

KEY FINDINGS FROM THE BUSINESS CASE JUNE 2017

RAYMONT ROAD AND GRANGE ROAD INTERSECTION UPGRADE



Dedicated to a better Brisbane

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Following previous studies, Brisbane City Council completed a business case in 2017. The business case recommended the provision of separate right and left-turn lanes on Grange Road, at the Raymont Road and Grange Road intersection.

This summary provides a brief outline of the key findings of the business case, including:

- » why an upgrade is required for Raymont Road and Grange Road intersection
- » timeline of key milestones
- » why the project is needed now
- » the benefits of delivering the project
- » summary of the options analysis.

OVERVIEW

Raymont Road and Grange Road are identified as suburban roads in the Brisbane City Plan road hierarchy within the inner-north Brisbane road network, as shown in Figure 1.

Webster Road and Grange Road provide a significant north-south link to the Brisbane CBD via Days Road and Stafford Road. They also provide one of the few crossing opportunities across Kedron Brook within the Wilston-Grange precinct. Similarly, Raymont Road and Pickering Street provide a significant east-west link between Samford Road, South Pine Road and Grange Road.

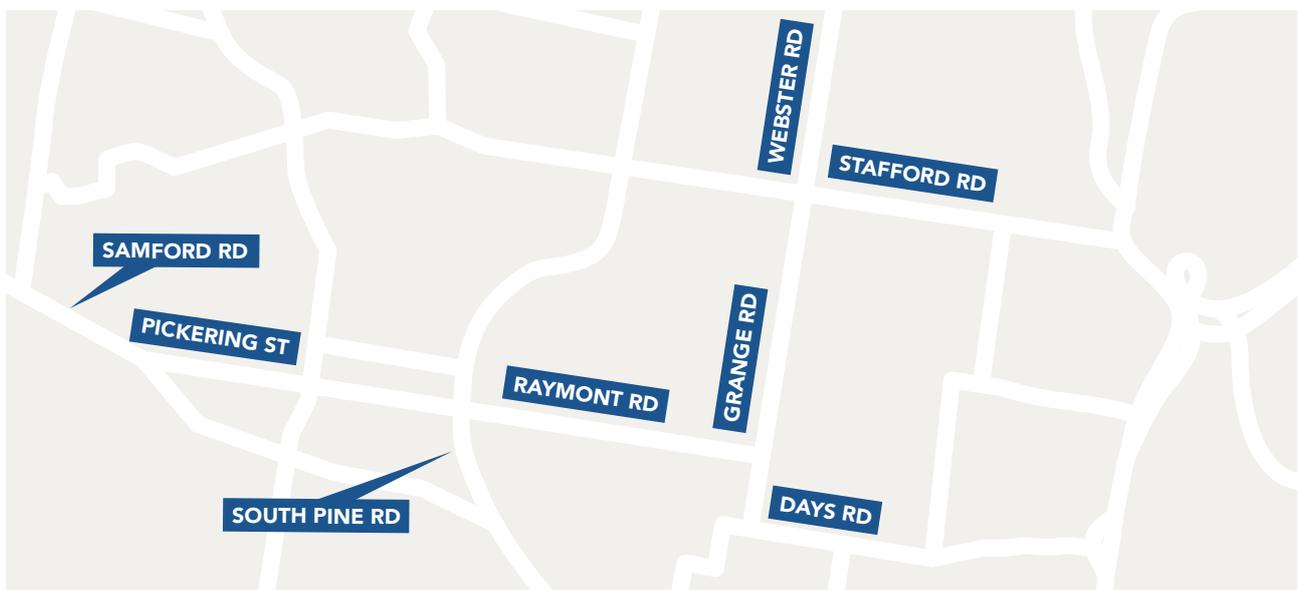


Figure 1 – Project location

Raymont Road and Grange Road intersection is a signalised T-intersection. Grange Road is an undivided four-lane carriageway, with a shared through and right-turn lane on the southbound approach and shared through and left-turn lane on the northbound approach. Raymont Road is an undivided two-lane carriageway, which has an eastbound approach comprising a shared left and right-turn lane and an additional right-turn lane.

Grange Road and Raymont Road both have posted speed limits of 60km/h. The roads lie in a constrained inner suburban environment, with narrow carriageways and no medians or cycle lanes.

The Wilston-Grange Precinct Transport Study was undertaken in 2015 and included a strategic assessment of the Raymont Road and Grange Road intersection. The study identified a need to develop a corridor management strategy to improve road safety along Grange Road, including the creation of right-turn lanes where possible, as an immediate priority.

