

# Waitemata Harbour Crossing Study

## PHASE 1: SUMMARY REPORT OPTION SHORT LISTING

November 2007





## 1. Executive Summary

Organisations responsible for planning transport infrastructure around the Auckland Harbour (the Project Partners) decided to undertake the Waitemata Harbour Crossing Study, to identify the preferred location for an additional harbour crossing. Issues associated with the Wynyard Quarter Plan Change prompted the need to this matter to be given some urgency.

The study objective was:

**“To identify the preferred option for delivering integrated, safe, responsive and sustainable cross-harbour travel between North Shore and the Isthmus to facilitate the future growth and development of the Auckland Region.”**

This report describes Phase 1 of the Waitemata Harbour Crossing Study, which involved development of a long list of possible options for a new harbour crossing and a subsequent assessment to determine a short list. The short listed options will be refined and assessed in greater detail in Phase 2 of the study, which will identify a preferred option for the new crossing.

Given the policy background for New Zealand transportation projects, an LTMA themed evaluation framework was developed, which will also form the basis of the Phase 2 evaluation framework. Key aspects of the Phase 1 evaluation framework are as follows:

- Economic Development and Regional Growth – covering consistency with the Regional Growth Strategy and economic growth;
- Connectivity – addressing connections between transport networks, functional principles and flexibility;
- Environmental – sustainability issues and the key environmental criteria such effects on natural and built environments;
- Social & Community – measures of social severance and displacement of communities; and
- Affordability – relating to cost only at this stage

The first key task in Phase 1 was development of a long list of feasible options for the crossing. Four methods of generating options were used, as follows:

- Analysis of ways to connect transport networks
- Options identified in previous studies
- Opportunities generated by new technologies and operational options
- Independent expert review



All options were developed recognising the potential future use of the existing Auckland Harbour Bridge. The study identified 159 possible options for a new harbour crossing (plus a “do-nothing” option of no new crossing), with tunnels or bridges joining the same points considered to be two separate options. In addition, options were generated with intermediate connection points where possible; for example routes connecting Esmonde Road to SH16 (Port and Westbound) at Central Motorway Junction (CMJ) have possible connections at Onewa and Wynyard.

Once the option long list was agreed, options were evaluated to produce a short list. This was carried out in two steps using the evaluation framework in each case. The first step was an initial sieve carried out on the options that were a single new crossing either for combined PT and general traffic or for general traffic only. The initial sieve focussed on the positive aspects of the options, namely economic development, regional growth and connectivity criteria, from which a reduced list of options was derived. Therefore, to be considered further, options had to score higher than the no new crossing option.

In the second step of the evaluation, the reduced option list was reassessed using a more refined assessment system and considering both positive and negative aspects of options. This gave a short list of single-crossing options.

A two-crossing option was then developed by combining a PT alone option and a general traffic alone option, using the best option for each function. The two-crossing option and the best PT alone option were compared against the short list of single-crossing options to decide on the final short list.

Operational options, such as ferries, did not reach the short list as they did not satisfy the project objectives as effectively as other options. However, it is recognised that measures to optimise use of existing infrastructure and improve ferry services are likely to be implemented prior to a new harbour crossing.

The evaluation process concluded with a short list of options on three alignments, although the question of whether the crossing would be a bridge or a tunnel had not been settled. Accordingly further work was undertaken to look at the following aspects of a bridge crossing:

- Ports of Auckland operations and navigation rules
- Suburban rail requirements

Discussions with Ports of Auckland about operational requirements of the port established that a bridge between the existing Auckland Harbour Bridge and Wynyard would need an air draught no less than that of the existing bridge (43.5 metres). Any bridge between Wynyard and Captain Cook Wharf would need an air draught of at least 62m plus clearance (for cruise ships). Any bridge



between Captain Cook Wharf and the open sea would need an air draught of 80m plus appropriate clearance.

These constraints would render a bridge impractical from Princess Wharf eastwards, as the gradients that could be used are such that the approaches would be too long to achieve the necessary height. Therefore a bridge option for Esmonde to Grafton was dismissed.

Hence, the conclusions of Phase 1 of this study are that the short list of options for the Waitemata Harbour Crossing is as listed below. These options should be further evaluated during Phase 2 of the study:

#### **Option 1: Esmonde to Britomart**

- Passenger transport (only) in a new tunnel or on a new bridge between Esmonde and Britomart, with possible connections at Onewa and Wynyard.
- General traffic on the existing Auckland Harbour Bridge
- Walking and cycling on either a new bridge or the existing Auckland Harbour Bridge (with appropriate modifications to the existing bridge.)

#### **Option 2 Esmonde to Britomart & SH16**

- Passenger transport in either a new tunnel or new bridge across the harbour, with tunnels to landside connections between Esmonde and Britomart. Possible connections at Onewa and Wynyard.
- General traffic in either a new tunnel, or new bridge (as well as on the existing bridge), with tunnels to landside connections between Esmonde and SH16 at either Wellington Street (Port and Westbound) or Newton (Westbound only). Possible connections at Onewa and Wynyard.
- Walking and cycling on either a new bridge or the existing Auckland Harbour Bridge (with appropriate modifications to the existing bridge.)

#### **Option 3 Esmonde to Britomart & Grafton**


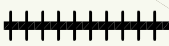

- Passenger transport in a new tunnel between Esmonde and Britomart. Possible connection at Onewa.
- General traffic in a new tunnel between Esmonde and Grafton (as well as on the existing bridge) with possible connection at Onewa.
- Walking and cycling on the existing Auckland Harbour Bridge (with appropriate modifications to the existing bridge.)



A plan showing each of these options is included as Figure 1 overleaf.

While options have been described in terms of particular connection points to the transport network, a key aspect of Phase 2 will be to determine the optimal connection configuration to each part of the network in that vicinity.

**LEGEND**

-  COMBINED PT AND GENERAL TRAFFIC
-  PT ONLY
-  GENERAL TRAFFIC ONLY



WAITEMATA HARBOUR CROSSING STUDY  
OPTION SHORT LIST - FIGURE 1