4. FERRYMEAD BRIDGE LIFELINES PROJECT

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The purpose of this report is to seek the Board's support for the recommended option for the Ferrymead Bridge project.

CONTEXT AND BACKGROUND

Ferrymead Bridge carries approximately 30,000 vehicles per day and Ferry Road is the preferred route for two thirds of these vehicles. The bridge serves 11,000 people, 4,450 households, or about 3.5% of Christchurch residents, and carries water, pumped sewage mains, major Telecom, and minor power services.

There are existing traffic congestion and safety problems at the Ferry Road/Humphreys Drive intersection, growing congestion problems at St Andrews Hill and complaints about traffic congestion on Main Road to Sumner.

The 1994 "Lifelines" study identified the bridge as being susceptible to a seismic event. Subsequent investigation showed that the columns are an earthquake hazard, the bridge would be under threat from Tsunami, and that liquefaction is a major risk.

In March 1999 options for addressing the lifelines aspects of the bridge and the current and projected traffic problems were documented in the report entitled "Ferrymead Bridge – Lifelines Project, Draft Feasibility Report (Preliminary Assessment of Options)".

The contents of the report were adopted and consultation on the issues and options raised was carried out.

From the consultation process, responses were received from local businesses, interest groups, residents (local and elsewhere), local residents groups and Council units. The report presented a range of options for resolving the bridge concerns, and the consultation and technical assessments resulted in the following two major options being pursued:

- Option 1: Creating a new bridge to the south
- Option 2: Widening and strengthening the existing bridge

Diagrams of Options 1 and 2 are attached to this report.

TRAFFIC CONSIDERATIONS OF OPTIONS

The traffic considerations of the two options are:

Option 1: South Side Bridge: Provides safe traffic operation and minimal disruption during construction. No U-turns are required for Bridal Path Road traffic bound for Sumner. However this option has limited growth capacity and is not a "once only" solution - loss of the existing bridge in a seismic event would still require replacement of that bridge.

Option 2: Strengthening/widening of existing bridge with "half roundabout" at Bridal Path Road/St Andrews Hill Road: This option works best of all under all scenarios however the proposed construction method is complex and there is potential disruption during construction and a U-turn requirement.

Option 2 is preferred overall for day to day traffic performance.

TECHNICAL INVESTIGATION OF OPTIONS

Thorough geotechnical and structural investigation of both options has been carried out and the practicality of construction, particularly for Option 2 (strengthen/widen existing bridge) has been closely looked at. Site investigation resulted in the discovery that the existing bridge piles could in fact be founded on liquefiable material and hence the structural option to use these piles is not feasible.

Expert advice has confirmed the liquefaction risk.

New strengthening/widening options were prepared and peer reviewed. A "frame" philosophy has now been adopted and construction methods are being further investigated.

Traffic effects during construction have been studied and delays are acceptable.

CAPITAL COSTS

The estimated capital costs for the options are as follows:

Item	Option 1	Option 2
Bridge Work	3,500,000	3,850,000
Roading Work	1,250,000	700,000
Total	**4,800,000**	**4,550,000**

Bridge work and roading work include a contingency of 20%.

COST – BENEFIT ANALYSIS

Up-front costs have been compared to the benefits derived from doing the work (security of access, services retention) and risk elements.

With Option 1 there is the probability of additional cost of replacing the existing bridge in the event of its loss ($3.85M at today's prices) and the traffic delays caused by the loss.

For Option 1 the structural net present value of benefits is $5.5M and for Option 2 this is $8.1M. The benefits of the options are relative to a do nothing scenario i.e. avoiding total loss costs such as traffic delays, temporary bridge costs, demolition and reconstruction, and intangibles.

The preferred option, based on currently evaluated benefits and costs, and consideration of future costs, is Option 2 - widening/strengthening of the existing bridge.

The Council now has $5.4M budgeted for the project and current estimates are in the range of $4.5M-$4.8M.

