.78	0.68	0.78	20.8

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID		Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Lower Hobson St S											
P1	Full	50	46.3	LOS E	0.1	0.1	0.94	0.94	200.1	200.0	1.00
North: Lower Hobson St N											
P3	Full	50	46.3	LOS E	0.1	0.1	0.94	0.94	200.1	200.0	1.00
West: Custom St W											
P4	Full	50	46.3	LOS E	0.1	0.1	0.94	0.94	200.1	200.0	1.00
All Pedestrians		150	46.3	LOS E	0.1	0.1	0.94	0.94	200.1	200.0	1.00

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Lower Hobson St															
1	L2	All MCs	8	25.0	8	25.0	0.980	92.4	LOS F	31.8	234.8	1.00	1.31	1.77	15.6
2	T1	All MCs	50	16.0	50	16.0	*0.980	87.6	LOS F	31.8	234.8	1.00	1.31	1.77	16.3
3	R2	All MCs	397	13.6	397	13.6	0.980	87.1	LOS F	31.8	234.8	0.98	1.25	1.68	15.9
Approach			455	14.1	455	14.1	0.980	87.3	LOS F	31.8	234.8	0.99	1.26	1.69	16.0
East: Quay St E															
4b	L3	All MCs	149	15.4	149	15.4	0.661	34.2	LOS C	15.8	127.2	0.89	0.84	0.89	26.9
4	L2	All MCs	425	18.8	425	18.8	0.661	36.7	LOS D	15.8	127.2	0.93	0.84	0.94	25.1
5	T1	All MCs	1	0.0	1	0.0	*0.661	79.6	LOS E	10.2	83.2	0.97	0.84	1.00	9.9
6	R2	All MCs	23	17.4	23	17.4	0.661	83.9	LOS F	10.2	83.2	0.97	0.84	1.00	10.4
Approach			598	17.9	598	17.9	0.661	38.0	LOS D	15.8	127.2	0.92	0.84	0.93	25.1
North: Princes Wharf															
7	L2	All MCs	98	9.2	98	9.2	0.284	42.4	LOS D	4.2	31.6	0.89	0.76	0.89	11.1
7a	L1	All MCs	4	0.0	4	0.0	0.665	58.4	LOS E	3.8	29.2	1.00	0.84	1.14	22.0
8	T1	All MCs	66	13.6	66	13.6	*0.665	55.1	LOS E	3.8	29.2	1.00	0.84	1.14	22.3
9	R2	All MCs	1	0.0	1	0.0	0.665	59.7	LOS E	3.8	29.2	1.00	0.84	1.14	9.9
Approach			169	10.7	169	10.7	0.665	47.8	LOS D	4.2	31.6	0.94	0.79	1.00	17.3
West: Quay St W															
10	L2	All MCs	1	0.0	1	0.0	0.339	60.7	LOS E	1.2	9.5	1.00	0.71	1.00	9.2
11	T1	All MCs	1	0.0	1	0.0	*0.339	56.1	LOS E	1.2	9.5	1.00	0.71	1.00	7.8
12a	R1	All MCs	5	20.0	5	20.0	0.339	59.3	LOS E	1.2	9.5	1.00	0.71	1.00	20.6
12	R2	All MCs	16	12.5	16	12.5	0.339	60.7	LOS E	1.2	9.5	1.00	0.71	1.00	20.3
Approach			23	13.0	23	13.0	0.339	60.2	LOS E	1.2	9.5	1.00	0.71	1.00	19.7
All Vehicles			1245	15.4	1245	15.4	0.980	57.7	LOS E	31.8	234.8	0.95	0.98	1.22	19.8

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID	Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec

South: Lower Hobson St											
P1	Full	50	44.8	LOS E	0.1	0.1	0.94	0.94	198.6	200.0	1.01
SouthEast: Lower Hobson St											
P5	Full	50	44.8	LOS E	0.1	0.1	0.94	0.94	198.6	200.0	1.01
East: Quay St E											
P2	Full	50	44.8	LOS E	0.1	0.1	0.94	0.94	198.6	200.0	1.01
North: Princes Wharf											
P3	Full	50	44.8	LOS E	0.1	0.1	0.94	0.94	198.6	200.0	1.01
West: Quay St W											
P4	Full	50	44.8	LOS E	0.1	0.1	0.94	0.94	198.6	200.0	1.01
All Pedestrians		250	44.8	LOS E	0.1	0.1	0.94	0.94	198.6	200.0	1.01

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthWest: Sturdee St W															
30a	L1	All MCs	503	16.1	503	16.1	0.259	5.6	LOS A	10.2	76.8	0.00	0.57	0.00	51.3
31	T1	All MCs	543	37.0	543	37.0	0.151	0.0	LOS A	0.0	0.0	0.00	0.02	0.00	59.7
Approach			1046	27.0	1046	27.0	0.259	2.7	NA	10.2	76.8	0.00	0.29	0.00	56.7
All Vehicles			1046	27.0	1046	27.0	0.259	2.7	NA	10.2	76.8	0.00	0.29	0.00	56.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sturdee St (S)															
2	T1	All MCs	775	27.5	775	27.5	* 0.442	9.3	LOS A	6.0	49.7	0.69	0.59	0.69	39.9
Approach			775	27.5	775	27.5	0.442	9.3	LOS A	6.0	49.7	0.69	0.59	0.69	39.9
All Vehicles			775	27.5	775	27.5	0.442	9.3	LOS A	6.0	49.7	0.69	0.59	0.69	39.9

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID		Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Sturdee St (S)											
P1	Full	50	19.4	LOS B	0.1	0.1	0.88	0.88	173.2	200.0	1.15
All Pedestrians		50	19.4	LOS B	0.1	0.1	0.88	0.88	173.2	200.0	1.15

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sturdee St															
1a	L1	All MCs	155	23.9	155	23.9	0.141	2.4	LOS A	0.0	0.0	0.00	0.44	0.00	45.5
3a	R1	All MCs	620	28.4	620	28.4	0.171	2.5	LOS A	0.0	0.0	0.00	0.47	0.00	29.5
Approach			775	27.5	775	27.5	0.171	2.5	NA	0.0	0.0	0.00	0.46	0.00	39.7
NorthWest: Downtown Car park															
27	L2	All MCs	22	13.6	22	13.6	0.010	5.9	LOS A	0.0	0.4	0.30	0.53	0.30	43.0
Approach			22	13.6	22	13.6	0.010	5.9	LOS A	0.0	0.4	0.30	0.53	0.30	43.0
West: Slip Lane Lower Hobson St															
10b	L3	All MCs	94	17.0	94	17.0	0.072	6.2	LOS A	0.3	2.7	0.28	0.54	0.28	44.7
10a	L1	All MCs	1	0.0	1	0.0	0.001	6.0	LOS A	0.0	0.0	0.54	0.51	0.54	43.0
Approach			95	16.8	95	16.8	0.072	6.2	LOS A	0.3	2.7	0.28	0.54	0.28	44.7
All Vehicles			892	26.0	892	26.0	0.171	3.0	NA	0.3	2.7	0.04	0.47	0.04	41.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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

Organisation: FLOW TRANSPORTATION SPECIALIST LIMITED | Licence: NETWORK / 1PC | Processed: Monday, 19 May 2025 5:48:22 pm
Project: P:\PREP\002 Downtown Carpark redevleopment\Modelling\SIDRA\Construction SIDRA\Downtown CP Construction - FAST TRACK.sip9

MOVEMENT 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
North: Access															
7	L2	All MCs	20	10.0	20	10.0	0.026	5.7	LOS A	0.1	0.5	0.36	0.55	0.36	43.0
Approach			20	10.0	20	10.0	0.026	5.7	LOS A	0.1	0.5	0.36	0.55	0.36	43.0
West: Custom St															
10	L2	All MCs	114	23.7	114	23.7	0.264	2.8	LOS A	0.0	0.0	0.00	0.17	0.00	45.9
11	T1	All MCs	531	28.8	531	28.8	0.264	0.0	LOS A	0.0	0.0	0.00	0.07	0.00	43.5
Approach			645	27.9	645	27.9	0.264	0.5	NA	0.0	0.0	0.00	0.09	0.00	45.3
All Vehicles			665	27.4	665	27.4	0.264	0.7	NA	0.1	0.5	0.01	0.10	0.01	45.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Albert															
1	L2	All MCs	41	92.7	41	92.7	0.195	38.1	LOS D	1.5	18.9	0.88	0.73	0.88	25.5
3	R2	All MCs	74	20.3	74	20.3	*0.646	50.8	LOS D	3.3	27.3	1.00	0.84	1.14	29.2
Approach			115	46.1	115	46.1	0.646	46.2	LOS D	3.3	27.3	0.96	0.80	1.05	28.2
East: Customs															
4	L2	All MCs	24	29.2	24	29.2	0.098	21.9	LOS C	1.3	13.8	0.71	0.63	0.71	37.3
5	T1	All MCs	736	16.7	736	16.7	*0.655	27.9	LOS C	13.1	102.8	0.92	0.79	0.92	29.9
Approach			760	17.1	760	17.1	0.655	27.8	LOS C	13.1	102.8	0.91	0.79	0.91	30.2
North: Lower Albert															
7	L2	All MCs	1	0.0	1	0.0	0.235	48.9	LOS D	0.9	11.0	0.98	0.70	0.98	25.1
8	T1	All MCs	39	97.4	39	97.4	*0.235	44.3	LOS D	0.9	11.0	0.98	0.70	0.98	25.7
Approach			40	95.0	40	95.0	0.235	44.4	LOS D	0.9	11.0	0.98	0.70	0.98	25.7
West: Customs															
10	L2	All MCs	163	37.4	163	37.4	0.557	31.4	LOS C	9.3	83.3	0.89	0.79	0.89	15.8
11	T1	All MCs	387	24.0	387	24.0	0.557	27.1	LOS C	10.1	85.7	0.89	0.77	0.89	30.0
Approach			550	28.0	550	28.0	0.557	28.4	LOS C	10.1	85.7	0.89	0.77	0.89	26.8
All Vehicles			1465	25.6	1465	25.6	0.655	29.9	LOS C	13.1	102.8	0.91	0.78	0.92	28.7

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID		Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Albert											
P1	Full	50	36.8	LOS D	0.1	0.1	0.93	0.93	190.6	200.0	1.05
East: Customs											
P2	Full	50	36.8	LOS D	0.1	0.1	0.93	0.93	190.6	200.0	1.05
North: Lower Albert											
P3	Full	50	36.8	LOS D	0.1	0.1	0.93	0.93	190.6	200.0	1.05

West: Customs										
P4 Full	50	36.8	LOS D	0.1	0.1	0.93	0.93	190.6	200.0	1.05
All Pedestrians	200	36.8	LOS D	0.1	0.1	0.93	0.93	190.6	200.0	1.05

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sturdee St (S)															
2	T1	All MCs	543	37.0	543	37.0	* 0.258	7.1	LOS A	3.8	33.7	0.51	0.43	0.51	41.9
Approach			543	37.0	543	37.0	0.258	7.1	LOS A	3.8	33.7	0.51	0.43	0.51	41.9
All Vehicles			543	37.0	543	37.0	0.258	7.1	LOS A	3.8	33.7	0.51	0.43	0.51	41.9

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID		Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Sturdee St (S)											
P1	Full	50	26.8	LOS C	0.1	0.1	0.91	0.91	180.7	200.0	1.11
All Pedestrians		50	26.8	LOS C	0.1	0.1	0.91	0.91	180.7	200.0	1.11

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sturdee St															
1a	L1	All MCs	111	20.7	111	20.7	0.113	2.4	LOS A	0.0	0.0	0.00	0.44	0.00	45.5
3a	R1	All MCs	432	41.2	432	41.2	0.135	2.5	LOS A	0.0	0.0	0.00	0.47	0.00	29.5
Approach			543	37.0	543	37.0	0.135	2.5	NA	0.0	0.0	0.00	0.46	0.00	39.8
NorthWest: Downtown Car park															
27	L2	All MCs	90	11.1	90	11.1	0.037	5.6	LOS A	0.2	1.3	0.29	0.54	0.29	43.3
Approach			90	11.1	90	11.1	0.037	5.6	LOS A	0.2	1.3	0.29	0.54	0.29	43.3
West: Slip Lane Lower Hobson St															
10b	L3	All MCs	52	17.3	52	17.3	0.038	6.0	LOS A	0.2	1.4	0.22	0.52	0.22	44.8
10a	L1	All MCs	1	0.0	1	0.0	0.001	5.2	LOS A	0.0	0.0	0.48	0.47	0.48	43.6
Approach			53	17.0	53	17.0	0.038	6.0	LOS A	0.2	1.4	0.23	0.52	0.23	44.8
All Vehicles			686	32.1	686	32.1	0.135	3.2	NA	0.2	1.4	0.06	0.48	0.06	42.0

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

Organisation: FLOW TRANSPORTATION SPECIALIST LIMITED | Licence: NETWORK / 1PC | Processed: Monday, 19 May 2025 5:48:25 pm
Project: P:\PREP\002 Downtown Carpark redevleopment\Modelling\SIDRA\Construction SIDRA\Downtown CP Construction - FAST TRACK.sip9

MOVEMENT 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
North: Access															
7	L2	All MCs	29	6.9	29	6.9	0.043	5.2	LOS A	0.1	0.6	0.27	0.52	0.27	43.4
Approach			29	6.9	29	6.9	0.043	5.2	LOS A	0.1	0.6	0.27	0.52	0.27	43.4
West: Custom St															
10	L2	All MCs	76	19.7	76	19.7	0.193	2.8	LOS A	0.0	0.0	0.00	0.19	0.00	45.7
11	T1	All MCs	446	38.8	446	38.8	0.193	0.0	LOS A	0.1	0.5	0.00	0.05	0.00	44.5
Approach			522	36.0	522	36.0	0.193	0.4	NA	0.1	0.5	0.00	0.07	0.00	45.4
All Vehicles			551	34.5	551	34.5	0.193	0.7	NA	0.1	0.6	0.01	0.10	0.01	44.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Albert															
1	L2	All MCs	45	86.7	45	86.7	0.135	33.9	LOS C	1.7	20.1	0.77	0.72	0.77	26.9
3	R2	All MCs	218	9.6	218	9.6	*0.697	48.4	LOS D	10.5	79.5	0.99	0.86	1.05	29.7
Approach			263	22.8	263	22.8	0.697	45.9	LOS D	10.5	79.5	0.95	0.83	1.00	29.4
East: Customs															
4	L2	All MCs	38	18.4	38	18.4	0.144	26.0	LOS C	2.2	21.5	0.79	0.69	0.79	34.1
5	T1	All MCs	610	19.5	610	19.5	*0.697	38.9	LOS D	13.6	108.5	0.96	0.84	0.99	25.9
Approach			648	19.4	648	19.4	0.697	38.2	LOS D	13.6	108.5	0.95	0.83	0.98	26.6
North: Lower Albert															
7	L2	All MCs	1	0.0	1	0.0	0.305	58.1	LOS E	1.1	14.5	0.99	0.71	0.99	22.9
8	T1	All MCs	45	86.7	45	86.7	*0.305	53.3	LOS D	1.2	14.5	0.99	0.71	0.99	23.4
Approach			46	84.8	46	84.8	0.305	53.4	LOS D	1.2	14.5	0.99	0.71	0.99	23.4
West: Customs															
10	L2	All MCs	47	72.3	47	72.3	0.635	41.9	LOS D	10.3	97.8	0.95	0.81	0.95	13.3
11	T1	All MCs	428	32.9	428	32.9	0.635	37.6	LOS D	10.9	97.9	0.95	0.80	0.95	26.2
Approach			475	36.8	475	36.8	0.635	38.0	LOS D	10.9	97.9	0.95	0.80	0.95	25.3
All Vehicles			1432	27.9	1432	27.9	0.697	40.0	LOS D	13.6	108.5	0.95	0.82	0.98	26.8

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID		Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Albert											
P1	Full	50	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
East: Customs											
P2	Full	50	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
North: Lower Albert											
P3	Full	50	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

West: Customs										
P4 Full	50	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians	200	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Lower Hobson St S															
1	L2	All MCs	13	23.1	13	23.1	0.274	12.5	LOS B	4.8	43.1	0.56	0.49	0.56	38.1
2	T1	All MCs	270	43.0	270	43.0	* 0.274	9.4	LOS A	4.8	43.1	0.55	0.49	0.55	11.5
3	R2	All MCs	24	100.0	24	100.0	0.118	11.8	LOS B	1.1	19.7	0.50	0.50	0.50	36.1
Approach			307	46.6	307	46.6	0.274	9.7	LOS A	4.8	43.1	0.54	0.49	0.54	20.7
All Vehicles			307	46.6	307	46.6	0.274	9.7	LOS A	4.8	43.1	0.54	0.49	0.54	20.7

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID		Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Lower Hobson St S											
P1	Full	50	32.8	LOS D	0.1	0.1	0.92	0.92	186.6	200.0	1.07
North: Lower Hobson St N											
P3	Full	50	32.8	LOS D	0.1	0.1	0.92	0.92	186.6	200.0	1.07
West: Custom St W											
P4	Full	50	32.8	LOS D	0.1	0.1	0.92	0.92	186.6	200.0	1.07
All Pedestrians		150	32.8	LOS D	0.1	0.1	0.92	0.92	186.6	200.0	1.07

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Lower Hobson St															
1	L2	All MCs	20	25.0	20	25.0	0.701	45.9	LOS D	11.1	99.9	0.98	0.86	1.04	23.8
2	T1	All MCs	43	23.3	43	23.3	* 0.701	41.1	LOS D	11.1	99.9	0.98	0.86	1.04	24.9
3	R2	All MCs	208	49.0	208	49.0	0.701	45.0	LOS D	11.1	99.9	0.95	0.84	1.00	23.6
Approach			271	43.2	271	43.2	0.701	44.4	LOS D	11.1	99.9	0.96	0.84	1.01	23.8
East: Quay St E															
4	L2	All MCs	566	9.2	566	9.2	0.680	35.7	LOS D	17.8	134.2	0.93	0.84	0.95	25.5
5	T1	All MCs	1	0.0	1	0.0	* 0.680	78.7	LOS E	8.5	66.3	1.00	0.85	1.07	9.1
6	R2	All MCs	34	29.4	34	29.4	0.680	83.0	LOS F	8.5	66.3	1.00	0.85	1.07	9.6
Approach			601	10.3	601	10.3	0.680	38.5	LOS D	17.8	134.2	0.93	0.84	0.95	24.8
North: Princes Wharf															
7	L2	All MCs	18	16.7	18	16.7	0.052	38.8	LOS D	0.7	5.6	0.83	0.68	0.83	11.8
8	T1	All MCs	67	13.4	67	13.4	* 0.632	54.2	LOS D	3.5	27.6	1.00	0.82	1.11	22.5
9	R2	All MCs	1	0.0	1	0.0	0.632	58.7	LOS E	3.5	27.6	1.00	0.82	1.11	10.0
Approach			86	14.0	86	14.0	0.632	51.0	LOS D	3.5	27.6	0.96	0.79	1.05	21.0
West: Quay St W															
10	L2	All MCs	1	0.0	1	0.0	0.545	61.2	LOS E	2.0	15.5	1.00	0.76	1.08	9.1
11	T1	All MCs	1	0.0	1	0.0	* 0.545	56.7	LOS E	2.0	15.5	1.00	0.76	1.08	7.7
12	R2	All MCs	35	14.3	35	14.3	0.545	61.3	LOS E	2.0	15.5	1.00	0.76	1.08	20.1
Approach			37	13.5	37	13.5	0.545	61.2	LOS E	2.0	15.5	1.00	0.76	1.08	19.7
All Vehicles			995	19.7	995	19.7	0.701	42.0	LOS D	17.8	134.2	0.95	0.84	0.98	23.9

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID		Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Lower Hobson St											
P1	Full	50	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

East: Quay St E										
P2 Full	50	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
North: Princes Wharf										
P3 Full	50	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
West: Quay St W										
P4 Full	50	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians	200	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthWest: Sturdee St W															
30a	L1	All MCs	307	46.6	307	46.6	0.307	6.0	LOS A	0.0	0.0	0.00	0.56	0.00	51.4
31	T1	All MCs	682	27.7	682	27.7	0.184	0.1	LOS A	0.0	0.0	0.00	0.02	0.00	59.7
Approach			989	33.6	989	33.6	0.307	1.9	NA	0.0	0.0	0.00	0.19	0.00	58.0
All Vehicles			989	33.6	989	33.6	0.307	1.9	NA	0.0	0.0	0.00	0.19	0.00	58.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Lower Hobson St S															
1	L2	All MCs	52	36.5	52	36.5	0.391	10.5	LOS B	6.3	49.0	0.47	0.45	0.47	39.3
2	T1	All MCs	460	18.3	460	18.3	* 0.391	7.4	LOS A	6.3	49.0	0.46	0.44	0.46	13.6
3	R2	All MCs	24	100.0	24	100.0	0.096	9.1	LOS A	1.1	18.8	0.36	0.42	0.36	38.1
Approach			536	23.7	536	23.7	0.391	7.8	LOS A	6.3	49.0	0.45	0.44	0.45	24.7
All Vehicles			536	23.7	536	23.7	0.391	7.8	LOS A	6.3	49.0	0.45	0.44	0.45	24.7

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID		Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Lower Hobson St S											
P1	Full	50	46.3	LOS E	0.1	0.1	0.94	0.94	200.1	200.0	1.00
North: Lower Hobson St N											
P3	Full	50	46.3	LOS E	0.1	0.1	0.94	0.94	200.1	200.0	1.00
West: Custom St W											
P4	Full	50	46.3	LOS E	0.1	0.1	0.94	0.94	200.1	200.0	1.00
All Pedestrians		150	46.3	LOS E	0.1	0.1	0.94	0.94	200.1	200.0	1.00

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Lower Hobson St															
1	L2	All MCs	8	25.0	8	25.0	0.879	55.5	LOS E	24.4	186.6	1.00	1.02	1.25	21.4
2	T1	All MCs	50	16.0	50	16.0	*0.879	50.8	LOS D	24.4	186.6	1.00	1.02	1.25	22.4
3	R2	All MCs	401	18.5	401	18.5	0.879	53.6	LOS D	24.4	186.6	0.98	0.99	1.21	21.5
Approach			459	18.3	459	18.3	0.879	53.3	LOS D	24.4	186.6	0.98	0.99	1.21	21.6
East: Quay St E															
4	L2	All MCs	572	15.4	572	15.4	0.612	33.9	LOS C	16.7	132.4	0.88	0.82	0.88	26.1
5	T1	All MCs	1	0.0	1	0.0	*0.612	89.6	LOS F	9.0	71.4	0.97	0.82	0.97	9.6
6	R2	All MCs	23	17.4	23	17.4	0.612	93.9	LOS F	9.0	71.4	0.97	0.82	0.97	10.1
Approach			596	15.4	596	15.4	0.612	36.3	LOS D	16.7	132.4	0.89	0.82	0.89	25.6
North: Princes Wharf															
7	L2	All MCs	98	9.2	98	9.2	0.295	44.6	LOS D	4.4	33.1	0.90	0.77	0.90	10.7
8	T1	All MCs	69	13.0	69	13.0	*0.681	57.6	LOS E	3.9	30.1	1.00	0.84	1.16	21.7
9	R2	All MCs	1	0.0	1	0.0	0.681	62.2	LOS E	3.9	30.1	1.00	0.84	1.16	9.5
Approach			168	10.7	168	10.7	0.681	50.1	LOS D	4.4	33.1	0.94	0.80	1.01	16.7
West: Quay St W															
10	L2	All MCs	1	0.0	1	0.0	0.454	65.7	LOS E	1.3	9.8	1.00	0.72	1.02	8.6
11	T1	All MCs	1	0.0	1	0.0	*0.454	61.2	LOS E	1.3	9.8	1.00	0.72	1.02	7.2
12	R2	All MCs	20	15.0	20	15.0	0.454	65.8	LOS E	1.3	9.8	1.00	0.72	1.02	19.3
Approach			22	13.6	22	13.6	0.454	65.6	LOS E	1.3	9.8	1.00	0.72	1.02	18.6
All Vehicles			1245	15.8	1245	15.8	0.879	45.0	LOS D	24.4	186.6	0.93	0.88	1.03	22.7

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID		Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Lower Hobson St											
P1	Full	50	46.8	LOS E	0.1	0.1	0.94	0.94	200.6	200.0	1.00

East: Quay St E										
P2 Full	50	46.8	LOS E	0.1	0.1	0.94	0.94	200.6	200.0	1.00
North: Princes Wharf										
P3 Full	50	46.8	LOS E	0.1	0.1	0.94	0.94	200.6	200.0	1.00
West: Quay St W										
P4 Full	50	46.8	LOS E	0.1	0.1	0.94	0.94	200.6	200.0	1.00
All Pedestrians	200	46.8	LOS E	0.1	0.1	0.94	0.94	200.6	200.0	1.00

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
SouthWest: Sturdee St W															
30a	L1	All MCs	536	23.7	536	23.7	0.304	5.7	LOS A	4.0	34.5	0.00	0.57	0.00	51.3
31	T1	All MCs	454	36.1	454	36.1	0.122	0.0	LOS A	0.0	0.0	0.00	0.03	0.00	59.6
Approach			990	29.4	990	29.4	0.304	3.1	NA	4.0	34.5	0.00	0.32	0.00	56.2
All Vehicles			990	29.4	990	29.4	0.304	3.1	NA	4.0	34.5	0.00	0.32	0.00	56.2

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sturdee St (S)															
2	T1	All MCs	682	27.7	682	27.7	* 0.384	9.0	LOS A	5.0	41.6	0.67	0.57	0.67	40.1
Approach			682	27.7	682	27.7	0.384	9.0	LOS A	5.0	41.6	0.67	0.57	0.67	40.1
All Vehicles			682	27.7	682	27.7	0.384	9.0	LOS A	5.0	41.6	0.67	0.57	0.67	40.1

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID		Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Sturdee St (S)											
P1	Full	50	19.4	LOS B	0.1	0.1	0.88	0.88	173.2	200.0	1.15
All Pedestrians		50	19.4	LOS B	0.1	0.1	0.88	0.88	173.2	200.0	1.15

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sturdee St															
3a	R1	All MCs	682	27.7	682	27.7	0.227	2.5	LOS A	0.0	0.0	0.00	0.47	0.00	29.4
Approach			682	27.7	682	27.7	0.227	2.5	NA	0.0	0.0	0.00	0.47	0.00	29.4
West: Slip Lane Lower Hobson St															
10a	L1	All MCs	24	100.0	24	100.0	0.050	6.6	LOS A	0.2	4.6	0.26	0.52	0.26	42.4
Approach			24	100.0	24	100.0	0.050	6.6	LOS A	0.2	4.6	0.26	0.52	0.26	42.4
All Vehicles			706	30.2	706	30.2	0.227	2.7	NA	0.2	4.6	0.01	0.47	0.01	32.0

