

# Canning Highway Duck & Dive: Movement and place impacts

City of Melville  
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## 1.0 Executive summary

Hatch RobertsDay were commissioned by the City of Melville (the City) to undertake a high level connectivity and Movement & Place study of a Duck & Dive proposal for Canning Highway by Main Roads Western Australia (Main Roads). The aim of this study is to identify the connectivity and place impacts that can be expected in the Melville Canning Bridge Activity Centre (the Precinct) as a result of the construction and operation of the Main Roads proposal.

This study is underpinned by a high level Movement & Place impact assessment of the proposal (Appendix A) by Stantec, which finds that the proposal will eliminate future potential for mass rapid transit on Canning Highway within the Precinct, negatively impact accessibility and reliability of existing public transport, increase congestion for local traffic, and limit the potential for the Canning Highway corridor to transition to a higher order place function in the Movement & Place hierarchy.

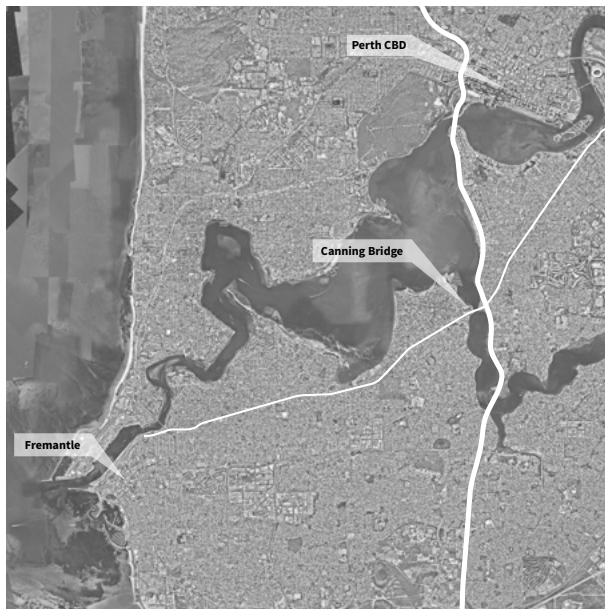
Through this analysis we find that any trenched design would tangibly compromise amenity, resulting in quantifiable economic impacts, and the opportunity for substantial modal shift (identified in the Canning Bridge Activity Centre Plan as a prerequisite of genuine transit oriented development) will be lost – perhaps permanently.

Analysis of Movement & Place confirms the goal of a vibrant street environment can only be achieved if place-based objectives of the CBACP are actively pursued in designing Canning Highway.



## 2.0 Purpose

Due to uncertainty regarding Main Roads future planning for Canning Highway, and potential for conflicts with the objectives of the Canning Bridge Activity Centre Plan (CBACP), this study seeks to quantify the impacts of the Duck & Dive proposal and investigate the connectivity impacts of alternative concepts for the corridor. This will strengthen work currently being undertaken by the City in reviewing the CBACP and strengthen the position of the City in engagement with Main Roads in the planning process for Canning Highway in order to inform a preferred outcome for the future of Canning Highway and which improves existing conditions for the local community. This study acknowledges the critical regional movement function of Canning Highway while advocating for greater considerations of the place impacts of potential upgrades.



**Figure 1**  
Location



**Figure 2**  
Study area



## 3.0 Background

This section outlines the relevant local context of the CBAC area.

The Canning Bridge Activity Centre is less than 8km from Perth CBD and benefits from direct road, rail, pedestrian and cycling connectivity. It is a complex centre which incorporates a 'District Centre' in accordance with *State Planning Policy 4.2 – Activity Centres for Perth and Peel* and a 'Station Precinct' in accordance with *State Planning Policy 7.2 – Precinct Design*.

Canning Highway, which bisects the Precinct, provides an important road link between the Perth CBD and Fremantle. It carries a mix of traffic and serves a number of activity centres. Canning Highway within the Canning Bridge Activity Centre is designated as an 'Urban Corridor' in accordance with the *Central Sub-regional Planning Framework of Perth & Peel @ 3.5 Million*, and is designated a 'Primary Regional Road' in accordance with the *Metropolitan Region Scheme (MRS)*, under the management and control of Main Roads. In the Main Roads Functional Road Hierarchy, Canning Highway is designated as a Primary Distributor where it has a major regional traffic movement function.

Canning Highway currently carries between 40,000 to 60,000 vehicles per day (VPD) within the study area, and up to 70,000 vpd over Canning Bridge. Canning Highway experiences major congestion during peak periods, particularly between Riseley Street and Kwinana Freeway.

A number of frequent bus services run in the Canning Highway corridor, providing access to Canning Bridge Station from the local area, as well as the wider catchment. Approximately 1300 passengers per day access bus services on Canning Highway within the Precinct.

### 3.1 Canning Bridge Activity Centre Plan

The CBACP was approved by the Western Australian Planning Commission in 2016, and has undergone a number of minor amendments to date. The CBACP applies to land within the City of South Perth to the east of Canning Bridge and within the City of Melville to the west. This study applies only to the land within the City of Melville (the Kintail and Ogilvie Quarters of the CBACP).

The CBACP is guided by the Vision Statement (right).

The objectives of the CBACP are:

1. *Meet district levels of community need and enable employment, goods and services to be accessed efficiently and equitably by the community.*
2. *Support the activity centre hierarchy as part of a long-term and integrated approach to the development of economic and social infrastructure.*
3. *Support a wide range of retail and commercial premises and promote a competitive retail and commercial market.*
4. *Increase the range of employment within the CBACP area and contribute to the achievement of sub-regional employment self-sufficiency targets.*
5. *Increase the density and diversity of housing in and around the CBACP to improve land efficiency, housing variety and affordability and support the facilities in the area.*
6. *Ensure the CBACP area provides sufficient development intensity and land use mix to support and increase high frequency public transport.*
7. *Maximise access to and through the CBACP area by walking, cycling and public transport while reducing private car trips.*
8. *Plan development in the CBACP area around a legible street network and quality public spaces.*
9. *Concentrate activities, particularly those that generate steady pedestrian activation within the CBACP area.*

The Duck and Dive proposal directly conflicts with the connectivity, place and economic objectives of the CBACP.

#### Vision

The Canning Bridge area will evolve to become a unique, vibrant, creative community centred on the integrated transport node of the Canning Bridge rail station. The area will be recognised by its unique location, its integrated mix of office, retail, residential, recreational and cultural uses that create areas of excitement, the promotion of its local heritage and as a pedestrian friendly enclave that integrates with the regional transport networks while enhancing the natural attractions of the Swan and Canning Rivers.



**Figure 3**  
Canning Bridge Activity Centre Plan Quarters

## 3.2 Canning Bridge Activity Centre Plan review

In 2020, the City of Melville resolved to undertake a review of the CBACP (the Review) to address community concerns related to approval processes, built form and community benefits. The Review featured a comprehensive engagement process which has allowed stakeholders to collectively shape suitable approaches for managing growth of the Precinct in a way that maximises community benefit.

The Precinct is confronting a range of complex issues, and measures to address many of them will be significantly impacted by Main Roads' plans for Canning Highway. An integrated transport node is critical to the Precinct's future aspirations. Contrary to local expectations as articulated in the original ACP, the introduction of higher intensity residential development has not been met with commensurate investment in the public realm and public transport infrastructure. Pedestrian access within the Precinct and to Canning Bridge Station is considerably deficient.

During the Review, stakeholders, designers and engineers explored the implications of potential future treatments for Canning Highway, including the duck & dive option and a tunnel design option. The tunnel option was overwhelmingly favoured, considered less intrusive and provided options to retain and improve pedestrian connectivity. It may also require less land acquisition, improve development potential, increase public space, reduce community severance and create new or improved commercial opportunities.

The revised CBACP issued in April 2023 reduced development potential of the Precinct by more than 50%, with a corresponding impact on local traffic generation. However the question of regional traffic generation and establishing modal shift requires concerted effort across all levels of government.

## 3.3 Planned, proposed and possible interfacing projects

### 3.3.1 Canning Bridge Station bus interchange

Previous planning for the relocation of the Canning Bridge Station bus interchange has indicatively preferred a location on the eastern Canning River foreshore, north of Canning Highway and west of Kwinana Freeway. This proposed location is incorporated in the CBACP and the Main Roads Duck & Dive proposal. We understand that there may be Aboriginal Heritage and environmental constraints precluding this location, and alternative locations are currently being investigated. It is understood that the current preferred location is a new dedicated bus interchange over the Canning Bridge Station to cater for more bus services in the future and help to ease congestion.

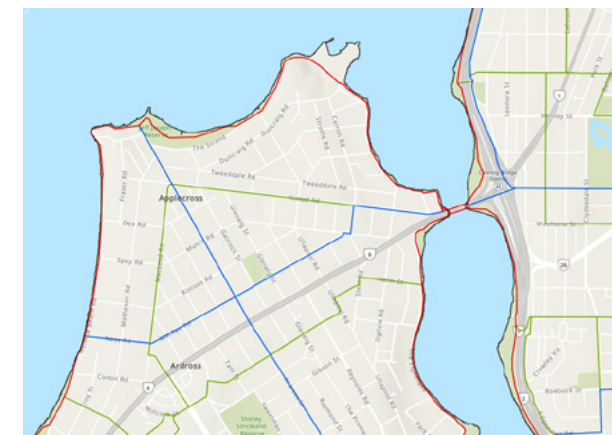
Given the uncertainty regarding the ultimate location for the bus interchange, Canning Highway works to facilitate bus access to this location are premature.

### 3.3.2 Long Term Cycle Network

The Department of Transport *Long Term Cycle Network* (LTCN) is an aspirational blueprint for the delivery of a continuous cycling network, and proposes a hierarchy of routes based on regional function. The LTCN proposes Primary Cycle Routes along the river foreshores and the Kwinana Freeway, with Secondary and Local Routes throughout the Precinct. Canning Highway is not identified for future cycling infrastructure under the LTCN.

There is potential that a key north-south Secondary Cycle Route on Ardross Street will be impacted by the Duck & Dive proposal.

The LTCN conflicts with the *Canning Bridge Structure Plan Integrated Transport Strategy*, which proposed dedicated cycle lanes on Canning Highway.



**Figure 4**  
Long Term Cycle Network. Source: Department of Transport



### 3.3.3 Canning Highway bus priority

In 2018 the Public Transport Authority (PTA) completed a review of major road corridors to identify issues that impact the efficiency of the current and future bus network, and the strategies necessary for these corridors to meet demand under Perth and Peel @ 3.5 Million forecast conditions. The Corridor Review identified high peak period congestion resulting in unreliable journey times for bus services on Canning Highway. Bus priority lanes between Riseley Street and Canning Bridge were proposed as strategies under development as part of Canning Bridge Station upgrades.

The Duck & Dive proposal precludes bus priority lanes on Canning Highway within the Precinct.



**Figure 5**  
Canning Highway - Major Road Corridor Review 2018.  
Source: Public Transport Authority, 2018

### 3.3.4 Mid-tier mass rapid transit

Several studies have identified a potential rapid transit link between Curtin University and Fremantle, via Canning Highway. More recently a consortium of Local Governments has prepared a mid-tier transport concept network for Perth to facilitate funding and further investigation by the State Government. Canning Highway between Canning Bridge Station and Fremantle was identified as a potential corridor within this network. Onward travel opportunities toward Curtin University, Cannington and Victoria Park were also identified, utilising Canning Bridge Station as an integrated hub for multiple public transport modes.

The Duck and Dive proposal precludes mid-tier transit on Canning Highway within the Precinct.



