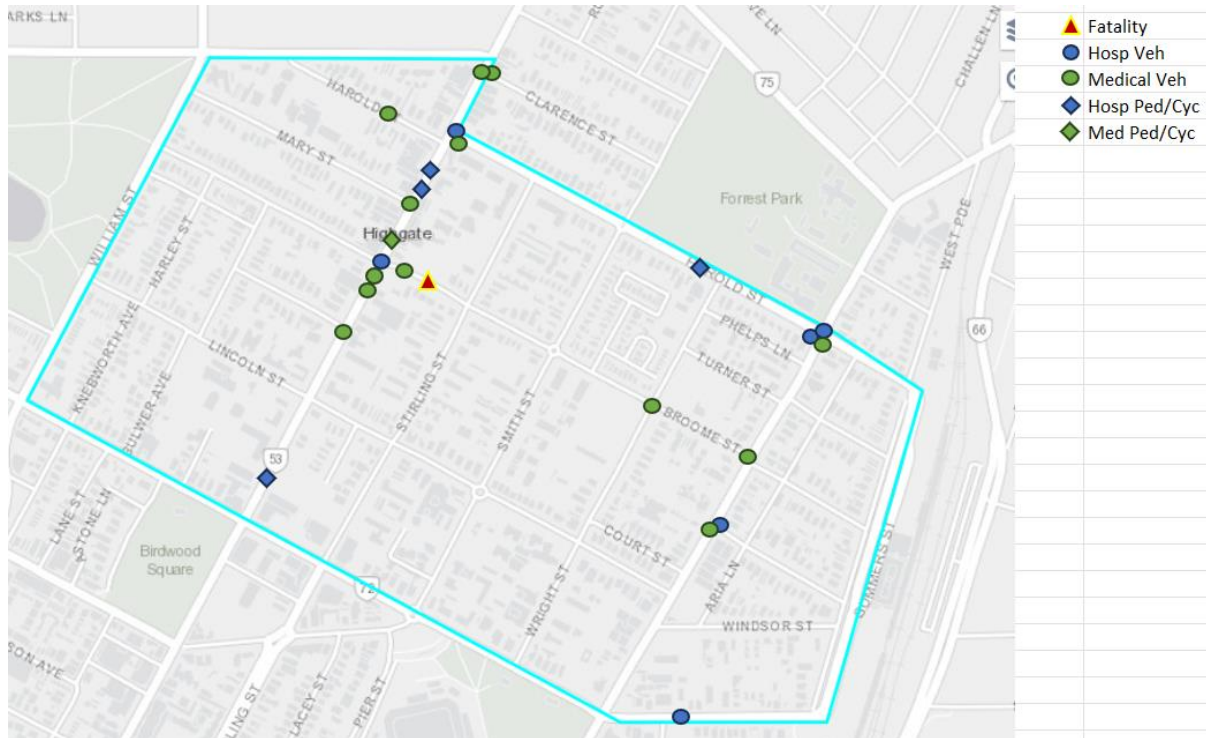


# Traffic and Transport – Technical Note Highgate Precinct Area

## Precinct wide Traffic Analysis

The purpose of this report is to explore options to slow vehicle speed and increase pedestrian, cyclist and vehicle safety on Beaufort Street as well as exploring the option of converting Harold Street to a one-way street from Vincent Street to Beaufort Street.

### KSI Crash Data within the Highgate area



### Beaufort Street Node treatments

After investigating treatments typically used to mitigate problems of average traffic speeds above that posted, the incidents of turning movements and the concentration of pedestrian and cyclist collisions, it has been identified that there are similar patterns along the section Beaufort Street (between Lincoln Street and Walcott Street). This section is also identified for preapproved blackspot treatments, such as banned right turns and roundabouts, however these do not suit the needs of many in the local area and treatments should reflect both the local needs of the community and improve accessibility for walking and cycling.

It is also important that this area of Beaufort Street maintains a level of formality regarding these treatments, so there is less confusion for all road users.