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
North: Access															
7	L2	All MCs	21	9.5	21	9.5	0.030	5.2	LOS A	0.1	0.5	0.27	0.52	0.27	43.4
Approach			21	9.5	21	9.5	0.030	5.2	LOS A	0.1	0.5	0.27	0.52	0.27	43.4
West: Custom St															
10	L2	All MCs	165	23.0	165	23.0	0.244	2.8	LOS A	0.0	0.0	0.00	0.28	0.00	45.1
11	T1	All MCs	542	32.3	542	32.3	0.244	0.0	LOS A	0.2	1.8	0.00	0.06	0.00	43.7
Approach			707	30.1	707	30.1	0.244	0.7	NA	0.2	1.8	0.00	0.12	0.00	44.9
All Vehicles			728	29.5	728	29.5	0.244	0.8	NA	0.2	1.8	0.01	0.13	0.01	44.7

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Albert															
1	L2	All MCs	41	92.7	41	92.7	0.183	37.0	LOS D	1.5	18.5	0.87	0.73	0.87	25.9
3	R2	All MCs	81	21.0	81	21.0	*0.609	49.2	LOS D	3.6	29.4	1.00	0.82	1.09	29.5
Approach			122	45.1	122	45.1	0.609	45.1	LOS D	3.6	29.4	0.95	0.79	1.01	28.6
East: Customs															
4	L2	All MCs	20	35.0	20	35.0	0.096	22.0	LOS C	1.2	13.2	0.72	0.63	0.72	37.1
5	T1	All MCs	727	19.1	727	19.1	*0.682	29.3	LOS C	13.3	106.5	0.93	0.82	0.95	29.3
Approach			747	19.5	747	19.5	0.682	29.1	LOS C	13.3	106.5	0.93	0.81	0.94	29.6
North: Lower Albert															
7	L2	All MCs	1	0.0	1	0.0	0.235	48.9	LOS D	0.9	11.0	0.98	0.70	0.98	25.1
8	T1	All MCs	39	97.4	39	97.4	*0.235	44.3	LOS D	0.9	11.0	0.98	0.70	0.98	25.7
Approach			40	95.0	40	95.0	0.235	44.4	LOS D	0.9	11.0	0.98	0.70	0.98	25.7
West: Customs															
10	L2	All MCs	163	37.4	163	37.4	0.621	32.9	LOS C	10.1	94.5	0.92	0.81	0.92	14.8
11	T1	All MCs	400	29.0	400	29.0	0.621	28.6	LOS C	10.4	97.9	0.92	0.79	0.92	29.3
Approach			563	31.4	563	31.4	0.621	29.8	LOS C	10.4	97.9	0.92	0.79	0.92	26.1
All Vehicles			1472	28.3	1472	28.3	0.682	31.1	LOS C	13.3	106.5	0.93	0.80	0.94	28.1

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID		Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Albert											
P1	Full	50	36.8	LOS D	0.1	0.1	0.93	0.93	190.6	200.0	1.05
East: Customs											
P2	Full	50	36.8	LOS D	0.1	0.1	0.93	0.93	190.6	200.0	1.05
North: Lower Albert											
P3	Full	50	36.8	LOS D	0.1	0.1	0.93	0.93	190.6	200.0	1.05

West: Customs										
P4 Full	50	36.8	LOS D	0.1	0.1	0.93	0.93	190.6	200.0	1.05
All Pedestrians	200	36.8	LOS D	0.1	0.1	0.93	0.93	190.6	200.0	1.05

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sturdee St (S)															
2	T1	All MCs	454	36.1	454	36.1	* 0.208	6.8	LOS A	3.0	26.2	0.50	0.41	0.50	42.2
Approach			454	36.1	454	36.1	0.208	6.8	LOS A	3.0	26.2	0.50	0.41	0.50	42.2
All Vehicles			454	36.1	454	36.1	0.208	6.8	LOS A	3.0	26.2	0.50	0.41	0.50	42.2

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID		Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Sturdee St (S)											
P1	Full	50	26.8	LOS C	0.1	0.1	0.91	0.91	180.7	200.0	1.11
All Pedestrians		50	26.8	LOS C	0.1	0.1	0.91	0.91	180.7	200.0	1.11

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Sturdee St															
3a	R1	All MCs	454	36.1	454	36.1	0.152	2.5	LOS A	0.0	0.0	0.00	0.47	0.00	29.4
Approach			454	36.1	454	36.1	0.152	2.5	NA	0.0	0.0	0.00	0.47	0.00	29.4
West: Slip Lane Lower Hobson St															
10a	L1	All MCs	24	100.0	24	100.0	0.050	6.6	LOS A	0.2	4.5	0.26	0.53	0.26	42.4
Approach			24	100.0	24	100.0	0.050	6.6	LOS A	0.2	4.5	0.26	0.53	0.26	42.4
All Vehicles			478	39.3	478	39.3	0.152	2.7	NA	0.2	4.5	0.01	0.47	0.01	32.9

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
North: Access															
7	L2	All MCs	45	8.9	45	8.9	0.069	5.3	LOS A	0.1	1.1	0.30	0.54	0.30	43.3
Approach			45	8.9	45	8.9	0.069	5.3	LOS A	0.1	1.1	0.30	0.54	0.30	43.3
West: Custom St															
10	L2	All MCs	86	19.8	86	19.8	0.146	2.8	LOS A	0.1	0.6	0.00	0.19	0.00	45.7
11	T1	All MCs	392	43.6	392	43.6	0.146	0.0	LOS A	0.2	2.4	0.00	0.07	0.00	42.9
Approach			478	39.3	478	39.3	0.146	0.5	NA	0.2	2.4	0.00	0.09	0.00	45.0
All Vehicles			523	36.7	523	36.7	0.146	0.9	NA	0.2	2.4	0.03	0.13	0.03	44.5

Site Level of Service (LOS) Method: Delay (SIDRA). Site LOS Method is specified in the Network Data dialog (Override Site Data tab).

Vehicle movement LOS values are based on average delay per movement.

Minor Road Approach LOS values are based on average delay for all vehicle movements.

NA (TWSC): Level of Service is not defined for major road approaches or the intersection as a whole for Two-Way Sign Control (HCM LOS rule).

Two-Way Sign Control Capacity Model: SIDRA Standard.

Delay Model: SIDRA Standard (Control Delay: Geometric Delay is included).

Queue Model: SIDRA queue estimation methods are used for Back of Queue and Queue at Start of Gap.

Gap-Acceptance Capacity Formula: SIDRA Standard (Akçelik M3D).

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

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

MOVEMENT SUMMARY

Site: 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)

Vehicle Movement Performance

Mov ID	Turn	Mov Class	Demand Flows [Total veh/h	HV] %	Arrival Flows [Total veh/h	HV] %	Deg. Satn v/c	Aver. Delay sec	Level of Service	95% Back Of Queue [Veh. veh	Dist] m	Prop. Que	Eff. Stop Rate	Aver. No. of Cycles	Aver. Speed km/h
South: Albert															
1	L2	All MCs	46	84.8	46	84.8	0.132	33.1	LOS C	1.7	20.1	0.76	0.71	0.76	27.2
3	R2	All MCs	240	9.2	240	9.2	*0.725	48.3	LOS D	11.7	88.0	0.99	0.87	1.08	29.7
Approach			286	21.3	286	21.3	0.725	45.9	LOS D	11.7	88.0	0.96	0.85	1.02	29.5
East: Customs															
4	L2	All MCs	34	20.6	34	20.6	0.143	25.9	LOS C	2.1	20.7	0.79	0.68	0.79	33.9
5	T1	All MCs	653	21.9	653	21.9	*0.793	43.8	LOS D	15.8	129.1	0.99	0.95	1.12	24.5
Approach			687	21.8	687	21.8	0.793	42.9	LOS D	15.8	129.1	0.98	0.94	1.11	25.0
North: Lower Albert															
7	L2	All MCs	1	0.0	1	0.0	0.305	58.1	LOS E	1.1	14.5	0.99	0.71	0.99	22.9
8	T1	All MCs	45	86.7	45	86.7	*0.305	53.3	LOS D	1.2	14.5	0.99	0.71	0.99	23.4
Approach			46	84.8	46	84.8	0.305	53.4	LOS D	1.2	14.5	0.99	0.71	0.99	23.4
West: Customs															
10	L2	All MCs	46	73.9	46	73.9	0.640	43.0	LOS D	9.6	97.9	0.96	0.82	0.97	12.2
11	T1	All MCs	389	36.0	389	36.0	0.640	38.7	LOS D	9.9	97.9	0.96	0.81	0.97	25.8
Approach			435	40.0	435	40.0	0.640	39.1	LOS D	9.9	97.9	0.96	0.81	0.97	24.7
All Vehicles			1454	29.2	1454	29.2	0.793	42.7	LOS D	15.8	129.1	0.97	0.88	1.05	26.0

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

* Critical Movement (Signal Timing)

Pedestrian Movement Performance

Mov ID		Dem. Flow ped/h	Aver. Delay sec	Level of Service	AVERAGE BACK OF QUEUE [Ped ped	Dist] m	Prop. Que	Eff. Stop Rate	Travel Time sec	Travel Dist. m	Aver. Speed m/sec
South: Albert											
P1	Full	50	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
East: Customs											
P2	Full	50	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
North: Lower Albert											
P3	Full	50	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

West: Customs										
P4 Full	50	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01
All Pedestrians	200	44.3	LOS E	0.1	0.1	0.94	0.94	198.1	200.0	1.01

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

PHASING 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)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Four-Phase Leading Right Turns
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C
Reference Phase: Phase A
Offset: NA

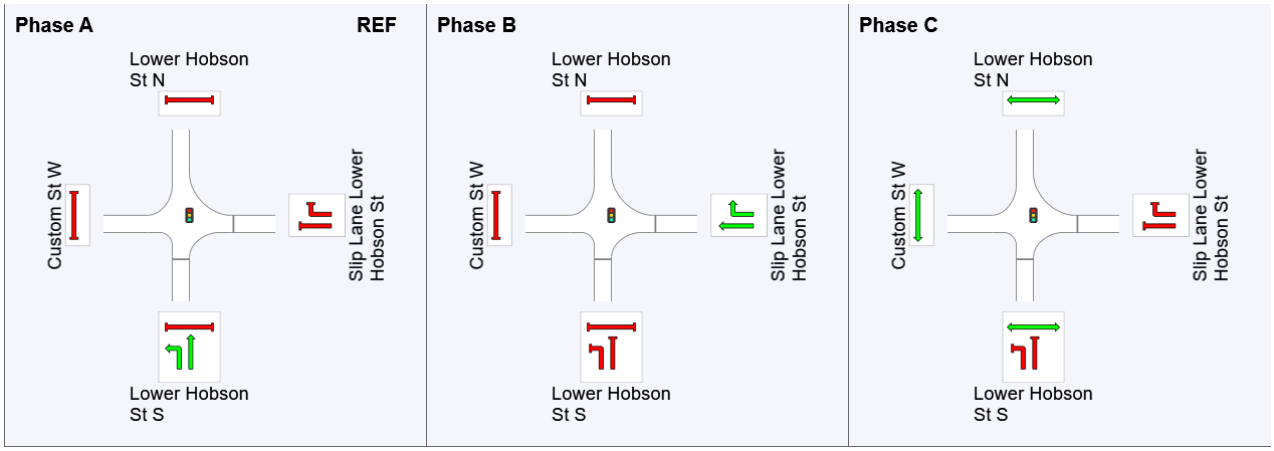
Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	26	48
Green Time (sec)	21	17	24
Phase Time (sec)	26	22	29
Phase Split	34%	29%	38%
Phase Frequency (%)	100.0	100.0	95.0[2]

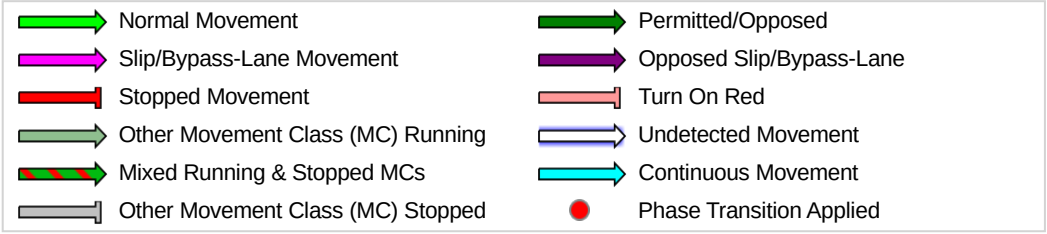
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

2 Phase Frequency is implied by a Phase Time specified by the user that is less than the Required Movement Time.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



PHASING 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)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Four-Phase Leading Right Turns
Input Phase Sequence: A, B, C, D, E
Output Phase Sequence: A, B, C, D, E
Reference Phase: Phase B
Offset: NA

Phase Timing Summary

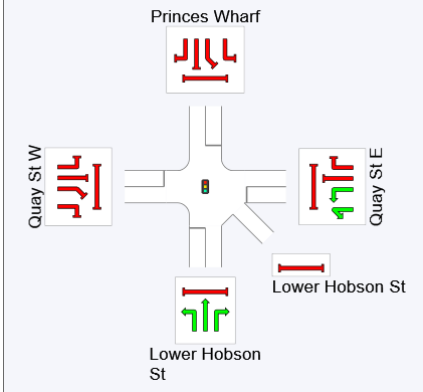
Phase	A	B	C	D	E
Phase Change Time (sec)	72	0	13	27	37
Green Time (sec)	23	6	6	4	30
Phase Time (sec)	30	14	12	9	35
Phase Split	30%	14%	12%	9%	35%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]	100.0[1]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

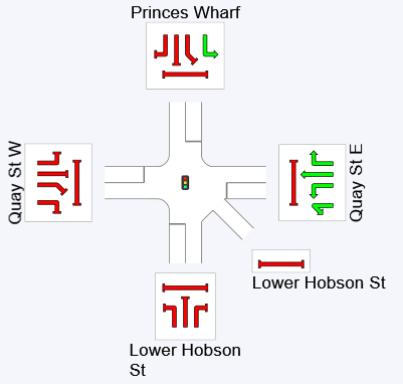
1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence

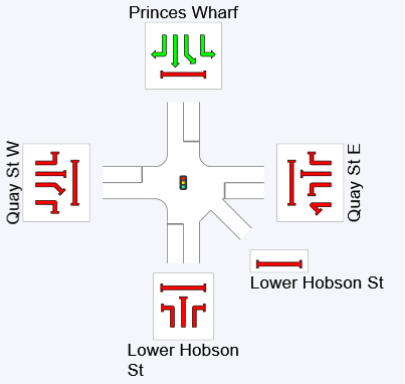
Phase A



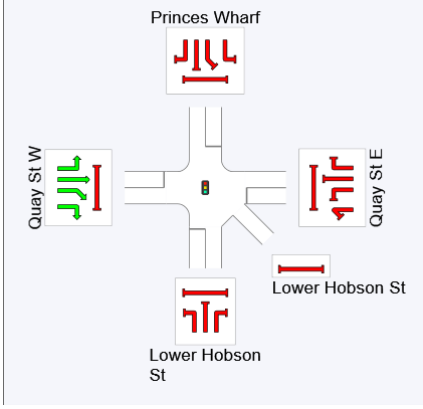
Phase B **REF**



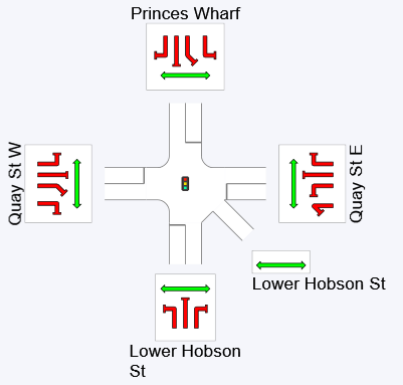
Phase C



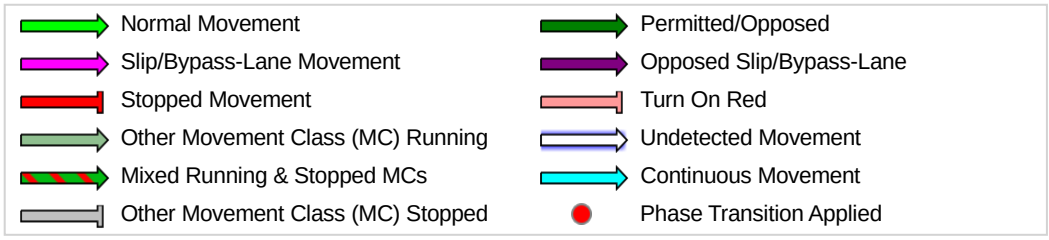
Phase D



Phase E



REF: Reference Phase
VAR: Variable Phase



PHASING 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)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Four-Phase Leading Right Turns
Input Phase Sequence: A, B, C
Output Phase Sequence: A, B, C
Reference Phase: Phase A
Offset: NA

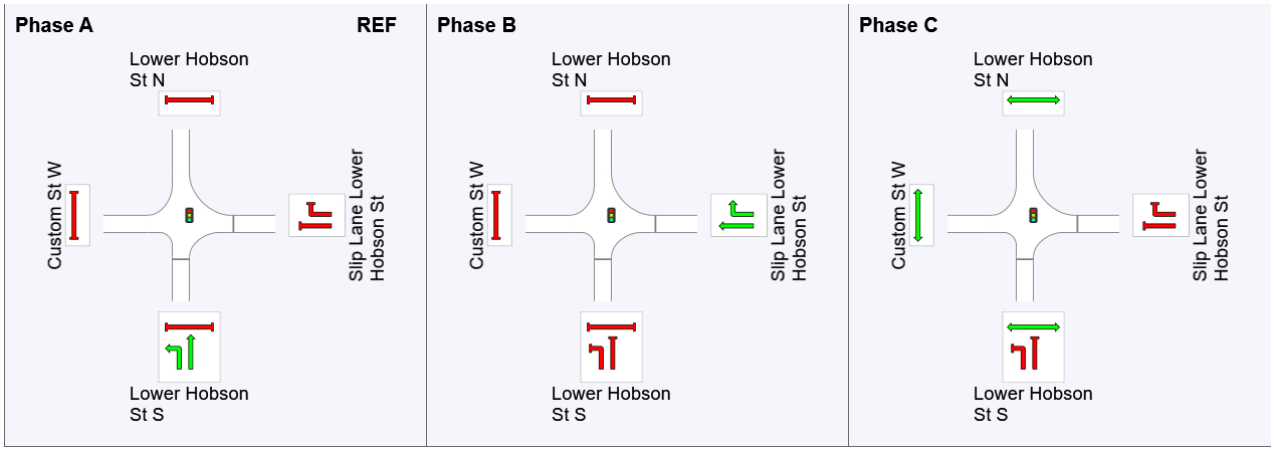
Phase Timing Summary

Phase	A	B	C
Phase Change Time (sec)	0	54	76
Green Time (sec)	49	17	23
Phase Time (sec)	54	22	28
Phase Split	52%	21%	27%
Phase Frequency (%)	100.0	100.0	98.4[2]

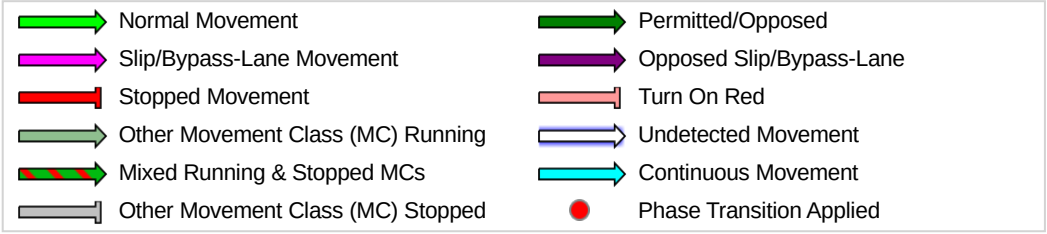
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

2 Phase Frequency is implied by a Phase Time specified by the user that is less than the Required Movement Time.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



PHASING 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)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Four-Phase Leading Right Turns
Input Phase Sequence: A, B, C, D, E
Output Phase Sequence: A, B, C, D, E
Reference Phase: Phase B
Offset: NA

Phase Timing Summary

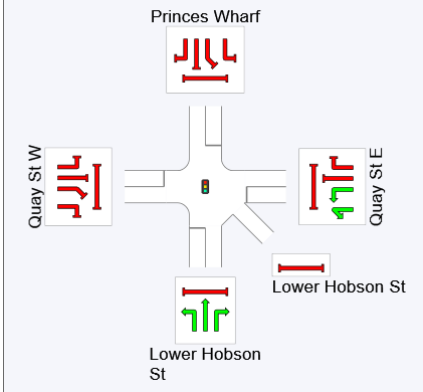
Phase	A	B	C	D	E
Phase Change Time (sec)	72	0	13	27	37
Green Time (sec)	24	6	6	4	30
Phase Time (sec)	31	14	12	9	35
Phase Split	31%	14%	12%	9%	35%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]	100.0[1]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

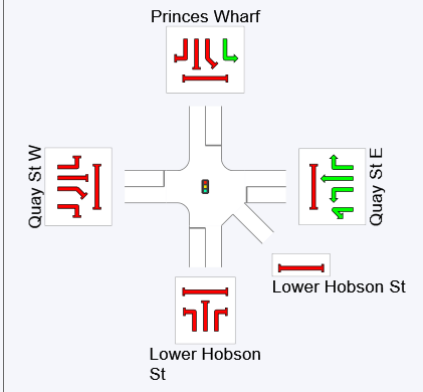
1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence

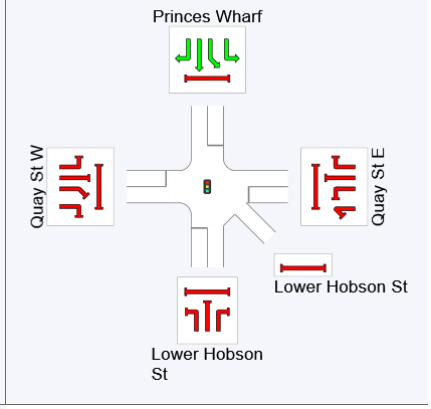
Phase A



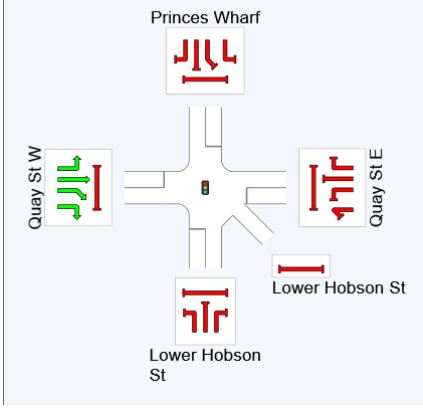
Phase B **REF**



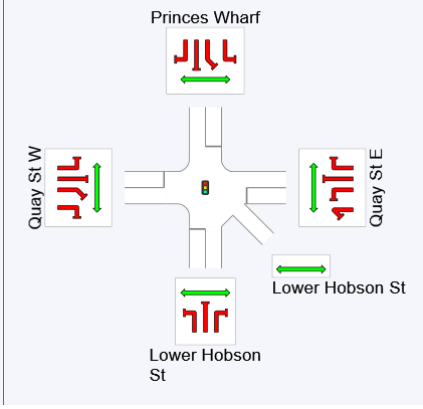
Phase C



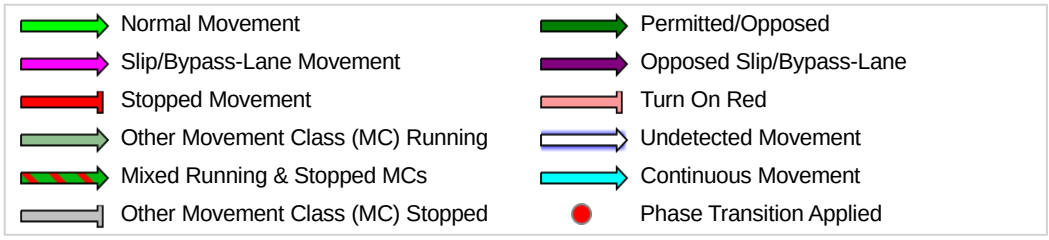
Phase D



Phase E



REF: Reference Phase
VAR: Variable Phase



PHASING 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)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Two-Phase
Input Phase Sequence: A, P
Output Phase Sequence: A, P
Reference Phase: Phase A
Offset: NA

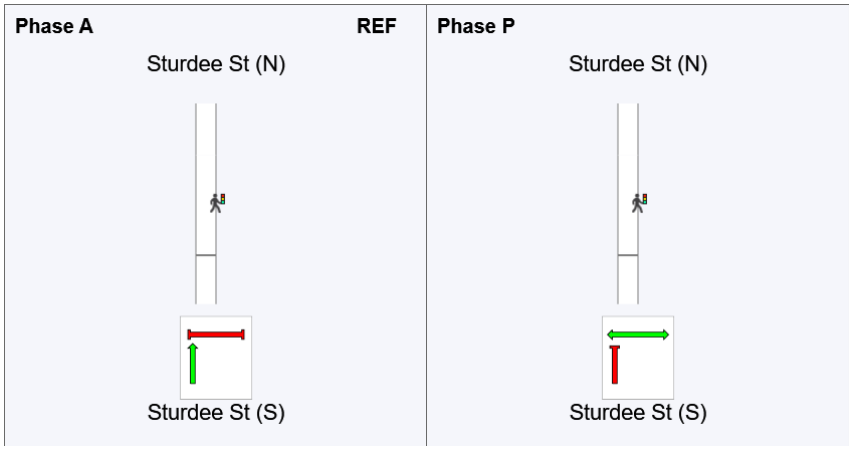
Phase Timing Summary

Phase	A	P
Phase Change Time (sec)	0	29
Green Time (sec)	24	16
Phase Time (sec)	29	21
Phase Split	58%	42%
Phase Frequency (%)	100.0[1]	100.0[1]