**Figure 6**  
Mid-tier Transport Investigation corridors. Source: Mid-tier Transport Consortium, 2022

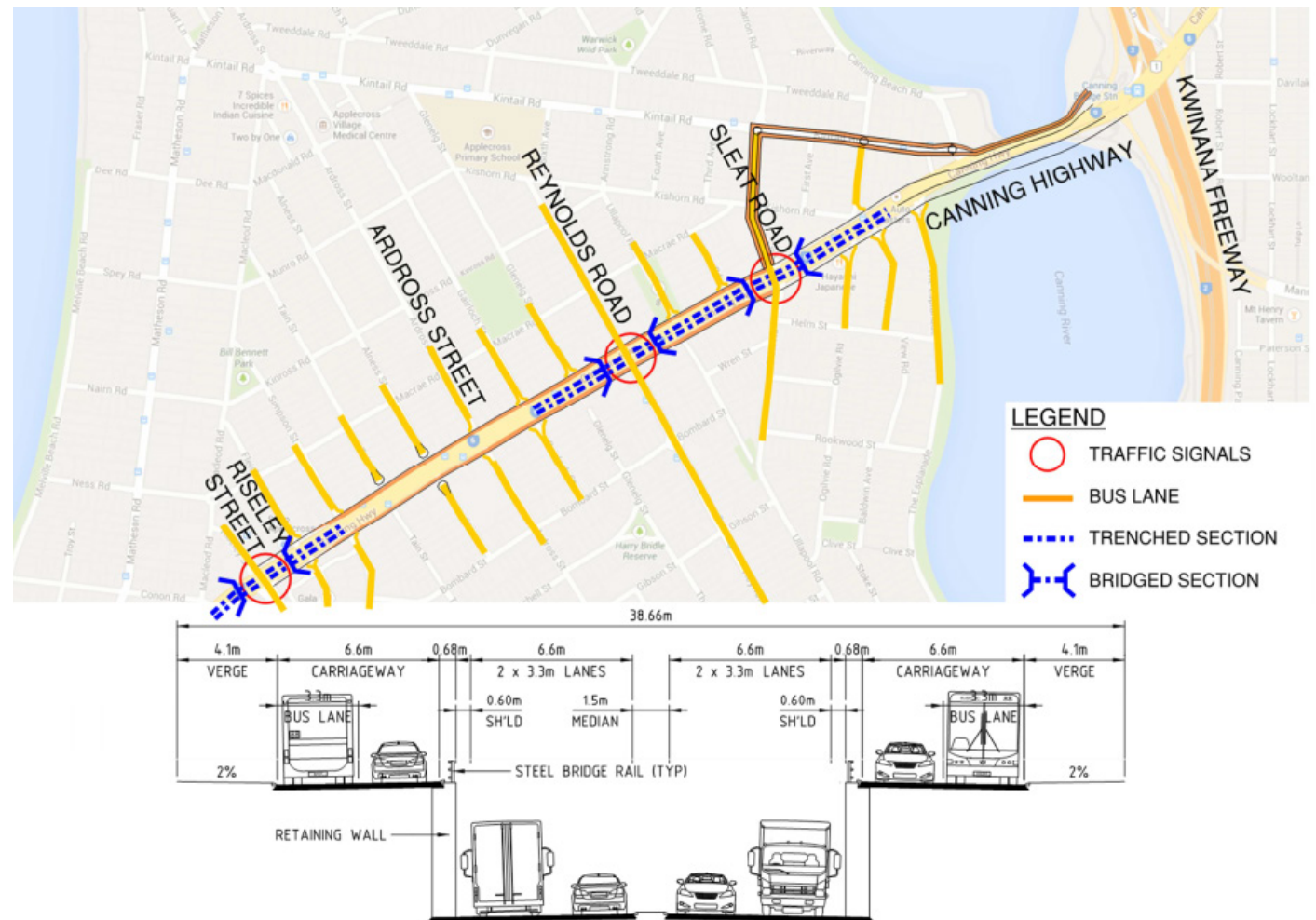
## 4.0 Main Roads Duck & Dive proposal

Main Roads are progressing planning for a major upgrade to Canning Highway to 8 lanes between Riseley Street and Canning Bridge. This proposal includes grade separated 'trenches' beneath Riseley Street, Reynolds Road and Sleet Road to ease congestion by separating regional (through) road traffic from local road traffic. Main Roads are planning to introduce an amendment to the MRS for reserve widening to accommodate the Proposal and associated upgrades.

The proposed design is achieved by grade separating the central 4 lanes of Canning Highway beneath Riseley Street, Reynolds Road and Sleet Road, with access modifications to intersecting streets to prevent traffic crossing multiple lanes to enter the grade separated sections. Access modifications primarily take the form of either left-in/left-out access to/from Canning Highway, or revocation of access to Canning Highway through culs-de-sac. Finally, bus service is proposed to be deviated off Canning Highway to Kintail Road, in order to provide more direct access to a potential redesigned/re-located bus interchange above Canning Bridge Station.

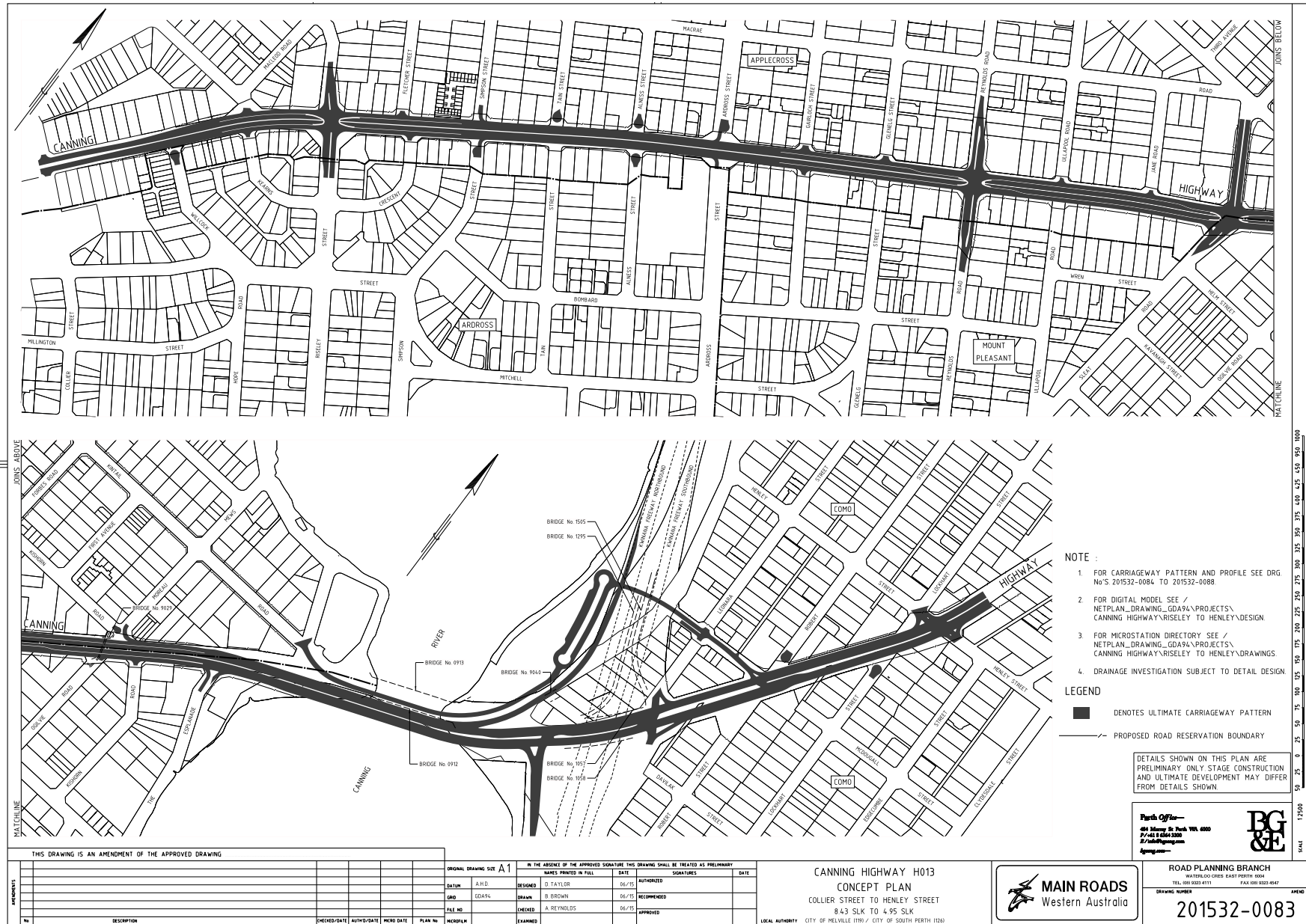
Planning for this upgrade has progressed with cursory public consultation only, and limited opportunities for the City to provide input to access, design, or integration with the CBACP. The Review of the CBACP identified the duck & dive proposal as the single greatest impediment to achieving the vision and objectives of the CBACP.

It is understood that Main Roads are proposing to initiate consultation on the MRS Amendment process to accommodate the duck & dive proposal in early 2024.



**Figure 7**  
Canning Highway Duck & Dive design.  
Source: BG&E





**Figure 8**  
 Canning Highway Duck & Dive design.  
 Source: BG&E

## 5.0 Previous impact studies

### 5.1 Socio-economic impact assessment. Hatch, 2021

Hatch were engaged by the City to undertake an assessment of the local economic, social and environmental impacts of the Duck & Dive proposal. This study quantified the impacts within the CBACP area, from just west of Reynolds Road to Canning Bridge. Stage 2 of this study is investigating the impacts of the section to the west of the CBACP area. The Stage 1 report found that the Proposal would result in moderate to major adverse financial impacts, including:

*Private and public commuters (up to \$1.3M per annum) and pedestrians (up to \$200k per annum)*

*A loss of 220 jobs and economic value (\$13.9M per annum)*

*A loss of rate revenue for commercial (up to \$880k over 10 years) and residential (up to \$490k over 10 years)*

*Blight on housing values: existing (up to \$7M) and future (up to \$9.5M)*

The assessment also found the following local accessibility impacts of the Duck & Dive Proposal:

*Kintail Road / Canning Beach Rd closure to general traffic will substantially reduce accessibility to the north side of the Precinct, with many journey lengths increasing by 300m – 1.3km*

*Moreau Mews left-out movement assists some eastbound traffic, it impacts local eastbound traffic travelling on Canning Highway*

*Proposed diversion of bus routes increases through journeys by up to 3 minutes and local journeys by up to 1.5 minutes, in addition to increased walk times to access bus services of up to 4 minutes (especially for residents south of Canning Highway)*

*Expanded Canning Highway footprint will deteriorate the pedestrian environment and create more barriers to local pedestrian movement*

*Potential removal of the pedestrian overpass at Moreau Mews / Ogilvie Road would add 4 minutes walk time to this route*

### 5.2 Social & economic impacts study - Transport inputs. GTA Consultants, 2021

A transport Technical Note was produced by GTA Consultants as input to the Hatch Socio-economic study to summarise the traffic impacts of the Duck & Dive proposal as forecast in the BG&E Canning Highway Planning Study Report, 2015. This Tech Note notes that daily traffic volumes are forecast to be in the order of 100,000 vpd by 2031. While forecast traffic volumes are expected to increase by approximately 20% on Canning Highway overall, the section between Sleat Road and Kwinana Freeway is forecast to increase by 50% - 60%, due to traffic generated from development of the Canning Bridge Precinct. The forecast level of service (LOS) for the Canning Highway / Reynolds Road intersection is LOS D and Canning Highway / Sleat Road intersection is LOS E, suggesting significant delays and loss of travel speed. Additional issues raised by the proposal include:

*Canning Beach Road / Kintail Road closed to Canning Highway*

*Moreau Mews left-out only to Canning Highway*

*Development traffic and existing Precinct traffic has no access to dive structures and must travel along surface road*

*No provision for dedicated bus lanes on Canning Highway*

*Removal of the pedestrian overpass from Ogilvie Street - Moreau Mews*

*No future opportunity for mass rapid transit*

*Reduced access to Canning Highway for a number of local streets*

*Additional rights-of-way required as access from Canning Highway will be restricted*

## 6.0 Options assessment

### 6.1 CBACP Goals

In addition to the Main Roads Duck & Dive proposal, Hatch RobertsDay also assessed the connectivity and movement and place outcomes for two additional options, as described below. Opportunities and constraints of these options are presented with reference to the Goals of the CBACP.



Principle	Goal
<b>G1 Consultation</b>	The community continues to be involved in implementation for the CBACP area, through online information and local news. specific planning applications will be communicated to affected landowners, and the City of Melville and the City of South Perth will have a combined Design Advisory Group which will include representatives from each Council that consider the quality and contribution of all new development.
<b>G2 Place activation</b>	The local character, function and strength of each unique 'Quarter' will be built upon in the implementation of the CBACP. Local events, such as fresh produce and hawkers markets and concerts, will be encouraged and enabled and the CBACP area will be known as a place to work, live and visit.
<b>G3 Place activation</b>	Q6 (Station Quarter) will be a vibrant hub for passengers moving freely and safely between transport types and enjoying the adjacent parklands and river front. the journey to and from Q6 will be comfortable and memorable.
<b>G4 Built form</b>	The CBACP area will be a demonstration of quality architecture with a strong focus on built form and public space interaction, providing multiple accommodation, commercial and employment opportunities.
<b>G5 Built form</b>	The CBACP area will be welcoming to all members of the community and will provide a range of accommodation and recreation options for the variety of culture, socio-economic groups and age groups which live, work and play in the area.
<b>G6 Innovation</b>	Developers will be encouraged to provide innovative spaces and places that will benefit the whole community, including areas to access views, civic uses, open space, recreation and entertainment.
<b>G7 Accessibility</b>	The CBACP area will be developed with consideration of safe, efficient and universal access to, through and within the diverse activities and facilities of the area.
<b>G8 Sustainability</b>	The CBACP area will be a model for the development of greener buildings, more efficient transport usage, and more sustainable lifestyle options. the local residential community will be encouraged to work in the area or travel via public transport to work and public open spaces will be encouraged horizontally and vertically throughout.
<b>G9 Crime prevention</b>	The CBACP area will be active and vibrant and the community who frequent it will feel safe and secure. Design of buildings, spaces and services will contribute to its safe enjoyment at all times of the day and night.
<b>G10 Environment</b>	Development of CBACP area responds to its excellent natural attributes, making best use of the river and its adjacent areas for community enjoyment and ongoing education about the local environment.
<b>G11 Staging and implementation</b>	Staging of development is considerate of the community impacts of development over time, including transition from lower to higher density development and provision of necessary community infrastructure.
<b>G12 Staging and implementation</b>	The CBACP area develops sensitively and carefully over time to ensure that the benefits of development are realised by all members of the community.

**Table 1**  
CBACP goals

### **6.1.1 Option 1 - Existing + bus priority / mid-tier transit**

In this option, any upgrade and widening of the Canning Highway reservation would incorporate bus priority infrastructure and/or pedestrian and cycle infrastructure. Existing access arrangements to interfacing streets remain, as do existing pedestrian/cycle crossing points.

The Canning Highway reservation varies in width between approximately 30-36m, with up to 6 traffic lanes (including slip lanes), planted median and generous footpaths on both sides of the Highway. Ample opportunities to improve the public realm and local connectivity exist within this reservation without compromising existing regional throughput, limiting mode-shift strategies or precluding future mobility solutions.

#### **Key elements:**

*4 traffic lanes + 2 bus lanes*

*No change to connectivity across Canning Highway*

*Opportunities for improved local and regional mobility via public transport and active transport*

*Main Roads forecast Canning Highway to reach capacity by 2031*

Detailed opportunities and constraints are not applicable as this option is in accordance with the current condition of Canning Highway, as planned for in the CBACP.