PROGRAMME

Details of the project were presented to members of the Sustainable Transport and Utilities Committee and the Board at a Joint Seminar on Ferrymead Bridge on 15 July 2004.

After comment/support by the Board, the intended programme is:

- Sustainable Transport and Utilities Committee on 7 September 2004 for a decision on the preferred bridge option for consultation.
- Decision ratified by the Council on 23 September 2004.
- Consultation/resource consent process October 2004 to July 2005.
- Design completed by October 2005.
- Tender approved/accepted by April 2006.
- Construction May 2006 to November 2007.

ASSOCIATED PROJECTS

There are three projects also in progress around the Ferrymead Bridge, in differing stages of progress.

Ferry Road/Humphreys Drive Intersection
Negotiations are continuing for land required for implementation of the approved signalised intersection scheme at the intersection of Ferry Road and Humphreys Drive. Consultation, design/tender, and construction dates are all dependent upon completion of the property purchase.

Main Road
A feasibility study is underway for the 3-laning of Main Road from Ferrymead Bridge to the west end of the causeway. The purpose of the 3-laning proposal (two lanes toward the City, one toward Sumner) is to alleviate the congestion concerns for city-bound traffic at peak hours.

The position and geometry of the 3-lane proposal gives potential constraints/opportunities for the bridge project in the Scott Park area. These are addressed later in this report.

The feasibility study is due to be completed in August 2004. No budget is currently allocated for this work.

Ferrymead Retail Area
An investigation is about to commence for this area which will look at a range of scenarios including full retailing, zoning, plot-ratio limits etc.

FURTHER CONSIDERATIONS

The bridge redevelopment and proposed 3-laning projects present an opportunity to resite the historic building known as Cob Cottage. The current location jammed hard against the road embankment leaves the cottage unseen and unappreciated and is far from satisfactory.

The building is in a precarious state, with large cracks, which will make removal and resiting difficult and expensive, however a new cottage reusing as much of the existing materials as possible could be constructed relatively cheaply at another location. Various locations have been considered in the past and this could be looked at again.

Removal of the cottage is not vital to the preferred bridge option, nor the possible future 3-laning of Main Road, however, there are benefits to both projects if it occurs. Provision for future 3-laning from the bridge east to the causeway is desirable and retention of Cob Cottage at its present location compromises traffic engineering standards. If the cottage was moved or replaced then a better alignment could be achieved for 3-laning. Further, if the cottage was moved, there would be added benefits for the bridge project (e.g. increased separation at the St Andrews Hill Road intersection). Moving the cottage also creates opportunities for redevelopment of Scott Park.

If Cob Cottage was going to be moved, the optimum time would be in conjunction with the roading projects.

A brief outline of the statutory and historical context of Cob Cottage is attached as Appendix 1 of this report.

SUMMARY AND RECOMMENDATIONS

The Ferry/Humphreys project is progressing, and will be reported at the appropriate times once property issues are resolved.

The Transport and City Streets Unit recommends Option 2 – widening/strengthening existing bridge – as the most effective and economical bridge replacement option (from traffic, technical and benefit/costs perspective).

Three scenarios have been looked at for the traffic layout at the east end of the bridge:

Scenario	Cottage	3-laning
1.	Stays	Not provided for
2.	Stays	Compromised
3.	Moved/replaced	Optimum

The Transport and City Streets Unit recommends further investigation/consultation of the scenario to move/replace Cob Cottage to allow the ideal situation for provision of optimum 3-laning of Main Road. This could be pursued as a separate project and subsequently coordinated with the bridge project if the timings make this possible.

Staff Recommendation:

1. That the information be received.
2. That the Board support Option 2 – strengthening/widening the existing bridge - for consultation.
3. That the Board recommend that options for the resiting/replacement of Cob Cottage be investigated as a separate project and coordinated with the bridge if possible.

Chairperson's Recommendation: For discussion.