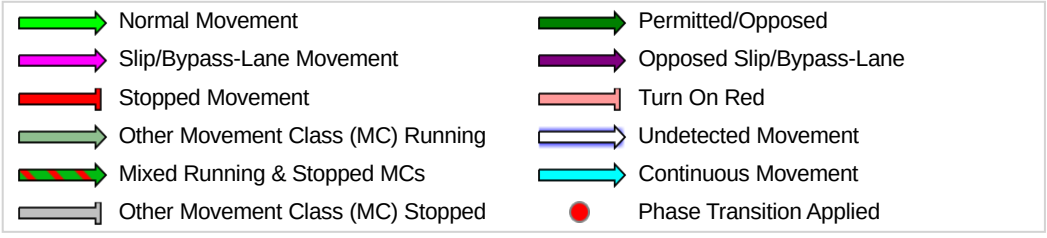
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



PHASING 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)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Four-Phase Leading Right Turns
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B
Offset: NA

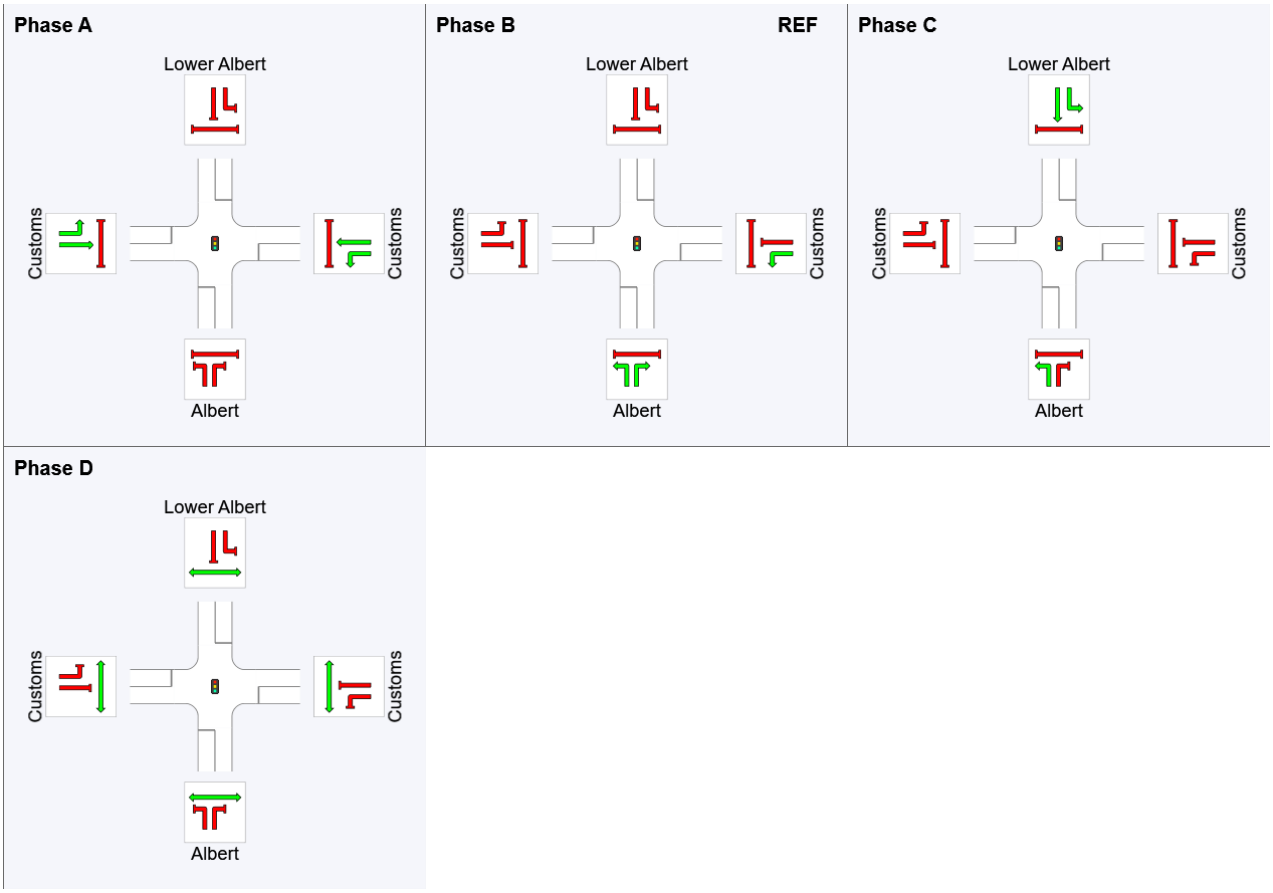
Phase Timing Summary

Phase	A	B	C	D
Phase Change Time (sec)	51	0	10	20
Green Time (sec)	26	6	6	25
Phase Time (sec)	30	10	12	33
Phase Split	35%	12%	14%	39%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]

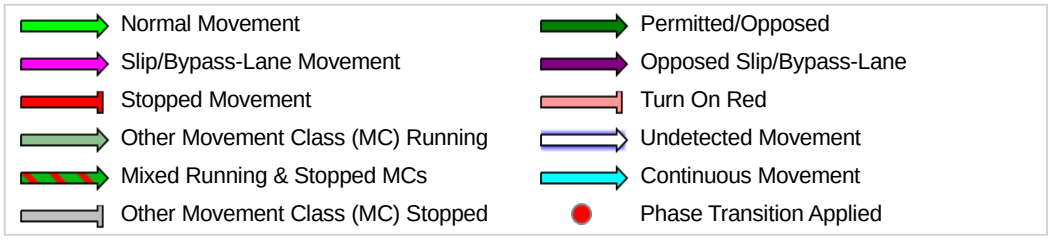
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



PHASING 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)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Two-Phase
Input Phase Sequence: A, P
Output Phase Sequence: A, P
Reference Phase: Phase A
Offset: NA

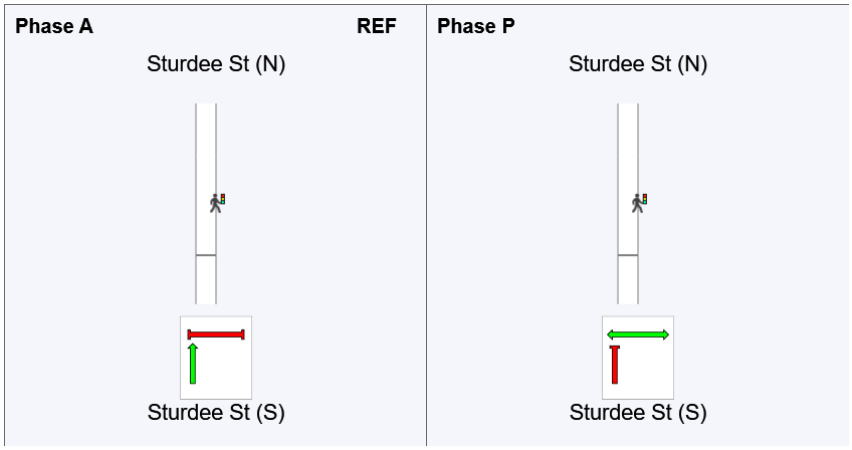
Phase Timing Summary

Phase	A	P
Phase Change Time (sec)	0	43
Green Time (sec)	38	17
Phase Time (sec)	43	22
Phase Split	66%	34%
Phase Frequency (%)	100.0[1]	100.0[1]

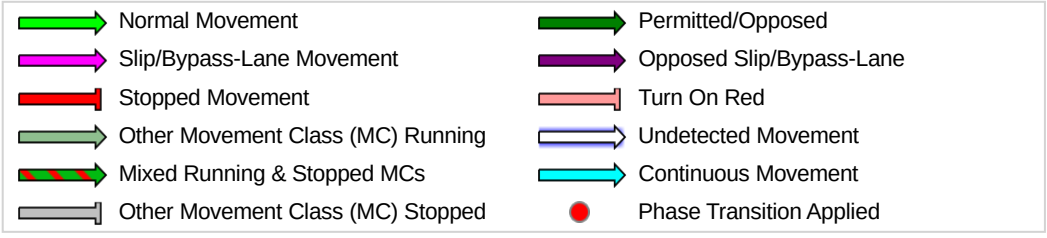
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



PHASING 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)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Four-Phase Leading Right Turns
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B
Offset: NA

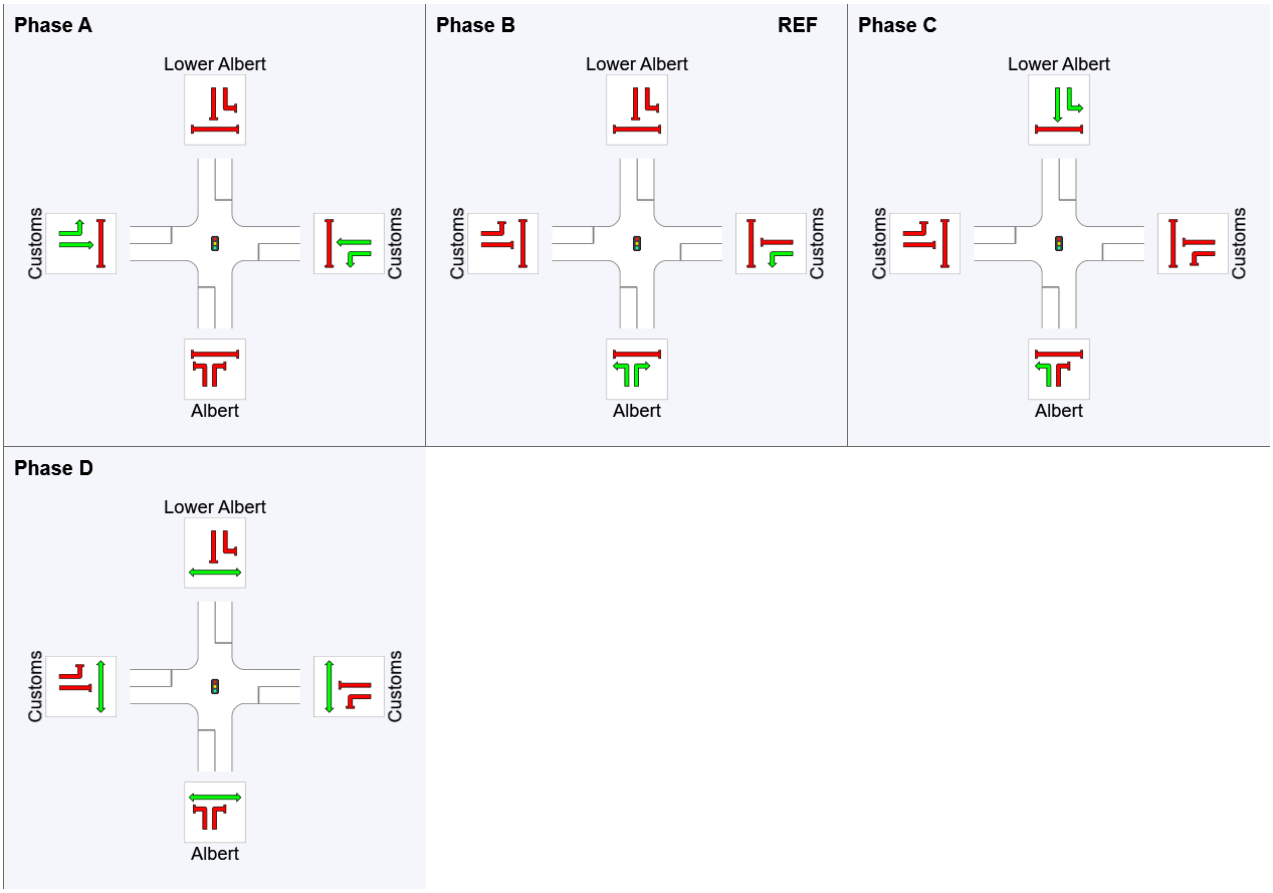
Phase Timing Summary

Phase	A	B	C	D
Phase Change Time (sec)	69	0	23	34
Green Time (sec)	24	18	6	29
Phase Time (sec)	29	23	12	36
Phase Split	29%	23%	12%	36%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]

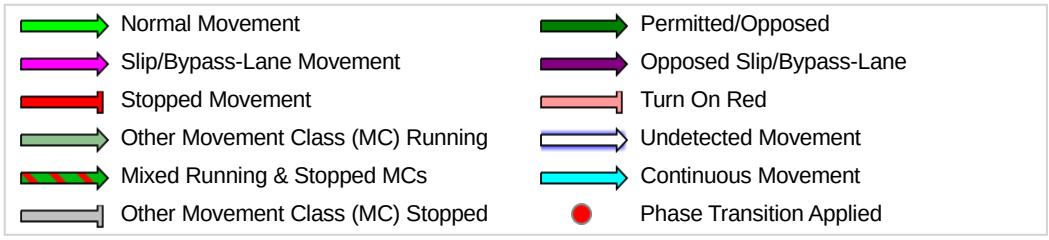
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



PHASING 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)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Four-Phase Leading Right Turns
Input Phase Sequence: A, B
Output Phase Sequence: A, B
Reference Phase: Phase A
Offset: NA

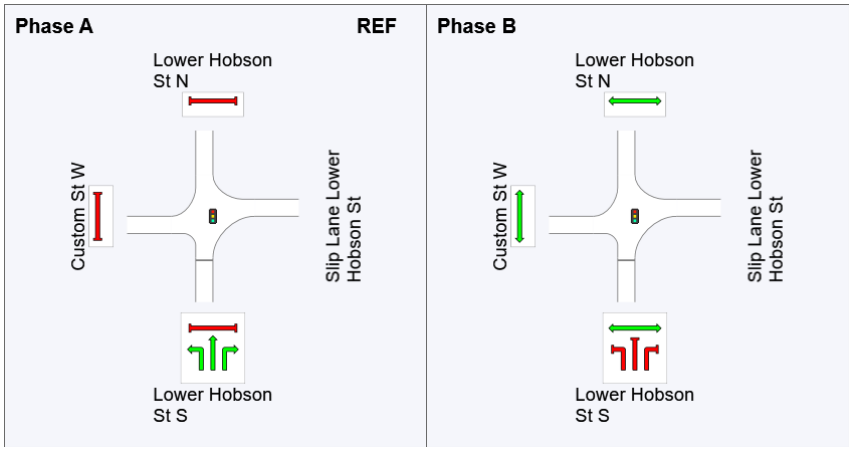
Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	48
Green Time (sec)	43	24
Phase Time (sec)	48	29
Phase Split	62%	38%
Phase Frequency (%)	100.0[1]	100.0[1]

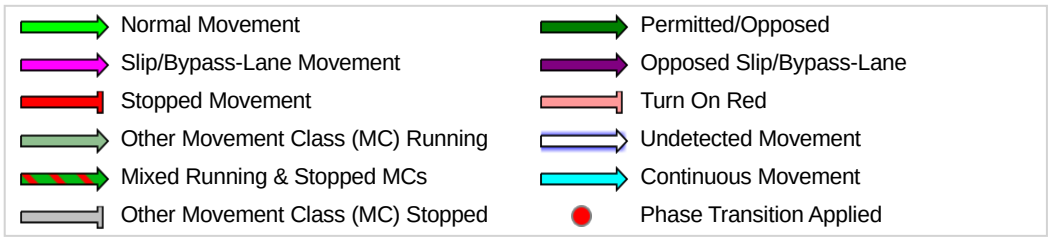
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



PHASING 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)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Four-Phase Leading Right Turns
Input Phase Sequence: A, B, C, D, E
Output Phase Sequence: A, B, C, D, E
Reference Phase: Phase B
Offset: NA

Phase Timing Summary

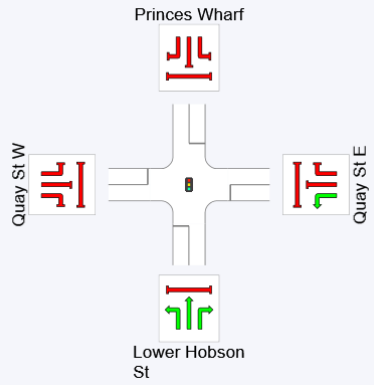
Phase	A	B	C	D	E
Phase Change Time (sec)	73	0	14	28	38
Green Time (sec)	22	7	6	4	30
Phase Time (sec)	29	15	12	9	35
Phase Split	29%	15%	12%	9%	35%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]	100.0[1]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

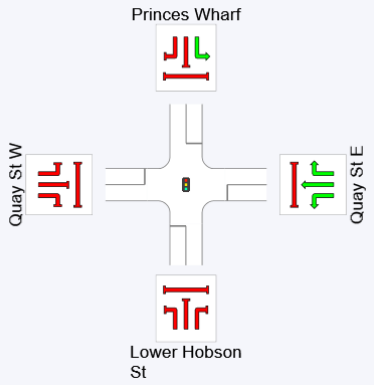
1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence

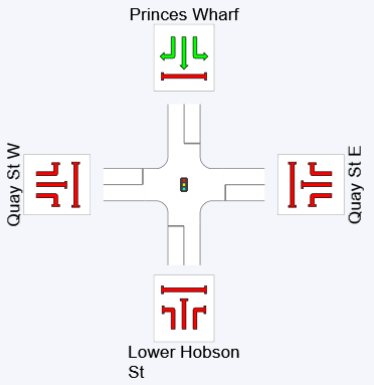
Phase A



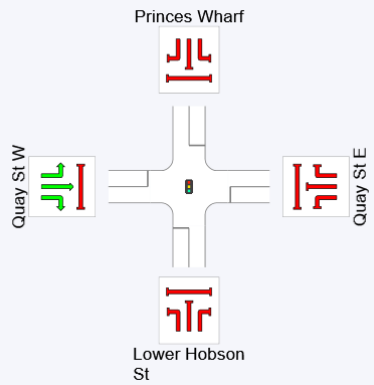
Phase B REF



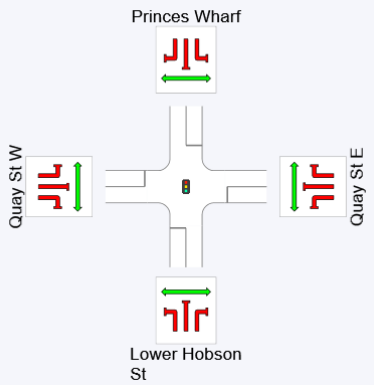
Phase C



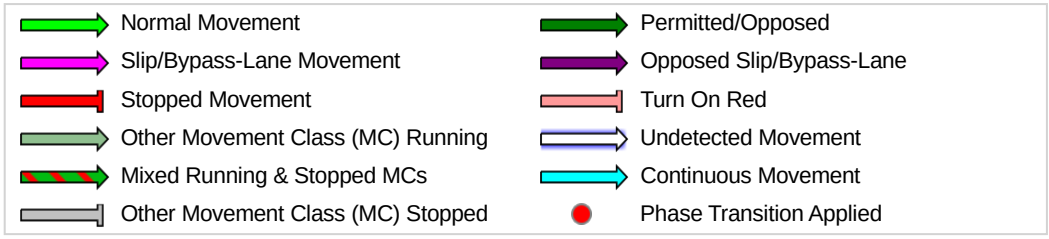
Phase D



Phase E



REF: Reference Phase
VAR: Variable Phase



PHASING 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)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Four-Phase Leading Right Turns
Input Phase Sequence: A, B
Output Phase Sequence: A, B
Reference Phase: Phase A
Offset: NA

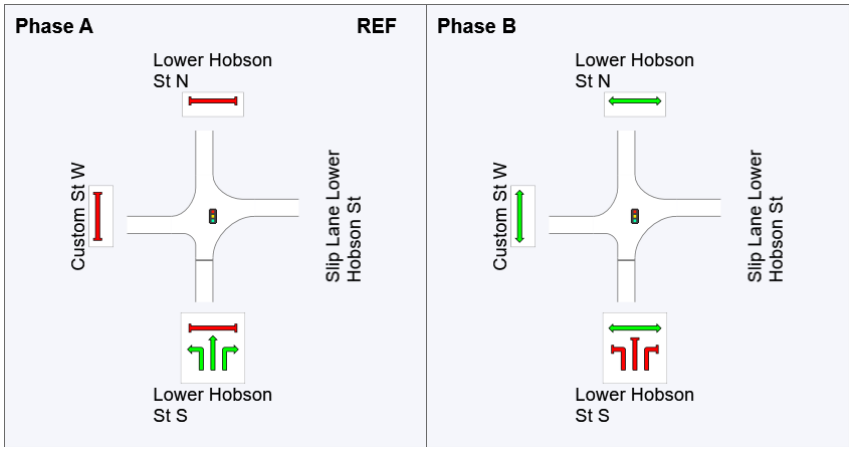
Phase Timing Summary

Phase	A	B
Phase Change Time (sec)	0	76
Green Time (sec)	71	23
Phase Time (sec)	76	28
Phase Split	73%	27%
Phase Frequency (%)	100.0[1]	100.0[1]

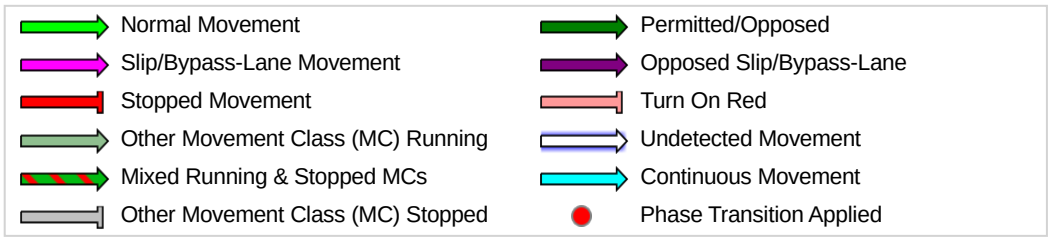
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



PHASING 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)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Four-Phase Leading Right Turns
Input Phase Sequence: A, B, C, D, E
Output Phase Sequence: A, B, C, D, E
Reference Phase: Phase B
Offset: NA

Phase Timing Summary

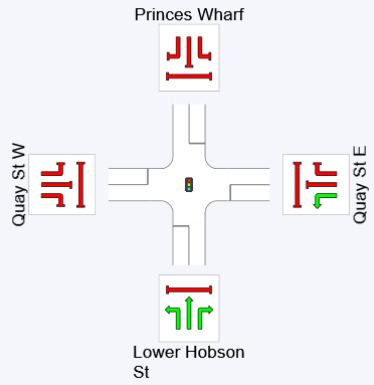
Phase	A	B	C	D	E
Phase Change Time (sec)	71	0	13	27	36
Green Time (sec)	29	6	6	3	31
Phase Time (sec)	36	14	12	7	36
Phase Split	34%	13%	11%	7%	34%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]	100.0[1]

See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

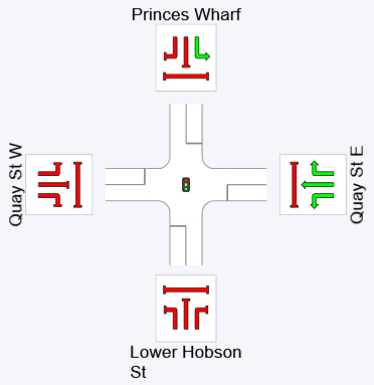
1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence

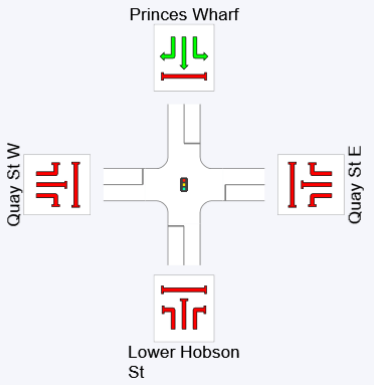
Phase A



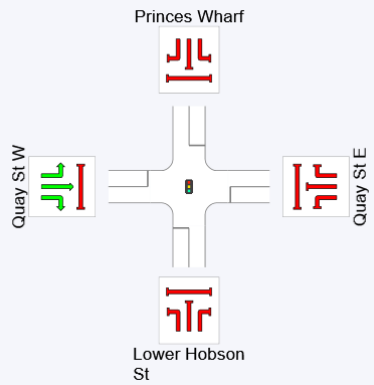
Phase B **REF**



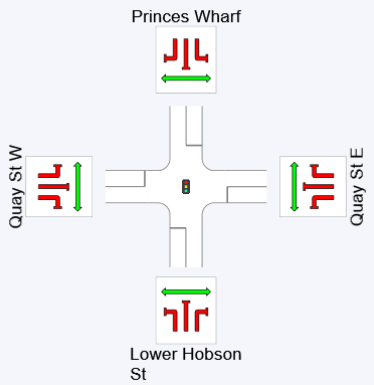
Phase C



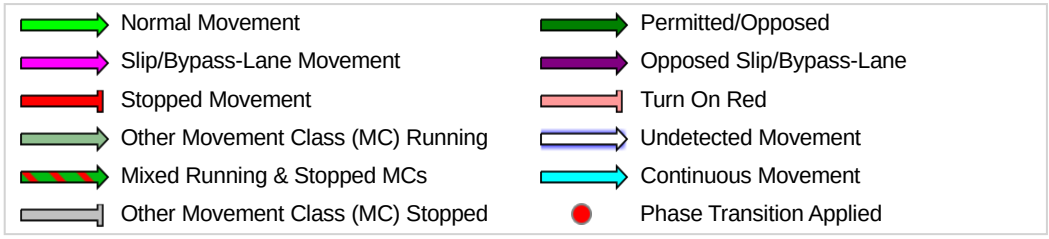
Phase D



Phase E



REF: Reference Phase
VAR: Variable Phase



PHASING 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)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Two-Phase
Input Phase Sequence: A, P
Output Phase Sequence: A, P
Reference Phase: Phase A
Offset: NA

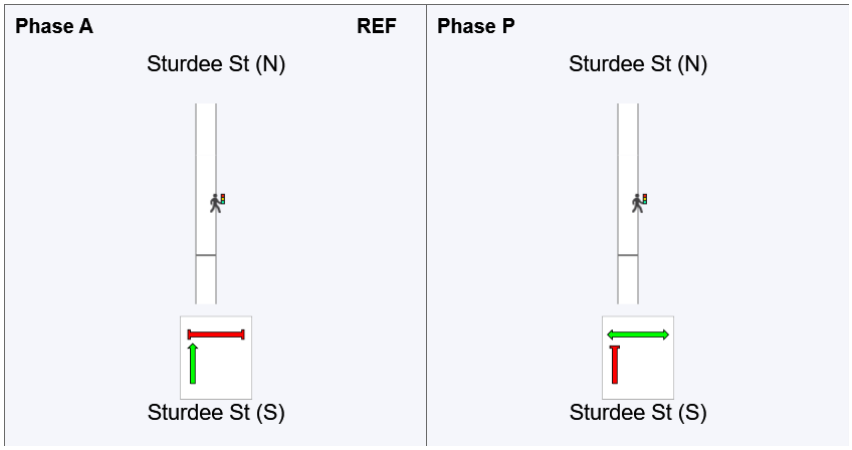
Phase Timing Summary

Phase	A	P
Phase Change Time (sec)	0	29
Green Time (sec)	24	16
Phase Time (sec)	29	21
Phase Split	58%	42%
Phase Frequency (%)	100.0[1]	100.0[1]