The road is a PTA bus route for a handful of services (including peak time bus lanes), is prescribed as an important cycling network route connector, and has impacted the safety of pedestrians crossing Beaufort Street, and to reflect this, the following identifies suitable treatments that should be investigated as a solution to improving road safety and accessibility within the Highgate Precinct.

# Traffic and Transport – Technical Note Highgate Precinct Area

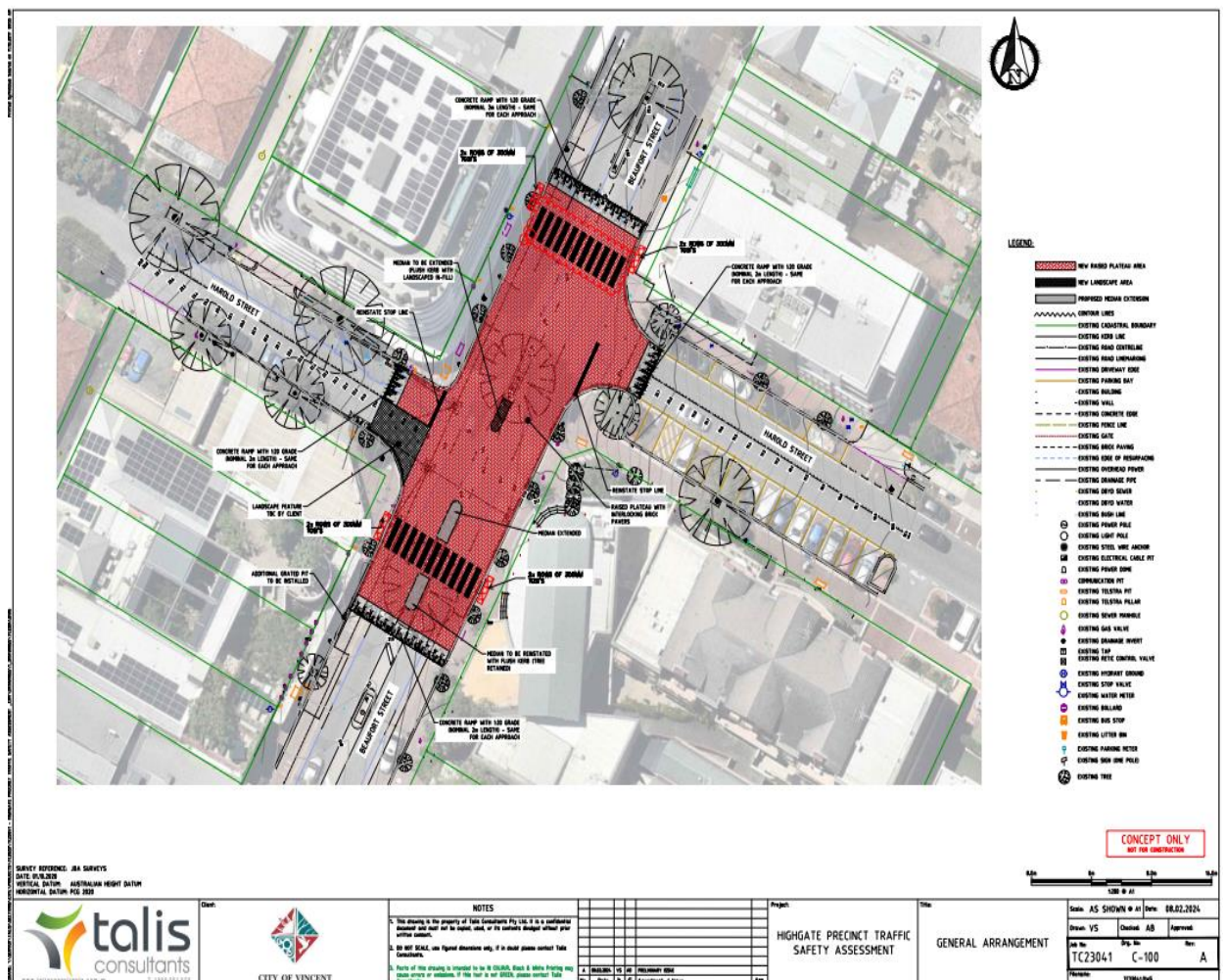
Plateau intersection treatments on the following intersections with Beaufort Street

