



FACT SHEET – TECHNICAL STUDIES AND REPORTS

Moreton Bay Regional Council is working to upgrade Youngs Crossing Road at Joyner where it crosses the North Pine River to improve its flood immunity and capacity to handle more traffic.

A large road infrastructure project like this typically goes through several planning phases before it receives approval and is tendered for construction, with each phase involving an increasing level of detail as it progresses.

This fact sheet gives an overview of the different technical studies and reports undertaken so far as part of the Youngs Crossing Upgrade Project, as well as those that will inform the project's next phases.

Options analysis and concept design

With the goal of selecting a preferred option, Council engaged specialist engineering consultants to complete an options analysis of several alternative solutions to upgrade Youngs Crossing Road.

A multi-criteria assessment (MCA) was performed to shortlist the two options that were progressed to concept design and shared with the community in September 2020 to seek feedback.

An options analysis and concept-level design are required to understand the current and future issues and opportunities for the corridor, and to provide concept designs, cost estimates and prioritisation for the options that will inform future planning.

Several other investigations have been done as part of the options analysis and concept design work including hydraulic, geotechnical, utility network, environment, constructability, road safety and noise assessments.

What is multi-criteria assessment?

Transport planners and engineers often use multi-criteria assessment (MCA) as a tool to narrow a set of possible solutions or to select a preferred option.

The assessment involves evaluating options against multiple criteria, such as traffic performance, road safety, constructability, social and environmental impacts, flood immunity and cost.

Weightings are assigned to each criterion (such as those listed above) to reflect its importance in the decision making. Scoring of each project option, against all the weighted criteria, results in the ranking of all considered options.

Sensitivity testing can be conducted to see how project options rank with the same scoring but with different weightings placed on them, based on certain scenarios.

For large and expensive infrastructure projects, it is important to consider and assess multiple criteria. This leads to more informed and better decisions.

MCA is only one of the tools used by the project team to provide evidence-based information for Council to make an informed decision on the preferred option.

Assessing environmental impacts

The significance of koala populations and native vegetation in and around the project area are key considerations for Council.

This project will affect some areas of environmental significance, mostly through the clearing of vegetation, however to achieve the best outcome possible, Council is working to reduce these impacts.

Specialist environmental consultants have been engaged to assess this impact and advise mitigation measures. Environment assessments and studies undertaken during the concept-level design phase include:

- » **Preliminary environmental and cultural heritage assessment** – this preliminary assessment informed the options analysis and concept designs by identifying potential impacts to fauna corridors, fauna habitat, vegetation, waterways, noise, air quality and cultural heritage. It also recommended options to avoid these impacts and mitigation strategies, as well as identifying required approvals.
- » **Environment Protection and Biodiversity Conservation Act (EPBC) impact assessments** – this involved desktop and field assessments to determine potential impacts to plant and animal species of national significance, along with identifying Federal Government approvals.
- » **Ecological survey** – specialists provided further evaluation of the environmental impacts of Option 1 given the vegetation classifications of some areas. The survey assessed the area's vegetation significance including its essential habitat, regulated vegetation and non-juvenile koala habitat trees, and also advised on approvals, offsets and the relocation of large fig trees.

- » **Tree transplanting feasibility report** – considers factors associated with retaining and/or relocating large fig trees located within the vicinity of Option 1 and the measures required.

Future technical investigations

Council will undertake more detailed studies relating to environment, cultural heritage, bridge and road design, road safety, constructability, visual amenity and noise mitigation measures as the project progresses. This will include:

- » **Environmental assessment** – this process involves more detailed investigations to decide the most reasonable and practicable environmental management and mitigation strategies for potential impacts. The primary function of this assessment is to reconfirm that the environment factors, management strategies and agreed design outcomes are incorporated into the project's detailed design.
- » **Cultural heritage assessment** – while early engagement with traditional owners has occurred, a heritage assessment will be undertaken to identify any areas of local cultural heritage significance within the project area, as part of Council's responsibility under the *Queensland Heritage Act 1992*.
- » **Construction environmental management plan** – this sets out the plan for construction with protections in place for the environment. These include all mitigation measures, permit requirements and the measures for managing considerations such as erosion, weed species, noise, vibration and air quality impacts associated with the works.

Key planning terms

Feasibility investigation and concept design – initial planning with an end goal of selecting a preferred alternative and developing concept-level designs. Alternatives are evaluated using a set of criteria, often along with stakeholder engagement to determine the preferred alternative.

Detailed design – the concept design is refined, detailed modelling and costing is undertaken and drawings and specifications suitable for construction purposes are developed.

Annual Exceedance Probability (AEP) – a measure of the likelihood of a flood event reaching or exceeding a particular magnitude in any one year. A 1% AEP flood has a one per cent (or 1 in 100) probability of occurring or being exceeded at a location in any year (at least once). This is the preferred terminology.

Average Recurrence Interval (ARI) – is another way of expressing AEP. It is a measure of the probable frequency of a flood event of a predetermined level being equalled or exceeded at least once in any given year. A 100-year ARI event has a 1% (one in 100) chance of being equalled or exceeded at least once in any given year (a 1% AEP event).

Q100 flood immunity – a traditional term used for describing the 1% AEP or 100-year ARI flood event that has unfortunately been misinterpreted in the past as meaning an event that happens only once every 100 years. This terminology has been replaced with AEP terminology in more recent flood studies.

Technical studies and project planning phases



**Early planning
and design**



2020 – WE ARE HERE
Council decision (November 2020)



**Detailed design and
further consultation**



Early 2021

Completed studies:

- » Options analysis and concept design
- » Preliminary cost estimates
- » Flood modelling
- » Geotechnical investigation
- » Preliminary environmental and cultural heritage assessment
- » Environment Protection and Biodiversity Conservation Act (EPBC) impact assessments
- » Ecological survey
- » Preliminary road traffic noise assessment
- » Tree transplanting feasibility investigation
- » Transport and traffic modelling analysis
- » Preliminary constructability assessment

Studies to be undertaken:

- » Environmental assessment and management plan
- » Road traffic noise assessment
- » Cultural heritage assessment
- » Hydraulic analysis and flood modelling
- » Geotechnical analysis
- » Traffic assessment
- » Visual amenity and noise abatement measures
- » Bridge capacity, road formation and embankment design
- » Landscaping and green infrastructure network design
- » Road safety audit
- » Risk analysis and management
- » Constructability assessment
- » Pavement investigation and design
- » Public utility plant
- » Optioneering/value engineering
- » Early works packages
- » Construction environmental management plan

To keep up to date with the project's progress you can:



Visit: moretonbay.qld.gov.au/youngs-crossing



Phone the project team on 1800 565 930 between 8:30am and 5pm Monday to Friday



Email the project team: youngscrossing@moretonbay.qld.gov.au