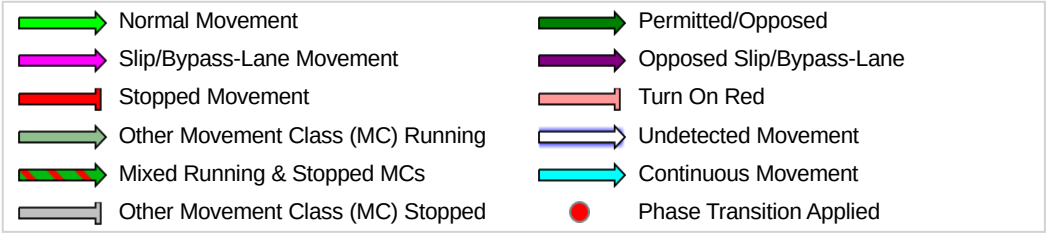
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



PHASING 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)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Four-Phase Leading Right Turns
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B
Offset: NA

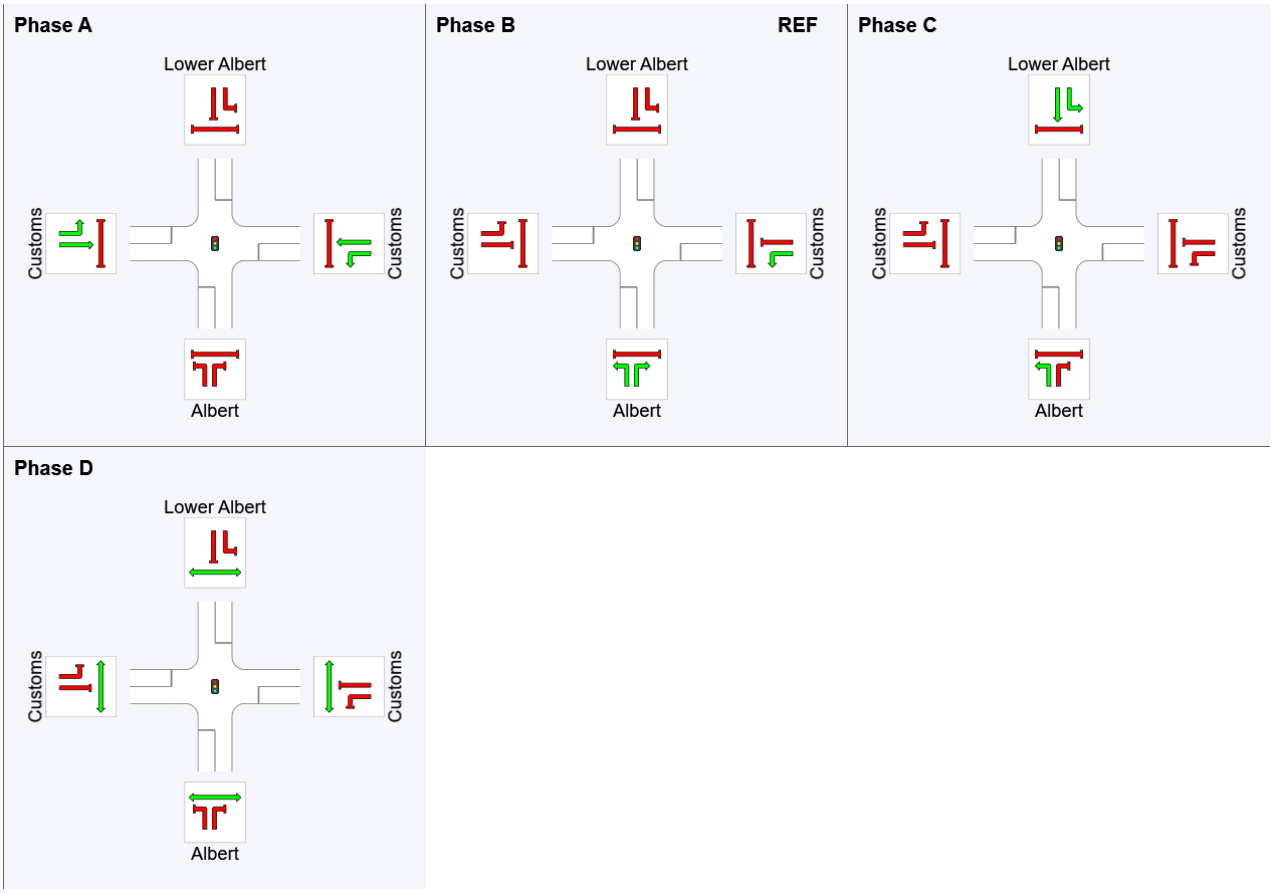
Phase Timing Summary

Phase	A	B	C	D
Phase Change Time (sec)	52	0	11	21
Green Time (sec)	25	7	6	25
Phase Time (sec)	29	11	12	33
Phase Split	34%	13%	14%	39%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]

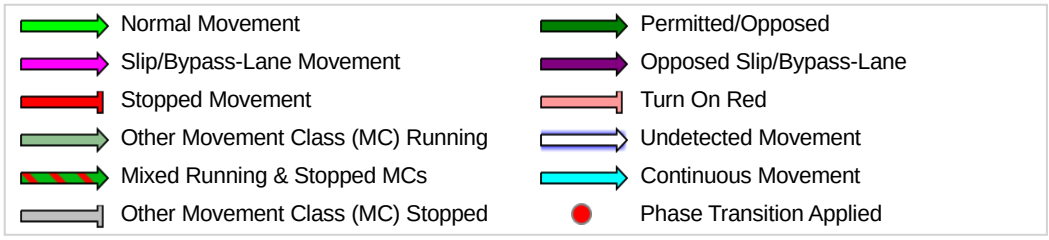
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



PHASING 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)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Two-Phase
Input Phase Sequence: A, P
Output Phase Sequence: A, P
Reference Phase: Phase A
Offset: NA

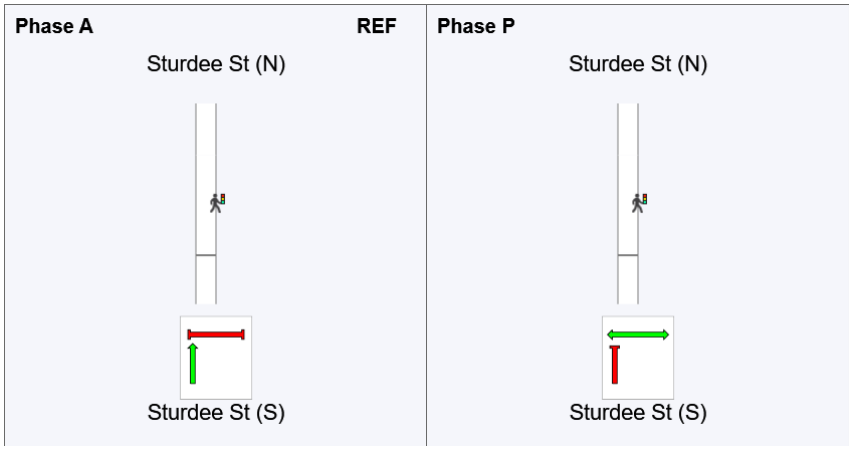
Phase Timing Summary

Phase	A	P
Phase Change Time (sec)	0	41
Green Time (sec)	38	19
Phase Time (sec)	43	22
Phase Split	66%	34%
Phase Frequency (%)	100.0	56.5[2]

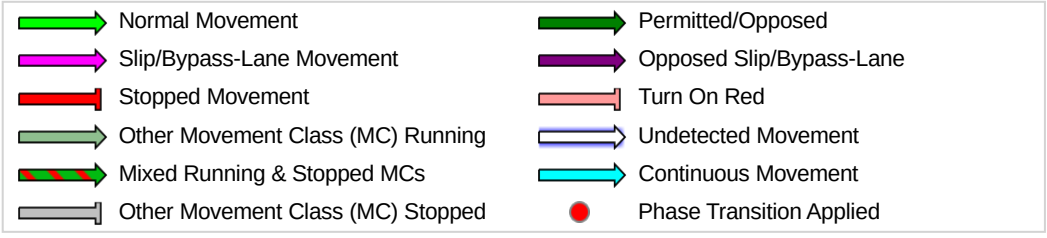
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

2 Phase Frequency is implied by a Phase Time specified by the user that is less than the Required Movement Time.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



PHASING 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)

Timings based on settings in the Site Phasing & Timing dialog
Phase Times specified by the user
Phase Sequence: Four-Phase Leading Right Turns
Input Phase Sequence: A, B, C, D
Output Phase Sequence: A, B, C, D
Reference Phase: Phase B
Offset: NA

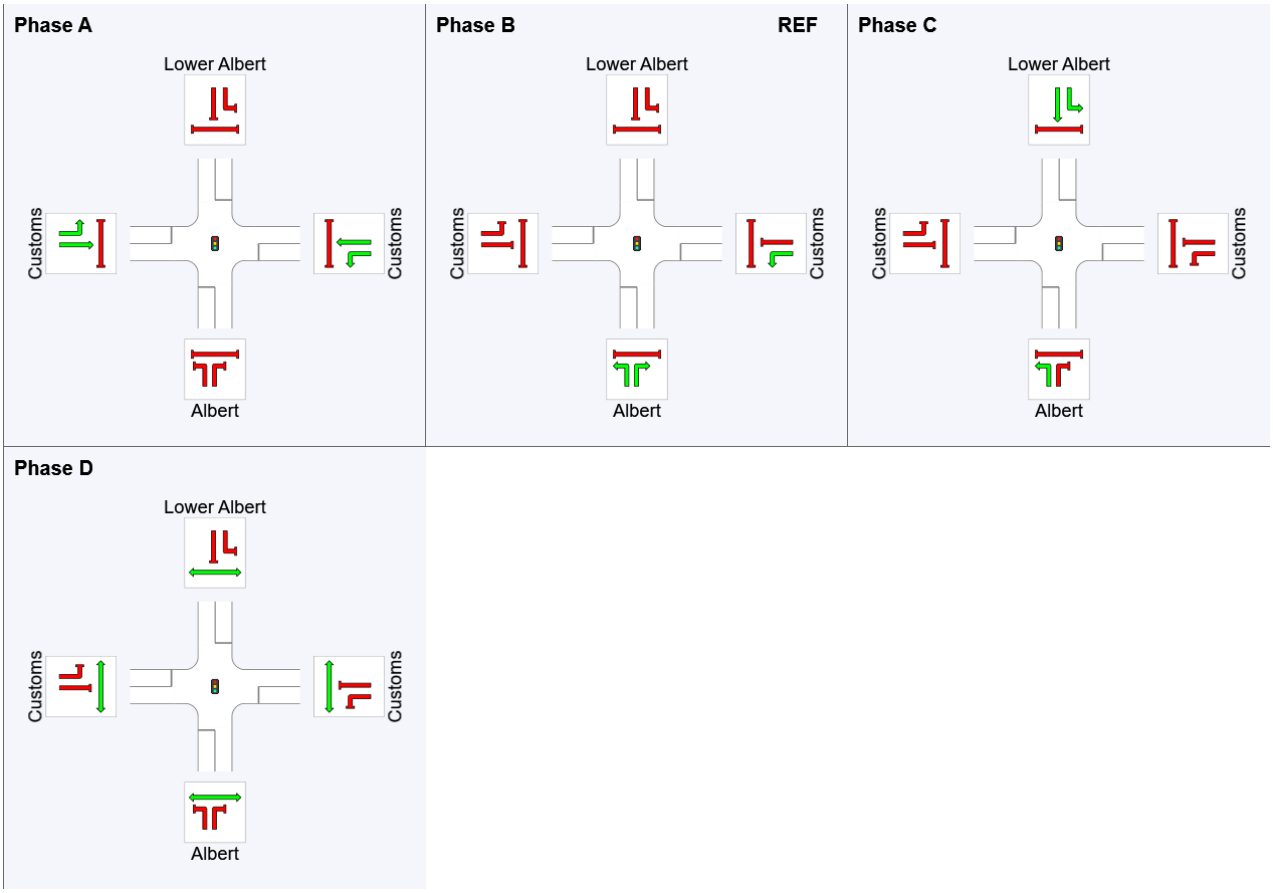
Phase Timing Summary

Phase	A	B	C	D
Phase Change Time (sec)	70	0	24	35
Green Time (sec)	23	19	6	29
Phase Time (sec)	28	24	12	36
Phase Split	28%	24%	12%	36%
Phase Frequency (%)	100.0[1]	100.0[1]	100.0[1]	100.0[1]

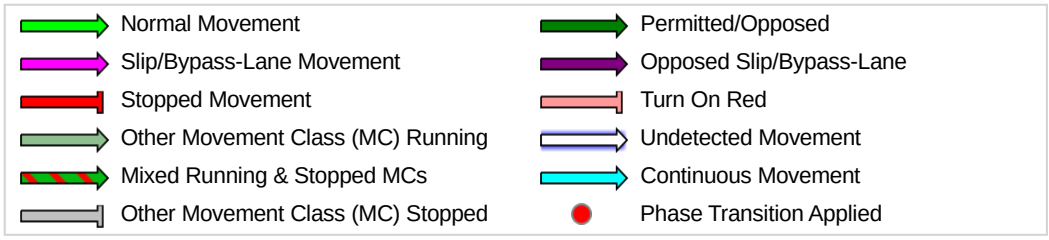
See the Timing Analysis report for more detailed information including input values of Yellow Time and All-Red Time, and information on any adjustments to Intergreen Time, Phase Time and Green Time values in cases of Pedestrian Actuation, Minor Phase Actuation and Phase Frequency values (user-specified or implied) less than 100%.

1 Phase Frequency has been given with User-Specified Phase Times.

Output Phase Sequence



REF: Reference Phase
VAR: Variable Phase



APPENDIX B Vehicle tracking diagrams – Demolition

IN

INDICATIVE ENTRY LOCATIONS (CAN MOVE ANYWHERE NORTH OR SOUTH ALONG THIS WESTERN FRONTAGE)

HEIGHT RESTRICTED AREA DUE TO LOWER HOBSON ST OVER BRIDGE

TEMPORARY TRUCK HOLDING OR PASSING BAY AREA (FLEXIBLE SPACE & TURNING AREA FOR SMALLER TRUCKS)

MAINTAINS PEDESTRIAN ACCESS WHERE POSSIBLE DURING EACH STAGE OF CONSTRUCTION/DEMOLITION

HEAVY VEHICLE ACCESS VIA LOWER HOBSON STREET. REQUIRES TEMPORARY REMOVAL OF KERB, SIGNAL POLE AND SIGN

CROSSING TO BE EXTENDED AND MANAGED AT ALL TIMES

MAINTAINS EAST-WEST PEDESTRIAN ACCESS AT ALL TIMES

OUT

HEIGHT RESTRICTED AREA DUE TO LOWER HOBSON ST OVER BRIDGE

HOLD EXITING TRUCK UNTIL ENTERING TRUCK CLEARS (TO BE MANAGED)

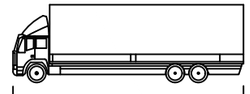
TEMPORARY TRUCK HOLDING OR PASSING BAY AREA (FLEXIBLE SPACE & TURNING AREA FOR SMALLER TRUCKS)

INDICATIVE EXIT LOCATION (CAN MOVE ANYWHERE NORTH OR SOUTH ALONG THIS WESTERN FRONTAGE)

vehicle tracking key:

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

vehicle specs:



12.6m Rigid Truck

vehicle width: 2.55m
lock to lock time: 6.00s
track width: 2.55m
turning radius: 49 degrees
vehicle speed: 5-10km/h

Not to Scale

NOT FOR CONSTRUCTION

REV	AMENDMENT	DATE OF ISSUE
A	First Issue	24/09/2025
B	Second Issue	25/09/2025

DESIGN: KC | DRAWN: KC
CHECKED: HS | DATE: 24/09/2025
SCALE: 0 20m
1:500 @ A3

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

FOR DISCUSSION

SHEET TITLE:
DEMOLITION PHASE
ACCESS TO LOWER HOBSON ST FRONTAGE

DRAWING NUMBER: PREP002-DC-CTMP-A

SHEET: 01 of 15
REV: B

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

HEIGHT RESTRICTED AREA DUE TO LOWER HOBSON ST OVER BRIDGE

MAINTAINS PEDESTRIAN ACCESS WHERE POSSIBLE DURING EACH STAGE OF CONSTRUCTION/DEMOLITION

TEMPORARY TRUCK HOLDING OR PASSING BAY AREA (FLEXIBLE SPACE & TURNING AREA FOR SMALLER TRUCKS)

INDICATIVE ENTRY LOCATION (COULD BE ANYWHERE FURTHER NORTH IF REQUIRED)

CROSSING TO BE EXTENDED AND MANAGED AT ALL TIMES

MAINTAINS EAST-WEST PEDESTRIAN ACCESS AT ALL TIMES

INDICATIVE ENTRY LOCATION

INDICATIVE EXIT LOCATION

HEAVY VEHICLE ACCESS VIA LOWER HOBSON STREET. REQUIRES TEMPORARY REMOVAL OF KERB, SIGNAL POLE AND SIGN

85-89

73-83

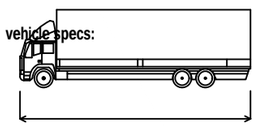
LOWER HOBSON STREET

STURDEE STREET

vehicle tracking key:

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

vehicle specs:



12.6m

12.6m Rigid Truck

vehicle width: 2.55m
lock to lock time: 6.00s
track width: 2.55m
turning radius: 49 degrees
vehicle speed: 5-10km/h

Not to Scale

REV	AMENDMENT	DATE OF ISSUE
A	First Issue	24/09/2025
B	Second Issue	25/09/2025

DESIGN: KC DRAWN: KC
SCALE: 0 20m
CHECKED: HS DATE: 24/09/2025

PRECINCT PROPERTIES

CLIENT:
LOCATION: :500 @ A3

DEMOLITION PHASE

SHEET TITLE:
PROJECT: DOWNTOWN CARPARK REDEVELOPMENT

2 LOWER HOBSON STREET

SHEET: A ND CBD
U
C
KL
A

NOT FOR CONSTRUCTION

flow TRANSPORTATION SPECIALISTS

FOR DISCUSSION

DRAWING NUMBER:

PREP002-DC-CTMP-A

REV:

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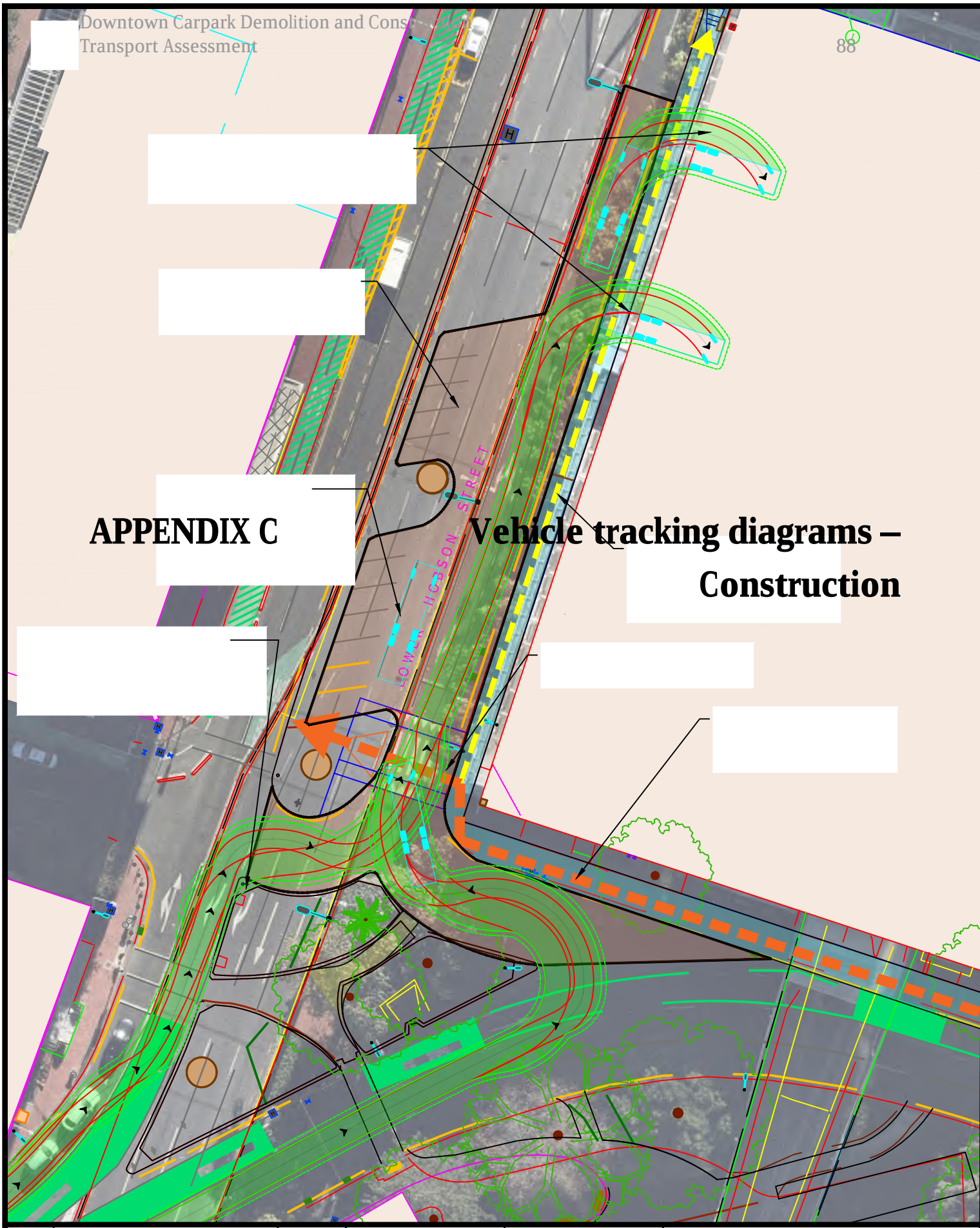
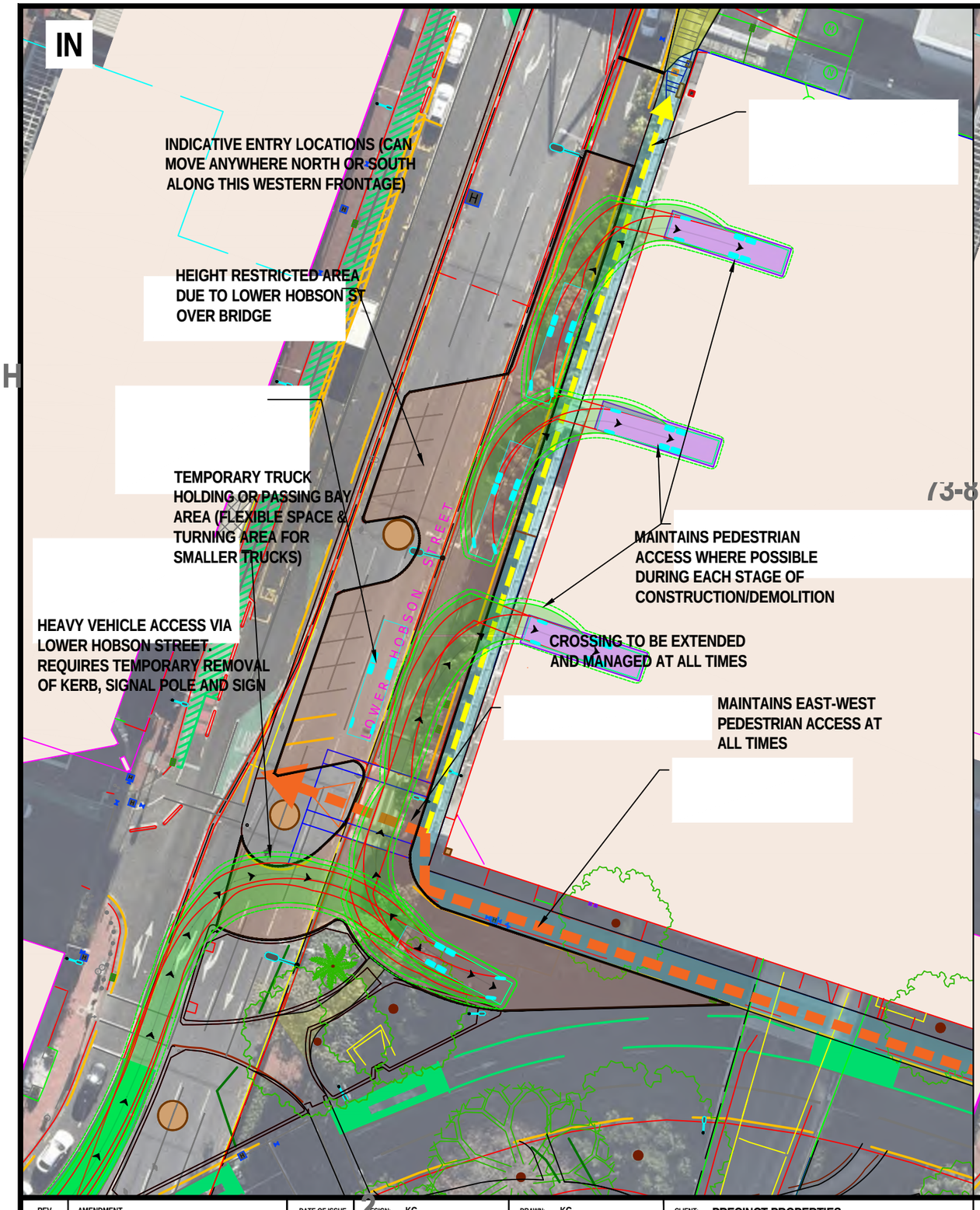
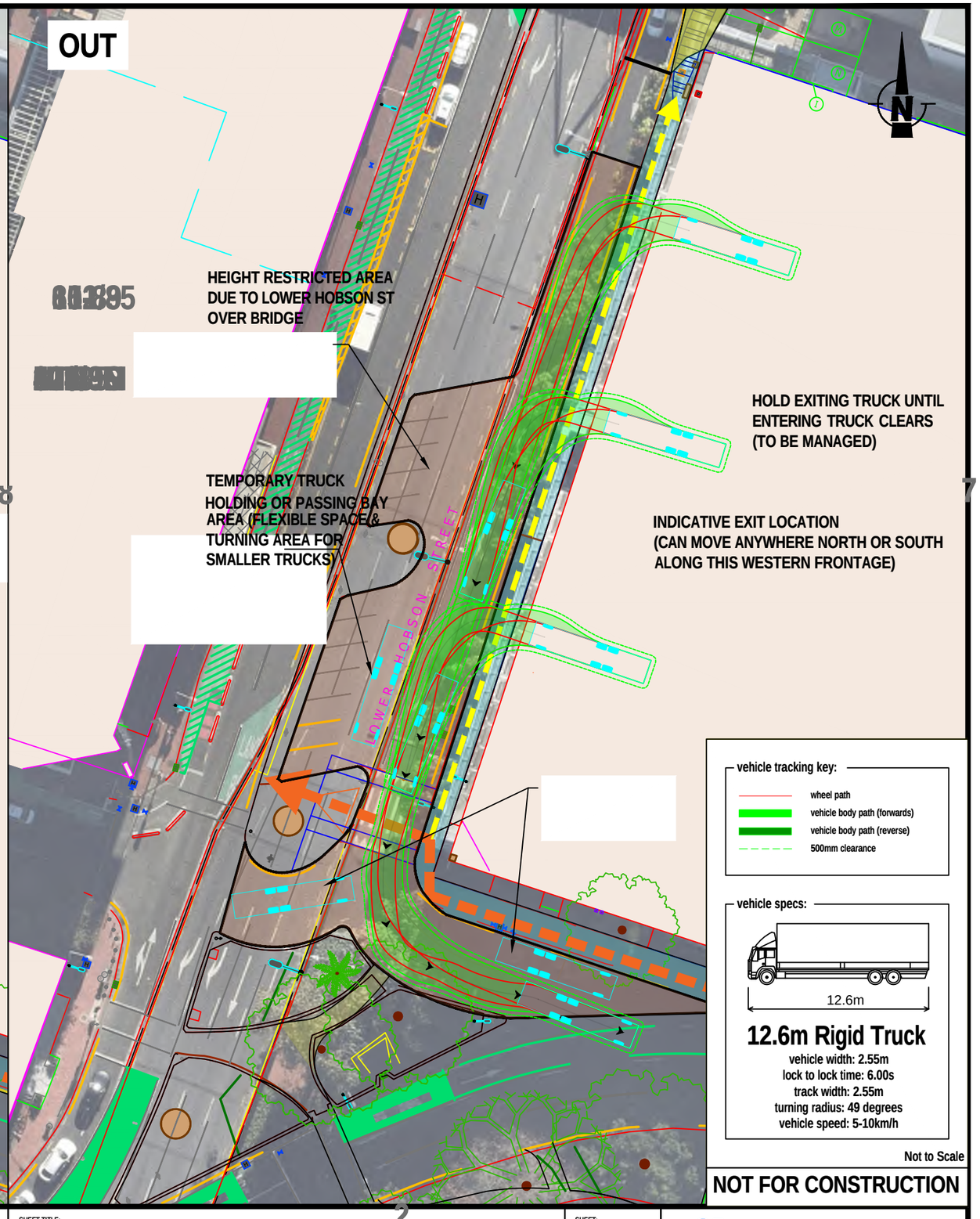
Auckland | PO Box 47497 Ponsonby
p 09 970 3820 l f 09 970 3890 l



