

Smart Freeway Mitchell Southbound – Reid Highway to Vincent Street



Changes to Hutton Street southbound on-ramp

As part of the Smart Freeway Mitchell Southbound project, coordinated traffic signals will be installed at each on-ramp from Hester Avenue to Vincent Street.

Requirements for the Hutton Street southbound on-ramp include coordinated traffic signals and construction of a third lane, to enable easier and safer merging during peak periods.

Hutton Street ramps (northbound and southbound) are quite unique as they are the only ramps on both Mitchell and Kwinana freeways with intersections connecting to the local road network.

This posed some challenges for the project, to ensure the road layout provided efficient traffic data to the smart technology.

Without accurately monitoring vehicle queues along the ramp, the coordination element with other ramps in the system cannot work effectively. This is because it is designed to increase the rate of vehicles moving onto the freeway as traffic increases.

To ensure accurate data readings of traffic along the Hutton Street on-ramp, the intersections at Hector Street and McDonald Street need to be closed.

These changes were communicated to residents in 2022. Feedback was received, with some concerns raised regarding the proposed closures including access to businesses, increased heavy vehicle movements near local schools and properties, tree removal, and traffic congestion creating safety issues and restricting access to other local roads.

The feedback was reviewed by Main Roads and several months were spent evaluating different options in an effort to address the concerns raised, while still meeting project requirements.

We are pleased to advise that some variations have been adopted to minimise impacts (designs overleaf). These include:

- improved access for Hutton Street eastbound and southbound traffic entering the on-ramp
- the left turn to McDonald Street will remain open
- a T-shaped cul-de-sac design at Hector Street to ensure tree retention
- a dedicated left turn from Cape Street on to a new third lane along the on-ramp
- street parking modifications along Cape Street (to be managed by City of Stirling).

The need for Smart Technology

Currently peak period congestion from the Mitchell Freeway backs onto the Hutton Street on-ramp and blocks access to the McDonald Street and Hector Street intersections.

Vehicles accessing the Hutton Street on-ramp have presented a consistent bottleneck on the Mitchell Freeway. Turbulence from these access points, paired with the existing freeway merge congestion, causes significant delay along this ramp.

Observations show a 15-minute travel duration for vehicles entering the freeway on-ramp at the Hutton Street interchange, to the merge on Mitchell Freeway.

Monitoring vehicle movements

Vehicles travel with gaps proportional to the amount of traffic flow. In light conditions, traffic is well-spaced, and drivers have enough time to react to the conditions ahead of them.

When too much traffic enters the freeway at the same time, vehicles are tightly packed together and small disturbances in traffic create congestion.

As a result of this, traffic builds up on the Hutton Street on-ramp on a regular basis. This creates queuing – slow moving vehicles trying to move onto the freeway.

Ramp signalling system

The Smart Freeway project includes a ramp signalling system which will use freeway sensors to measure the freeway speed and the gaps between vehicles.

The ramp signals use this information to regulate the traffic flow onto the freeway, ensuring there are sufficient gaps between vehicles and that traffic can flow at optimum levels.

Working in combination with sensors placed strategically on the ramps themselves, this ensures drivers have enough time to react to small disturbances in the traffic flow which can be dissipated easily.

As a result of regulating the traffic flow, the system is aware of the whole freeway traffic demand and the queue at each ramp. It responds accordingly to address the exact network condition being experienced in real time.

Impacts on local roads

Once the two access points in Hector Street and McDonald Street are closed at the Hutton Street on-ramp, Main Roads forecasts a manageable traffic increase on Cape Street during the peak period.

The analysis shows that Cape Street, a local distributor road, has sufficient capacity to accommodate the additional traffic.

School access

The Osborne Park Primary School is located adjacent to Hutton Street, with access provided off Albert Street and Hamilton Street. A key input into the option selection is maintaining the current level of traffic accessing the school to ensure safe access.

Main Roads' assessment shows that the selected option predicts there will be no additional traffic within the Osborne Park Primary school zone, which maintains the current level of accessibility for vehicles entering and departing the school.

Safety

All designs and feedback received to date, will be considered during Safety in Design (SiD) workshops within the design process; Road Safety Audits; and application of relevant Main Roads specifications and standards, as well as ongoing liaison with the City of Stirling.

Further information

For more information please call 138 138 or email enquiries@mainroads.wa.gov.au.

To stay up to date with the project, subscribe to email notifications via our project webpage at www.mainroads.wa.gov.au/smart-freeways.

Changes to Hutton Street southbound on-ramp and side roads

Hutton Street intersection with southbound ramps

CURRENT LAYOUT



1. Entry to on-ramp is restricted to the right lane
2. Dedicated left lane for westbound traffic turning on to on-ramp

PROPOSED LAYOUT



1. Entry open to both left and right lanes
2. Give way signage for westbound traffic turning on to on-ramp

Hutton Street on-ramp and Cape Street intersection

CURRENT LAYOUT



1. Give way sign for Cape Street traffic entering on-ramp
2. Parking signage in place

PROPOSED LAYOUT



1. Dedicated left turn from Cape Street on to new third lane
2. New line marking for median and street parking

Hutton Street on-ramp and McDonald Street intersection

CURRENT LAYOUT



1. Left turn from on-ramp to McDonald Street
2. Left turn from McDonald Street to on-ramp

PROPOSED LAYOUT



1. Left turn to remain from on-ramp to McDonald Street
2. No access to on-ramp. McDonald Street traffic to use cul-de-sac turn, giving way to traffic from on-ramp