- Lincoln Street
- Broome Street
- Harold Street (east and west legs)

The installation of plateaus is a very good option compared to other intersection treatments at these locations, such as closures and reconfigurations (roundabout, signals). The installation at each location will require consultation with residents, PTA and Main Roads, however, they provide the following opportunities:

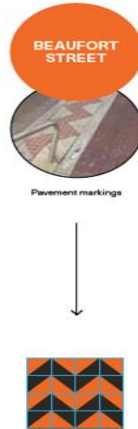
- Does not reduce movement accessibility for all modes of transport along the local road network. Supporting petitioners to not ban right turn movements at Beaufort Street with Harold Street.
- Improves DDA compliance and supports the City’s safety and accessibility strategies and policies (e.g. Strategic Community Plan 2018-2028 – Accessible City)
  - Creates at-grade crossings for pedestrians at all intersections.
  - Improves accessibility for all modes of transport including improvement along the LTCN network locally.
- Provides a treatment that is an environment change for drivers, making it feel like a less car dominated environment.

The node concept for Harold Street and Beaufort Street intersection is detailed within the below sketch;



# Traffic and Transport – Technical Note Highgate Precinct Area

There may be opportunity for some artwork to be painted on the intersection which would incorporate elements of the City's wayfinding Strategy, which of Beaufort Street looks like the below.



## **Removal of central medians on Beaufort Street**

Potential for removal of central medians midblock – allowing better on-street parking accessibility for local businesses.

- Requires consultation with residents, PTA and Main Roads

## **Midblock closure of traffic movement eastbound lane on Harold Street.**

Midblock allows for two-way access for residents closer to William Street to enter and access Harold Street (they should be impacted as little as possible). The midblock will allow for cycling two-way access (if possible and kerbed so the minimum road width is maintained).

Local Road – therefore will not require a wide lane width.

- Requires consultation with residents, PTA and Main Roads

Other treatments to be reviewed to improve transport network accessibility and safety in the Highgate Precinct are:

## **Safe Active Streets**

From the crash data, it was also identified that there are crash patterns along residential areas of the precinct. These roads also had other important features such as LTCN routes, parks and schools. It is important that these streets provide good walkable and rideable road sections to improve accessibility for more vulnerable road users and pedestrians.

## **Safe Active Street treatments on:**

- Broome Street, (LTCN Local Route)
- Smith Street (LTCN Local Route)