APPENDIX C Vehicle tracking diagrams – Construction





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

vehicle specs:

12.6m Rigid Truck
vehicle width: 2.55m
lock to lock time: 6.00s
track width: 2.55m
turning radius: 49 degrees
vehicle speed: 5-10km/h

Not to Scale

NOT FOR CONSTRUCTION

REV	AMENDMENT	DATE OF ISSUE
A	First Issue	24/09/2025
B	Second Issue	25/09/2025

DESIGN: KC | DRAWN: KC
CHECKED: HS | DATE: 24/09/2025
SCALE: 0 20m
1:500 @ A3

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

FOR DISCUSSION

SHEET TITLE: **EXCAVATION PHASE - RAMP LOAD OUT ONLY ACCESS TO LOWER HOBSON ST FRONTAGE**

DRAWING NUMBER: **PREP002-DC-CTMP-A**

SHEET: 03 of 15
REV: B

flow
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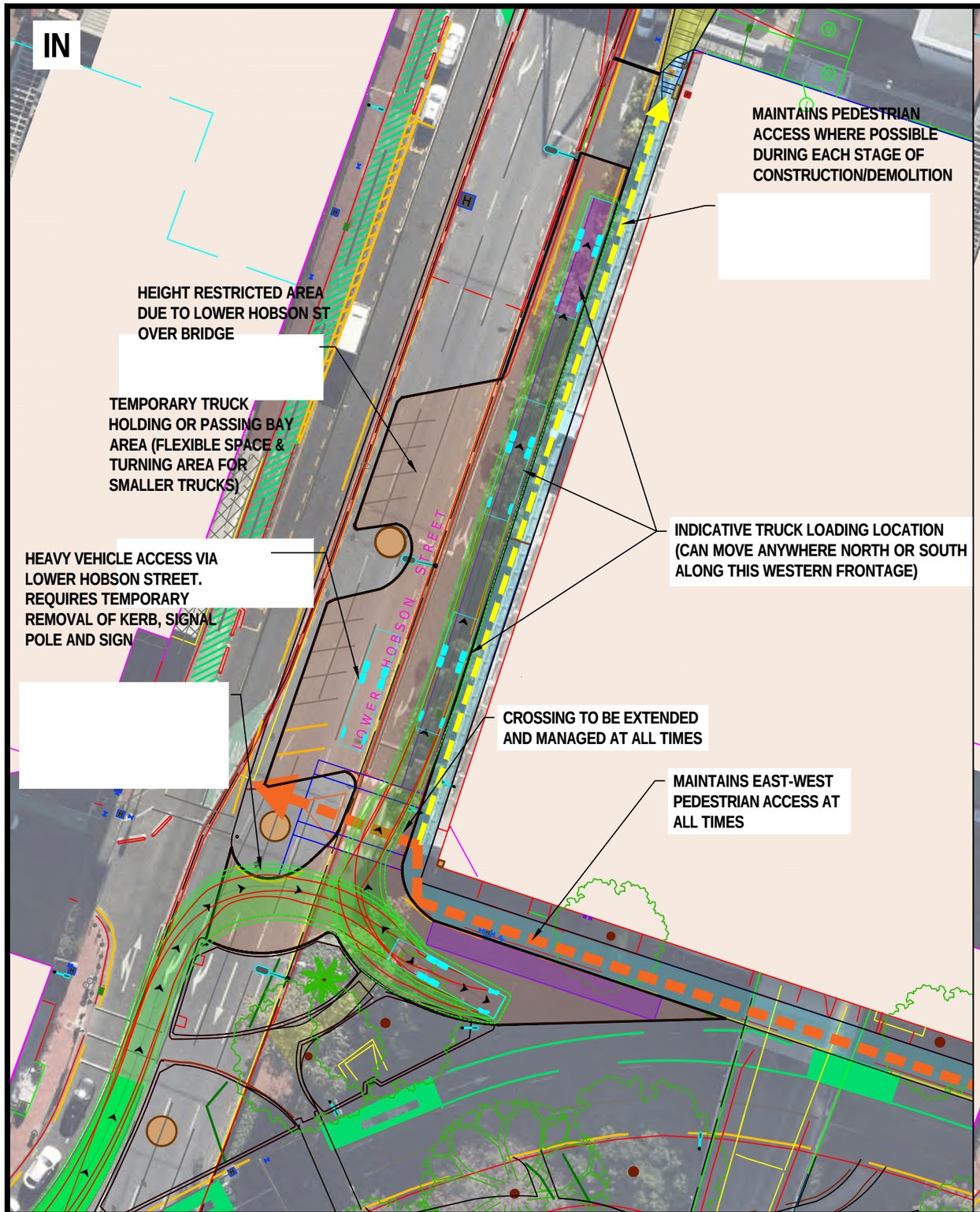
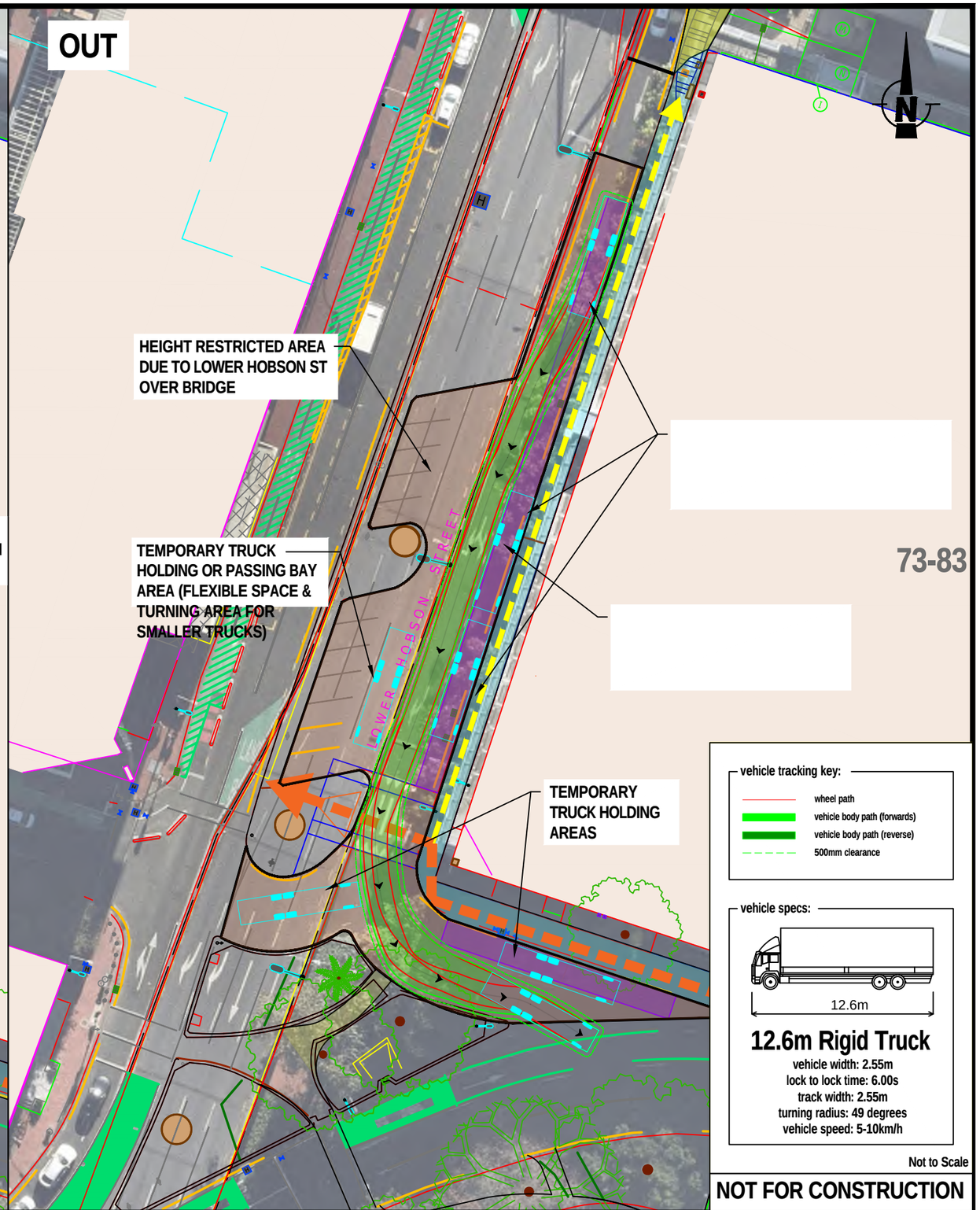
p 09 970 3820 I f 09 970 3890 I www.flownz.com

IN



OUT



73-83

vehicle tracking key:

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

vehicle specs:

12.6m Rigid Truck

vehicle width: 2.55m
lock to lock time: 6.00s
track width: 2.55m
turning radius: 49 degrees
vehicle speed: 5-10km/h

Not to Scale

NOT FOR CONSTRUCTION

REV	AMENDMENT	DATE OF ISSUE
A	First Issue	24/09/2025
B	Second Issue	25/09/2025

DESIGN: KC | DRAWN: KC
CHECKED: HS | DATE: 24/09/2025
SCALE: 0 — 20m
1:500 @ A3

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

FOR DISCUSSION

SHEET TITLE: **EXCAVATION PHASE - LOADING PLATFORMS LOADING FROM LOWER HOBSON ST**

DRAWING NUMBER: **PREP002-DC-CTMP-A**

SHEET: 04 of 15
REV: B

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IN

OUT

HEIGHT RESTRICTED AREA DUE TO LOWER HOBSON ST OVER BRIDGE

MAINTAINS PEDESTRIAN ACCESS WHERE POSSIBLE DURING EACH STAGE OF CONSTRUCTION/DEMOLITION

HEIGHT RESTRICTED AREA DUE TO LOWER HOBSON ST OVER BRIDGE

INDICATIVE TRUCK LOADING LOCATION (CAN MOVE ANYWHERE NORTH OR SOUTH ALONG THIS WESTERN FRONTAGE)

TEMPORARY TRUCK HOLDING OR PASSING BAY AREA (FLEXIBLE SPACE)

INDICATIVE TRUCK LOADING LOCATION (CAN MOVE ANYWHERE NORTH OR SOUTH ALONG THIS WESTERN FRONTAGE)

TEMPORARY TRUCK HOLDING OR PASSING BAY AREA (FLEXIBLE SPACE)

LOWER HOBSON STREET WIDTH LIMITED TO ONLY ONE TRUCK AT A TIME NORTH OF A TRUCK PARKED AT THIS POSITION

HEAVY VEHICLE ACCESS VIA LOWER HOBSON STREET. REQUIRES TEMPORARY REMOVAL OF KERB, SIGNAL POLE AND SIGN

CROSSING TO BE EXTENDED AND MANAGED AT ALL TIMES

MAINTAINS EAST-WEST PEDESTRIAN ACCESS AT ALL TIMES

TEMPORARY TRUCK HOLDING AREAS

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

vehicle specs:

12.6m

12.6m Rigid Truck
vehicle width: 2.55m
lock to lock time: 6.00s
track width: 2.55m
turning radius: 49 degrees
vehicle speed: 5-10km/h

Not to Scale

NOT FOR CONSTRUCTION

REV	AMENDMENT	DATE OF ISSUE
A	First Issue	24/09/2025
B	Second Issue	25/09/2025

DESIGN: KC | DRAWN: KC
CHECKED: HS | DATE: 24/09/2025
SCALE: 0 20m
1:500 @ A3

CLIENT: 24/09/2025
PROJECT: DOWNTOWN CARPARK REDEVELOPMENT
LOCATION: 2 LOWER HOBSON STREET, AUCKLAND CBD

FOR DISCUSSION

SHEET TITLE: **EXCAVATION PHASE - SLIP LANE LOADING LOADING FROM LOWER HOBSON ST**

DRAWING NUMBER: **PREP002-DC-CTMP-A**

SHEET: 05 of 15
REV: B

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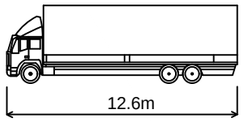
vehicle tracking key:

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

vehicle specs:



12.6m Rigid Truck

vehicle width: 2.55m
lock to lock time: 6.00s
track width: 2.55m
turning radius: 49 degrees
vehicle speed: 5-10km/h

Not to Scale

NOT FOR CONSTRUCTION

MAINTAIN ALL TRAFFIC LANES ON FLYOVER

HEAVY VEHICLE ACCESS VIA LOWER HOBSON STREET. REQUIRES TEMPORARY REMOVAL OF KERB, SIGNAL POLE AND SIGN

EXISTING FOOTPATH LINK TO BE CLOSED

MAINTAINS PEDESTRIAN ACCESS WHERE POSSIBLE DURING EACH STAGE OF CONSTRUCTION/DEMOLITION

CROSSING TO BE EXTENDED AND MANAGED AT ALL TIMES

STEEL/MATERIAL LOADING ZONE

MAINTAINS EAST-WEST PEDESTRIAN ACCESS AT ALL TIMES

MAINTAIN SERVICE LANE ACCESS

MAINTAIN PEDESTRIAN ACCESS BETWEEN FANSHAWE STREET & CUSTOMS STREET WEST

REV	AMENDMENT	DATE OF ISSUE
A	First Issue	24/09/2025
B	Second Issue	25/09/2025

DESIGN: KC | DRAWN: KC
CHECKED: HS | DATE: 24/09/2025
SCALE: 0 20m
1:500 @ A3

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

FOR DISCUSSION

SHEET TITLE: **CONSTRUCTION PHASE - LB4 to L00 RIGID TRUCK LOADING AT CUSTOM ST W**

DRAWING NUMBER: **PREP002-DC-CTMP-A**

SHEET: 06 of 15

REV: B

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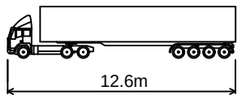
vehicle tracking key:

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

vehicle specs:



12.6m Rigid Truck

vehicle width: 2.55m
lock to lock time: 6.00s
track width: 2.55m
turning radius: 49 degrees
vehicle speed: 5-10km/h

Not to Scale

NOT FOR CONSTRUCTION

IN

HEIGHT RESTRICTED AREA DUE TO LOWER HOBSON ST OVER BRIDGE

OUT

HEIGHT RESTRICTED AREA DUE TO LOWER HOBSON ST OVER BRIDGE

MAINTAINS PEDESTRIAN ACCESS WHERE POSSIBLE DURING EACH STAGE OF CONSTRUCTION/DEMOLITION

INDICATIVE TRUCK LOADING LOCATION (CAN MOVE ANYWHERE NORTH OR SOUTH ALONG THIS WESTERN FRONTAGE)

CROSSING TO BE EXTENDED AND MANAGED AT ALL TIMES

MAINTAINS EAST WEST PEDESTRIAN ACCESS AT ALL TIMES

TEMPORARY TRUCK HOLDING OR PASSING BAY AREA (FLEXIBLE SPACE & TURNING AREA FOR SMALLER TRUCKS)

TEMPORARY TRUCK HOLDING OR PASSING BAY AREA (FLEXIBLE SPACE & TURNING AREA FOR SMALLER TRUCKS)

TEMPORARY TRUCK HOLDING AREA

LOWER HOBSON STREET WIDTH LIMITED TO ONLY ONE TRUCK AT A TIME NORTH OF A TRUCK PARKED AT THIS POSITION

TOWER 2

LOT 9 DP 60151

LOT 1 DP 78340

PODIUM

TOWER 1

AON BUILDING LOT 7 DP 77037

HSBC BUILDING LOT 5 DP 3972

HOBSON STREET

CUSTOMS STREET WEST

FANSHAWE STREET

15-17

REV	AMENDMENT	DATE OF ISSUE
A	First Issue	24/09/2025
B	Second Issue	25/09/2025	

DESIGN: KC | DRAWN: KC
CHECKED: HS | DATE: 24/09/2025
SCALE: 0 20m
1:500 @ A3

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

FOR DISCUSSION

SHEET TITLE: **CONSTRUCTION PHASE - LB4 to L00 RIGID TRUCK LOADING AT SLIP LANE**

DRAWING NUMBER: **PREP002-DC-CTMP-A**

SHEET: 07 of 15

REV: B

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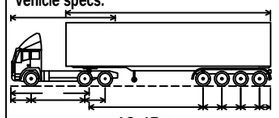
vehicle tracking key:

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

vehicle specs:



19.45m

19.45m Semi-Trailer

vehicle width: 2.55m
lock to lock time: 6.00s
track width: 2.55m
turning radius: 12.55m
vehicle speed: 5-10kmph

Not to Scale

NOT FOR CONSTRUCTION

MAINTAIN ALL TRAFFIC LANES ON FLYOVER

HEIGHT RESTRICTED AREA DUE TO LOWER HOBSON ST OVER-BRIDGE.

HEAVY VEHICLE ACCESS VIA LOWER HOBSON STREET. REQUIRES TEMPORARY REMOVAL OF KERB, SIGNAL POLE AND SIGN.

EXISTING FOOTPATH LINK TO BE CLOSED

MAINTAINS PEDESTRIAN ACCESS WHERE POSSIBLE DURING EACH STAGE OF CONSTRUCTION/DEMOLITION

CROSSING TO BE EXTENDED AND MANAGED AT ALL TIMES

STEEL/MATERIAL LOADING ZONE

MAINTAINS EAST-WEST PEDESTRIAN ACCESS AT ALL TIMES

MAINTAIN PEDESTRIAN ACCESS BETWEEN FANSHAWE STREET & CUSTOMS STREET WEST.

REV	AMENDMENT	DATE OF ISSUE
A	First Issue	24/09/2025
B	Second Issue	25/09/2025

DESIGN: KC | DRAWN: KC
CHECKED: HS | DATE: 24/09/2025
SCALE: 0 20m
1:500 @ A3

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

FOR DISCUSSION

SHEET TITLE: **CONSTRUCTION PHASE - LB4 to L00 SEMI-TRAILER LOADING AT CUSTOM ST W**

DRAWING NUMBER: PREP002-DC-CTMP-A

SHEET: 08 of 15

REV: B

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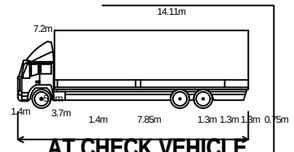
vehicle tracking key:

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

vehicle specs:



AT CHECK VEHICLE
17.9m - Truck Semi-Trailer
vehicle width: 2.550m
lock to lock time: 6.00s
track width: 2.550m
turning radius: 12.500m
vehicle speed: 5-10kmph

Not to Scale

NOT FOR CONSTRUCTION

IN

OUT

HEIGHT RESTRICTED AREA DUE TO LOWER HOBSON ST OVER BRIDGE

HEIGHT RESTRICTED AREA DUE TO LOWER HOBSON ST OVER BRIDGE

MAINTAINS PEDESTRIAN ACCESS WHERE POSSIBLE DURING EACH STAGE OF CONSTRUCTION/DEMOLITION

LOADING ZONE FOR SEMI-TRAILER (RESTRICT TO 17.9m SEMI-TRAILER AS LARGEST TRUCK)

CROSSING TO BE EXTENDED AND MANAGED AT ALL TIMES

MAINTAINS EAST-WEST PEDESTRIAN ACCESS AT ALL TIMES

TOWER 2

LOT 9 DP 60151

LOT 1 DP 78340

PODIUM

TOWER 1

AON BUILDING LOT 7 DP 77037

HSBC BUILDING LOT 5 DP 3972

STURDEE STREET

FANSHAWE STREET

CUSTOMS STREET WEST

REV	AMENDMENT	DATE OF ISSUE
A	First Issue	24/09/2025
B	Second Issue	25/09/2025

DESIGN: KC | DRAWN: KC
CHECKED: HS | DATE: 24/09/2025
SCALE: 0 20m
1:500 @ A3

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

FOR DISCUSSION

SHEET TITLE:
CONSTRUCTION PHASE - LB4 to L00
SEMI-TRAILER LOADING AT SLIP LANE

DRAWING NUMBER: PREP002-DC-CTMP-A

SHEET: 09 of 15

REV: B

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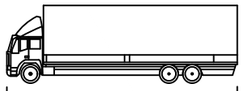
vehicle tracking key:

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

vehicle specs:



12.6m Rigid Truck

vehicle width: 2.55m
lock to lock time: 6.00s
track width: 2.55m
turning radius: 49 degrees
vehicle speed: 5-10km/h

Not to Scale

NOT FOR CONSTRUCTION

MAINTAIN ALL TRAFFIC LANES ON FLYOVER

HEIGHT RESTRICTED AREA DUE TO LOWER HOBSON ST OVER BRIDGE

HEAVY VEHICLE ACCESS VIA LOWER HOBSON STREET. REQUIRES TEMPORARY REMOVAL OF KERB, SIGNAL POLE AND SIGN

EXISTING FOOTPATH LINK TO BE CLOSED

MAINTAINS PEDESTRIAN ACCESS WHERE POSSIBLE DURING EACH STAGE OF CONSTRUCTION/DEMOLITION

CROSSING TO BE EXTENDED AND MANAGED AT ALL TIMES

STEEL/MATERIAL LOADING ZONE

MAINTAINS EAST-WEST PEDESTRIAN ACCESS AT ALL TIMES

MAINTAIN PEDESTRIAN ACCESS BETWEEN FANSHAWE STREET & CUSTOMS STREET WEST.