**Figure 9**  
Connectivity - Option 1



6.1.2 Option 2 - Main Roads Duck & Dive

This is the current Main Roads proposal, as described in Section 4.0

Opportunities exist to improve the amenity and local condition of Canning Highway at surface level through the implementation of a low speed environment through the Precinct and significant landscaping and noise mitigation measures to the trenched sections. These amenity improvements are possible, but are not stated to form part of the proposal

Despite the opportunities of the current proposal, there is obvious risk related to forecast traffic demand resultant from ultimate development under the CBACP. Mitigation of the impacts of this option at surface level risk being neutralised by increased local movement demand, which will have limited non car-based options and will limit desired mode-shift in the long term.

Any proposal of this nature fundamentally limits local connectivity, and the scale of severance proposed will result in a pronounced physical divide between north and south. This directly conflicts with the vision of the CBACP. Public transport trips to/from south of Canning Highway are particularly impacted.

Key elements:

8 lanes – 4 through (trenched); 4 local + 2 on-street bike lanes

Significantly restricted connectivity across Canning Highway (all modes)

Improved through mobility (car only); potential to induce greater regional demand and reach capacity earlier than forecast

Restricted local mobility and accessibility overall (all modes)

CBACP goal	Opportunity	Constraint
G1 Consultation		Minimal consultation has been undertaken by Main Roads to gauge community support. CBACP Review has found community opposition.
G2, G3 Place activation		Division of quarters; Reduced ability to move freely and safely between transport types and to/from the river front; Economic fragmentation.
G4, G5 Built form		Likely reduction in quality of built form interfacing with Canning Highway; Poorer interactivity and inclusivity.
G6 Innovation	Additional constraints have potential to require innovative design solutions	Likely reduction in development viability of Canning Highway development will limit innovation
G7 Accessibility	Improved regional movement through the Precinct for private vehicular modes in the short term	Restricted regional movement through the Precinct for non-private vehicle modes; Significantly restricted movement within the Precinct for local traffic, public transport, pedestrians and cyclists
G8 Sustainability		Less efficient transport use, further contribute to unsustainable vehicle-oriented development pattern
G9 Crime prevention		Canning Highway will become less active, and therefore experience poorer CPTED outcomes.
G10 Environment		Increased emissions from greater private car use and reliance; reduced opportunities for street trees
G11, G12 Staging and implementation		Construction period will limit development activity and not allow the Precinct to stage develop organically in accordance with the CBACP

Table 2  
Option 2 - Opportunities and constraints



**Figure 10**  
Connectivity - Option 2



### 6.1.3 Option 3 - Capped 'trench'

This option improves cross connectivity of the Main Roads proposal by placing the entire extent of the Duck and Dive proposal (between Riseley Street and Canning Bridge) in a continuous trench, and capping key crossing points and intersections. These caps could be very wide (50 - 80m) – with gaps between to the limits that fire engineering and emergency access allow – and could significantly improve cross connectivity and the pedestrian environment at street level.

This option retains the potential movement benefit of Option 2, but by increasing the number and extent of surface-level crossing opportunities, further mitigates the negative impacts of trenched sections. Opportunities include the implementation of bus priority and a low-speed environment within the Precinct, significant landscaping and noise mitigation measures, urban plazas at crossing points and additional place opportunities. Improvement of local mobility (non-car) and greater integration between north and south of the Highway also potentially result.

#### Key elements:

*8 lanes – 4 through (capped trenched); 4 local (surface) inc. priority bus or mid-tier facility*

*Improved through mobility (car only); potential to induce greater regional demand and reach capacity*

*Downgrading of Canning Highway (at surface) providing a lower speed environment*

*Opportunities for improved connections across Highway*

*Lower speed environment at surface provides improved pedestrian environment and interface with built form*

CBACP goal	Opportunity	Constraint
<b>G1 Consultation</b>	Opportunity for community knowledge to drive the design of Canning Highway	Minimal consultation has been undertaken by Main Roads to gauge community support. CBACP Review has found community opposition.
<b>G2, G3 Place activation</b>	Potential for improved movement between different transport modes and the riverfront; Additional place activation opportunities	
<b>G4, G5 Built form</b>	Potential for greater activation of built form on Canning Highway; Improved interactivity and inclusivity	
<b>G6 Innovation</b>	Additional innovation opportunities related to new street level context of Canning Highway	
<b>G7 Accessibility</b>	Improved regional movement through the Precinct for private vehicular modes; Potential for improved local movement within the Precinct	Restricted regional movement through the Precinct for non-private vehicle modes
<b>G8 Sustainability</b>		Less efficient transport use, further contribute to unsustainable vehicle-oriented development pattern
<b>G9 Crime prevention</b>	Potential for Canning Highway to become more active, with greater integration with public spaces, improving CPTED outcomes	
<b>G10 Environment</b>	Opportunities to integrate Canning Highway and crossings with new public spaces	
<b>G11, G12 Staging and implementation</b>		Construction period will limit development activity and not allow the Precinct to stage in accordance with the CBACP

**Table 3**

Option 3 - Opportunities and constraints





**Figure 11**  
Connectivity - Option 3



6.2 Movement and place

Movement & Place is a place-based approach to the planning, design, delivery and operation of transport networks, which seeks to optimise the network of public spaces formed by roads and streets and the spaces they adjoin and impact. It recognises that streets have two different and often competing roles - to transport people and goods (movement) and as destinations in their own right (place).

The 3 options are assessed at a high level against the 9 Built Environment Indicators of the New South Wales Movement & Place Framework. The Western Australian Department of Transport are currently leading development of a Movement & Place Framework for use in Western Australia, however the NSW Framework is used in absence of a local framework for the assessment of infrastructure or development through a Movement & Place lens. For example, Main Roads WA currently use the NSW Framework as part of its Speed Zoning Policy and Application Guidelines.

The WA Framework, once operational, will classify streets under the Framework based on an agreed matrix by comparing their movement and place requirements. The DoT state that as a decision-making tool, WA's Movement & Place Framework will help to settle conflicts over the competing roles of streets. We understand that the WA Framework will be used as part of a program to assess and classify the 'Urban Corridors' identified in Perth & Peel @ 3.5 Million, of which Canning Highway is one.

The NSW Movement and Place Framework establishes a set of performance indicators for the evaluation of Movement and Place projects. The indicators are based on qualities that contribute to a well-designed built

environment.  
These are assessed at a high level, relative to existing conditions, measured as net positive impact (green), no impact (grey), or net negative impact (red).

Mode share

The proportion of sustainable travel mode usage by transport customers.

Public transport accessibility

The level of interaction between land use and transport services in terms of how well people are served by public transport.

Freight network accessibility

The efficiency of access for freight.

Public space

Walking access to public spaces and the proportion of land that is reserved for public space.

Mix of uses

Proximity of the road segment to locally oriented Business Land Use Zones which increase the social capital of the local population.

Tree canopy

Percentage of tree cover across urban areas, which provides critical shade, drainage, air quality and wellbeing benefits.

Road safety

Road safety risks and trends in crashes over time.

Air quality and noise

Air quality, noise and greenhouse gas emissions impacts from road traffic.

Permeability

Walking and cycling permeability of the road network, reflecting the walkability and connectivity of the area.

Performance indicator	Option 1	Option 2	Option 3
Mode share	Green	Red	Grey
Public transport accessibility	Green	Red	Grey
Freight network accessibility	Grey	Green	Green
Public space	Grey	Red	Green
Mix of uses	Grey	Red	Grey
Tree canopy	Grey	Red	Red
Road safety	Grey	Green	Green
Air quality and noise	Grey	Red	Red
Permeability	Grey	Red	Green

Table 4  
High level Movement and Place impact assessment



## 7.0 Summary + recommendations

The current proposal clearly generates significant issues as far as can be determined, noting that a lack of clarity and engagement - itself an issue - has also impeded full assessment of the plans.

A plan for the future of Canning Highway through such a significant urban centre should, at minimum, be held to the same standards of collaboration and consultation that the CBACP is, while the proposal itself suggests a disconnect at the State level. Detailed costings for this project have not been released, however a project of this cost and impact is an opportunity to drive transformative change rather than reinforce a business-as-usual approach which conflicts with long term strategic planning. This is particularly relevant given the vision, objectives and modal shift commitments for the Precinct, as endorsed in the CBACP by the State Government (WAPC), which itself reflects significant investment of taxpayer funds in the form of the Mandurah Railway Line and Canning Bridge Station.

A key challenge for the Precinct is how it will accommodate growth of local and regional commuters without compromising the social, economic and place values held by the Canning Bridge community and the objectives of the CBACP. Public transport accessibility to both sides of Canning Highway needs to be maintained and enhanced in order to support this, and long-term mass rapid transit appears to be precluded by the duck-and-dive in addition to providing insufficient crossing points and significant loss of tree canopy.

The public realm investment necessary to support the precinct is also at risk from the impacts of the duck-and-dive proposal.

If infrastructure investment is not considered within the context of the CBACP, poor design responses to Canning Highway are a likely outcome. This will negatively impact the amenity of the street network which connects to Canning Highway, deter high quality development in the precinct, and further segregate the community south of Canning Highway (both in and adjoining the CBACP area).

Potential for modal shift towards active and public transport, on which the CBACP is predicated, will also be substantially compromised.

A number of notional additions have previously been raised in consultation for a similar proposal for West Coast Highway (City of Stirling), but are absent in the Canning Highway proposal:

- Extended lids at road crossings with flexible spaces incorporated within/on the lids to include landscaping, pop-up activation opportunities and protected seating areas. *This option is considered in this assessment as Option 3*
- Extended surface areas cantilevering over the trench to incorporate landscaping. *This may mitigate some of the visual impact of the trench, however does not reduce the physical severance.*
- Feature and acoustic screening. *This may mitigate some of the visual and acoustic impact of the trench.*
- Heavily landscaped verges with dense canopy coverage. *Current infrastructure and services planning often locates underground services within verges, in addition to subsurface structural requirements of the trench itself. This significantly limits the potential extent of the deep soil zones required to offset the loss of tree canopy, let alone provide a net increase.*

The above recommendations provide some positive additions to the proposal, however they ultimately amount to 'tinkering around the edges' of the proposal and further compromise pedestrian, cyclist and public transport space within the road corridor, while creating insurmountable community severance and additional barriers to mode-shift. Additionally, this proposal likely precludes the ability for the Precinct to capture future benefits associated with a changing transport context by ruling out a potential mid-tier transport solution.

In this event, it is likely that the precinct will fail as a walkable and vibrant centre and become traffic dominated, subservient to the regional movement function of Canning Highway at the expense of local amenity.

Future planning for the corridor should:

1. Investigate the full spectrum of alternative solutions to moving *people* to and through the Precinct.
2. That the above is carried out in a transparent and consultative process; noting the recent decision made on a duck-and-dive proposal for Charles Street, North Perth, understood to be due at least in part to significant community objections.
3. Adequately consider the local connectivity and place impacts of the duck-and-dive proposal prior to and as part of consideration of the MRS amendment for Canning Highway. This should be considered in light of the current Local Government Consortium Mid-Tier Transit study, the progress of the WA Movement and Place Framework, and any other future proposals that would be unable to be implemented should the duck-and-dive proceed.
4. Ensure any proposal is developed in accordance with Infrastructure Australia/Infrastructure Western Australia requirements.

Key matters to be overcome are the substantial, tangible and foreseeable amenity impacts arising from the trench design (even if partly capped), and the diversion of public transport services making this mode less desirable and accessible to both regional and local patrons. This is particularly problematic given the CBACP is predicated on genuine transit oriented development (and therefore investment to deliver modal shift).

Analysis of movement and place only confirms this: the goal of a vibrant street, acknowledging higher volumes but also place values and opportunities for modal shift, can only be achieved if both objectives are actively considered in the future design of Canning Highway.

# APPENDIX A

Canning Highway - High Level Impact. Stantec, June 2022



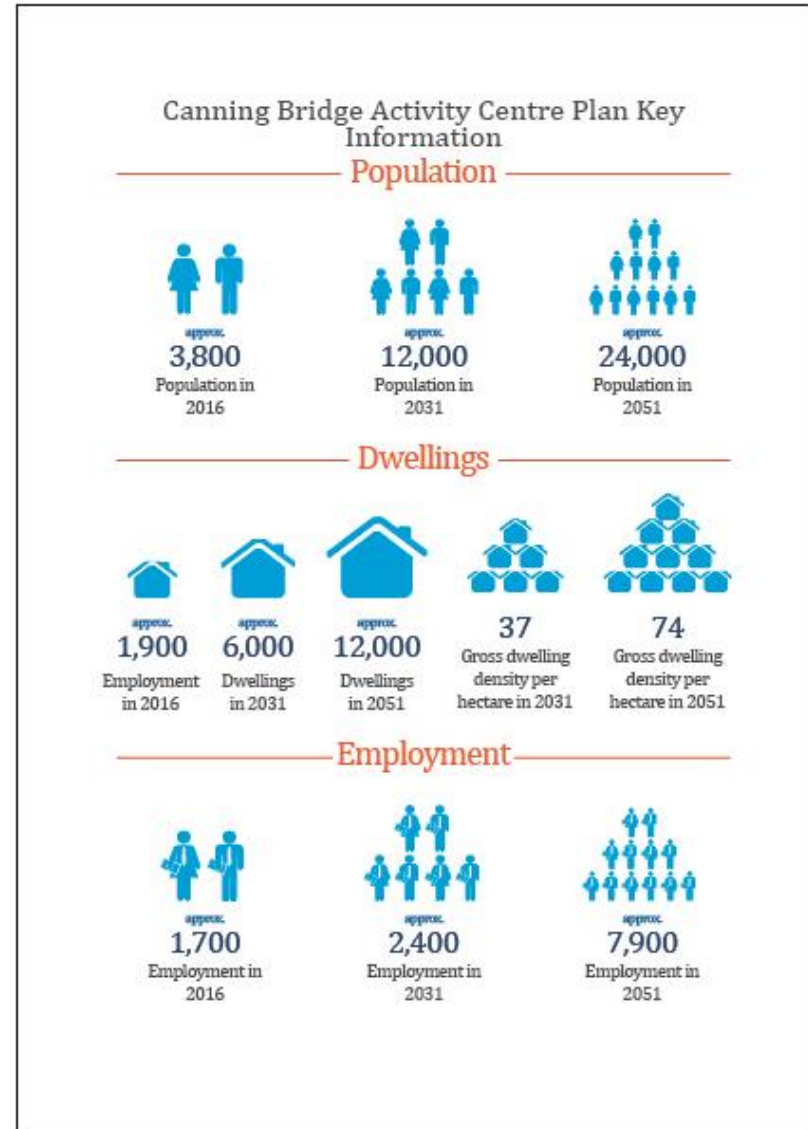
City of Melville c/o  
HRD  
CBACP

Canning Highway –  
High Level Impact

# CBACP

The Canning Bridge Activity Centre Plan (CBACP) was approved in 2015 (having gone through a number of amendments to date) in order to guide development of the CBACP area. The activity centre is ultimately intended to comprise a mix of residential, civic, office, retail, entertainment uses encompassing the river and adjacent open spaces, and sits within the local government areas of the Cities of Melville and South Perth.