# Traffic and Transport – Technical Note Highgate Precinct Area

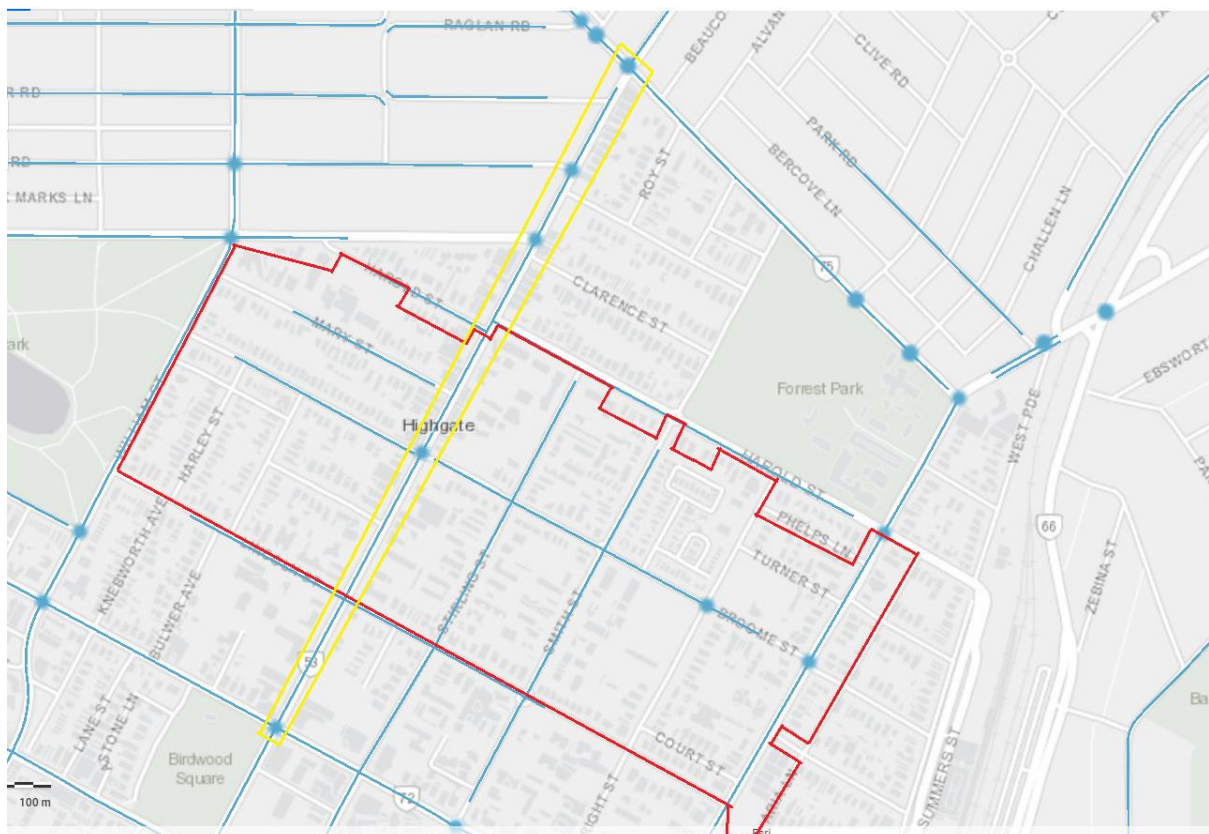
- Mary Street (LTCN Route)
- Harold Street between Beaufort Street and Lord Street (plenty of capacity for a mid-block treatment)

## Other node sites

The plateau proposed at the intersection of Harold Street with Beaufort Street will reduce traffic speeds on all intersection approaches, therefore improving driver reaction time to avoid collisions. Further nodes identified from crash data, show similar patterns of crash behaviour, with events involving rear end and right turning movements being the most prevalent. The crash assessment for the study area, showed that there were a high number of crashes at many other local intersections. The opportunity to improve road safety at other local intersections along Beaufort Street, whilst increasing accessibility for walk and cycling can be provided by installing the same node treatments at intersections as follows:

Pre-approved MRWA blackspot areas;

- Walcott Street
- Chelmsford Road
- Vincent Street
- Broome Street
- Bulwer Street
- Harold Street



Other possible intersections;

- Grosvenor Road
- Barlee Street
- Clarence Street
- Mary Street



# Traffic and Transport – Technical Note Highgate Precinct Area

- Lincoln Street

It has been identified that there are similar crash issues at other intersections further along Beaufort Street, and given the similar development demands between Vincent Street, the city is also investigating similar node treatments of raised plateaus at intersections including Barlee Street with Beaufort Street, and Chelmsford Road with Beaufort Street. The city is also investigating similar treatment opportunities at the intersection of Walcott Street with Beaufort, however, this will require extensive engagement and discussions with Main Roads WA and the City of Stirling.

Harold Street (Vincent Street to Beaufort Street) was analysed, and the concept of the one-way treatment modelled. It was evident that traffic volumes would likely decrease, slower speeds would be expected, and crashes likely reduced. There were no signs of negative impacts on other intersections or adjacent roads as traffic was free flowing, travelling West to East down Harold Street.