REV	AMENDMENT	DATE OF ISSUE
A	First Issue	24/09/2025
B	Second Issue	25/09/2025

DESIGN: KC | DRAWN: KC
CHECKED: HS | DATE: 24/09/2025
SCALE: 0 20m
1:500 @ A3

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

FOR DISCUSSION

SHEET TITLE: **CONSTRUCTION PHASE - L00 and UP RIGID TRUCK LOADING AT CUSTOM ST W**

DRAWING NUMBER: **PREP002-DC-CTMP-A**

SHEET: 10 of 15

REV: B

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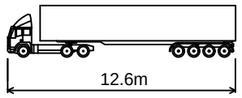
vehicle tracking key:

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

vehicle specs:



12.6m Rigid Truck

vehicle width: 2.55m
lock to lock time: 6.00s
track width: 2.55m
turning radius: 49 degrees
vehicle speed: 5-10km/h

Not to Scale

NOT FOR CONSTRUCTION

IN

OUT

HEIGHT RESTRICTED AREA DUE TO LOWER HOBSON ST OVER BRIDGE

HEIGHT RESTRICTED AREA DUE TO LOWER HOBSON ST OVER BRIDGE

MAINTAINS PEDESTRIAN ACCESS WHERE POSSIBLE DURING EACH STAGE OF CONSTRUCTION/DEMOLITION

INDICATIVE TRUCK LOADING LOCATION (CAN MOVE ANYWHERE NORTH OR SOUTH ALONG THIS WESTERN FRONTAGE)

CROSSING TO BE EXTENDED AND MANAGED AT ALL TIMES

MAINTAINS EAST-WEST PEDESTRIAN ACCESS AT ALL TIMES

TEMPORARY TRUCK HOLDING OR PASSING BAY AREA (FLEXIBLE SPACE & TURNING AREA FOR SMALLER TRUCKS)

TEMPORARY TRUCK HOLDING OR PASSING BAY AREA (FLEXIBLE SPACE & TURNING AREA FOR SMALLER TRUCKS)

LOWER HOBSON STREET WIDTH LIMITED TO ONLY ONE TRUCK AT A TIME NORTH OF A TRUCK PARKED AT THIS POSITION

TOWER 2

LOT 9 DP 60151

LOT 1 DP 78340

PODIUM

TOWER 1

AON BUILDING LOT 7 DP 77037

HSBC BUILDING LOT 5 DP 7972

CUSTOMS STREET WEST

FANSHAWE STREET

TYRWHITT STREET

REV	AMENDMENT	DATE OF ISSUE
A	First Issue	24/09/2025
B	Second Issue	25/09/2025

DESIGN: KC | DRAWN: KC

CHECKED: HS | DATE: 24/09/2025

SCALE: 0 20m

1:500 @ A3

CLIENT: PRECINCT PROPERTIES

PROJECT: DOWNTOWN CARPARK REDEVELOPMENT

LOCATION: 2 LOWER HOBSON STREET, AUCKLAND CBD

FOR DISCUSSION

SHEET TITLE: **CONSTRUCTION PHASE - L00 and UP RIGID TRUCK LOADING AT SLIP LANE**

DRAWING NUMBER: **PREP002-DC-CTMP-A**

SHEET: 11 of 15

REV: B

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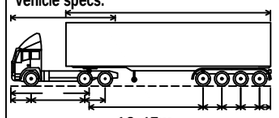
vehicle tracking key:

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

vehicle specs:



19.45m Semi-Trailer

vehicle width: 2.55m
lock to lock time: 6.00s
track width: 2.55m
turning radius: 12.55m
vehicle speed: 5-10kmph

Not to Scale

NOT FOR CONSTRUCTION

MAINTAIN ALL TRAFFIC LANES ON FLYOVER

HEIGHT RESTRICTED AREA DUE TO LOWER HOBSON ST OVER BRIDGE

HEAVY VEHICLE ACCESS VIA LOWER HOBSON STREET. REQUIRES TEMPORARY REMOVAL OF KERB, SIGNAL POLE AND SIGN

EXISTING FOOTPATH LINK TO BE CLOSED

MAINTAINS PEDESTRIAN ACCESS WHERE POSSIBLE DURING EACH STAGE OF CONSTRUCTION/DEMOLITION

CROSSING TO BE EXTENDED AND MANAGED AT ALL TIMES

STEEL/MATERIAL LOADING ZONE

MAINTAINS EAST-WEST PEDESTRIAN ACCESS AT ALL TIMES

MAINTAIN PEDESTRIAN ACCESS BETWEEN FANSHAWE STREET & CUSTOMS STREET WEST

LOWER HOBSON STREET

TOWER 2

PODIUM 2

PODIUM 1

N

REV	AMENDMENT	DATE OF ISSUE
A	First Issue	24/09/2025
B	Second Issue	25/09/2025

DESIGN: KC | DRAWN: KC
CHECKED: HS | DATE: 24/09/2025
SCALE: 0 20m
1:500 @ A3

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

FOR DISCUSSION

SHEET TITLE: **CONSTRUCTION PHASE - L00 and UP SEMI-TRAILER LOADING AT CUSTOM ST W**

DRAWING NUMBER: **PREP002-DC-CTMP-A**

SHEET: 12 of 15

REV: B

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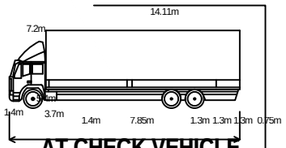
vehicle tracking key:

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

vehicle specs:



AT CHECK VEHICLE
17.9m - Truck Semi-Trailer
vehicle width: 2.550m
lock to lock time: 6.00s
track width: 2.550m
turning radius: 12.500m
vehicle speed: 5-10kmph

Not to Scale

NOT FOR CONSTRUCTION

IN

OUT

HEIGHT RESTRICTED AREA DUE TO LOWER HOBSON ST OVER BRIDGE

HEIGHT RESTRICTED AREA DUE TO LOWER HOBSON ST OVER BRIDGE

MAINTAINS PEDESTRIAN ACCESS WHERE POSSIBLE DURING EACH STAGE OF CONSTRUCTION/DEMOLITION

LOADING ZONE FOR SEMI-TRAILER (RESTRICT TO 17.9m SEMI-TRAILER AS LARGEST TRUCK)

CROSSING TO BE EXTENDED AND MANAGED AT ALL TIMES

MAINTAINS EAST-WEST PEDESTRIAN ACCESS AT ALL TIMES

LOWER HOBSON STREET

PODIUM 3

TOWER 2

LOT 9 DP 60151

LOT 8 DP 60151

LOT 1 DP 78340

PODIUM 2

PODIUM

TOWER 1

AON BU... LOT ... DP 770...

BOUNDARY 108°14' 71.02m

108°14' 7.44m

18°14' 55.25m

BOUNDARY 18°14' 32.01m

BOUNDARY 18°14' 53.45m

REV	AMENDMENT	DATE OF ISSUE
A	First Issue	24/09/2025
B	Second Issue	25/09/2025

DESIGN: KC | DRAWN: KC
CHECKED: HS | DATE: 24/09/2025
SCALE: 0 20m
1:500 @ A3

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

FOR DISCUSSION

SHEET TITLE: CONSTRUCTION PHASE - L00 and UP SEMI-TRAILER LOADING AT SLIP LANE

DRAWING NUMBER: PREP002-DC-CTMP-A

SHEET: 13 of 15

REV: B

flow TRANSPORTATION SPECIALISTS
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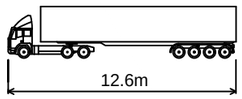
vehicle tracking key:

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

vehicle specs:



12.6m Rigid Truck

vehicle width: 2.55m
lock to lock time: 6.00s
track width: 2.55m
turning radius: 49 degrees
vehicle speed: 5-10km/h

Not to Scale

NOT FOR CONSTRUCTION

MSOCIAL LOADING SPACE REQUIREMENTS TO BE MANAGED TO AVOID CONFLICTING SWEPT PATHS.

RELOCATING THE GATE FURTHER NORTH SEPARATING THE CONSTRUCTION ZONE AND M SOCIAL LOADING ACCESS MANAGED ACCORDINGLY BY TRAFFIC MANAGEMENT.

INDICATIVE SITE ACCESS LOCATION

HEIGHT RESTRICTED AREA DUE TO LOWER HOBSON ST OVER BRIDGE

TEMPORARY TRUCK HOLDING OR PASSING BAY AREA (FLEXIBLE SPACE & TURNING AREA FOR SMALLER TRUCKS)

MAINTAINS PEDESTRIAN ACCESS WHERE POSSIBLE DURING EACH STAGE OF CONSTRUCTION/DEMOLITION

INDICATIVE TRUCK LOADING ZONE

CROSSING TO BE EXTENDED AND MANAGED AT ALL TIMES

HEAVY VEHICLE ACCESS VIA LOWER HOBSON STREET. REQUIRES TEMPORARY REMOVAL OF KERB AND SIGNAL POLE

TRUCK LOADING ZONE

MAINTAINS EAST-WEST PEDESTRIAN ACCESS AT ALL TIMES

LOT 8 DP 60151
PODIUM 3
TOWER 2
LOT 9 DP 60151
LOT 1 DP 78340
PODIUM 2
TOWER 1
PODIUM
AON BU
LOT
DP 770
LOWER HOBSON STREET
108°14' 71.02m
108°14' 7.44m
18°14' 55.25m
BOUNDARY 18°14' 32.01m
BOUNDARY 18°14' 53.45m

REV	AMENDMENT	DATE OF ISSUE
A	First Issue	24/09/2025
B	Second Issue	25/09/2025

DESIGN: KC | DRAWN: KC
CHECKED: HS | DATE: 24/09/2025
SCALE: 0 20m
1:500 @ A3

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

FOR DISCUSSION

SHEET TITLE: CONSTRUCTION PHASE - ONSITE (PARTIAL L00 and UP)
RIGID TRUCK - ENTRY AND EXIT

DRAWING NUMBER: PREP002-DC-CTMP-A

SHEET: 14 of 15
REV: B

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vehicle tracking key:

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

vehicle specs:

19.45m

19.45m Semi-Trailer

vehicle width: 2.55m
lock to lock time: 6.00s
track width: 2.55m
turning radius: 12.55m
vehicle speed: 5-10kmph

Not to Scale

NOT FOR CONSTRUCTION

MSOCIAL LOADING SPACE REQUIREMENTS TO BE MANAGED TO AVOID CONFLICTING SWEPT PATHS.

RELOCATING THE GATE FURTHER NORTH SEPARATING THE CONSTRUCTION ZONE AND M SOCIAL LOADING ACCESS MANAGED ACCORDINGLY BY TRAFFIC MANAGEMENT.

INDICATIVE SITE ACCESS LOCATION

HEIGHT RESTRICTED AREA DUE TO LOWER HOBSON ST OVER BRIDGE

TEMPORARY TRUCK HOLDING OR PASSING BAY AREA FOR SEMI-TRAILER

MAINTAINS PEDESTRIAN ACCESS WHERE POSSIBLE DURING EACH STAGE OF CONSTRUCTION/DEMOLITION

INDICATIVE TRUCK LOADING ZONE

CROSSING TO BE EXTENDED AND MANAGED AT ALL TIMES

HEAVY VEHICLE ACCESS VIA LOWER HOBSON STREET. REQUIRES TEMPORARY REMOVAL OF KERB AND SIGNAL POLE

TRUCK LOADING ZONE

MAINTAINS EAST-WEST PEDESTRIAN ACCESS AT ALL TIMES

REV	AMENDMENT	DATE OF ISSUE
A	First Issue	24/09/2025
B	Second Issue	25/09/2025

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DESIGN: KC
DRAWN: KC
CHECKED: HS
DATE: 24/09/2025
SCALE: 0 20m
1:500 @ A3

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

FOR DISCUSSION

SHEET TITLE: CONSTRUCTION PHASE - ONSITE (PARTIAL L00 and UP)
19.45m SEMI - ENTRY AND EXIT

DRAWING NUMBER: PREP002-DC-CTMP-A

SHEET: 15 of 15

REV: B

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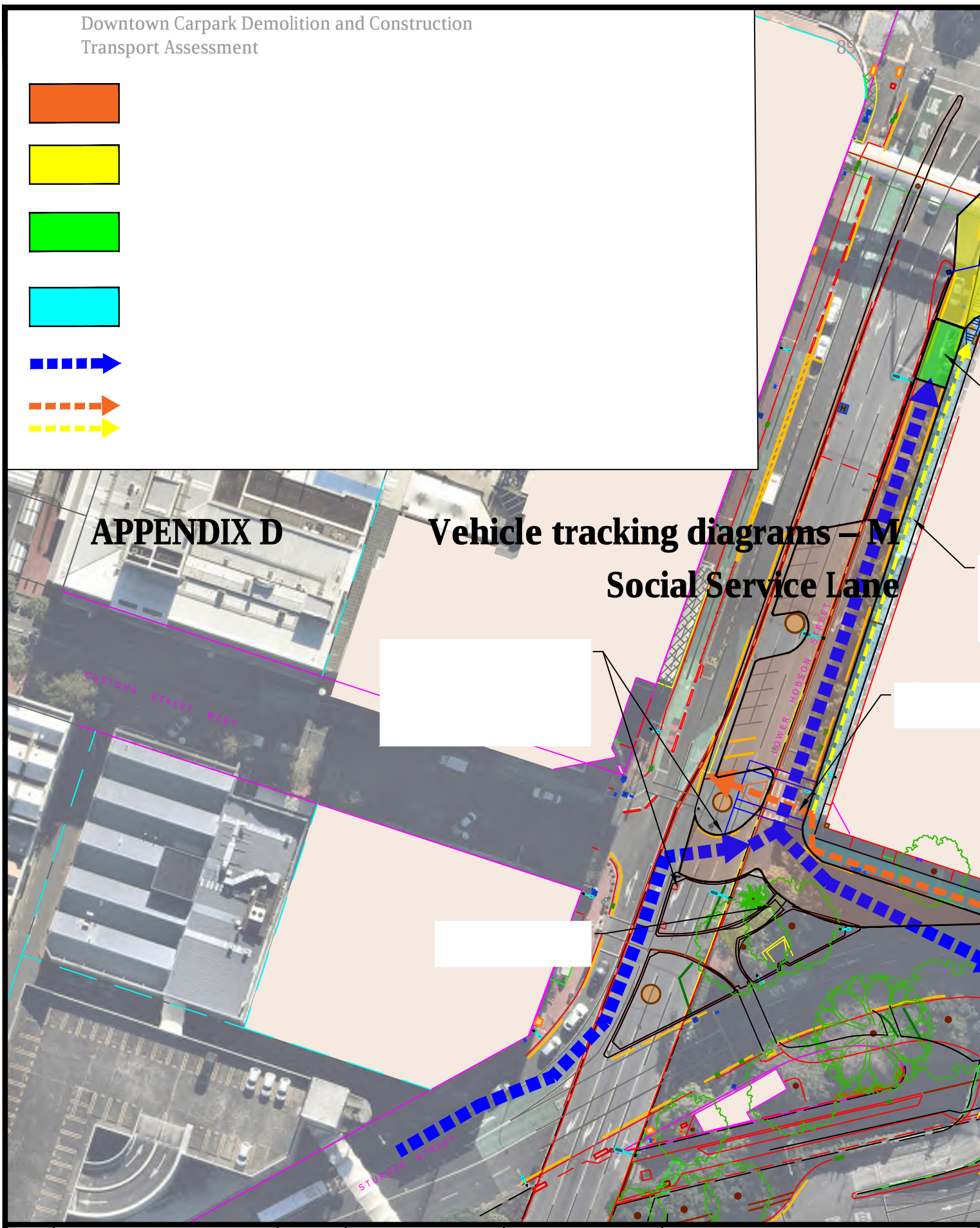
APPENDIX D

Vehicle tracking diagrams – M Social Service Lane



LEGEND

PROJECT CONSTRUCTION AREA/VEHICLE LANE CLOSURE

VEHICLE MANOEUVRING AREA FOR M SOCIAL LOADING BAY

OVERLAP AREA OF TRUCK MANOEUVRING FOR PROJECT CONSTRUCTION & M SOCIAL LOADING

HOARDINGS ALONG SITE FRONTAGE

CONSTRUCTION VEHICLE ACCESS

PEDESTRIAN ACCESS

HEAVY VEHICLE ACCESS VIA LOWER HOBSON STREET. REQUIRES TEMPORARY REMOVAL OF KERB AND SIGNAL POLE

CROSSING TO BE EXTENDED AND MANAGED AT ALL TIMES

EXISTING FOOTPATH LINK TO BE CLOSED

EXTENT OF SHORT TERM FOOTPATH CLOSURE. ONLY IF REQUIRED WHEN PEDESTRIAN ACCESS ON LOWER HOBSON ST CANNOT BE MAINTAINED

TRUCK MANOEUVRING OVERLAP AREA WITH M SOCIAL TO BE MANAGED DURING THE STAGE OF CONSTRUCTION WHEN L00 SLAB IS OPENED DURING LATER STAGES OF CONSTRUCTION. INCLUSIVE OF GATED AREA TO SEPARATE M SOCIAL AND CONSTRUCTION TRAFFIC.

MAINTAINS PEDESTRIAN ACCESS WHERE POSSIBLE DURING EACH STAGE OF CONSTRUCTION/DEMOLITION

MAINTAINS EAST-WEST PEDESTRIAN ACCESS AT ALL TIMES

REV	AMENDMENT	DATE OF ISSUE
A	First Issue	25/09/2025
B	Second Issue	26/09/2025

DESIGN: KC DRAWN: KC
SCALE: 0 32m
CHECKED: HS DATE: 25/09/2025

04

CLIENT:
LOCATION: :800 @ A3

MSOCIAL ARRANGEMENTS - OVERVIEW

SHEET TITLE:
PROJECT: DOWNTOWN CARPARK REDEVELOPMENT

SHEET: 2 LOW

ER HOBSON STREET, AUCKLAND CBD

flow TRANSPORTATION SPECIALISTS

FOR DISCUSSION

DRAWING NUMBER:

PREP002-DC-CTMP-A

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LANE CLOSURE AND ACCESSES

01 of 05

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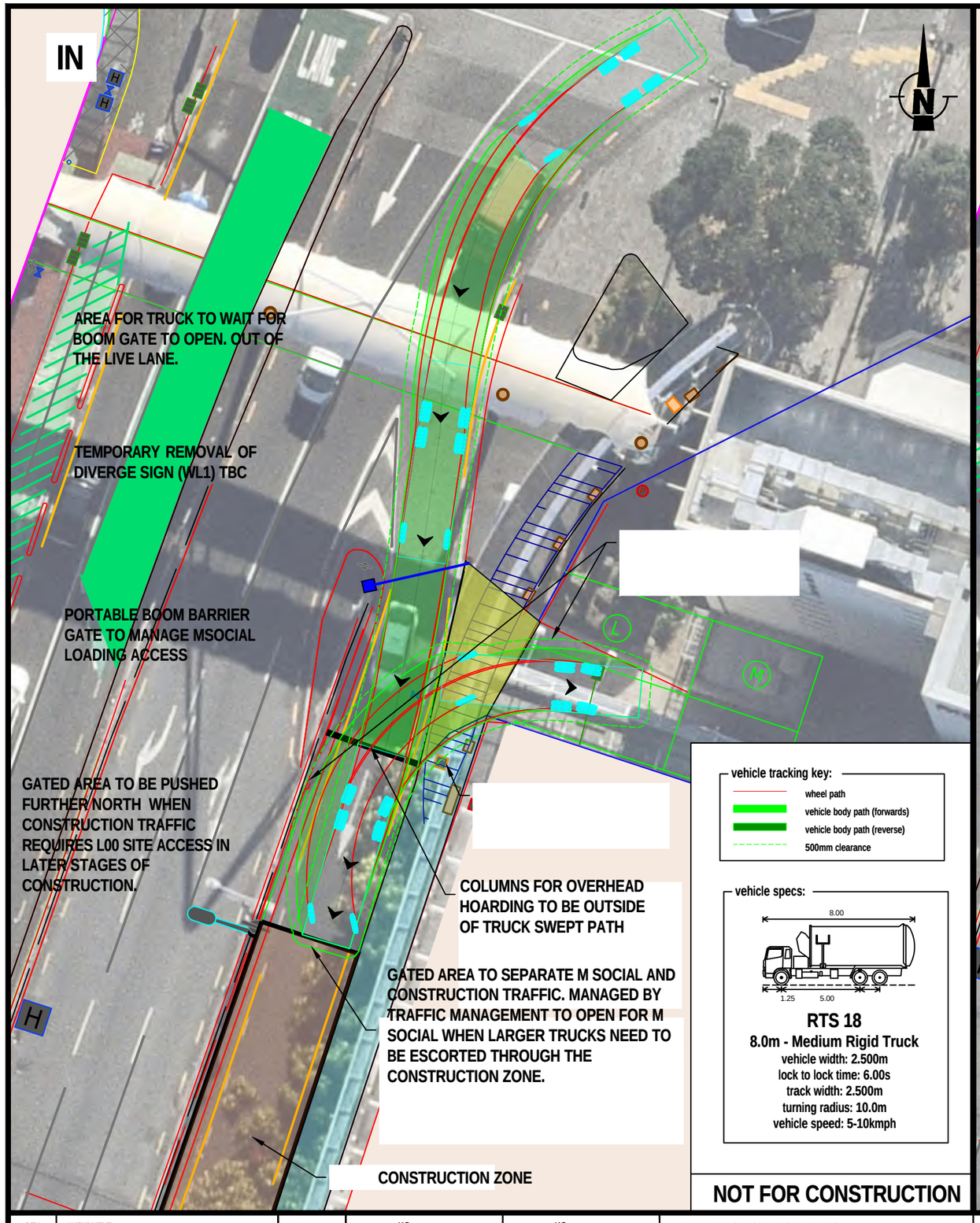

