

Daintree River Crossing Options Assessment Report

25 August 2020



DOC#958044

1 Introduction

Council officers were tasked with a number of activities arising from a Mayoral Minute at the Ordinary Meeting held 28 April 2020 when Council resolved to temporarily suspend contract negotiations for a two ferry service while it explored the option of a bridge crossing at various locations.

Whilst a bridge over the Daintree River has been discussed over the years as a possible crossing solution, no real detail as to location has ever been formally looked at and the initial round of consultation was focussed on what the community wanted by way of an enhanced ferry service, rather than seeking opinion on a bridge.

Mindful of time and budget constraints, the decision was made for two of Council's senior engineers to identify potential locations and to prepare indicative construction costs for a bridge at these locations.

The bridge costings have assumed the bridge would be constructed as a concrete pier and beam bridge typical in most road bridges today and would need to cater for most watercraft and be relatively flood resistant.

The locations were determined by proximity to current road infrastructure to minimise the need to create significant lengths of new road.

The options presented in this report focus on the technical and financial aspects and do not consider, environmental, social, economic, or cultural heritage implications.

Whilst the final solution (if indeed a bridge is decided on) may change some or all of these elements, this approach has enabled indicative construction costs to be established, to provide a comparison to estimated costs for a proposed two-ferry service.

Following the release of this report to the public, a second round of consultation, shire wide, will occur to gather community sentiment towards a bridge option. The findings will be brought back to an Ordinary Council Meeting for further discussion and resolution.

2 Background

The current Daintree River ferry service contract is due to expire 30 June 2021. Prior to preparing tender documents for a new ferry contract, feedback was sought from the community with regard to any enhancements they would like Council to consider.

A report on the community consultation findings has been published and key highlights were:

- A reduction in waiting times was by far the main area for improvement. It was the most commonly mentioned reason for dissatisfaction.
- The most commonly mentioned solution to address waiting times was to have a second ferry in peak times. Apart from increasing capacity, a second ferry would serve as a back-up for planned maintenance closures or break downs.

During the engagement process, Council made available a Traffic Modelling Report prepared by GHD consulting engineers to examine four options:

- Current service
- Larger ferry
- Two ferries
- Bridge

The Traffic Modelling Report provided an analysis of the level of congestion at peak times and assessed options out to 2036. It did not examine or compare costs or revenue of each of the options. The full report is published on Council's website.

The engagement findings were incorporated into the tender specifications and a public tender was released in July 2019 and closed at the end of August 2019. Key factors identified in the Project Brief contained within the tender documents were:

- Queueing and wait times
- Customer service/satisfaction
- Environment
- Council relationship / partnerships
- Local employment
- Service availability
- Amenity
- Safety
- Communications
- Community relationship

The evaluation criteria was weighted as follows.

Criteria	Weighting (%)
Service Model	40%
Capability and Capacity	25%
Price	20%
Environmental Sustainability	10%
Local business, employment and industry	5%

Four contractors submitted a total of nine conforming offers. Six offers were for a single-ferry solution and three offers were for a two-ferry solution.

In December 2019, Douglas Shire Council resolved to commence contractual negotiations with Sirron Enterprises Pty Ltd which proposed a two-ferry service and have operated the current ferry since 2006.

3 Daintree River Options Assessed

This report examines a two-ferry service and bridge option, and compares them against the current single ferry arrangement.

The two ferry option is based on the preferred tender as per the December 2019 Council resolution, and includes a high level cost estimate for the land based infrastructure to support the improved service.

Development of the bridge options involved a desktop review of possible locations and the shortlist of locations assessed were:

1. Bridge at current ferry location
2. Bridge at Martinelli Road
3. Bridge adjacent to 2874 Mossman Daintree Road (just past Bruce Belchers Daintree River Cruises)
4. Bridge at Daintree Village.

Other possible options not under consideration by Council are:

- Land based improvements to improve the current single ferry service: this option does not offer any increase in capacity. It may reduce waiting times for those with a concession card, however it will increase waiting time for all other paying travelers.
- The option of a single, larger ferry (50 vehicles): considered unviable due to its length, which is estimated to be one third width of the river. There are also issues with an extended trip turnaround time.

- Option of both a ferry and a bridge. This has been raised in conversation but is considered to be cost prohibitive due to the need to fund the construction of a bridge and maintain a ferry service which is likely to be under used.

3 Ferry Solution

3.1 Single Ferry (current service)

The existing ferry carries a maximum of 27 vehicles, taking an average of 14 minutes for a round trip. The ferry is operated by a commercial contractor on behalf of Douglas Shire Council. Vehicles pay a fee to cross and fares are set annually by Douglas Shire Council.