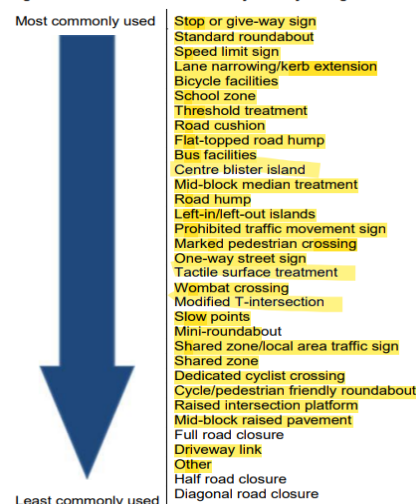
Beaufort Street and Harold Street Intersection was analysed, factoring in the concept of the one-way treatment on Harold Street, which supported the concept of a raised plateau node. Raised plateau nodes have benefits regarding slower speeds, reduces the likelihood of crashes, and allows pedestrians and cyclists to cross at locations which considers accessibility needs and streetscape improvements. It is likely that the node concept would also work at the other pre-approved blackspot intersections with similar benefits expected.

The Broome and Wright Street roundabout project (approved for delivery 2023-2024 and works initiated) was factored into the above analysis and there were no negative impacts from the proposed Harold Street one-way and node treatment within the area.

Other factors considered were the reduced speed limits from 50km/h to 40km/h now approved by Main Roads WA on all Local Roads, the new Bike network plan 2023-2028 as well as input from our internal Town Teams.

In addressing other problematic areas, treatments within the Local Area Traffic Management could be used as highlighted within the recommended section of the *Austrroads Guidelines to Traffic Management Part 8, Local Area Traffic Management*.

Figure 7.1: LATM devices commonly used by local governments



Source: Damen and Ralston (2015).

The Guidelines note that there are few treatments which recommend closing roads and diverting traffic, and these are not commonly used. Community consultation within the City of Vincent over the last five years, suggests that treatments such as raised plateaus and speed humps are generally well received. Diagonal diversions or other road closures which could divert traffic to other streets are not very well received by the community.

# Traffic and Transport – Technical Note Highgate Precinct Area

Other areas which may benefit from treatment are at the intersections of Chatsworth Road and Harley Street, Harley Street and Lincoln Street, Cavendish Street and Chatsworth Road.



Treatments could consider mini roundabouts, raised plateau or seagull islands which considered with other proposed treatments, would work in allowing free flowing traffic, and not negatively impacting adjacent streets.

Further analysis will be required in treating streets which are high priority, pre-approved areas with considerations likely on treatments which allows free flowing traffic.

## Harold Street One-Way – Vincent Street to Beaufort Street

### Harold Street One-Way

This section of Harold Street is Classified under the Main Roads WA Road Classification Hierarchy as an Access Road, with capacity for up to 3,000 vehicles per day. It is approximately 8.5m wide with a two-way configuration with on-street line marked public parking on both sides of road. The current posted speed on this road section 50km/hour (due to be changed in 2024 to 40 km/hour).

The road runs northwest to southeast, terminating at intersections with Vincent Street and Beaufort Street, respectively. The Vincent Street/ Harold Street intersection is configured as left in, left out only to/ from Vincent Street (Give Way controlled) and all movements are accessible at the intersection of Harold Street with Beaufort Street (Stop Line controlled).

# Traffic and Transport – Technical Note Highgate Precinct Area

The area is predominantly residential however it is within proximity to several other sites uses including several local businesses along Beaufort Street and a school and church near the Vincent Street intersection. There are also bus services operating along Vincent Street, Beaufort Street and nearby William Street, and Hyde Park is west of Harold Street, within five-minute walking distance. These are all accessible with good footpath connections and the street is well shaded with verge trees.

## Traffic data

The data in **Table 1.0** identifies that there are currently no excessive speeding impacts along the midblock section of Harold Street and traffic flows are less than 1/3 of the total traffic capacity for an Access Road. However, given the peak period on-street parking demands, the capacity of the road is typically reduced to provide traffic movements in one direction only. This requires drivers to find gaps where accesses are positioned, to temporarily give-way to oncoming traffic in the other direction. Given there is no control in place, it is up to drivers in each direction to show courtesy to let one of the drivers through.