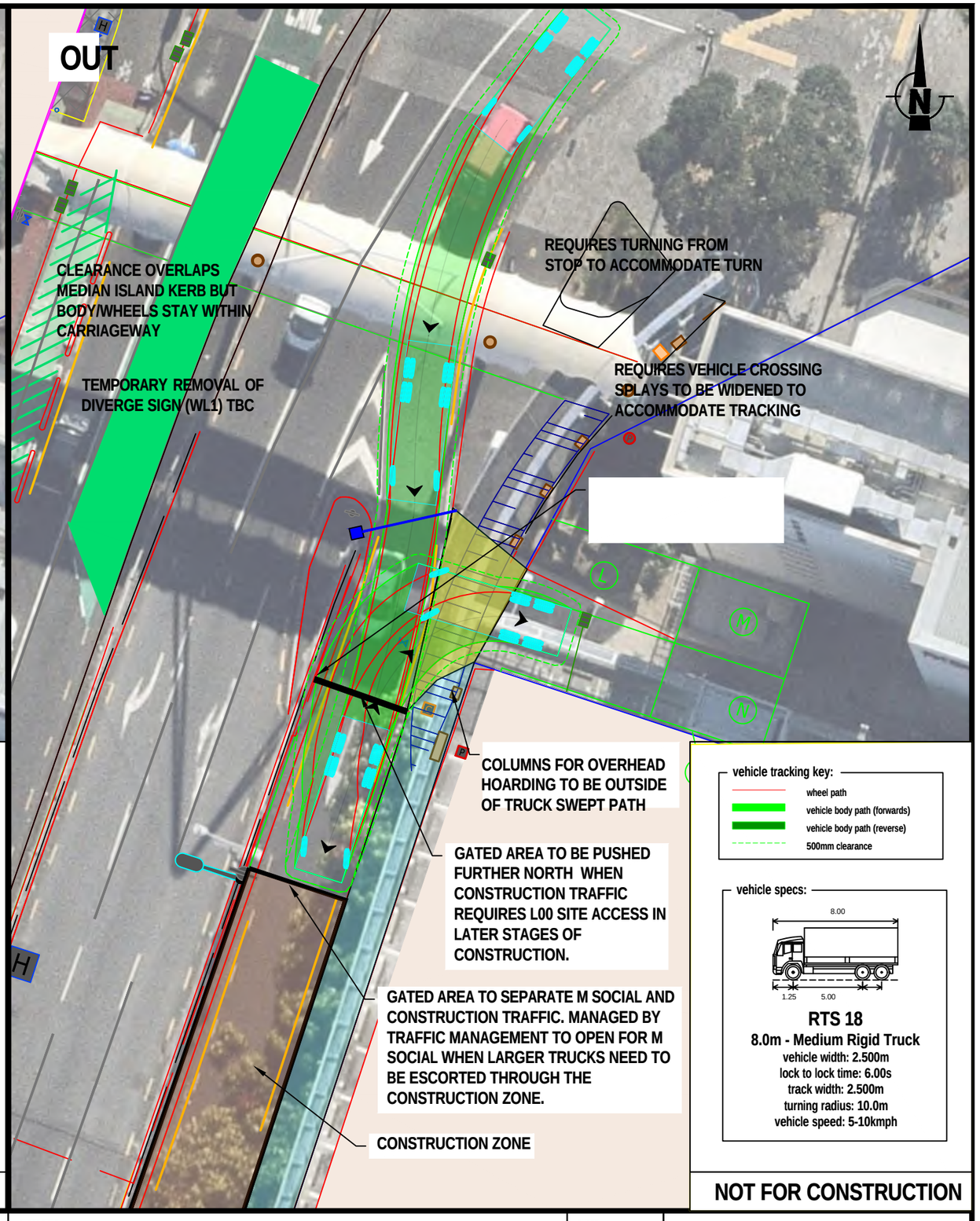

REV	AMENDMENT	DATE OF ISSUE
A	First Issue	25/09/2025
B	Second Issue	26/09/2025

DESIGN: KC | DRAWN: KC
CHECKED: HS | DATE: 25/09/2025
SCALE: 0 10m
1:250 @ A3

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

FOR DISCUSSION

SHEET TITLE: MSOCIAL ARRANGEMENTS - WORKABLE VEHS 8.0m TRUCK IN & OUT

DRAWING NUMBER: PREP002-DC-CTMP

SHEET: 02 of 05

REV: B

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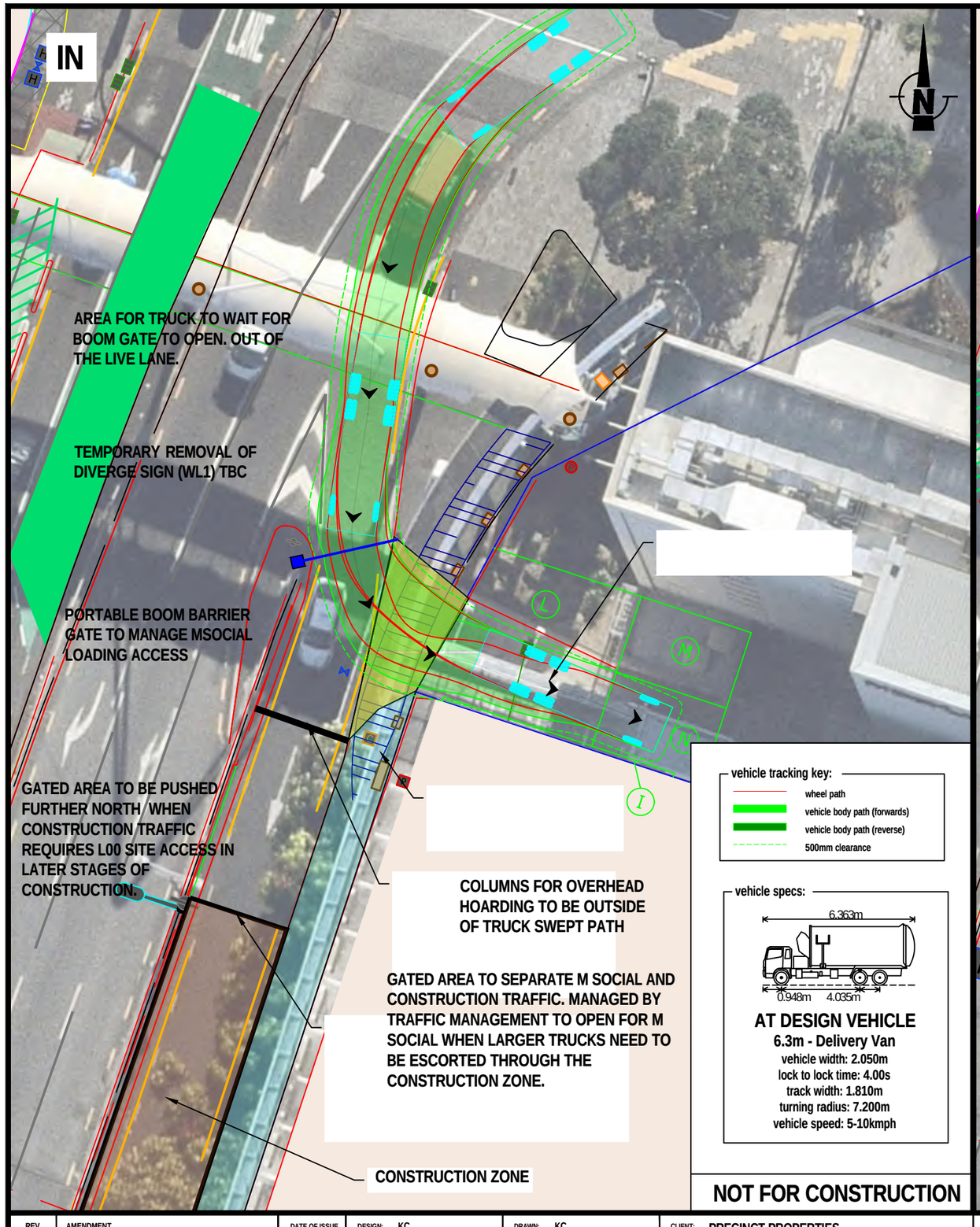
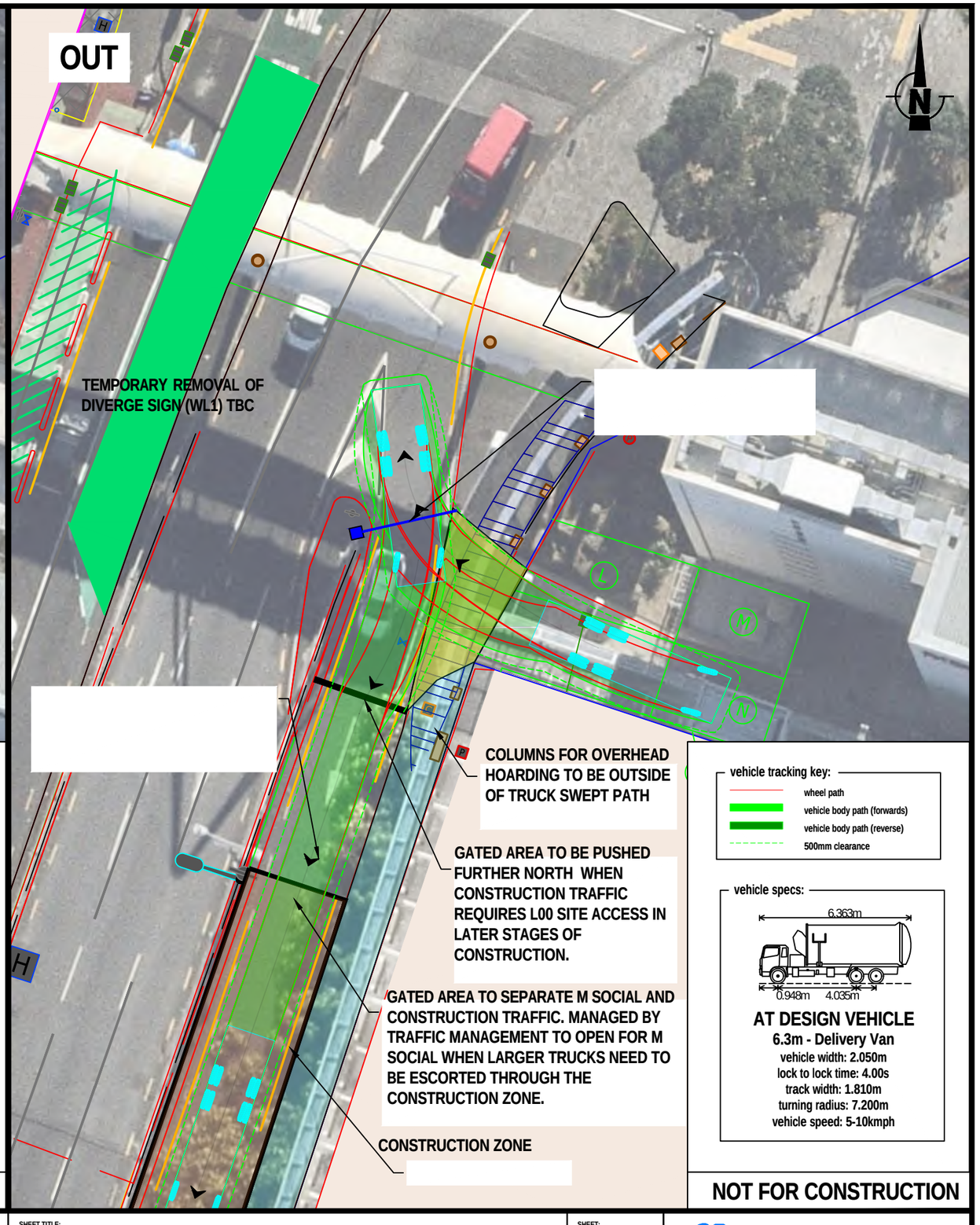


vehicle tracking key:
- wheel path
- vehicle body path (forwards)
- vehicle body path (reverse)
- 500mm clearance

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

NOT FOR CONSTRUCTION



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

NOT FOR CONSTRUCTION

REV	AMENDMENT	DATE OF ISSUE
A	First Issue	25/09/2025
B	Second Issue	26/09/2025

DESIGN: KC | DRAWN: KC
CHECKED: HS | DATE: 25/09/2025
SCALE: 0 10m
1:250 @ A3

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

FOR DISCUSSION

SHEET TITLE: **MSOCIAL ARRANGEMENTS - WORKABLE VEHS 6.3m VAN IN & OUT**

DRAWING NUMBER: **PREP002-DC-CTMP**

SHEET: 03 of 05
REV: B

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REV	AMENDMENT	DATE OF ISSUE
A	First Issue	25/09/2025
B	Second Issue	26/09/2025

DESIGN: KC DRAWN: KC
CHECKED: HS DATE: 25/09/2025
SCALE: 0 10m
1:250 @ A3

FOR DISCUSSION

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

SHEET TITLE: MSOCIAL ARRANGEMENTS - LARGER TRUCKS 10.3m & 8.3m TRUCK IN

DRAWING NUMBER: PREP002-DC-CTMP

SHEET: 04 of 05

REV: B

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IN

OUT

LARGER TRUCKS WORK WITH FORWARD IN

INITIAL REVERSE MANOEUVRE REQUIRED. BOOM GATE TO BE OPENED WHEN REQUIRED.

EXIT VIA LOWER HOBSON STREET SLIP LANE AND CONFLICTS WITH WITH CONSTRUCTION VEHICLES TO BE MANAGED

COLUMNS FOR OVERHEAD HOARDING TO BE OUTSIDE OF TRUCK SWEPT PATH

GATED AREA TO BE PUSHED FURTHER NORTH WHEN CONSTRUCTION TRAFFIC REQUIRES L00 SITE ACCESS IN LATER STAGES OF CONSTRUCTION.

GATED AREA TO SEPARATE M SOCIAL AND CONSTRUCTION TRAFFIC. MANAGED BY TRAFFIC MANAGEMENT TO OPEN FOR M SOCIAL WHEN LARGER TRUCKS NEED TO BE ESCORTED THROUGH THE CONSTRUCTION ZONE.

CONSTRUCTION ZONE

vehicle tracking key:

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

vehicle specs:

10.3m

1.25m 5.33m 1.35m

AT CHECK VEHICLE

10.3m - Rubbish Truck - Rear Steer

vehicle width: 2.550m
lock to lock time: 6.00s
track width: 2.550m
Max Steering Angle (Virtual): 47.00°
vehicle speed: 5-10kmph

NOT FOR CONSTRUCTION

FOR DISCUSSION

REV	AMENDMENT	DATE OF ISSUE
A	First Issue	25/09/2025
B	Second Issue	26/09/2025

DESIGN: KC DRAWN: KC
CHECKED: HS DATE: 25/09/2025
SCALE: 0 10m

1:250 @ A3

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

SHEET TITLE: MSOCIAL ARRANGEMENTS - LARGER TRUCKS 10.3m TRUCK EXIT VIA SLIP LANE

SHEET: 05 of 05

DRAWING NUMBER: PREP002-DC-CTMP

REV: B

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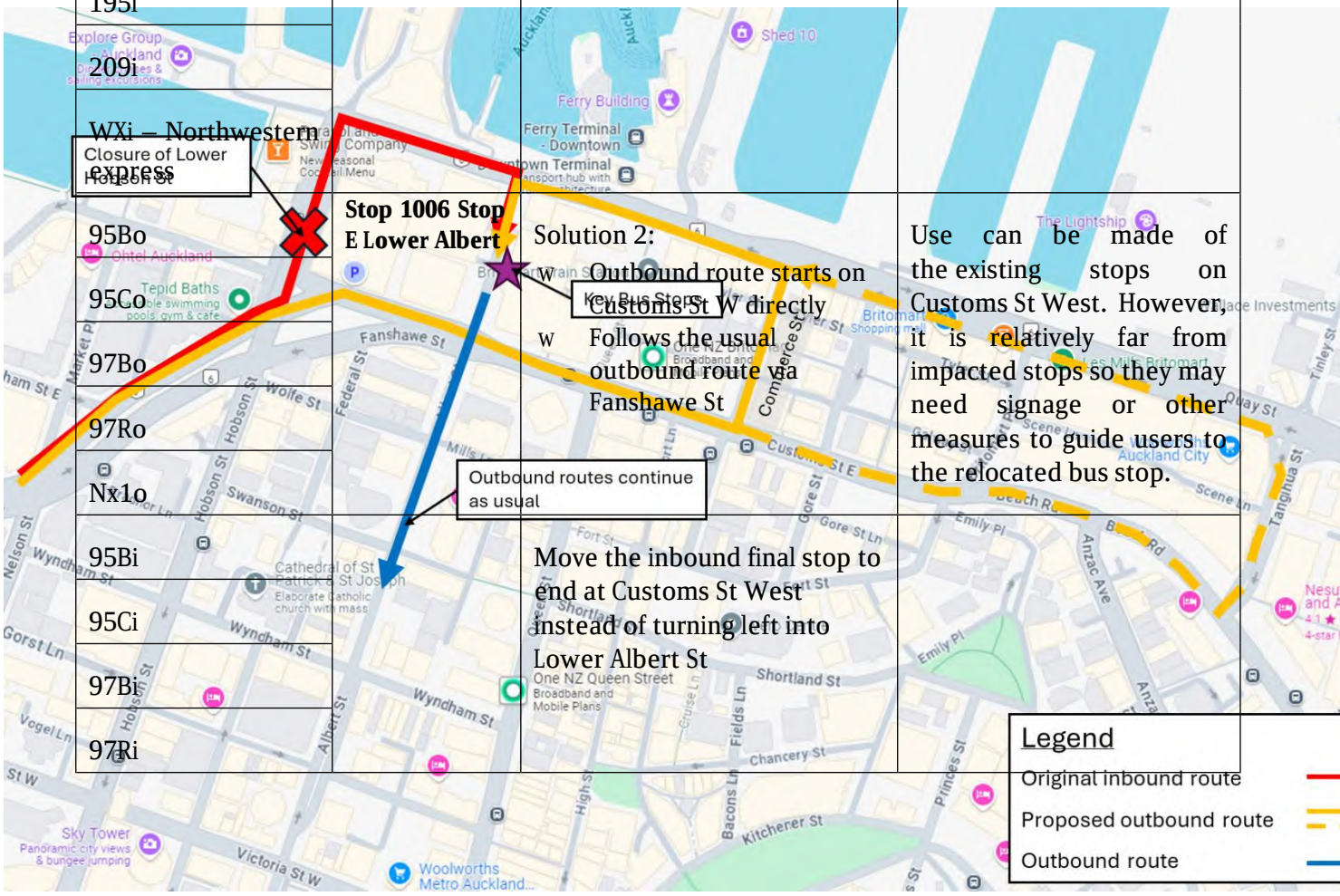
APPENDIX E Alternative bus route solutions

Route name followed by i = bus route inbound

Route name followed by o = bus route outbound

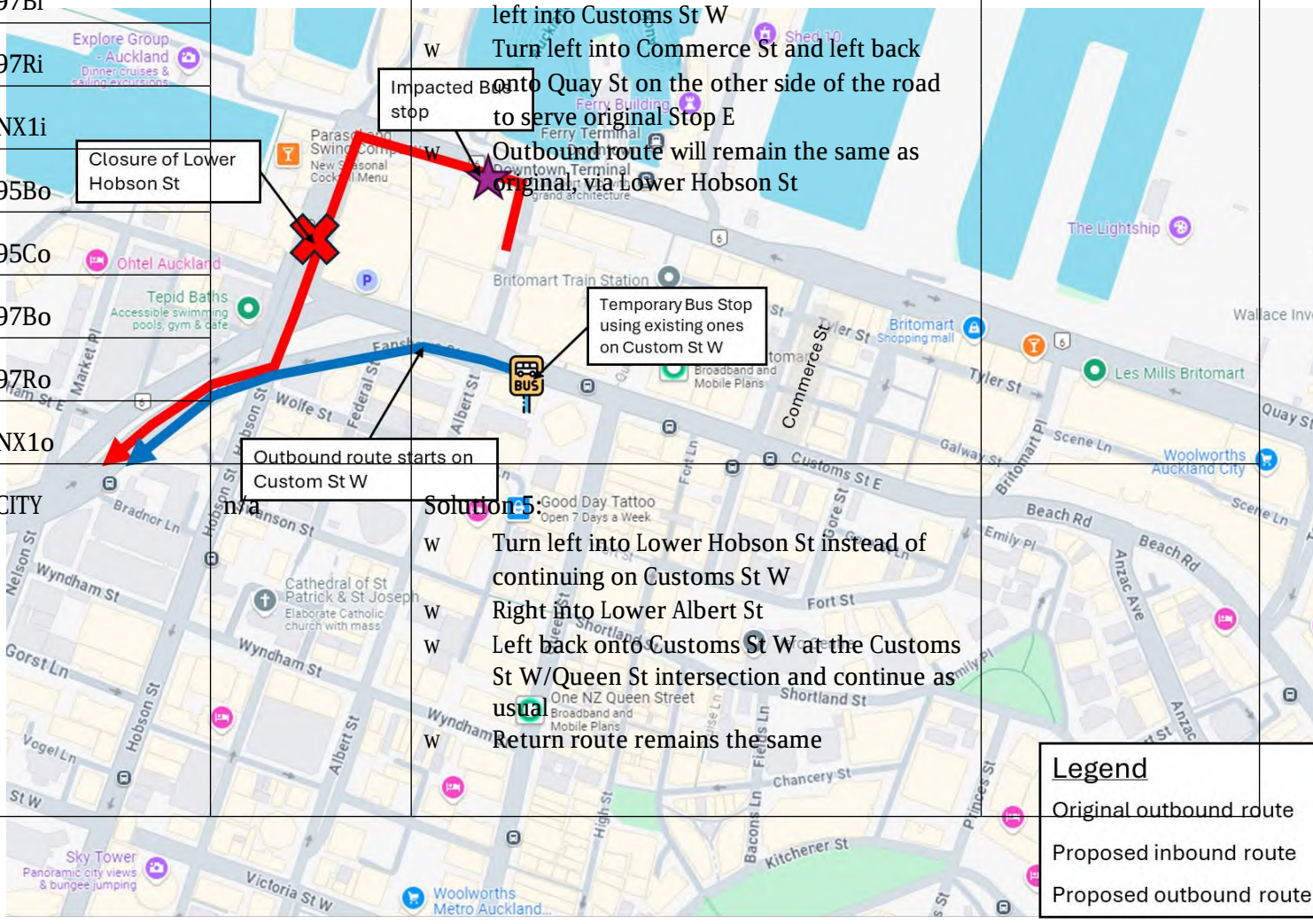
Removal of pedestrian overbridge - Closure of Lower Hobson St 48 hours during a weekend			
Affected Bus Routes in the SATURN model	**Affected Existing Bus Stops (ID)**	**Alternative route**	**Additional notes/works required**
105i 106 11Ti 11Wi 18i 195i 209i WXi – Northwestern express 95Bo 95Co 97Bo 97Ro Nx1o	n/a	Solution 1: w Continue on Fanshawe St instead of turning left into Lower Hobson St w Turn left at Commerce St w Turn left onto Quay St w Turn left back into Lower Albert St (trip origin)	We have checked bus tracking for the Commerce Street and Lower Albert Street intersections, which do not currently accommodate bus routes, as shown in Appendix F
95Bi 95Ci 97Bi 97Ri	**Stop 1006 Stop E Lower Albert**	Solution 2: w Outbound route starts on Customs St W directly w Follows the usual outbound route via Fanshawe St Move the inbound final stop to end at Customs St West instead of turning left into Lower Albert St	Use can be made of the existing stops on Customs St West. However, it is relatively far from impacted stops so they may need signage or other measures to guide users to the relocated bus stop.



Removal of Downtown Carpark ramp over Customs Street West - Closure of Customs St West

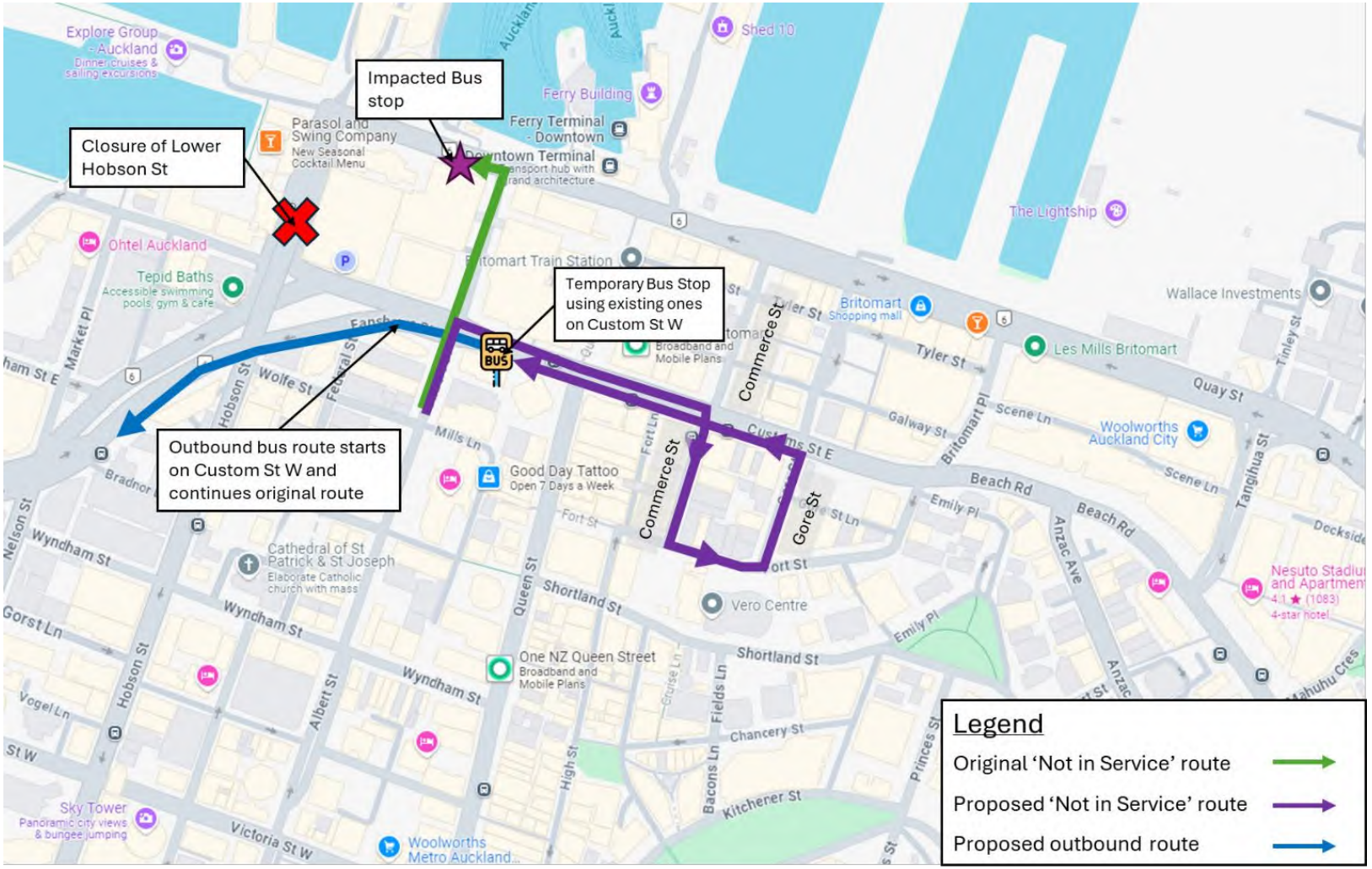
48 hours during a weekend

Affected Bus Routes in the SATURN model	Affected Existing Bus Stops (ID)	Alternative route	Additional notes/works required
931i 933i 939i	n/a	Solution 3: w Turn left into Lower Hobson St instead of continuing on Customs St W w Right into Lower Albert St w Left back onto Customs St W at the Customs St W/Queen St intersection and continue as usual	
95Bi 95Ci 97Bi 97Ri NX1i 95Bo 95Co 97Bo 97Ro NX1o	n/a	Solution 4: w Turn left into Lower Hobson St instead of continuing on Customs St W w Turn right into Lower Albert St and then turn left into Customs St W w Turn left into Commerce St and left back onto Quay St on the other side of the road to serve original Stop E w Outbound route will remain the same as original, via Lower Hobson St	
CITY	n/a	Solution 5: w Turn left into Lower Hobson St instead of continuing on Customs St W w Right into Lower Albert St w Left back onto Customs St W at the Customs St W/Queen St intersection and continue as usual w Return route remains the same	



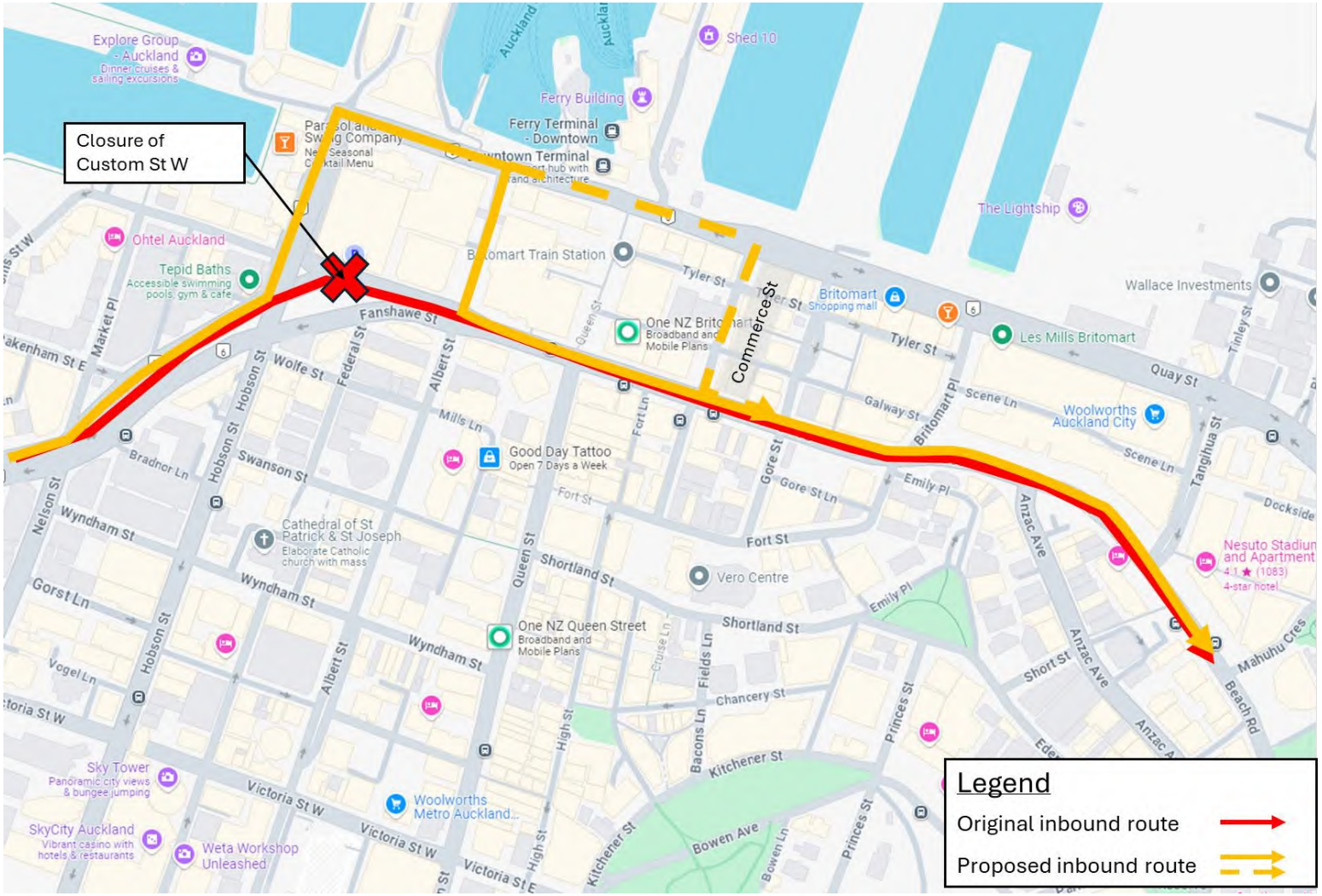
Removal of pedestrian overbridge – Closure of Lower Hobson St