*“The CBACP establishes a foundation for the future of the area including objectives and goals for its ongoing development, guidelines for the style of built form which is expected, and an implementation framework for orderly improvements to infrastructure and land over time.”*





# Canning Highway

Canning Highway currently bisects through the CBACP precinct splitting the existing neighbourhoods of Applecross and Mount Pleasant. Canning Highway performs both a local and regional function carrying people between Fremantle to the west to Canning Bridge and the Kwinana Freeway to the east.

Canning Highway is predominately a four-lane, divided road and is included in the Metropolitan Road Hierarchy as a Primary Distributor and comes under the management and control of Main Roads WA. For planning purposes, the Western Australian Planning Commission (WAPC) categorises Canning Highway as a Primary Regional Road under the MRS. The posted speed limit is 60km/h.

Canning Highway currently carries 40,000 to 60,000 vehicles per day (vpd) in the study area, and up to 70,000 vpd over Canning Bridge. The Highway experiences major congestion during peak hours, particularly between Riseley Street and Kwinana Freeway (although it is noted that recent improvements in signalling have managed some of this congestion on Sleat Road).

A number of frequent bus services run along Canning Highway providing connections to the local neighborhoods to/from Canning Bridge Train Station. Approximately 1,300 passengers a day (boardings and alightings) use bus services within the CBACP area (not including Canning Bridge) on Canning Highway.

# Canning Highway

- In the eastbound direction, Canning Highway has a 3-lane cross section between Reynolds Road and Henley Street.
- In the westbound direction, Canning Highway has a 3-lane cross section between Kwinana Freeway and Canning Beach Road.
- Either side of this, the Highway reverts to 2 lanes in each direction.
- The existing bus interchange is located along Canning Highway between the Freeway northbound and southbound ramps, with dedicated north facing bus ramps to the Freeway.
- The interchange with Kwinana Freeway is a signalised diamond interchange, with traffic signals at the ramp terminals, approximately 120m apart. The interchange provides connectivity between Canning Highway and Kwinana Freeway for all movements except the Canning Highway westbound to Kwinana Freeway northbound movement (given the skew of the two roads and the proximity to northbound Freeway access at Mill Point Road, the demand for this movement would be relatively low).
- The multiple frequent bus services operate in the traffic lanes mixing with general traffic, with bus stops embayed.

# Canning Highway – existing crashes

2017 to 2021 - between just east of Canning Beach Road to Riseley Street

Severity	No.	%
Fatal	0	0
Hospital	12	3.31
Medical	59	16.25
PDO Major	184	50.69
PDO Minor	108	29.75

Year	No.	%
2017	99	27.27
2018	75	20.66
2019	88	24.24
2020	38	10.47
2021	63	17.36

Nature	No.	%
Head On	0	0
Hit Animal	0	0
Hit Object	2	0.55
Hit Pedestrian	5	1.38
Non Collision	1	0.28
Not Known	0	0
Other / Unknown	12	3.31
Rear End	234	64.46
Right Angle	47	12.95
Right Turn Thru	6	1.65
Sideswipe Opposite Dirn	0	0

# Canning Highway – Infrastructure Australia Review

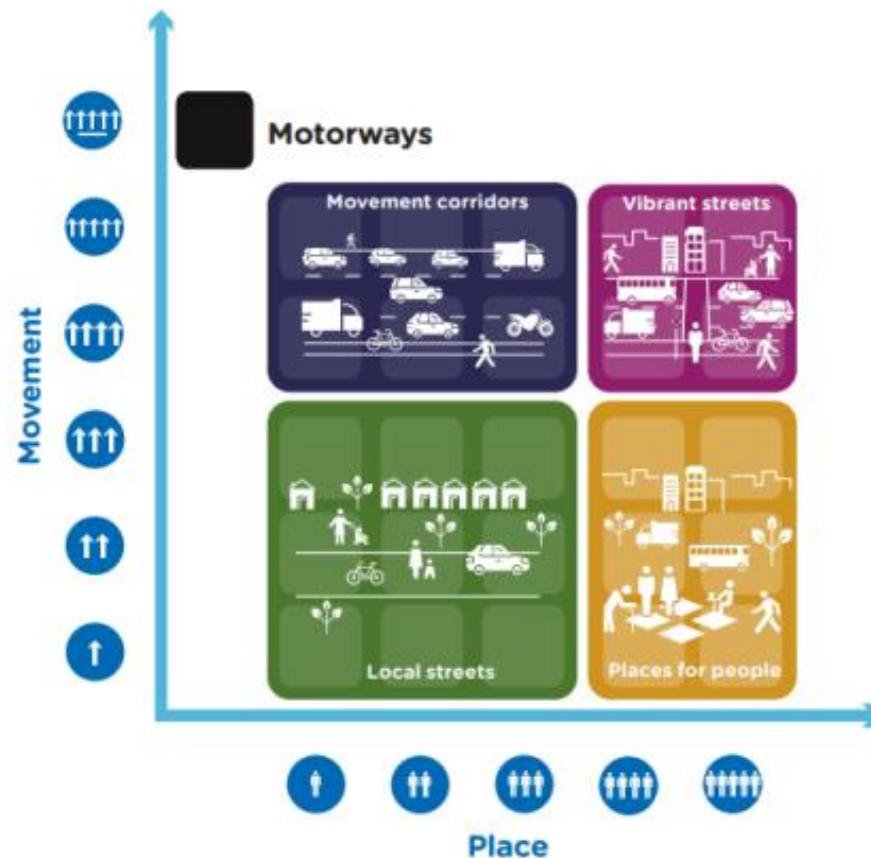
An assessment undertaken in 2020 presented findings from research and analysis on data and other factors related to Canning Highway with respect to the CBACP. The following points were raised:

- Traffic volumes are expected to increase steadily over the next decade up to 102,800 vpd by 2031(MRWA - reflecting the expected increase in mixed use area associated with the Canning Bridge Precinct.)
- Approximately 40,000 of these vehicles being generated within the CBACP area between Reynolds Road and Sleat Road
- Infrastructure Australia project that Canning Highway between Canning Bridge and Riseley Street will be beyond capacity by 2031
- Traffic growth on Canning Highway is expected to be greatest around the Canning Bridge (forecast to be 3.5% per yr from 2016-2026)
- While residential development is consistent with dwelling and infill targets, commercial activity is trending below expected levels
- 2014 traffic analysis projected that Canning Highway was able to accommodate regional and precinct related growth to 2031 based on mode shift and infrastructure upgrades
- Public Transport and active transport were projected to account for 27% mode share by 2031 and are currently tracking below targets (less than 10% currently).
- The report made the following recommendations:
  - Collect additional traffic data for local roads
  - Prioritise Public Transport and active transport modes and improve connectivity
  - Consult with MRWA regarding duck and dive
  - Advocate for upgrades
  - Investigate road performance and infrastructure upgrades for Leach Highway and South Street to reduce pressure on Canning Highway.



# Canning Highway – existing Movement and Place

MRWA speed zoning guideline adopts NSW framework in lieu of a WA specific framework



**Figure 2: Movement and Place Framework (Source: Roads and Maritime Services, NSW)**

# Canning Highway – existing Movement and Place

Movement describes both the demand and profile of road user movements, and the form and function of the roadway to facilitate movements. Variation in movement patterns at different times should always be considered. Movement information includes:

- The typical volume of traffic (such as AADT or peak hour movements)
- Profile of traffic, types of vehicles, purpose of road use
- Design standard of the roadway (including control of access, intersection types, pavement or surface type and standard, separation from adjacent land uses, width of the road corridor, geometric layout, etc.)
- Public transport facilities and service intensity along the roadway
- Use of the roadway for pedestrian and cyclist movement
- Use of the road reserve for other infrastructure, such as power lines or utility corridors. The road network in Western Australia is presently defined according to a road hierarchy rating. These categories generally follow the Movement Function of the roadway. Listed from highest Movement value to lowest, the classifications are as follows:
  - Primary Distributor
  - Regional Distributor
  - District Distributor A
  - District Distributor B
  - Local Distributor
  - Access Road

# Canning Highway – existing Movement and Place

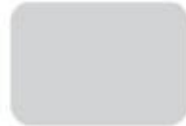
Place describes the form and function of land uses and activity beside or along the roadway corridor. Place values influence the activity pattern along the roadway and have a significant bearing on naturalistic Operational Speed. Many Place values are also strong indicators of potential road user risks and may highlight other considerations for appropriate Target Speed selection. Variation in place functions and activities at different times should always be considered.

A number of environmental, land use and context factors must be considered when assessing a roadway's Place value. Important considerations include:

- The role of the roadway for supporting activity (including retail, commercial, civic, entertainment, and recreation uses).
- Importance of the roadway as part of a destination or destinations.
- Intensity of land uses surrounding the roadway.
- Volume of pedestrians and cyclists moving within the precinct (rather than making through movements).
- Presence of land uses that may increase crash risk, e.g., licensed venues, medical facilities, recreational reserves, educational facilities, activity centres public transport interchanges, and different forms of residential use.
- Views, features or roadside locations that may distract driver attention.
- Type and profile of traffic accessing roadside locations, such as proportion of tourists, sightseers, or people making purely recreational trips.
- Type and quantity of parking along the roadway (including on-street parking, verge parking, etc.).
- Likelihood or potential for pick-up, drop-offs, stopping, and parking to occur along or aside the roadway.
- Number of accesses onto the roadway

Existing – M & P

## MOVEMENT

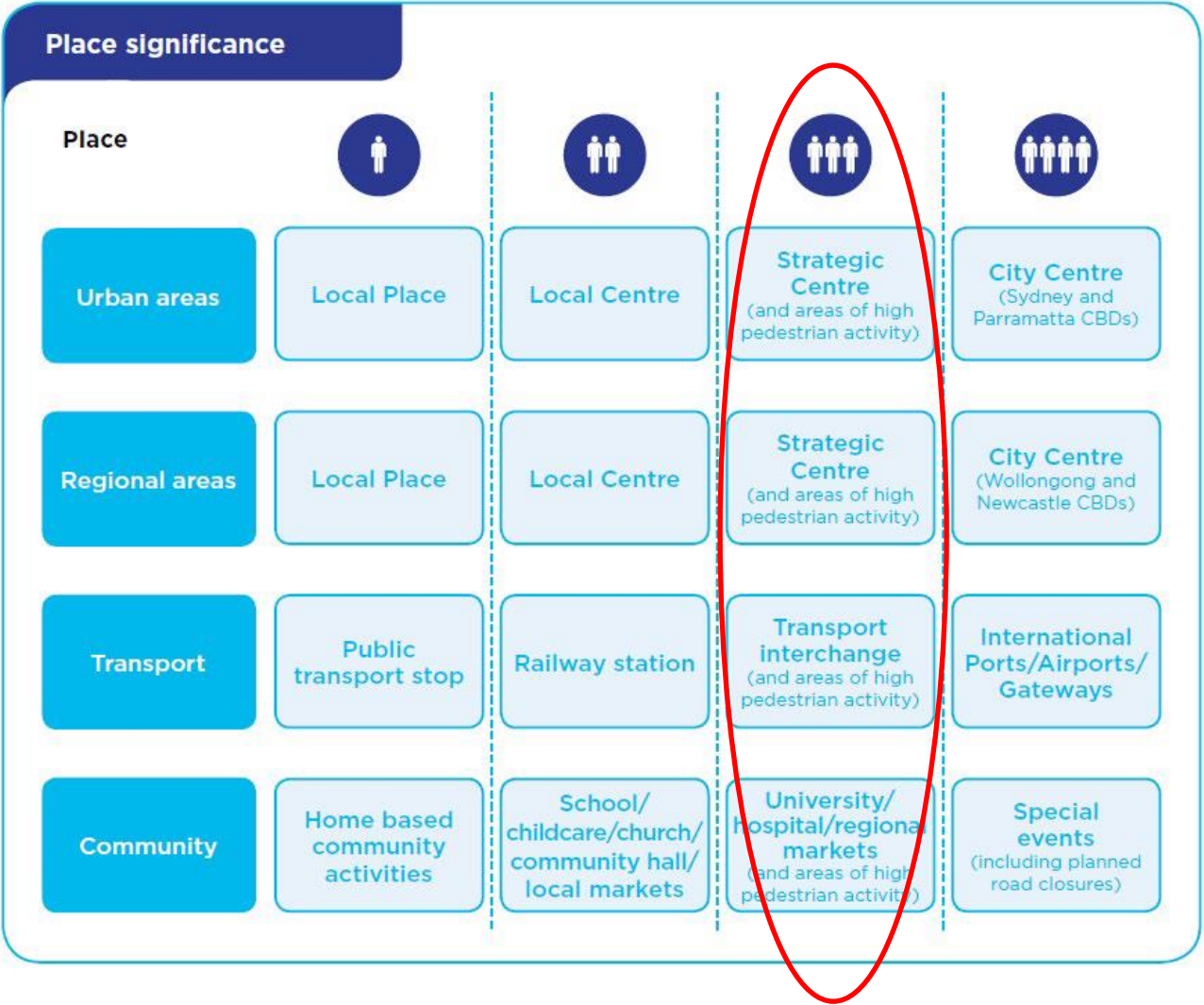


## PLACE

Currently, Canning Highway in this location would be sitting in the area circled (“significant movement with some place”), which is defined as providing a “safe, reliable and efficient movement between and within regional centres and urban areas”.