**Table 1.0 Harold Street midblock traffic data**

Location	From	To	Survey Date	Average Daily Weekday Traffic flow (ADWT)	Peak Flow AM	Peak Flow PM	Average Speed (Km/hr)	85 <sup>th</sup> %ile speed (Km/hr)
Harold Street	Beaufort Street	Vincent Street	July 2021	735	79.2	79.4	33.7	43.0

## Crash analysis summary

Crash data was obtained from the MRWA police recorded Crash Database. From the analysis, it was identified that that there were 08 crashes over 05 years (2018 to 2022). These were recorded within a corridor of less than 160m, showing a significant issue with crash rates, along a local residential street.

The data is summarised with the following crash information:

- 03 involving vehicles parked on-street.
- 04 involving cars to/ from accesses (01 needed medical attention)
- All midblock crashes were between 70m of Vincent Street and 30m of Beaufort Street.

Most crashes involved crashes from traffic travelling northwest and vehicles moving from accesses. Side swiping parked vehicles was also recorded. Figure 1.0 shows the coverage area of Harold Street where the crashes have been recorded.

**Figure 1.0 Proximity of all recorded midblock crashes**

# Traffic and Transport – Technical Note Highgate Precinct Area



## On Street Parking

The current on-street public parking controls are residential permit parking along the northern section of the street and 2P restrictions along the southern side of the street. There are additional parking controls to the southeast of the street towards Beaufort Street, where short term publicly accessible parking bays are provided. The availability for residential parking exceeds the number of residential properties proportion of over one property per parking space.

Two-way traffic flows are restricted in both directions due to the demand for on street parking in both directions, also covering the area of where midblock crashes were recorded. From site visits, it was identified that along with reduced road capacity, on street parking reduces access sight visibility for through traffic and residents exiting accesses. An example of the restricted traffic lane access, give-way to oncoming traffic and on-street parking is shown in Figure 2.0.

It is also worth noting that on-street parking capacity within five minutes walking distance of Beaufort Street is not typically at full capacity and there is parking availability typically on the northwest end of Harold Street.

## Harold Street looking towards Vincent Street



## Traffic and Transport – Technical Note Highgate Precinct Area

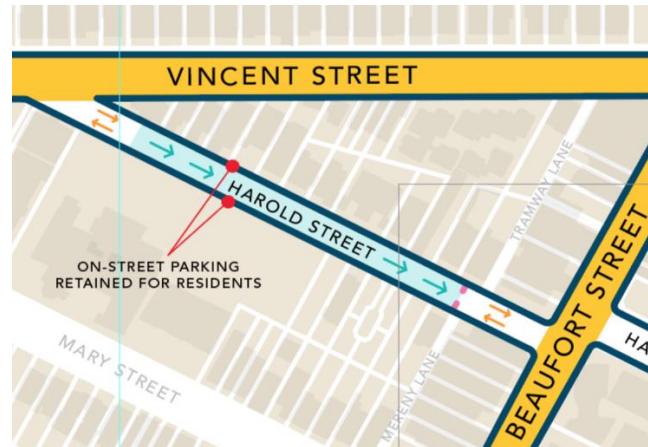


### Proposed layout

The proposed layout is reducing the traffic flow permanently to reflect the capacity during the peak period for on-street parking demand on this section of Harold Street. It has already been identified that right turning conflicts are a main causation of crashes in the area, and although the intersections of Harold Street with Beaufort and Vincent Streets have not changed, the reduced traffic flow will minimise the likelihood of crashes locally along Beaufort Street, which have an impact to the local road network, in terms of traffic delays, and queuing over other lanes and local intersections. Figure 3.0 indicates the proposed location to introduce one-way access and the proposed permissible direction of traffic along Harold Street