Solution 1



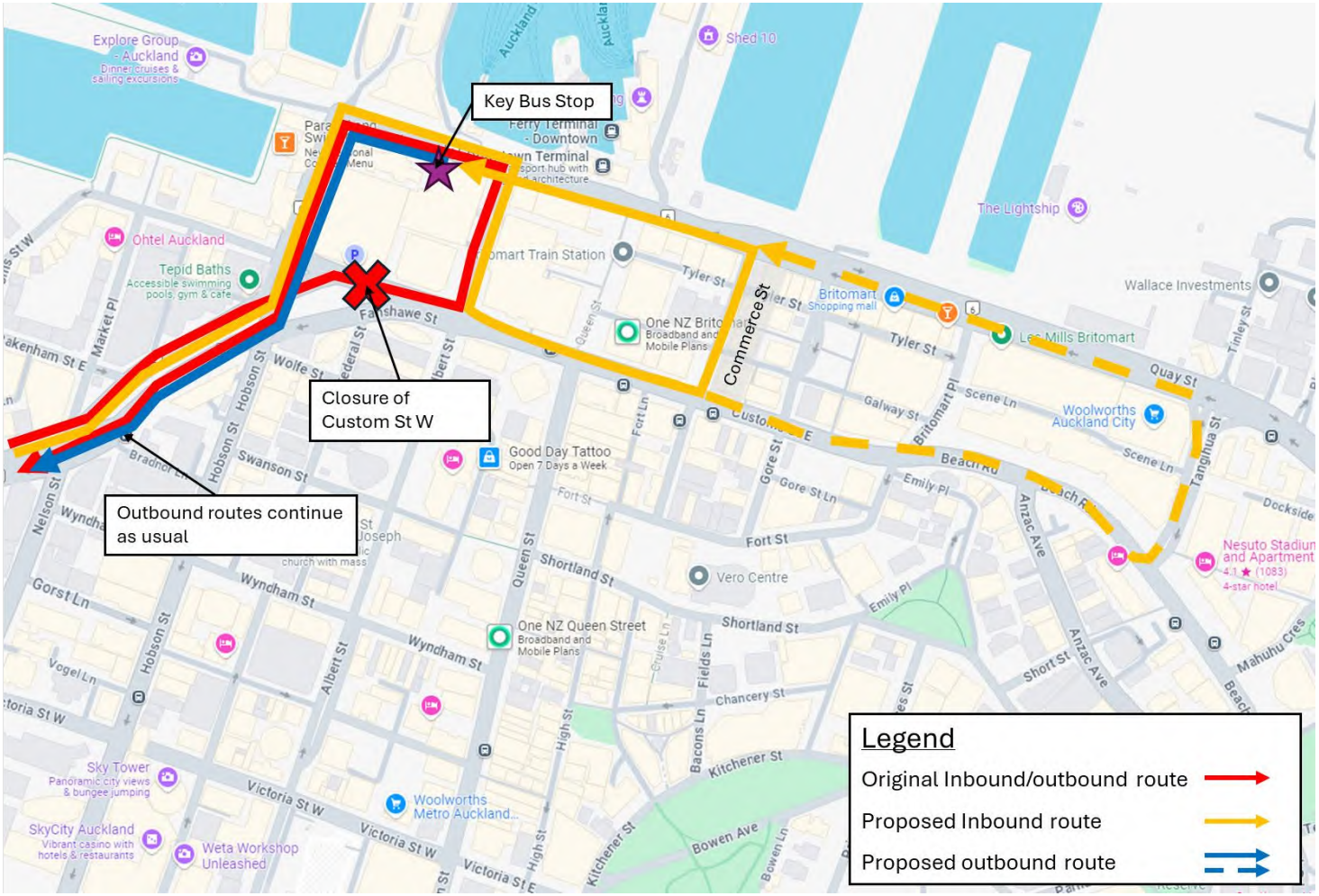
Removal of pedestrian overbridge – Closure of Lower Hobson St

Solution 2



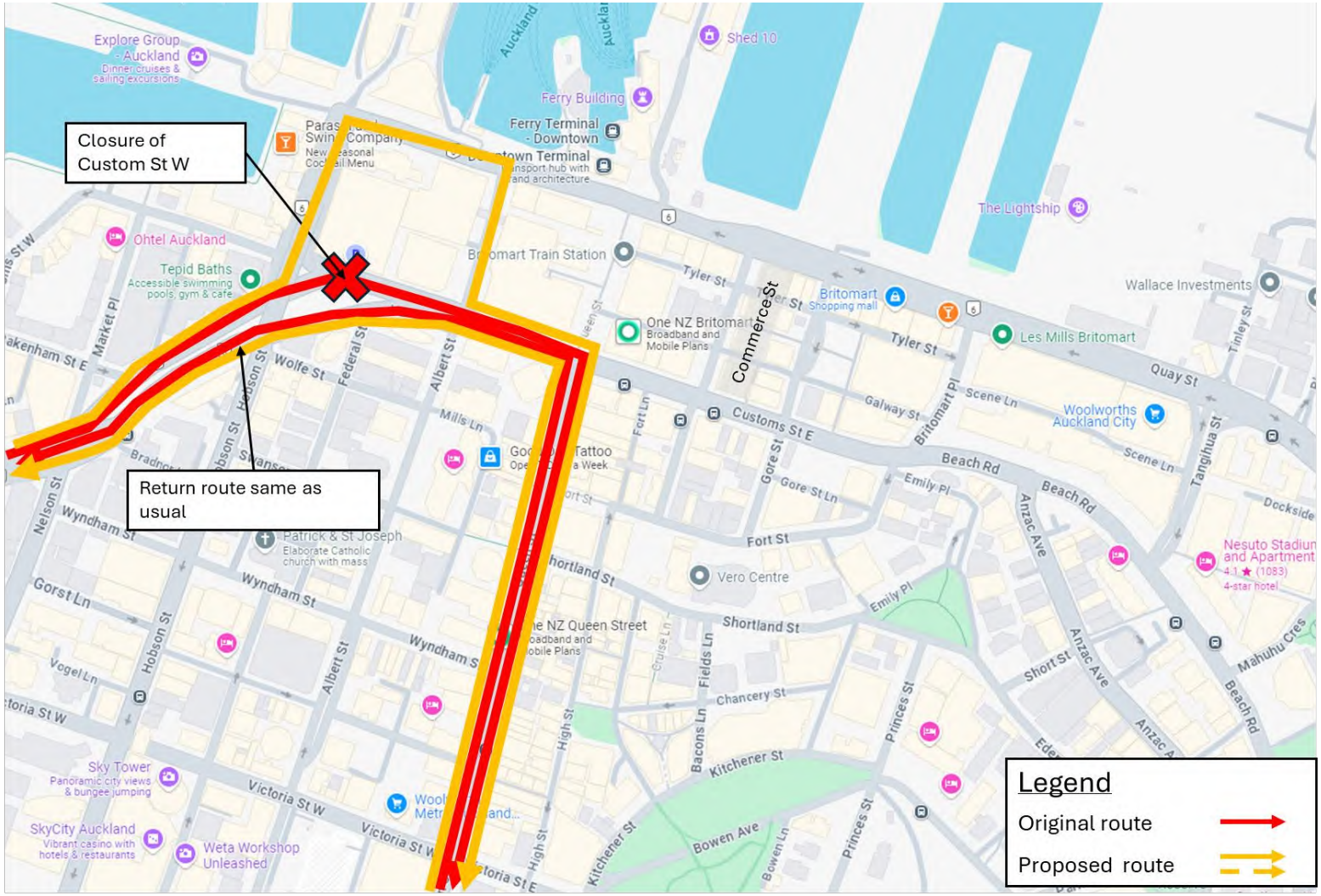
Removal of pedestrian overbridge – Closure of Lower Hobson St

Solution 2 – Not in Service Route



Removal of Downtown Carpark Ramp over Customs Street West - Closure of Customs St West

Solution 3

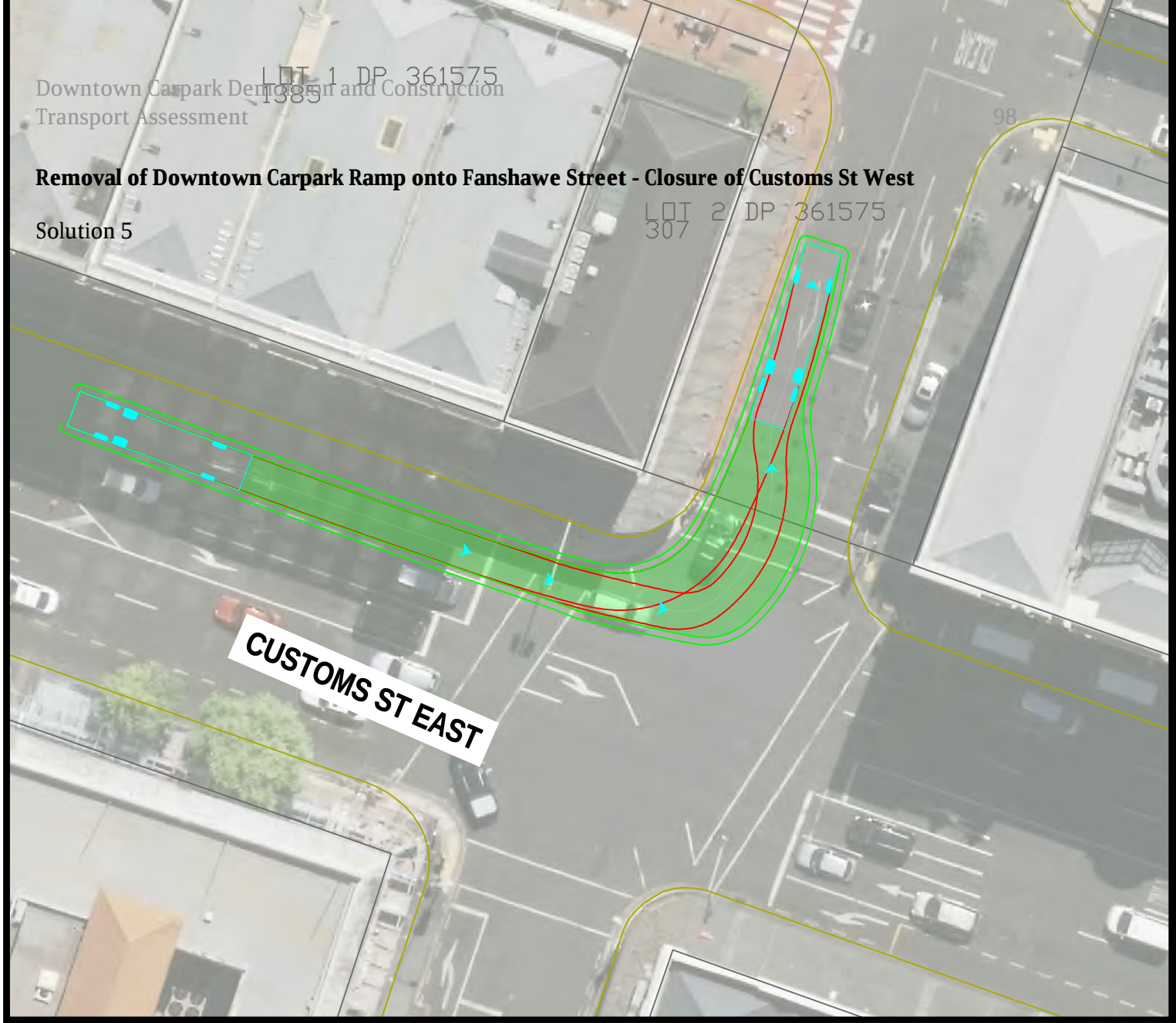


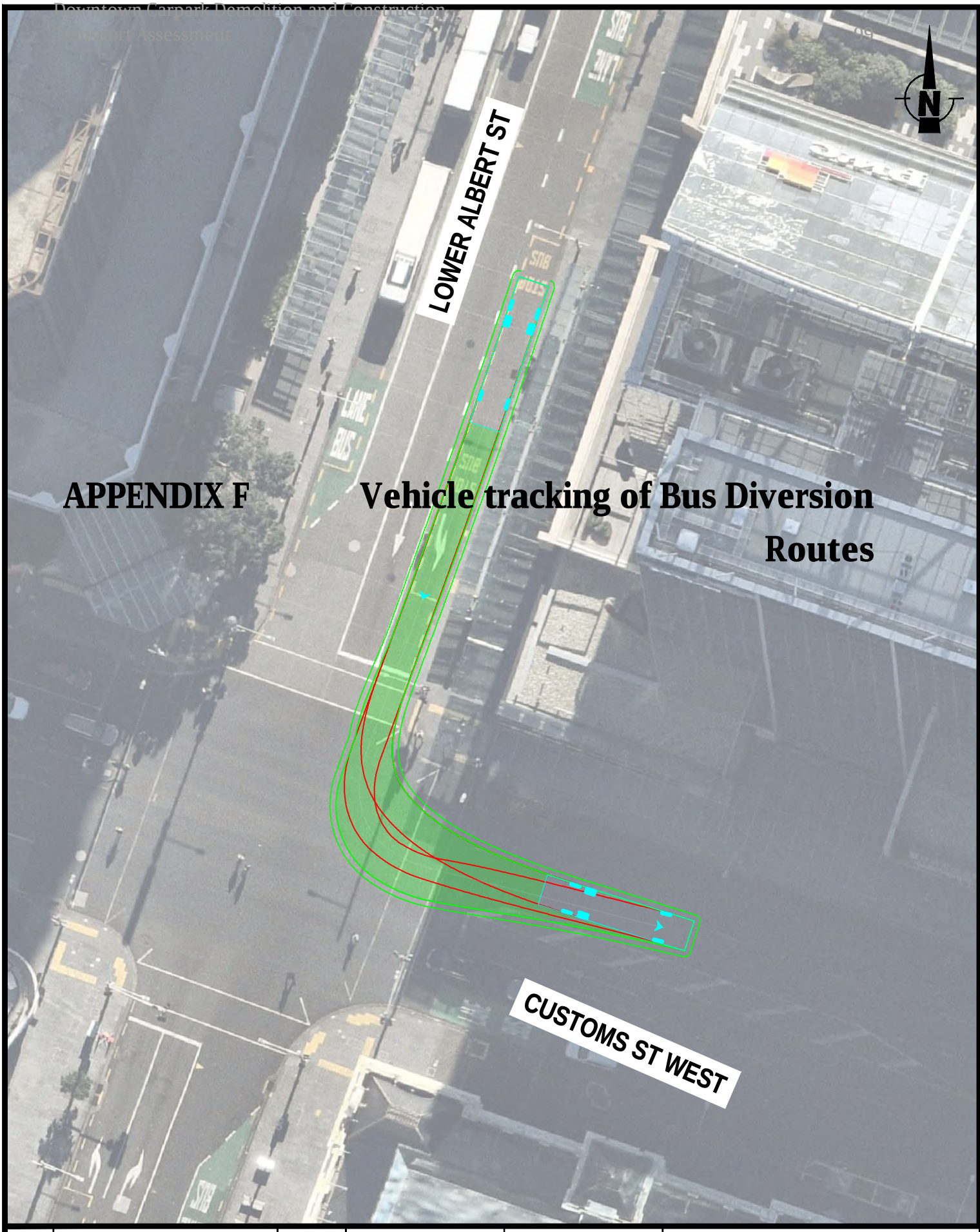
Removal of Downtown Carpark Ramp onto Fanshawe Street - Closure of Customs St West

Solution 4

Removal of Downtown Carpark Ramp onto Fanshawe Street - Closure of Customs St West

Solution 5





APPENDIX F Vehicle tracking of Bus Diversion Routes

vehicle tracking key:

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

vehicle specs:

12.6m

2.35m 6.25m 1.35m

AT DESIGN VEHICLE
12.6m - Urban Bus (RTS18)
vehicle width: 2.550m
lock to lock time: 6.00s
track width: 2.550m
turning radius: 12.500m
vehicle speed: 5-10kmph

REV	AMENDMENT	DATE OF ISSUE
A	First Issue	16/10/2024

DESIGN: KC DRAWN: KC
CHECKED: HS DATE: 16/10/2024
SCALE: 0 16m
1:400 @ A3

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

NOT FOR CONSTRUCTION

SHEET TITLE:
12.6m AT BUS TRACKING
TRACKING ON COMMERCE ST

DRAWING NUMBER: PREP002-DC-DW01

SHEET: 01 of 02

REV: A

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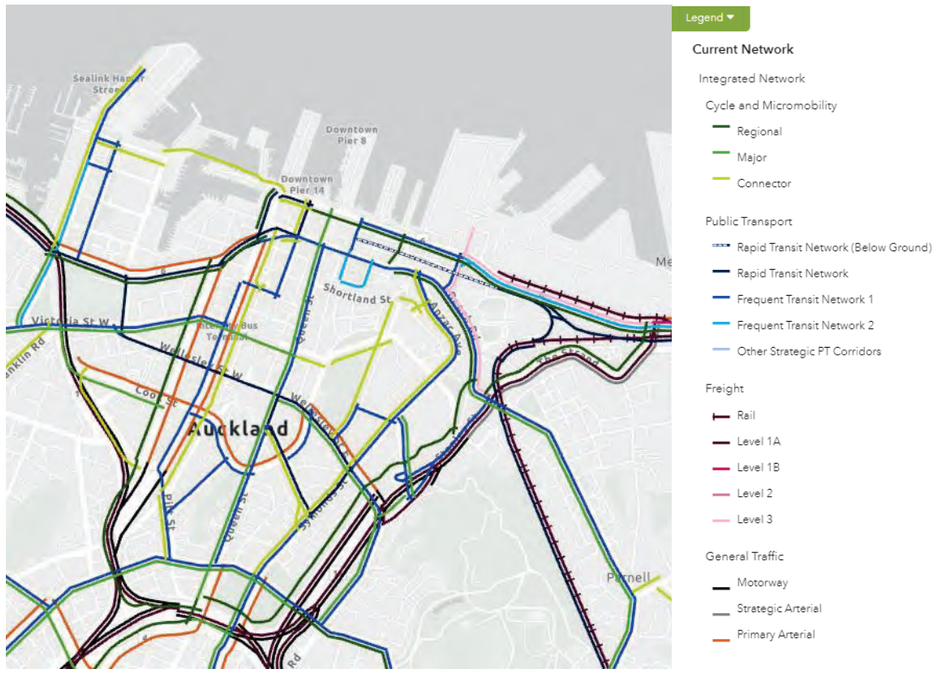

vehicle tracking key:

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

vehicle specs:

12.6m

2.35m 6.25m 1.35m

AT DESIGN VEHICLE
12.6m - Urban Bus (RTS18)
vehicle width: 2.550m
lock to lock time: 6.00s
track width: 2.550m
turning radius: 12.500m
vehicle speed: 5-10kmph

REV	AMENDMENT	DATE OF ISSUE
A	First Issue	16/10/2024

DESIGN: KC
CHECKED: HS
DRAWN: KC
DATE: 16/10/2024
SCALE: 0 16m
1:400 @ A3

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

NOT FOR CONSTRUCTION

SHEET TITLE: **12.6m AT BUS TRACKING TRACKING ON LOWER ALBERT ST**

DRAWING NUMBER: **PREP002-DC-DW01**

SHEET: 02 of 02

REV: A

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APPENDIX G Auckland Transport Temporary Traffic Management Guidelines

Temporary Traffic Management Guidelines 2022 to 2025

7 September 2022

- The City Centre is changing. Auckland Council has laid out a vision for the CC in the CCMP. It points towards a city centre that is well connected particularly for active modes and public transport, and readily serviceable. It will become less car-centric and more people-friendly.
  The CC has key routes already identified – these are shown in AT's Future Connect where strategic modal networks are shown for both the Current and Future (10-year) scenario.
  AT (and Waka Kotahi) uses this strategic direction to establish the Auckland Network Operating Plan (ANOP) for Auckland and therefore for the city centre.
  As a result, we have a plan on how to operate the city centre network TODAY and going forward. This is shown below.

- The ANOP has key principles that when applied to these strategic networks results in defining expected operational outcomes sought for network. These principles are summarised as follows:

- *Enable good pedestrian movement and experience in the city centre core area*
  Promote cycling on the cycle network and enable accessibility to / within the city centre
  Promote PT on the PT network and enable access to the city centre
  Ensure good connections to strategic motorway network – effectively supporting motorway operations
  Encourage general traffic movement on selected routes
  Maintain accessibility within the city centre for businesses, loading and residents
  Promote freight on the freight network – and promote freight movement/deliveries outside of peak periods

There are currently multiple works within the city centre. In each instance the above principles are applied to each submitted Temporary Traffic Management plan to proactively enable the city centre network to operate at acceptable levels.
Agile changes to these TTMP may be required should operation of the TTMP not meet desired outcomes. A monthly city centre network performance report is used to retrospectively confirm this. If under-performance is observed, immediate actions are taken to mitigate compromising situations.
Such actions include concerted efforts by ATOC to optimise traffic signal operations accordingly, Temporary Traffic Management plan (TTMP) audits and corrections, TTMP reviews, customer communication, works coordination and other network management-related activities to ensure the city centre continues to be open for business.
All TTMPs must follow COPTTM requirements along with additional requirements included herein.
In order to manage and accommodate the widespread number of construction works in the city centre, both current and upcoming key works (including CRLL, Midtown Infrastructure Works (Te Ha Noa and Wellesley Street Bus) and Watercare Works; numerous private developer works and broader (K'Road and Pitt Street upgrade) the following broad rules are applied in response to enabling the ANOP outcomes sought for the city centre through disruption:

1. No bus lanes are to be compromised.
    - However, if unavoidable and agreed by AT Metro, appropriate mitigation is required to ensure bus operations are unaffected. This could typically necessitate the provision of a bus lane on the temporary route, and relocated bus shelters, with ample pre-warning to enable.
    - Close liaison and agreement with AT Metro is necessary.
2. No pedestrian access is to be compromised.
    - In general, available unobstructed footpath widths must be maintained at 2.2m at all times, or at the width of the existing footpath if less than 2.2m.
    - The Queen Street footpath and at Queen Street intersections with side roads, unobstructed footpath width minimum requirement must be maintained at 3m at all times.
    - The Albert Street, Victoria Street, Wellesley Street, Mayoral Drive, Wyndham Street, Shortland Street and Customs Street footpath width must be maintained at 3m
    - The Lower Queen Street footpath and other pedestrian mall areas within the city centre, unobstructed footpath width must be maintained at 4m minimum at all times, preferably 5m where feasible.

      Crossing points at intersections and across streets are to be provided, and of similar widths to footpaths no less than 3m wide.

      Footpath surfaces provided are to be devoid of any trip hazards, and with minimal clutter albeit signage and/or construction-related equipment.
3. No cycle lanes/facilities are to be compromised.
    - Existing facilities are to be retained and provided for.

      A minimum lane width of 1.5m is required for any temporary cycle lane.

4. The number of lanes available to general access and traffic movements is to be closely considered, in particular for east-west movements across the Queen Street valley:

- Downtown: The number of lanes on Quay Street and Customs Street are to be considered as a sub-system comprising 3 lanes per direction, one of which is shared by buses on Customs Street.

    i. This effectively represents 1 lane for buses and 2 lanes for general access and traffic movements per direction. This is to be retained as such. A reduction thereof may be considered during interpeak periods, if deemed necessary and under close monitoring.

    ii. Between Lower Albert Street and Lower Hobson Street, there is an additional lane per direction provided for bus movements, which is to remain.

    iii. Bus stop requirements are to be agreed with AT Metro.

Mid-town: The number of lanes on Victoria Street, Wellesley Street and Mayoral Drive are to be considered as a second sub-system (with Mayoral Drive broadening in status in the future as the city centre moves towards A4E).

i. There is to be 1 lane per direction for bus movements. This is already ear-marked for Wellesley Street. There is an option to temporarily reserve a second lane per direction for buses on Mayoral Drive should this be deemed necessary.

ii. Bus stop requirements are to be agreed with AT Metro.

iii. There are to be 3 lanes per direction for general access and traffic movements, 2 of which are to be on Mayoral Drive, which is the major corridor for east-west general traffic movements across the city centre.

iv. The current (August 2022) number of lanes represents the least or 'worst case' scenario for this sub-system, with 2 lanes for buses (1 on Wellesley Street and 1 on Mayoral Drive) and 3 lanes for general traffic per direction (2 on Mayoral Drive, 1 on Wellesley Street eastbound and 1 westbound on Victoria Street-Queen Street-Wyndham Street (and Durham Street for local access).

v. Once Victoria Street becomes available, with 1 lane per direction for general access and traffic movements (cycling facilities and widened footpaths), the eastbound lane on Wellesley Street for general access and traffic movements is no longer required, resulting in 3 lanes per direction for general access and traffic movements. [Essential Vehicle Access may be provided to enable necessary access to Elliot and immediate surrounds].

Karangahape Road functions as a third sub-system, although to a small degree in association with Mayoral Drive.

i. The current arrangement of 1 lane for bus movements (for the peak period direction) and 1 lane for general access and traffic movements per direction is to be retained.

ii. With increased bus movements and/or necessary improvements to bus performance outcomes may be required.

5. Close monitoring is undertaken by AT. Adherence to the above requirements is expected to enable the city centre to operate to an acceptable level despite construction disruption.

6. Temporary Traffic Management Plans (TTMPs) are required to be approved as per standard AT requirements and outlined below. Within the city centre this is actively managed through the City Centre Network Operations (CCNO) team.

    For works due to commence within 2-6 months, AT Works Coordination must be contacted to facilitate appropriate coordination and confirm CCNO approval in principle.

    If needed, CCNO can set up a weekly/fortnightly meeting where the main TTM personnel collating works program and TTM program can share proposed plans for the project, to avoid or minimise delays in obtaining TTMP approvals.

    Applications must be uploaded with complete documents including work clashes/Service disruption approval/Special Events approval/public notification etc. where required, by a minimum 15 working days prior to the work start date. Incomplete applications are unable to be accepted.

    Full road closures must be uploaded with complete documents including work clashes/Service disruption approval/Special Events approval/public notification etc. where required, by a minimum 30 working days prior to work start date. Incomplete applications unable to be accepted.

    AM/PM peak periods must not be affected by TTM/works on weekdays.

    TTMP must ensure mobility parking spaces and loading bays are provided and approved by AT parking prior to submitting for Road Corridor Access (RCA) approval.

    Utility manhole and utility assets must be made available to utility asset owners at all times.

    NO night works are to take place from Thursday to Saturday night.

    NO excavations are to be undertaken between 2230 and 0700.

    NO Lane closures/Contraflow closure to be undertaken at same time on Mayoral Drive and Wellesley Street, and Victoria Street, Wyndham Street and Customs Street, respectively.

    Any proposed road closures will be subject to the availability of identified detour routes, and to be discussed and pre-approved by CCNO.

7. Early engagement with AT Works Coordination is strongly encouraged to facilitate appropriate coordination of construction activity and avoid delays in obtaining TTMP approvals.

8. Construction vehicle movements are to be deliberately managed upon accessing and travel within the city centre

    No construction vehicles are to use Queen Street.

    Construction vehicles are not to cross Queen Street. Construction sites to the east of Queen Street are to be accessed from and to the east, and similar those sites to the west are to be accessed from the west and to the west, via the traffic network as per Future Connect and the ANOP.

    Construction vehicles are to keep to higher order streets and avoid shared spaces and local streets.

Construction vehicles must enter the construction site on arrival. There is to be no idling on side streets nor in close proximity to the site.

A construction vehicle travel plan must be provided for approval by CCNO. All project-related construction vehicle movements must adhere to the approved construction vehicle routes identified in the construction vehicle travel plan.

9. Parking and Loading is an important element of the city centre.

Any changes or impact on parking and loading must be discussed and agreed by AT Parking.

TTMP drawing must ensure mobility parking spaces and loading bays are shown and approved by AT Parking prior to submitting for RCA approval.