In terms of its significance of place, the figure adjacent shows how the study area would currently be described being a Strategic Centre.



# Canning Highway – existing Movement and Place

The Movement and Place Framework provides a basis for identifying a range for the Target Speed with reference to the form and function of a roadway. The matrix presented in Table 1 provides a high-level overview of suitable Target Speeds for different categories of roads within the broader WA network.

**Table 1: Movement and Place Framework and Target Speed Range**

Level of Movement Function			Level of Place Value				
			Highest	High	Moderate	Low	Lowest
							
			Indicative Target Speed (in km/h):				
	Increasing significance ↑						
	Primary/Regional Distributor*		50-60	50-70	60-80	80-100	100-110
	District Distributor A/B		40-50	50-60	60-80	80-100	100-110
	Local Distributor		30-50	40-60	60-70	80-100	100-110
	Access Roads		10-50	30-50	50-70	80-100	100-110

\*Except for School Zones, which are 40 km/h.

As a 60km/h posted speed road and a Primary Regional Road, Canning Highway would fit into one of the first three categories as shown by the red circle.

# CBACP – Integrated Transport Strategy

## Aim

With regards to accessibility and mobility around the CBACP area, the Integrated Transport Strategy aims to:

- Plan future transport strategies around a mode hierarchy that promotes more sustainable forms of transport
- Facilitate access for emergency service vehicles
- Make walking safe, convenient, comfortable, and delightful
- Ensure pedestrian facilities encourage walking to, from and within the CBACP area
- Overcome barriers to movement
- Improve the legibility of transport networks in the CBACP area
- Make cycling safe, convenient, and comfortable for people of all ages and abilities

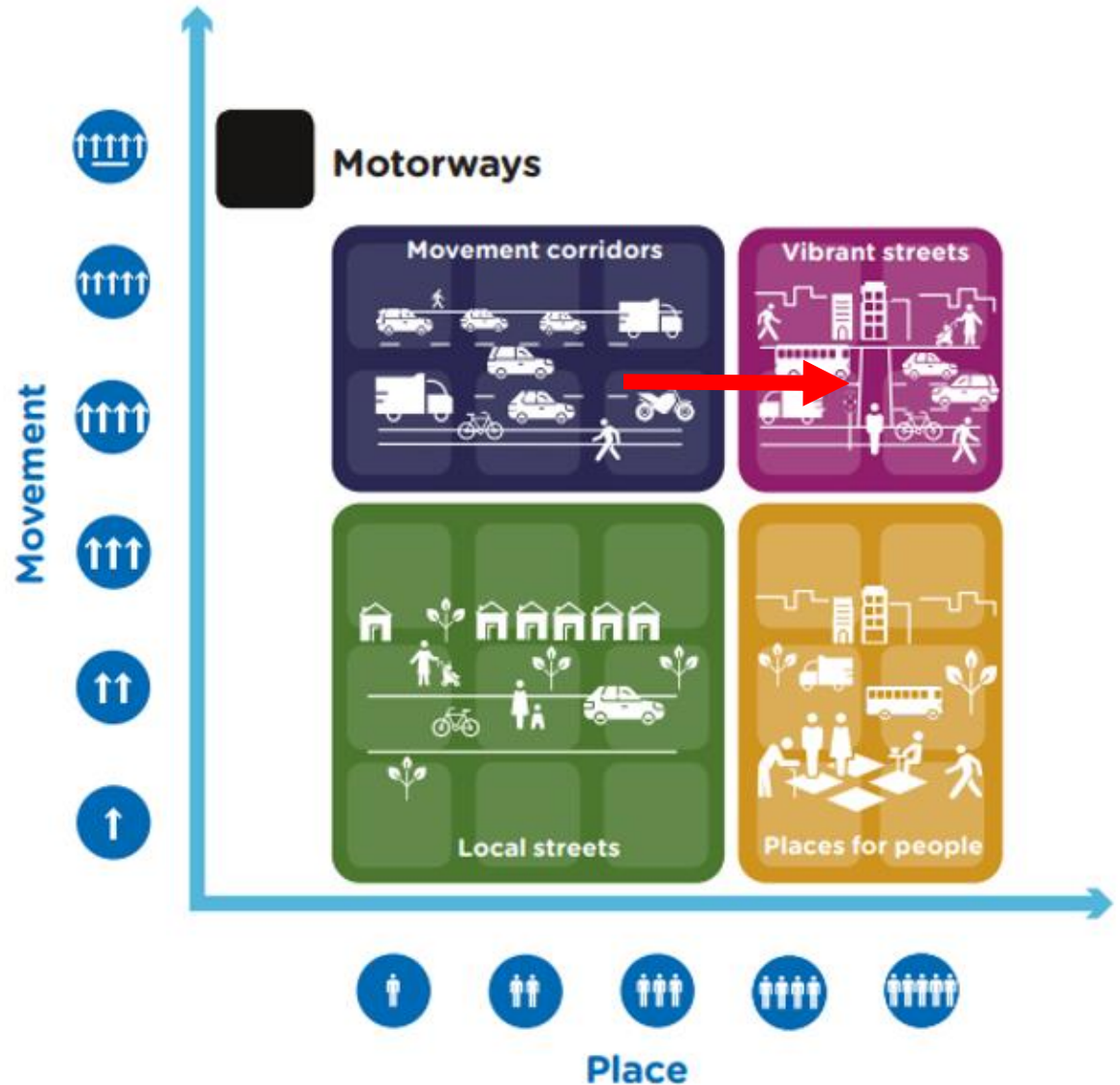
Enabling residents, customers, employees, and visitors to travel around the area without having to resort to using a car is a key part of this transport strategy. The mode hierarchy in the CBSP area places more sustainable forms of transport at the top, with single occupancy car trips at the bottom. This hierarchy should inform all strategy and policy decisions for transport in the CBSP area.

1. Walking
2. Cycling
3. Public transport
4. Taxi, commercial transit, car sharing and clubs
5. Single occupancy car trips

# Canning Highway – future Movement and Place

Existing – M & P

To achieve the vision of the CBACP ITS, and on the assumption that downgrading the road is unlikely, there is a need to transition the place value of Canning Highway from moderate/high to highest. This will enable Canning Highway in the future to move from a *Movement Corridor* to a *Vibrant Street* (a recognised Town Centre) in the Movement and Place framework





## Canning Highway – issues and opportunities

Canning Highway at present is a barrier between Applecross and Mount Pleasant that can only be crossed via the underpass near to Canning Beach Road, the overpass (footbridge) at Moreau Mews and the signalised intersections at Sleat Road, Reynolds Road and Ardross Street.

In addition to these controlled pedestrian crossing movements, there is an uncontrolled crossing point at Ullapool Road as well as evidence of informal midblock crossing along the length of Canning Highway.

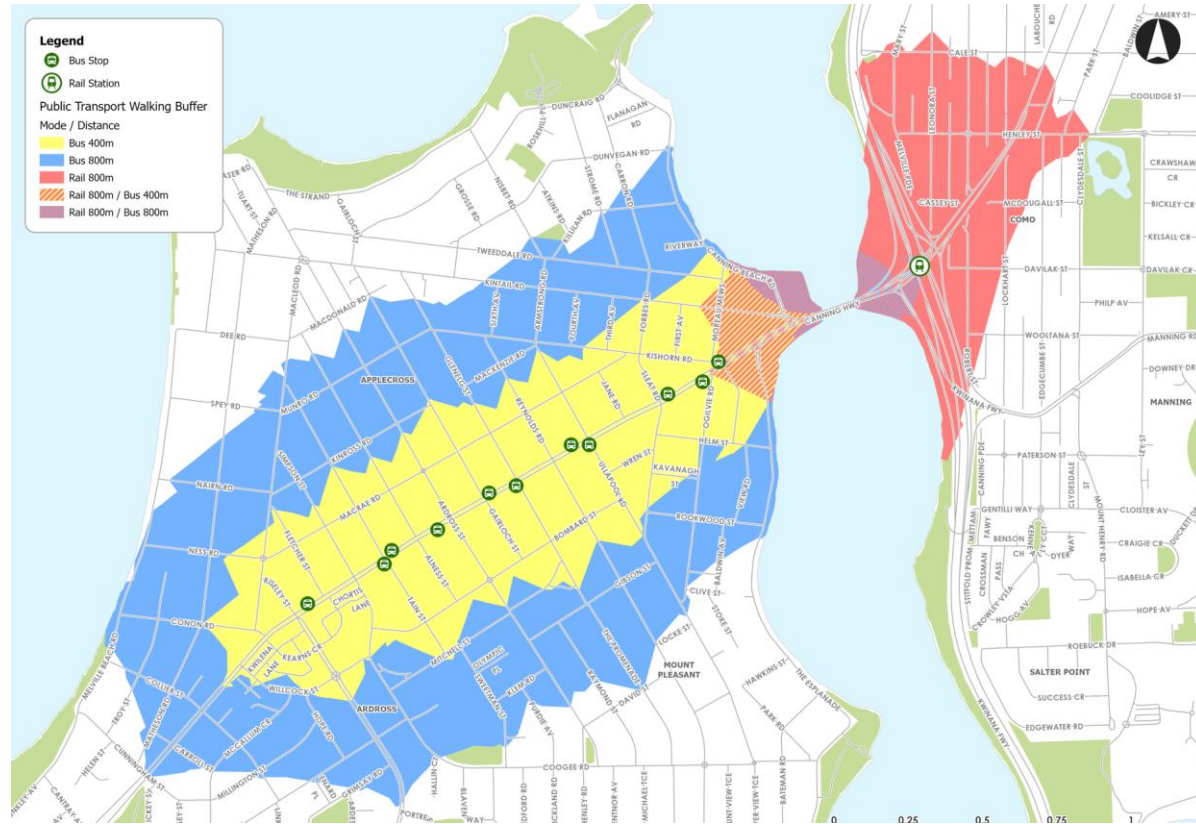
The speed of Canning Highway and the volume of traffic make it almost impossible to cross Canning Highway safely at any locations apart from the five controlled crossing locations noted above, especially for anyone with reduced cognitive ability or mobility.

Access to Canning Highway by private vehicle can be achieved through a number of intersections with side roads being left in left out only and signalised intersections facilitating full movements.

# Canning Highway – issues and opportunities

The walking catchment for the public transport corridor along Canning Highway has been mapped (at a high level) and shows that a large proportion of the residential areas both north and south of Canning Highway is within a 400m and 800m walking catchment.

However, the restrictions of crossing Canning Highway at signalised intersections and over or under passes make this a less attractive mode, and bus stops are only convenient in one direction when passengers are not required to cross Canning Highway



# Canning Highway – issues and opportunities

While Canning Highway currently acts as a barrier between neighbourhoods and reduces the attractiveness of public transport use along the corridor, its existing form (cross section) does allow for future public transport upgrades.

It is acknowledged through the high-level Movement and Place review that Canning Highway needs to continue to function as a regional movement corridor to link west to east (and vice versa).

However, what appears to be missing within the assessment for any future changes to Canning Highway is the ability for the corridor to move people (both regionally and locally) by other forms of transport, such as a rapid mass transit public transport alternative. The future of the activity centre is dependant on the ultimate design of Canning Highway, with implications for place outcomes and mode shift strongly tied to the function and realisation of pedestrian crossings.

