

MUFT Programme Control Group meeting 3rd April 2020

Recommendations for Multi User Ferry Terminal Site

Recommendations

It is recommended that the Programme Control Group (PCG):

1. Notes that four sites (Kaiwharawhara, Aotea, Container/Thorndon and Kings Wharf) were examined as requested by the PCG at its meeting of 9th October 2019.
2. Notes that Kings Wharf, Aotea and Container/Thorndon options all have an impact on the business of the Port and that this decision should be made in the context of a whole of Port plan so the decisions are integrated.
3. Agrees that Kaiwharawhara be developed as the site for the MUFT for the short to medium term.
4. Agrees that work to develop the Kaiwharawhara site be done in a manner that develops the site in a phased way – for a single user ferry terminal first and a multi-user ferry terminal later, and that minimises sunk assets.
5. Agrees that subject to the development of a plan to, and the transitioning of, Port operations to a new area, nominally considered north of the Kaiwharawhara knoll, further work be undertaken to assess the ability of Aotea and Container/Thorndon for the longer term site for the MUFT. This assessment also needs to link in with regional planning projects such as the Wellington Regional Growth Framework projects (a 30 year regional spatial plan) and transport planning.

Background

At a meeting of the MUFT Programme Control Group on 9th October 2019, the PCG made the following resolutions regarding the MUFT.

1. The PCG **approve** the following option (Option 3)
Review and update the Multi-Criteria Analysis (MCA) Assessment, focusing on four of the original eight "long list" sites (being those in the southern inner harbour - Aotea, Container, Kings Wharf and Kaiwharawhara). The focus being on ensuring due consideration has been given to life safety during and resilience after, a seismic event but also updated for contextual information now available.
2. The PCG **agree** that concurrent with (1) above, the PSG collectively undertake an assessment of alternative layouts for a MUFT in the areas of Kings Wharf, Aotea and Container and that this work include:
 - a) *Alternative layout options for a ferry terminal and other port and wider operations not limited by existing stakeholder land ownership or current configuration*
 - b) *Transport considerations and options*
 - c) *A Seismic Resilience Statement assessment*
3. The PCG **approve** the subsequent steps being:
 - a) *The PSG to re-consider the preferred site based on the updated MCA assessment*
 - b) *The PSG to bring their recommendation on the preferred site back to PCG for agreement.*
 - c) *If needed due to a new preferred site, update the PBC as required*
 - d) *Bring the updated PBC back to PCG for confirmation. Work has been undertaken on the recommendations above and this paper covers item 2(b) above – The PCG to bring these findings on the preferred site back to PCG for agreement.*

Overview of Findings for Recommendation for Kaiwharawhara as the preferred site

The points below provide a summary for why Kaiwharawhara has been recommended as the preferred site. Appendix 1 provides a view of all four sites. Further information and analysis to support this is provided in this report.

Note that when discussing “short term” and “long term”, the PSG have been using a timeframe of 20 years to define short term. However this could practically be a 20-30 year timeframe depending on the physical and business requirements for change.

- a. Time is driving a need for a decision within 3-6 months to ensure:
 - A site for the KiwiRail new ferries by 2024
 - The need for the Port to invest in its current operations and lifelines obligations; and
 - Any fit with LGWM long term direction and plans is not lost.
- b. Aotea and Container/Thorndon are seen as credible long-term sites but not as options to facilitate both Port needs and the timing for the MUFT in the short-term. Use of Aotea and Container/Thorndon require decisions that will take longer than 3-6 months to resolve – namely CentrePort shareholders making a decision on long term Port business (both sites impact the short term and long term port business) and KiwiRail making a decision on their site adjacent to Aotea Quay (the Aotea site requires the use of this site and will impact KiwiRail and other business). Both these sites will also take longer than 2024 to develop as the Port activity needs to be sequenced to move from current locations to any alternative locations (including new developed areas).
- c. Kings Wharf is not seen as a short-term alternative option as KiwiRail will need to invest in Kaiwharawhara to meet the arrival times of their ships and this would mean investing in two sites in the short term. It is also not seen as a short-term option based on the impact to Port operations and the need for significant investment over and above other options.
- d. Kings Wharf is not seen as a credible long-term option. This is because it would fix the southern edge of the port and not allow any long-term flexibility to migrate city activities and public access across this edge over time. It is also likely to mean that cruise ships could not use the inner harbour (to connect more closely to the city and tourism activities) and would have significant traffic impacts on key urban roads contrary to the intentions of LGWM.
- e. KiwiRail will need to invest in the Kaiwharawhara site to ensure the site is ready for their ships in 2024 and is therefore seen as a short-term option. For Kaiwharawhara to be considered a long-term option the resilience (seismic) concerns for the location will need to be addressed. Infrastructure (all or some) built for the short term could be retained as a back-up berth for the long-term option if a different long-term location was chosen.