**Figure 3.0** Harold Street one-way location proposal

# Traffic and Transport – Technical Note Highgate Precinct Area



The choice of traffic flow to be maintained is determined by the most important issue of road safety during the period of school children being dropped off and picked up. The nearest road intersection of Vincent Street/ Harold Street already has low likelihood of a crash, with less conflict points and the flow movement to leave the intersection and travel onto Beaufort ensures that children and other pedestrians cross this area of Harold Street with less traffic movements and improved gap times. This will also improve accessibility both in the school peak demand periods and the AM and PM commute peaks of the weekday. As cars are all also parked westbound on both sides of the road, driver visibility is also improved as the front of a car is nearest the access and not the higher raised rear sections of vehicles to maximise truncation visibility for drivers approaching and leaving accesses.

Vincent Street is a two-lane road in each direction during peak periods with on-street Parking restrictions from morning until the end of weekday peak traffic periods. The left turn only access onto Harold Street means a low likelihood of a collision entering Harold Street. Reallocating traffic flow via Beaufort Street onto Vincent Street is also a safer action than right turns onto Harold, as crash data history has already identified. The fact that it is only left turn movements required, especially in the Peak traffic demand periods is unlikely to have a detrimental time of additional travel times, with it estimated that, given the traffic speeds recorded along Harold Street and the likely single lane give way movements due to on street parking, the additional travel time would be less than 60 seconds and away from a corridor of road where collisions are occurring at an unnecessary rate. Crashes along this section of on Harold Street with single Lane capacity, if requiring medical attention do mean congestion issues, which may impact onto the local distributor Roads of Beaufort Street and Harold Street and the associated intersections.

Reducing the traffic flow movements also provides improved gap times and reduced conflict points along Harold Street for cyclists and pedestrians (including children local to the Primary School)

## Summary

With a high number of turning movements in a local vicinity (within proximity to Beaufort Street and Vincent Street), there is a high likelihood of collision along a section of Harold Street where on-street parking demands are prevalent.

Reducing traffic flows has been proposed, with one way access only provided along a corridor section of Harold Street identified as a crash zone area and where the road is typically reduced to a single due to on-street parking demands. The outcomes of this proposal will have the following outcomes:

# Traffic and Transport – Technical Note Highgate Precinct Area

- reduced turning movements along Harold Street.
- reduced likelihood of collision along Harold Street.
- Increased traffic flow along Harold Street.
- Reduced the risk of collision at locations where accesses are located along Harold Street. Drivers exiting have increased time to observe traffic flows in one direction.
- Reducing westbound traffic along Harold Street towards the school accesses reduces conflict opportunities, therefore improving exit flow from the primary school.
- The reduction of traffic flow into Harold Street from Beaufort Street will reduce right turn traffic flows, in turn reducing crash issues currently recorded.
- Vincent Street has capacity to carry additional local traffic and as a left in only intersection, has a low impact on the likelihood of intersection collision (there are no conflicting right turn flows on the intersection approach). There are also parking restrictions on-street enforced during the am and pm peak traffic periods to allow for two-lane capacity in each direction (as opposed to a reduced single traffic lane for traffic in both directions in the same period)
- Reduced traffic movement will also improve safety and accessibility for other modes of transport including crossing pedestrians and cyclists, supporting the following City of Vincent Policies:
  - City of Vincent Strategic Community Plan - 2022 to 2032. With specific reference to
    - Accessible City
    - Thriving Places
    - Innovative and Accountable
  - City of Vincent Public Health Plan - 2020 to 2025
    - Reduced injuries and a safer community

Redirected traffic of less than 80 vehicles in a peak period, would access Harold Street from Beaufort Street via Vincent Street using left turn movements. This will have a minimal journey time impact for commuters and improve safety for residents along Harold Street, including those who walk and cycle locally. The traffic volumes recorded for this flow have suitable capacity on Vincent Street between Beaufort Street and Harold Street.

It is also recommended that the street have traffic data recorded 12 months post any change to the road configuration and an on-street parking demand survey be conducted to identify if the changes to road accesses also would impact parking demand between Vincent Street and Beaufort Street.