All eligible Douglas Shire residents can, for \$18, purchase a concession card which gives them free ferry travel for up to two years. This means under the current arrangements, the ferry service is paid for by ferry users visiting the shire.

Under these current arrangements, Council pays the contractor a set fee to operate the service seven days a week from 5am to midnight. The ferry is owned by the contractor who also employs the ferry driver, traffic controllers and ticket booth staff. The ticket booths and boom gates are owned by Council, as are the access roads, pylons and ramps.

A Marine Park permit is required from the State Government to dredge a channel across the river. The current permit is current until 2024 and must be renewed every ten years. There is no requirement for an Environmental Impact Study due to the low (<10,000m³) dredge volumes.

After taking these costs into consideration, the Daintree Ferry generates revenue for Council, netting an estimated \$1.15 million annually.

During the peak tourist season there are often delays crossing the ferry and this was reconfirmed in GHD's traffic modelling report. This option is the 'business as usual' option and whilst it delivers an acceptable level of service for the majority of the year – during the peak tourist season the existing ferry becomes congested and tourists and locals become frustrated with the long delays.

Benefits

1. Users already understand the service;
2. Landside infrastructure in place to continue service;
3. Ferry channel in place, including dredge permit;
4. Ticket price change forecasted to be in line with CPI increases;
5. Provides employment for 20 people;
6. Provides an iconic visitor experience;
7. Ferry service is financially sustainable and provides revenue for Council averaging \$1.15 million per annum.

Challenges

1. Capacity of the ferry is not sufficient during peak periods;
2. Delays at the crossing are not acceptable during peak periods;
3. Queues at the crossing are not acceptable during peak periods;
4. Telecommunications at this site, which are required for the current ticketing system, are intermittent;
5. Dry docking of ferry for mandatory inspections every five years without a suitable stand by ferry
6. Service discontinuity during flood events on the river.

Risks

1. Loss of ferry service and reduced business continuity (i.e. no stand-by ferry);
2. Ferry channel dredge permit renewal not approved by State Government;
3. Ferry channel dredge spoil disposal permit renewal not approved by State Government;
4. Natural disaster damages ferry or landside facilities.

3.3 Two Ferries

The two-ferry solution includes a new 36 vehicle ferry with mostly solar/electric power to operate all year round and the existing 27 vehicle ferry operating during the peak times to reduce wait times and queuing.

This option provides for a high quality contingency plan in the event that one of the ferries was out of service and includes a new E-ticketing solution.

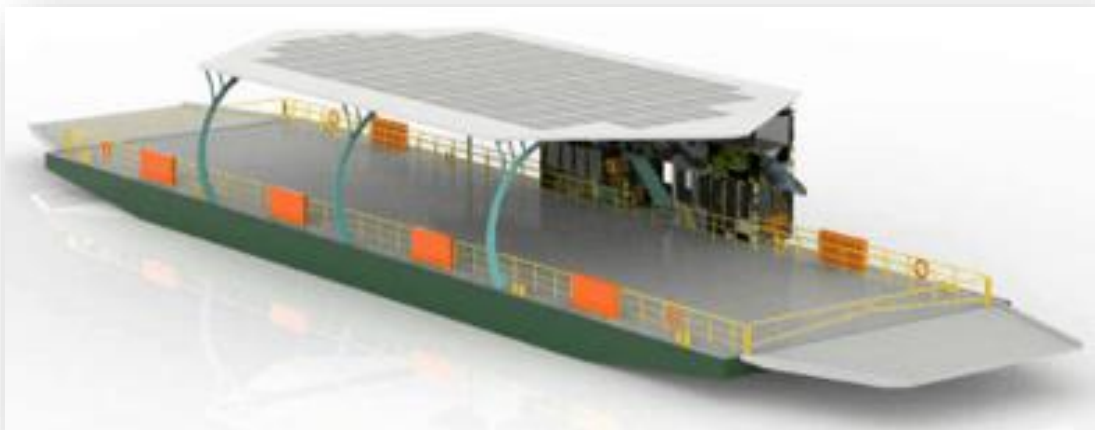


Figure 1 ©Sirron Enterprises Pty Ltd

A two-ferry service will require Council to provide new infrastructure as follows:

- a new road on the southern bank;
- 3 x barge ramp upgrades;
- 6 x land based mooring pylons;
- 2 x river mooring piles;
- Ergon upgrades;
- Telstra upgrades;
- Ticket booth relocations



The two-ferry solution was the preferred tender as it addressed the travel time delay and queuing in peak periods better than other offers submitted.