Overview of work undertaken since October 2019

To enable the PSG to provide a recommendation on a preferred site, the following work has been undertaken:

1. MCA reassessment – work has been completed by a group of experts on this reassessment for all four sites. New criteria have also been added and/or changes made to the original criteria. This reassessment also took into account other factors that have changed since the initial MCA – that being agreement on the LGWM programme and the proposed Natural Resources Plan.
2. Assessment of site options for the four sites – CentrePort have completed a “Ferry Precinct Options Study” which considered possible site options for the development of a ‘co-located’ ferry terminal designed to accommodate the two current ferry service operators, Interislander and Bluebridge. The options study is highlevel only.

3. A seismic risk assessment has been completed for all four sites – previously this work had been completed for Kings Wharf and Kaiwharawhara sites only.

Information and analysis of these three pieces of work is provided below.

Resilience at Sites

This aspect of the assessment was discussed and of concern at the October 2019 Programme Control Group meeting. Work completed by Beca and GNS for KiwiRail for their interim site resulted in the PCG agreeing to reassess all 4 sites.

To provide full information on this aspect, attached as Appendix 2 is the MCA assessment for all four sites. This was undertaken by Beca and includes both an MCA score, an outline of mitigations recommended and an assessment of the relative costs. No work has been undertaken at this stage to develop costs for resilience in any more detail.

Key points to note are:

- The evaluation assumes that the seismic risks at each site have been mitigated “as low as reasonably practical” (ALARP) ie the fault movement and liquefaction risks are mitigated to a similar extent as for buildings under ultimate and serviceability limit states as appropriate
- The comparative cost score is the indicative cost of mitigating the seismic risks at each site to meet the expected performance requirements.
- The location of the Wellington Fault is uncertain and complex and could vary from its historical position which passes diagonally NE-SW through the current InterIslander Ferry Terminal, with a possible zone of disturbance of about 100m wide, through to the north abutment of Thorndon Overbridge.
- The evaluation only considers the ferry terminal sites and their immediate access to the transport network and excludes the wider transport systems.
- The paper outlines a number of engineering solutions to mitigate the risks to life safety and facilities for each of the four sites and for each site notes “The above mitigation measures will not completely remove the risks.” These mitigations will also assist in restoring business after an event.

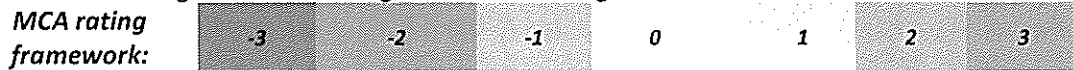
MCA Reassessment

A reassessment was undertaken on four sites and a copy of the findings can be found in Appendix 3. The Appendix provides information on the criteria, the assessors and the scores.

Points to note regarding the MCA reassessment process are:

1. Additional criteria were added as follows:
 - a) Resilience to HILP – Life Safety. This criteria was added under the Resilience section to reflect the previous discussions with regards to life safety and that the key emphasis of the other criteria under this section relate to the impact on a site to events.
 - b) Traffic impact on ferry users. This criteria was added under the Experience section. Other transport/traffic criteria focused on other land users and the assessors of the transport criteria determined there should be a criteria focusing on the transport/traffic impacts on ferry users, given that some of the options have quite an impact. The PSG agreed.