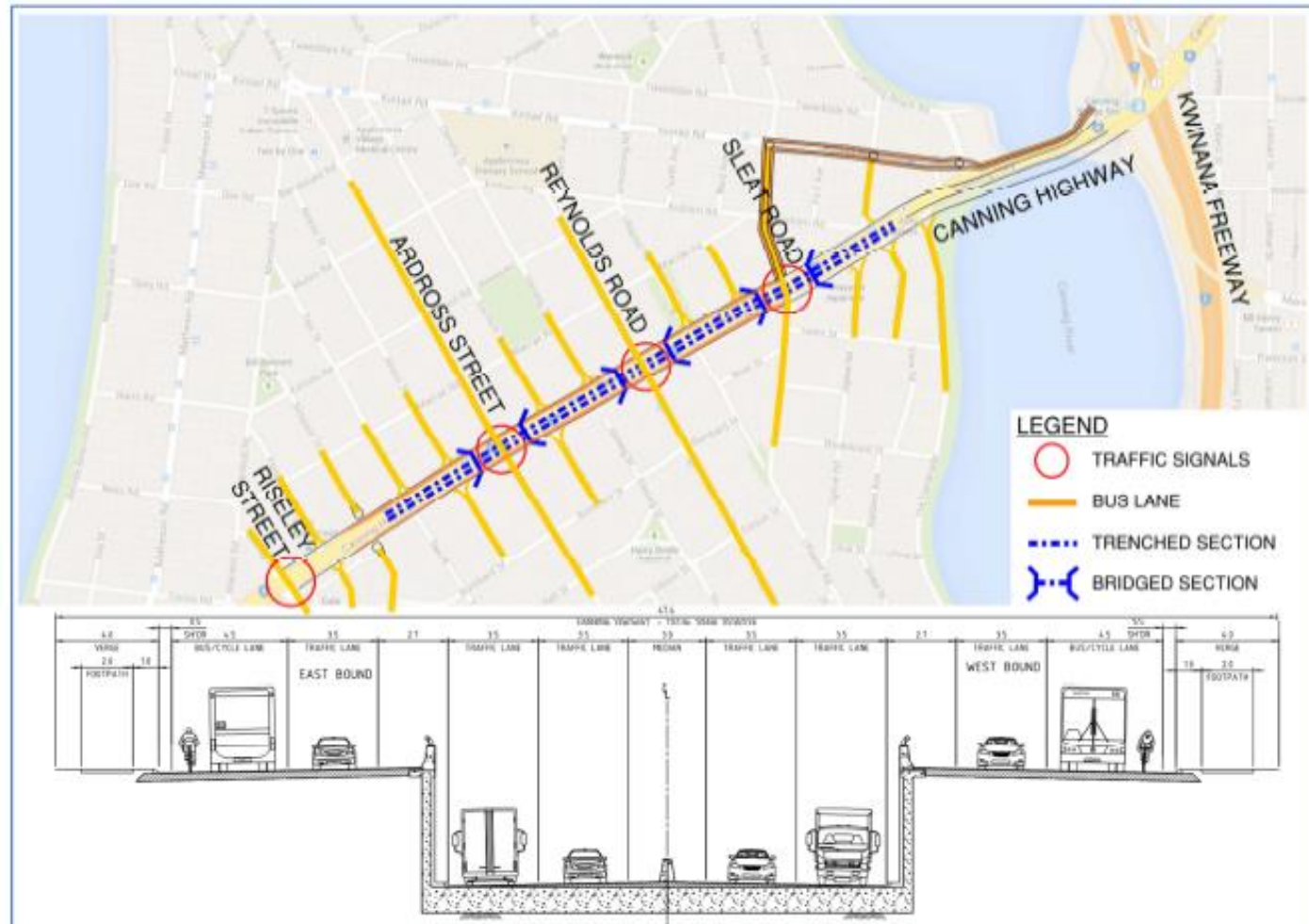
The mode of such can remain agnostic. However, the function it should perform is to be a rapid system that operates within its own corridor providing safe, reliable and fast public transport movement.

Indeed, Perth and Peel @ 3.5m (March 2018) notes that new jobs and homes need to be increasingly focussed in existing activity centres, integrated with efficient public transport routes with greater provision and use of public transport, such as through the METRONET program which will impact significantly on car dependency rates. A network of connected activity centres which deliver employment, entertainment and higher-density lifestyle choices will be designed to be attractive, accessible, compact, vibrant, pedestrian and cycling-friendly environments that have high-quality public transport and road linkages. The ongoing impacts associated with COVID-19 will also likely increase the importance of access to more diverse employment and community facilities locally.



# Canning Highway – Main Roads WA – ‘Duck and Dive’ / Trench Option

Main Roads WA have proposed a “Trench” design option for Canning Highway as presented.



# Canning Highway – Main Roads WA – ‘Trench’ Option – issues and opportunities

A number of issues have been documented regarding the proposed Canning Highway Trench and its impact to deliver public and active transport reliant infill development. A Technical Note discussing these issues can be found as an addendum to this review. The salient points are as follows:

- Canning Beach Road closed off – no access to Canning Highway
- Kintail Road closed off – no access to Canning Highway
- Moreau Mews proposed to have left out only access onto Canning Highway
- No access to Canning Bridge Dive Structure
- No bus lanes along Canning Highway through CBACP area
- Removal of pedestrian bridge
- It is noted that there is no access to the Canning Highway dive structure for the whole area of the CBACP. The nearest access to the Canning Highway dive structure is east at Cunningham Street or, west at Canning Bridge
- No future opportunity for mass public transport along Canning Highway Corridor
- Reduced Access to Canning Highway
- The proposed Access Strategy requires additional ‘Right of Ways’ to be developed

*This will put additional traffic pressure concentrated on a few local roads, further dividing the two neighbourhoods with reduced pedestrian and cycle connection, impacts on the public realm possibilities required for the Moreau Mews neighbourhood center and removes the ability to improve public transport or future mass rapid transit.*

# Canning Highway – Main Roads WA – 'Trench' Option – issues and opportunities

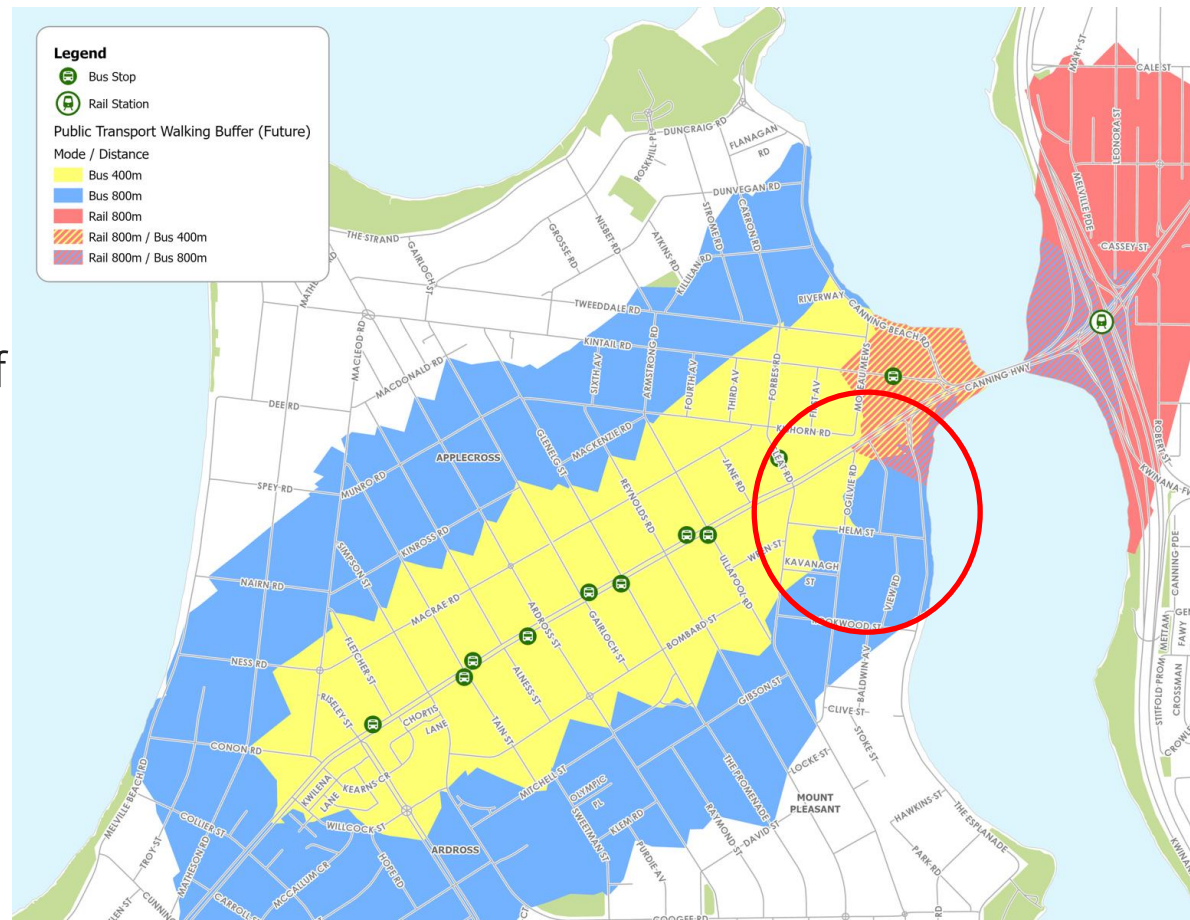
Additional issues include:

- Inability to provide supporting elements in streets (notably street trees on Canning Highway and Kintail Road)
- The hostile environment of the Canning Highway and its negative impact on foot traffic and economic activity for shop and other tenancies fronting Canning Highway.
- The original and updated Activity Centre Plan states clearly that the area will only grow in an orderly manner if sufficient complementary efforts are made at a state level to shift modal share towards public transport. It is not yet clear if this MRWA plan assists or impedes this goal being met.
- Impacts related to planned works at the Canning Bridge bus station in relation to the relocation of the bus interchange and potential routing of bus services away from the Canning Highway through local streets (thus further reducing access to public transport for those on the 'wrong' side of Canning Highway).



# Canning Highway – Main Roads WA – ‘Trench’ Option – issues and opportunities

The walking catchment for the realigned public transport corridor along Canning Highway and diverted Kintail Road has been mapped (at a high level) and shows the reduced proportion of the residential areas to the south of Canning Highway that are within a 400m and 800m walking catchment as a result of the proposed bus route realignment to Kintail Road, taking into account the limited opportunities for crossing.



## A more inclusive 'Trench' option

Through the Place Design Forum run by Hatch Roberts Day in 2021, it became apparent from participants (the community and technical stakeholders) that the proposed Trench option for Canning Highway failed to sufficiently address issues beyond private car mobility.

However, under a scenario that the Trench option was to be implemented, the community collectively agreed that numerous crossing points across Canning Highway (in addition to the proposed intersection crossing points) should be included.

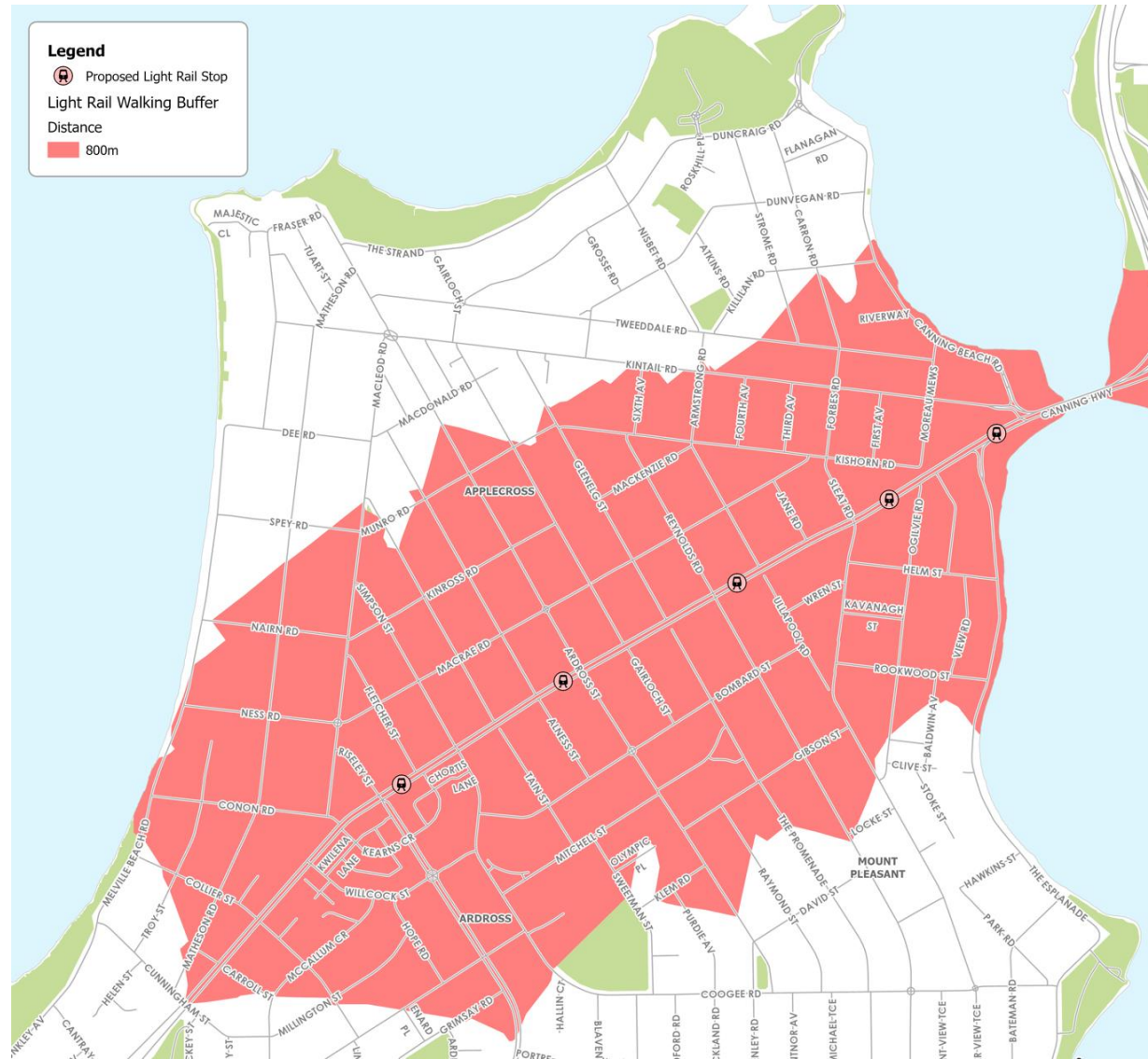
These additional crossing points should be more than just a single footbridge connection, they should maximise the extent to which a Trench can be covered (without it meeting "tunnel" requirements) facilitating areas for potential civic space, green space, and enough space for walking, bike riding and e-ridables.