Keeping the same ticketing pricing as per the single ferry, the two-ferry solution would generate revenue for Council, netting an estimated \$176,000 annually. This has been calculated based on the following:

- Estimated costs for infrastructure as outlined above approximately \$2.8 million
- Contractor payments to operate and maintain the Ferry
- Dredging (including spoil removal) based on one dredge per year (typical for most years, excluding extreme rain events)
- Depreciation of land based infrastructure (current and proposed)
- Maintenance costs for land based infrastructure (0.5% of capital cost)
- Revenue from ticket sales is based on 2018/19 actual passenger numbers (most recent 'typical' financial year)

The Benefits, Challenges and Risks identified thus far are as follows:

Benefits

1. Regular users already understand the service
2. Landside infrastructure in place to continue service in existing channel
3. Reduced delays for users when second ferry is operational
4. Reduced queues for users when second ferry is operational
5. Estimated to provide employment for 30 people
6. Provides a unique and iconic visitor experience
7. Principle new ferry proposed to be hybrid combining 60-80% solar/electric powered plus diesel
8. Provides a stand-by ferry for when AMSA's mandatory out of water inspection is required every three years for the new vessel and every five years for the existing vessel.

Challenges

1. Telecommunications at the site intermittent;
2. Service discontinuity during flood events on the river;
3. A new road will need to be constructed on the southern side triggering State Government permit processes;
4. A new ferry loading ramp will be required on the southern side triggering State Government permit processes;
5. Upgrade to the loading ramp on the northern side will be required to be completed while the ferry service is in operation.
6. A new second ferry channel downstream of the existing channel will be required and will trigger State Government permit processes.
7. Council will need to recoup loss of current income via increased ferry fees or increased rates.

Risks

1. Two Ferry channel dredge permits (new and renewal) not approved by State Government;
2. Ferry channel dredge spoil disposal permit renewal not approved by State Government;
3. State Government do not approve new ferry landing facilities and road on southern side;
4. Natural disaster damages both ferries or landside facilities.

4 Bridge Crossings

A number of locations were assessed for a bridge crossing option. This was a high level assessment based on standard engineering metrics. Regardless of the location, it is estimated that design, permit process and construction would take about five years.

The development of the estimate for each location was based on the following assumptions applied across all four bridge locations.

- Two lane concrete bridge, with a dual use walkway for pedestrian / bikeway access;
- 13 metre wide bridge deck;
- Bridge length between 190 and 300m, depending on location
- 100 year design life;
- Bridge to be depreciated over 100 years;
- The bridge deck is 4 metres above median river level;
- New or upgraded roads on both sides of the river ranging between 80m and 6,300m, depending on location;
- For some locations, land will be required to be purchased.
- Indicative construction cost estimates allow for:
 - \$10,000 per m² for bridge;
 - \$750,000 per kilometre to construct new or upgrade gravel roads to sealed roads;
 - 20% allowance for professional services in the design and construction phases;
 - 40% allowance for contingencies in accordance with best practice project estimation methodology;
 - Maintenance costs per year of 0.5% of capital cost of bridge and road infrastructure;
 - All costs are in 2020 dollars.
- No significant environmental or hydrological studies required to obtain approvals, e.g. Environmental Impact Assessments;
- No significant legal fees required, e.g. court cases to defend action or to resume land;
- That bridge height may not allow all watercraft to travel beneath the bridge;
- Road infrastructure approaching bridge would generally be at current levels and as such during reasonable flood events, access to a new bridge would be no different to either of the ferry solutions.

Without imposing a toll, none of the bridge solutions generate revenue for Council, and all will increase operational expenses to cover maintenance and depreciation. Further work would be required to ascertain the likelihood of being given approval by the State Government to charge a toll.

Part 7 and 8 of the *Transport Infrastructure Act 1994* sets out the legislative framework for a local government to ask the Minister for approval for a tollway project, entering into a Road Franchise Agreement and for the operational functions required. A link to the Act can be found at <https://www.legislation.qld.gov.au/view/pdf/inforce/current/act-1994-008>.

This assessment also does not look at visitor attitudes towards a toll. As part of the previous community engagement, an analysis of 370 Trip Advisor reviews was done. One in four people mentioned the cost of the ferry. Of these people, 59% said the fare was reasonable and 41% thought it was too expensive. Whether visitors would have a similar attitude to a bridge toll would need to be tested.

The four locations considered were:

1. Current ferry location
2. Martinelli Road which runs off Cape Tribulation Road
3. Adjacent to 2874 Mossman Daintree Road – just past Bruce Belcher’s River Cruises
4. Daintree Village

A map showing the four locations is shown **Attachment A**.

A preliminary assessment was done to identify the benefits, challenges and risks associated with constructing a road bridge. Those identified thus far include:

Benefits

1. Bridge will be above moderate flood levels;
2. Reduced delays for users;
3. Reduced queues for users;
4. Operational costs per year less than ferry;
5. 24 hour service – travel anytime (except if access road is flooded).
6. If location other than current ferry location is selected, the current ferry will be able to operate during construction of the bridge
7. If the bridge is built near Daintree Village, it may provide an economic stimulus for the village due to increased visitors
8. Possible local employment during construction.