TIMING AND REQUIREMENT

Project timing

Timing	Milestone	
April 2016	June 2016	Finalisation of concept design
December 2016	May 2017	Finalisation of business case
November 2016	May 2017	Stakeholder consultation
November 2016	June 2017	Detailed planning and design
April 2017	March 2018	Land acquisition
April 2018	Late 2018	Road and civil construction

Why an upgrade is needed

Congestion

- » Current congestion levels result in significant delays, with average queue lengths of 220 metres on Grange Road and 300 metres on Raymont Road, during the morning peak.
- » Existing traffic volumes exceed the available capacity for the intersection during the morning and afternoon peak times.
- » Forecast traffic performance in 2031 indicates traffic volumes on all approaches during the afternoon peak period will exceed the intersection capacity, resulting in average delays of four to six minutes, and a queue length of 1.8 kilometres for northbound Grange Road traffic.
- » If an upgrade is not undertaken, this anticipated increase in demand will result in increased congestion, longer peak periods, increased accidents and delays to travel times.

Bus services

- » Grange Road is a significant public transport route with bus services 325, 335, 346 and 353 running along Grange Road and Webster Road. Route 379 runs along Raymont Road and then into Grange Road, north of Raymont Road.
- » Reduced delays and improved operational efficiency to bus services will encourage changes to travel behaviour.
- » Congestion issues at the intersection affect bus travel times and travel time reliability.


 **Safety**

- » Over the six year period from 2010 to 2015 a total of five crashes were recorded at the Raymont Road and Grange Road intersection. Four of the crashes involved vehicles travelling southbound on Grange Road, with two turning right into Raymont Road and colliding with opposing vehicles, and two rear-end collisions. The fifth accident involved a motorcyclist falling to avoid a collision on Grange Road.
- » Restricted sightlines along the Grange Road northbound approach makes it difficult for right-turning drivers to judge gaps in the northbound oncoming traffic.
- » The absence of right and left-turn lanes on Grange Road creates conflict between turning and through traffic. The conflict risk for southbound Grange Road traffic is exacerbated by a filtered right-turn movement at the existing traffic signals.

 **Pedestrians and cyclists**

- » Grange Road and Raymont Road are classified as secondary cycle routes.
- » There are existing footpaths on both sides of Raymont Road and Grange Road within the project area.
- » The Raymont Road and Grange Road intersection has signalised crossings on Raymont Road and on the northern Grange Road approach.
- » There are no formal cycling facilities within the project area.

WHY NOW?

Why this project is needed now

The existing traffic demands on Raymont Road exceed the intersection capacity during the morning peak period. The northbound afternoon peak period traffic demands on Grange Road are also approaching capacity.

The absence of right and left-turn lanes on Grange Road creates conflict between turning and through traffic. The conflict risk for southbound Grange Road traffic is exacerbated by a filter right-turn movement in the existing traffic signal phasing arrangement, resulting in poor visibility and vehicles are unable to judge gaps in northbound Grange Road traffic due to a crest south of the intersection.

Failure to resolve the project need within the short term will:

- » increase safety risks and traffic congestion at the Raymont Road and Grange Road intersection due to the absence of dedicated turning lanes on Grange Road
- » increase the incidence of through traffic using local streets to avoid traffic delays
- » increase traffic congestion, resulting in longer peak periods
- » lead to ongoing delays and unreliable travel times for bus services and general traffic.

BENEFITS



OPTIONS ANALYSIS

Options developed

Three options were assessed to determine the option that maximises the benefits of the upgrade and minimises the impact on the local environment, community, businesses and traffic.

Options	Solution
Do minimum	Maintain the existing layout
1	New right-turn lane on the Grange Road (north) approach only
2	New right-turn lane on Grange Road (north) and left-turn lane on the Grange Road (south) approach
3	New left-turn lane on the Grange Road (south) approach only.

Options were assessed based on their ability to achieve the project objectives, as well as reflect a balance between project costs as well as property, community and environmental impacts.

The 'do minimum' option was considered, but not supported given the necessity for the improvement, as identified in the Wilston-Grange Precinct Transport Study. Option 1 and 3 were rejected as they did not address the project objectives of reducing congestion and improving safety as well as Option 2.

The Concept Design Report identified Option 2 as the preferred option, as it provides the best overall traffic performance and highest level of safety.

Traffic analysis demonstrates Option 2 has the lowest calculated delays in 2016, with average intersection delays of 20 seconds and 22 seconds during the morning and afternoon peak periods respectively. By 2031, the average forecast intersection delay remains at approximately 20 seconds during the morning peak period and increases to approximately 30 seconds during the afternoon peak period.

The crest immediately south of the intersection fails to achieve sight distance criteria, which has resulted in the installation of amber warning lights in advance of the intersection to alert drivers of this hazard. By locating the widening for the right-turn lane on the eastern side of Grange Road, Option 2 maintains a straight alignment for drivers travelling north through the intersection.

The length of the proposed right-turn lane in the Option 2 initial concept design resulted in widening on the eastern side of Grange road existing north of the Grange Road and Howard Street intersection. To remove widening impacts on properties north of Howard Street, Option 2A was developed as a modification of Option 2.

On the basis of a benefit-cost ratio of 4.1 for the project, it is recommended that the project should proceed with Option 2A as the preferred option.

Option 2A comprises provision of a separate right and left-turn lanes on Grange Road, at the Raymont Road and Grange Road intersection. Option 2A was developed to minimise the number of properties affected by limiting road widening outside the current road reserve on the eastern side.



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