In addition, access to reliable, safe and frequent public transport in both directions was also something the community wanted to see implemented to support the proposed infill density and resultant population increase (in accordance with the CBACP ITS) – this was both from a congestion and environmental point of view but also, to reduce the burden of development generated traffic parking within the local road network.

As the Trench option even with additional community focused crossing points precludes the possibility of a mass transit system, it will be imperative that a frequent and reliable bus route continues along the full length of Canning Highway and is not routed along Kintail Road further reducing the walkable catchment to public transport for Mount Pleasant residents and increasing travel time penalties, which will further reduce ridership .

## A more inclusive 'Trench' option

The walking catchment for a future mass rapid transit service operating along Canning Highway has been mapped (at a high level) which shows a large catchment area within 800m which would cover the CBACP infill area supporting the increase in population.



# Achieving the PLACE vision for CBACP while maintain a MOVEMENT function for Canning Highway

It is clear that the CBACP will facilitate the forecast increase in population through an increase in dwellings and employment opportunities.

Canning Highway is an important regional movement corridor but currently performs a single person Movement function over providing any real Place value.

The CBACP Integrated Transport Strategy notes that the development of the Canning Bridge precinct should plan future transport strategies around a mode hierarchy that promotes more sustainable forms of transport.

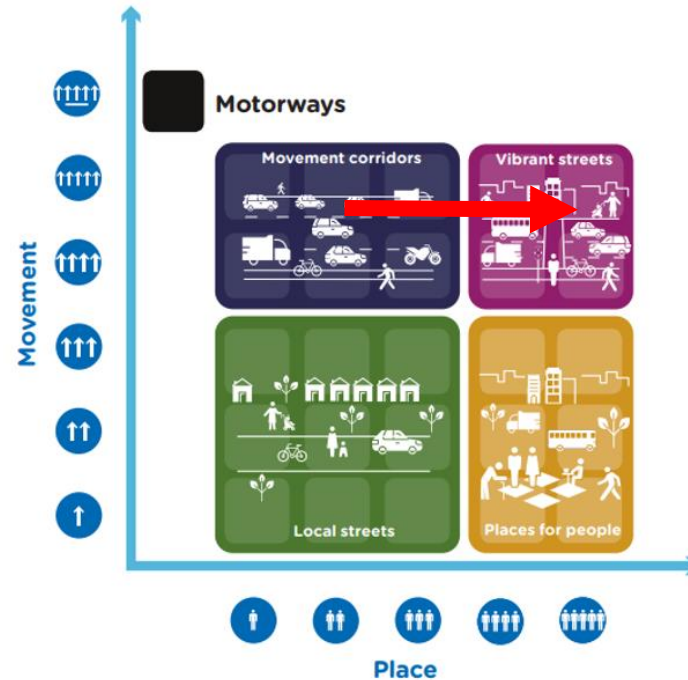
Perth and Peel @ 3.5m (March 2018) notes that new jobs and homes need to be increasingly focussed on existing activity centres, integrated with efficient public transport routes with greater provision and use of public transport, such as through the METRONET program which will impact significantly on car dependency rates. A network of connected activity centres which deliver employment, entertainment and higher-density lifestyle choices will be designed to be attractive, accessible, compact, vibrant, pedestrian and cycling-friendly environments that have high-quality public transport and road linkages.



# Achieving the PLACE vision while maintain a MOVEMENT function

To achieve the vision of the CBACP ITS and public transport mode share target (circa 27%) and to be in accordance with Perth and Peel @3.5m, and on the assumption that downgrading the road is unlikely, there is a need to transition the place value from moderate/high to highest. This will enable Canning Highway in the future to move from a *Movement Corridor* to a *Vibrant Street* (a recognised Town Centre) in the Movement and Place framework.

Ensuring easy access to reliable safe and frequent public transport along the Canning Highway corridor is key to achieving this.



# Achieving the PLACE vision while maintain a MOVEMENT function

The proposed Trench option for Canning Highway will remove any future potential for a mass rapid transit system (for example mid-tier services) and, within the current design removes the potential for the existing bus routes to continue serving the Canning Bridge corridor. Planned diversion of the bus route along Kintail both removes commuters from the south from the catchment, and also acts as a disincentive for regional bus users as it becomes a less direct service, threatening bus ridership locally and more generally.

With a potential increase in local traffic utilising the reduced number of local roads that can access the Canning Highway corridor (albeit not the trench itself) there is a potential that the reliability of a bus route along the Canning Highway corridor will become further diminished.

Ensuring easy access to reliable safe, frequent and direct public transport along the Canning Highway corridor is key to achieving a more PLACE based vision for the CBACP. In addition, multiple crossings across Canning Highway to connect the neighbourhoods of Applecross and Mount Pleasant improving connectivity is key.

**As such, a study to assess the potential for a mass rapid transit system servicing the Canning Highway corridor and its people-carrying capacity to provide the movement function required of Canning Highway should be undertaken.**

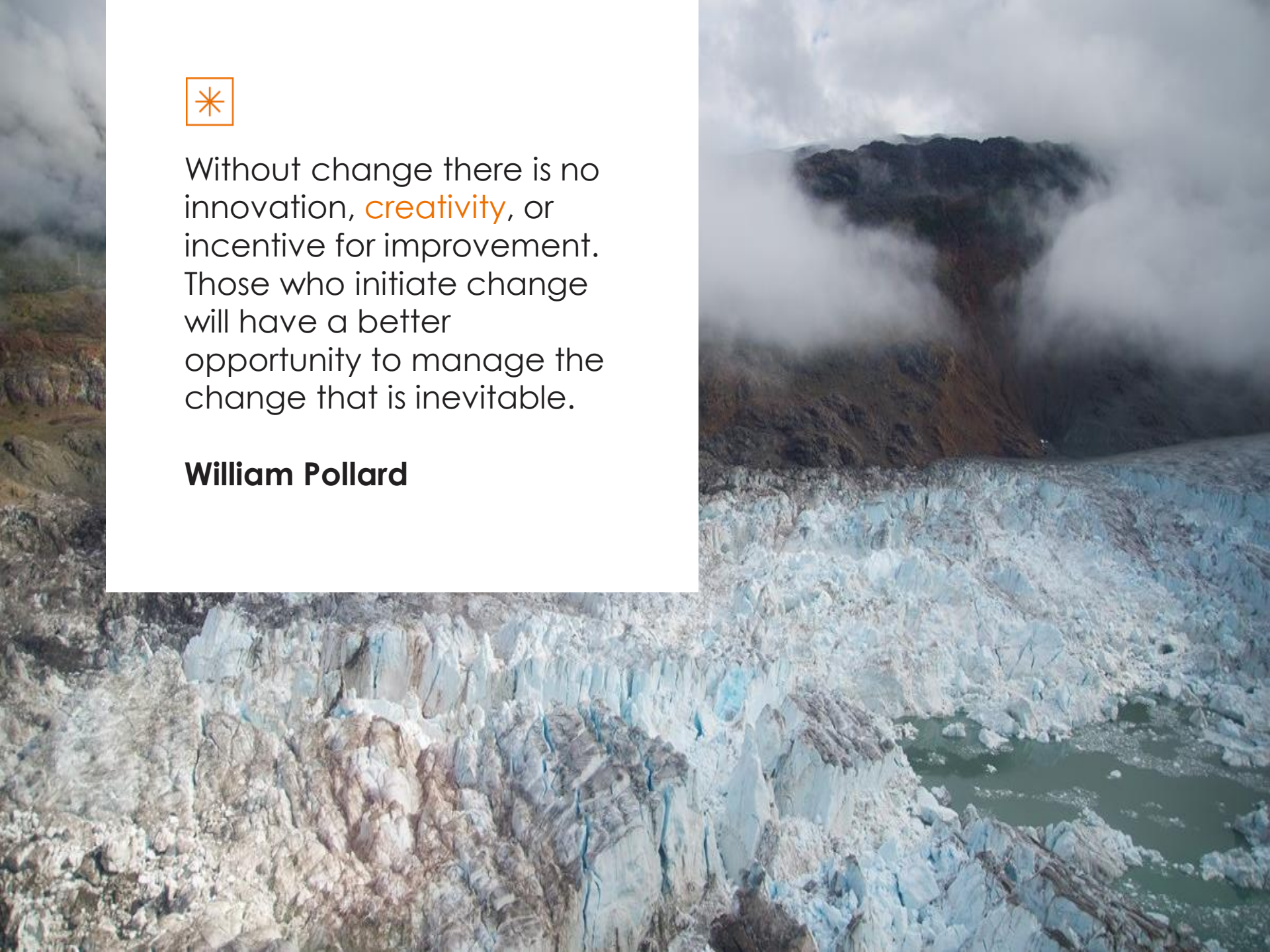
In this regard, it is noted that several studies have identified a potential mass transit link between Curtin University and Fremantle, via Canning Highway. More recently a consortium on local governments in the Perth Metropolitan Area, including the City of Melville, are preparing a 2nd Mid-Tier Mass Transit concept plan for consideration by the State Government.

**The duck and dive plan proposed would therefore appear to raise substantial issues in achieving the relevant place objectives in any movement and place analysis undertaken in the CBACP area and warrants further discussion.**



Without change there is no innovation, **creativity**, or incentive for improvement. Those who initiate change will have a better opportunity to manage the change that is inevitable.

**William Pollard**



# TECHNICAL NOTE

**Project Code:** W195730      **Project Name:** Social & Economic Impacts Study – Transport Inputs

**Dept:** Transport Planning

**Date:** 30 March 2021      **Version No.** A-Dr

**Author:** Tim Judd

**Reviewer:** AO

**SUBJECT:** GTA Transport Inputs to Canning Bridge Activity Centre Social and Economic Impacts Study

Page 1 of 7

GTA and City of Melville had a workshop meeting on 29<sup>th</sup> January to discuss the proposed developments within the Canning Bridge Activity Centre Plan (CBACP) area along with Main Roads WA proposed Duck and Dive design for Canning Highway and the impact this may have on the existing and new residents of the area.

The proposed Duck and Dive design for Canning Highway is provided with Appendix G of the BG&E Canning Highway Planning Study report (2015).

It is noted within the above-mentioned BG&E report (page 38) that the forecast daily traffic volumes are estimated to be in the order of 100,000 vehicles per day, with approximately 40,000 of these vehicles being generated within the CBACP area between Reynolds Road and Sleat Road (extract from BG&E report in Figure 1 below).

Figure 1: Canning Highway Forecast Traffic Volumes

Forecast traffic volumes along Canning Highway and major connecting side roads are summarised in Table 4 below, based on the ROM 2031 forecast horizon, and full development for the Canning Bridge Precinct.

Road	Location	ROM AADT (2031)	% Increase above 2014
Canning Highway	North of Henley St	49,100	5%
Canning Highway	At Canning Bridge	100,600	49%
Canning Highway	East of Sleat Road	100,600	63%
Canning Highway	East of Reynolds Road	60,200	17%
Canning Highway	East of Riseley Street	52,900	26%
Canning Highway	West of Riseley Street	46,500	20%
Henley Street	West of Canning Highway	21,700	NA
Sleat Road	South of Canning Highway	19,600	544%
Reynolds Road	South of Canning Highway	10,700	195%
Ardross Street	South of Canning Highway	7,700	NA
Riseley Street	South of Canning Highway	31,600	209%

The report goes on to note that forecast volumes along Canning Highway are typically 20% higher than current volumes, however traffic volumes along the section of Canning Highway between Sleat Road and Kwinana Freeway are forecast to increase



by 50 to 60%. This is largely a result of the significant additional volumes generated by the Canning Bridge Precinct, which is largely centred near Sleat Road. An increase in 20% on Canning Highway is sufficient to warrant additional traffic lanes in each direction, given the Highway is currently experiencing capacity issues.

All side roads show a significant increase traffic demand, with traffic on Riseley Street and Reynolds Road doubling, and traffic along Sleat Road increasing by more than 500%. This combination of traffic demand increasing on both the through route and on the side roads places additional pressure on the existing traffic signals, which are already struggling to cope with demand.

The report suggests nominal intersection upgrades to provide additional capacity to cope with this demand but does not note where this demand is coming from and the impact this additional traffic will have on the local residential roads.