Challenges

1. Building a bridge at the ferry location while still operating a ferry will require careful management and may effect operation of the ferry;
2. Requires land acquisition from at least one private property for each option;
3. Where new roads are required, this may require approval to construct a public road;
4. Project triggers State Government permits for building in a waterway;
5. Capital cost is beyond Council's current budget therefore funding would need to be secured by:
 - a. external grants or
 - b. through borrowing
6. Complex construction project with seasonal weather challenges;
7. Approach roads are not above the same flood level as the proposed bridge, and it is not cost effective to raise roads sufficiently to increase flood immunity;
8. Environmental permits including ecological assessments.
9. Loss of Council revenue stream, if unable to get Government approval to charge a toll.
10. Not all water craft will be able to pass underneath the bridge
11. Loss of 30 ongoing local jobs

Risks

1. Unable to secure finance;
2. Unable to secure external grant funding;
3. Unable to secure permits for construction;
4. Construction costs are greater than concept estimate;
5. May cause interruptions to existing service during construction
6. Natural disaster damages bridge and/or approach roads.
7. Unable to secure permission to apply a toll.

5 Financial Comparison

5.1 Capital Cost

The below table shows the Capital Cost of each option that would need to be funded either by Council, through grants or loans. The current ferry reserve of \$4 million can be used.

River Crossing	Capital Cost
Single Ferry	0
Two Ferries	\$2.8 million
Bridge Options reviewed	\$53 - \$75 million*

*Four bridge options were reviewed and estimates ranged between \$53 and \$75 million, the average of the four options was \$60 million.

5.2 Revenue/Operating Cost to Council

The table below provides a summary of the estimated net revenue/**cost** to Council for the options.

The figures do not take into account the cost of capital finance (loan repayments) and only include the operations, maintenance and depreciation costs. Scenarios are modelled based on no loans being required for the options and 9,443 ratable properties across the shire.

River Crossing	Net revenue / cost to Council	Revenue/ cost per ratepayer	% of rates	% of total revenue
Single Ferry	\$1,150,000	\$121.78	3.4%	2.5%
Two Ferries (no change to Ferry tickets)	\$176,000	\$18.64	0.5%	0.4%
Two Ferries (visitor ferry tickets increase by 35%)	\$1,180,000	\$124.96	3.5%	2.6%
Bridge (no toll)	-\$900,000	-\$95.11	-2.7%	-2.0%
Bridge (\$20 return toll for visitors)	\$1,160,000	\$122.58	3.4%	2.5%

5.3 Ferry Fees to Maintain Current Revenue

As mentioned earlier, the Daintree Ferry is currently treated as a revenue centre for Douglas Shire Council. In order for Council to maintain the estimated \$1.15 million in revenue, the resulting ferry fees / toll / change to general rates required are estimated as follows

River Crossing	One Way Ticket	Return Ticket	Return Bus			% change general rates
			6-10 seats	11-20 seats	21+ seats	
Single Ferry (2020/2021 fees)	\$18	\$31	\$33	\$64	\$101	0%
Two Ferries (no change to ferry fees)	\$18	\$31	\$33	\$64	\$101	2.9%
Two Ferries (Visitor Ferry fees increased by 35%)	\$22	\$41	\$43	\$84	\$132	-0.1%
Bridge (no toll)	\$0	\$0	\$0	\$0	\$0	6.1%
Bridge (\$20 return toll)	\$10	\$20	21	41	65	0.0%

The above ticket prices are provided as a rough order of magnitude calculated as follows:

- assumes current concession holders continue to have free travel;
- are based on 18/19 vehicle crossings travel data;
- are based on working out fares for car return tickets only i.e. not differentiated between buses, machinery, cars, etc.). This provided an indicative price increase which has been applied to the return bus fares.

6 Feedback and Enquiries

This report is may be viewed and/or downloaded from Council's website <https://douglas.qld.gov.au/daintree-ferry-contract-renewal-2021/>.

Council will be seeking feedback on the different options examined in this report. The public consultation period is scheduled to open 14 September 2020 and six weeks will be allowed for feedback. The closing date for comments and survey responses is October 26, 2020.

If have any questions, require clarification of any information presented, or would like to register to receive an email notification when consultation opens, please contact Council's Community Liaison officer on gaye.scott@douglas.qld.gov.au

ATTACHMENT A

1. Current ferry location
2. Martinelli Road which runs off Cape Tribulation Road
3. 2874 Mossman Daintree Road – just past Bruce Belcher's River Cruises
4. Daintree Village