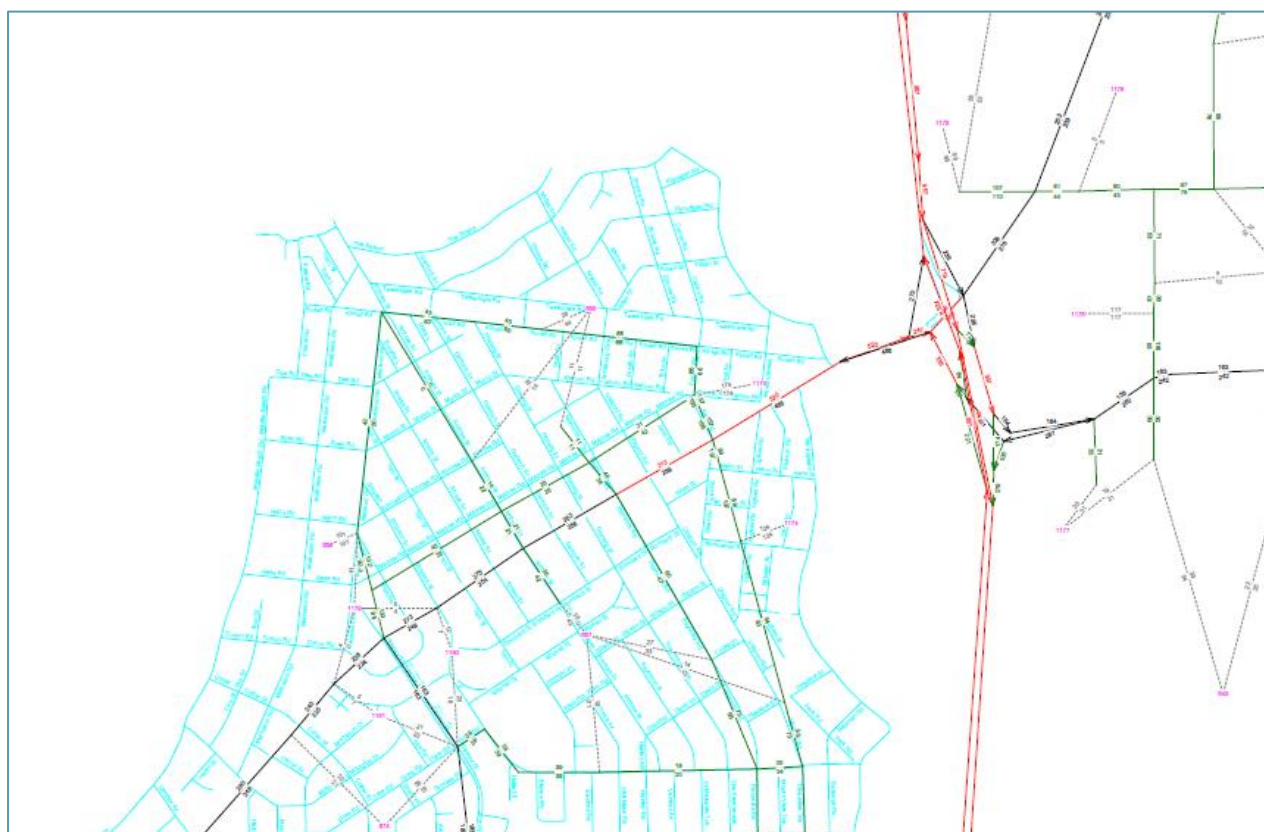
The report reports on the Level of Service (LOS) of the intersections along Canning Highway and notes that Sleat Road intersection with Canning Highway will likely operate at a LOS E and the intersection of Reynolds Road with Canning Highway will likely operate at a LOS D (see LOS description in Appendix A).

### **Main Roads ROM model assessment**

While the BG&E report does not specifically discuss the likely traffic demand on the side roads (specifically Sleat Road and Reynolds Road) Appendix E notes the Main Roads ROM model link volume plot used for the modelling. This notes approximately 31,000 vehicles per day will be utilising Sleat Road from the north of Canning Highway and 20,000 vehicles per day will be utilising Sleat Road from the south of Canning Highway. This will require additional traffic lanes along Sleat Road to cater for this demand.

The ROM model link volume plot notes approximately 8,000 vehicles per day will be utilising Reynolds Road from the north of Canning Highway and 11,000 vehicles per day will be utilising Reynolds Road from the south of Canning Highway.

Figure 2: ROM model 2031forecast link volume plot

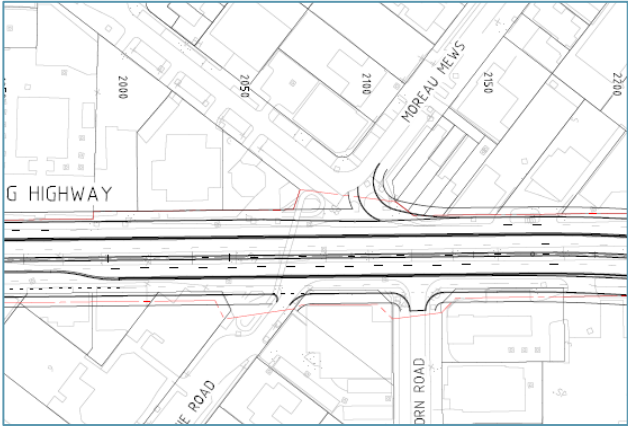
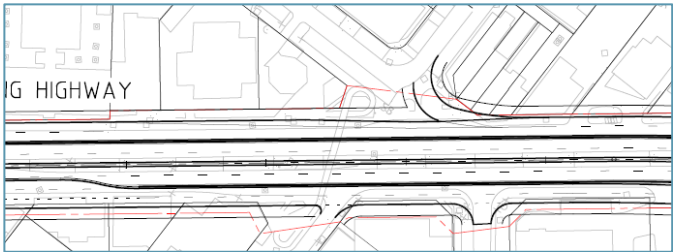
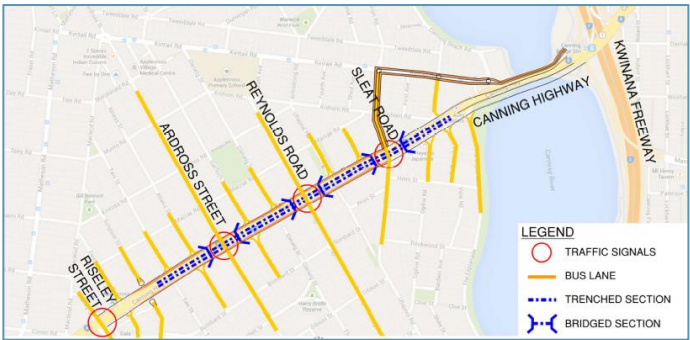



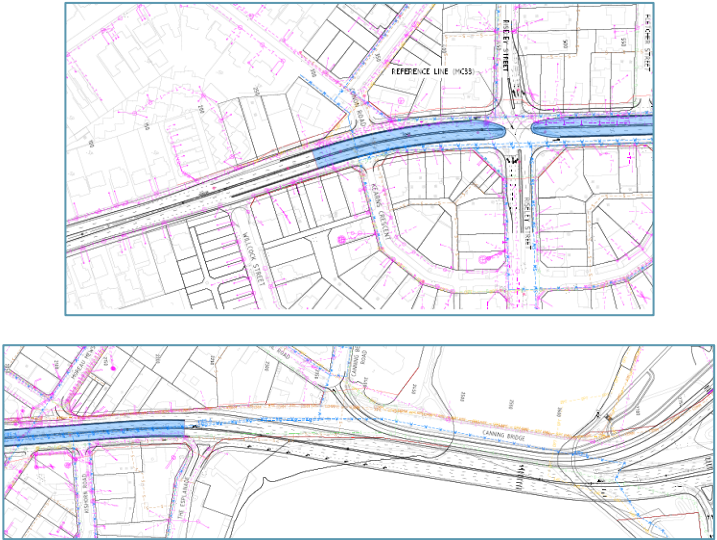
### Assessment of proposed design for Canning Highway and its impact on the residents of the CBACP

During the workshop between GTA and the City a number of observations were noted. These are captured within the assessment table below.



Table 3: Assessment

Issue	Finding	Impact	Design reference
Canning Beach Road closed off – no access to Canning Highway	All traffic will have to re-route to Sleat Road to access Canning Highway	As noted within the BG&E report, all traffic will be re-routed along Sleat Road and Reynolds Road creating additional traffic along lower order roads (and through the CBACP town centre)	
Kintail Road closed off – no access to Canning Highway	All traffic will have to re-route to Sleat Road and Reynolds Road to access Canning Highway		

Moreau Mews proposed to have left out only access onto Canning Highway	Having left out only from Moreau Mews into its own priority lane is likely to attract traffic to use this access bypassing the need to use the signalised intersections of Reynolds Road or Sleat Road	BG&E report does not mention the likely re-routing impact of this proposed left out priority lane that will attract traffic to travel through the very centre of the CBACP town centre	
No access to Canning Bridge Dive Structure	All the additional traffic that the BG&E report notes will use Sleat Road and Reynolds Road will not have direct access to the Canning Highway dive structure	The additional traffic will have to travel along Canning Highway at 'surface level' in front of the developments and alongside pedestrian footpaths creating an unpleasant environment. In addition, due to the left out only priority lane at Moreau Mews Canning Highway 'surface level' is reduced to one lane eastbound – one lane is unlikely to cope with traffic demand	
No bus lanes along Canning Highway through CBACP area	It is noted the proposed design deviates the bus priority along Sleat Road to Kintail Road	No public transport service along this section of Canning Highway to Canning Bridge Interchange reduces the PT catchment and likely patronage increasing the reliance on the private vehicle.	

Removal of pedestrian bridge	The removal of the pedestrian bridge further segregating the two sides of Canning Highway	Removal of the pedestrian bridge requires those to the south of Canning Highway wishing to walk to the centre of the CBAACP (Moreau Mews) to walk to Sleat Road intersection and back (a 500m additional walk).	
Access to Canning Highway Dive Structure beyond the CBACP study area	It is noted that there is no access to the Canning Highway dive structure for the whole area of the CBACP. The nearest access to the Canning Highway dive structure is east at Cunningham Street or, west at Canning Bridge	No access into the Canning Highway dive structure results in all of the traffic generated from the CBACP area and surrounds to travel along the 'surface level' section along Canning Highway, reducing pedestrian amenity in this corridor	
Future opportunity for mass public transport along Canning Highway Corridor	The Duck and Dive design for Canning Highway limits the possibility for mass public transport to be delivered along the Canning Highway corridor	Mass public transport (such as light rail/trackless tram or bus rapid transit) to connect to Canning Bridge interchange would not be possible with the proposed Duck and Dive structure, further enhancing the reliance on the private vehicle for this area	-



<p>Reduced Access to Canning Highway</p>	<p>The proposed design reduces access direct to Canning Highway requiring traffic to concentrate at a reduced number of access points.</p>	<p>Concentrating local traffic to a reduced number of access points to Canning Highway results in traffic volumes inappropriate for the type of road ultimately limiting/inhibiting development opportunities. It also leads to reduced pedestrian and cycle amenity.</p> <p>Between Wilcock Street and Canning Bridge there are 15 existing accesses onto Canning Highway eastbound, within the proposed design, this will be reduced to 10 accesses.</p> <p>From the south there are 6 existing accesses onto Canning Highway eastbound, within the proposed design, this will be reduced to 3 accesses.</p>	 <p>The map displays a section of Canning Highway with various access points marked. A legend indicates the 'PROPOSED ROAD RESERVATION BOUNDARY' and 'EXISTING ALTERNATE CORRIDOR BOUNDARY'. Notes specify that the map shows the 'PROPOSED ROAD RESERVATION BOUNDARY' and 'EXISTING ALTERNATE CORRIDOR BOUNDARY'.</p>
<p>The proposed Access Strategy requires additional 'Right of Ways' to be developed</p>	<p>Additional Right of Ways (in the form of laneway access) will be required to enable existing lots to have access as their current access (off Canning Highway) will be lost through the proposed Duck and Dive design.</p>	<p>Additional Right of Ways will require land to be resumed, reducing lot size and development potential.</p>	 <p>The map shows a section of Canning Highway with various access points marked. A legend indicates the 'PROPOSED ROAD RESERVATION BOUNDARY' and 'EXISTING ALTERNATE CORRIDOR BOUNDARY'. Notes specify that the map shows the 'PROPOSED ROAD RESERVATION BOUNDARY' and 'EXISTING ALTERNATE CORRIDOR BOUNDARY'.</p>

## Appendix A Level of Service Concepts

The Level of Service (LoS) concept describes the quality of traffic service in terms of six levels, designated A to F, with LoS A representing the best operating condition (i.e. at or close to free flow), and LoS F being the poorest (i.e. forced flow). More specifically:

- *LoS A*: Primarily free flow operations at average travel speeds, usually about 90% of the FFS (Free Flow Speed) for the given street class. Vehicles are completely unimpeded in their ability to manoeuvre within the traffic stream. Control delay at signalised intersections is less than 10 seconds. At non-signalised movements at intersections, the average control delay is less than 10 seconds.
- *LoS B*: Reasonably unimpeded operations at average travel speeds, usually about 70% of the FFS for the street class. The ability to manoeuvre within the traffic stream is only slightly restricted, and control delays at signalised intersections are between 10 and 20 seconds. At non-signalised movements at intersections the average control delay is between 10 and 15 seconds.
- *LoS C*: Stable operations; however, ability to manoeuvre and change lanes in mid-block locations may be more restricted than at LoS B, and longer queues, adverse signal coordination, or both may contribute to lower average travel speeds of about 50% of the FFS for the street class. Signalised intersection delays are between 20 and 35 seconds. At non-signalised movements at intersections the average control delay is between 15 and 25 seconds.
- *LoS D*: A range in which small increases in flow may cause substantial increases in delay and decreases in travel speed. LoS D may be due to adverse signal progression, inappropriate signal timing, high volumes, or a combination of these factors. Average travel speeds are about 40% of FFS. Signalised intersection delays are between 35 and 55 seconds. At non-signalised movements at intersections the average control delay is between 25 and 35 seconds.
- *LoS E*: Characterised by significant delays and average travel speeds of 33% of the FFS or less. Such operations are caused by a combination of adverse progression, high signal density, high volumes, extensive delays at critical intersections (between 55 and 80 seconds), and inappropriate signal timing. At non-signalised movements at intersections the average control delay is between 35 and 50 seconds.
- *LoS F*: Characterised by urban street flow at extremely low speeds, typically 25% to 33% of the FFS. Intersection congestion is likely at critical signalised locations, with high delays (in excess of 80 seconds), high volumes, and extensive queuing. At non-signalised movements at intersections the average control delay is greater than 50 seconds.