- c) The environmental/ease of consenting criteria was reassessed to now include any possible impacts from the proposed Natural Resources Plan which has been finalised (subject to appeals) since the initial assessment was undertaken.
2. The reassessment was completed by a range of technical experts including some that had been part of the initial assessment and some new technical experts/assessors. For instance for the reassessment, it was agreed by the PSG that Resilience section should be undertaken by BECA given their previous work on resilience on this project.
3. The MCA rating framework ranged from -3 through to 3 as seen below.



4. The process included:
 - a) Individual assessments by experts
 - b) Group meeting of all assessors to present their findings and discuss
 - c) Initial review of assessments by PSG and feedback provided to assessors
 - d) Update of assessments and scores as needed
 - e) MCA assessors presentation to PSG and discussion/clarification
 - f) Finalisation of scores and commentary by assessors

The results from the MCA reassessment are shown below. The results show that:

1. Both Kings Wharf options and both Container options have the highest total Resilience score, with Kaiwharawhara having the lowest.
2. The range of scores in the Resilience section is relatively narrow.
3. The high scores at Kaiwharawhara for Experience relate to both the high transport related scores this site achieves and that there are no (-) scores for any of the criteria at Kaiwharawhara (and there are for all other sites).
4. Economy scores for Kaiwharawhara relate to the highest scores possible for both Optimising land for highest and best use and Economic impact beyond the site. Both these assessments have been informed by economic development work undertaken by CentrePort.
5. The score for Delivery is for the Ease of Consenting which shows that Kaiwharawhara is expected to be the most difficult to consent. Note that a negative score does not mean it cannot be consented. These scores are all relative to the Enhanced Status Quo which is the requirements at Kaiwharawhara for the new Interislander ferries.

Site	Overall score	Resilience score	Experience score	Economy score	Delivery score
Kaiwharawhara	27	6	17	7	-3
Kings Wharf A	12	9	2	3	-2
Kings Wharf B	12	9	2	3	-2
Container A	10	9	-1	4	-2
Container B	12	9	1	4	-2
Aotea A	21	8	9	5	-1
Aotea B	13	8	1	5	-1

Assessment of Site Options for the Four Sites

CentrePort undertook this work which includes discussions with both KiwiRail and Bluebridge as input. A report by WSP Opus "Ferry Precinct Options Study" is attached as Appendix 4. Note this report was used by the assessors of the MCA reassessment to inform their thinking.

The Options Study does not, and was not, required to provide a recommended site. It outlines possible options.

Key aspects of each Option are:

Option	Key aspects
Scenario 1 – Kaiwharawhara OPTION A - Base case	Similar to initial Kaiwharawhara option Requires reclamation Offramp from SH1 for Ferry traffic
Scenario 2 – Kings Wharf Option A – Base case	Similar to initial Kings Wharf option but now with shared back up berth
Scenario 2 – Kings Wharf Option B	Similar to initial Kings Wharf option but now with shared back up berth
Scenario 3 – Thorndon Quay/Container Option A – Base Case	On land requirements situated on current CentrePort Container wharf area Includes shared back up berth InterIslander and Bluebridge berths at an angle to the wharf
Scenario 3 – Thorndon Quay/Container Option B	On land requirements situated on current CentrePort Container wharf area Includes shared back up berth One berth juts out the end of the Container Wharf and one is parallel to Container Wharf More detailed roading requirements are required on site to provide for this option
Scenario 4 – Aotea Quay Option A – Base case	On land requirements situation on current Aotea Wharf and KiwiRail land between Sky Stadium and the Motorway. InterIslander and Bluebridge berths parallel to Aotea Wharf with back up berth at current Kaiwharawhara site Extensive roading requirements including new off ramp from Motorway Passenger terminal across the road
Scenario 4 – Aotea Quay Option B	On land requirements situation on current Aotea Wharf and KiwiRail land between Sky Stadium and the Motorway. InterIslander and Bluebridge berths parallel to Aotea Wharf with back up berth at current Kaiwharawhara site Passenger terminal across the road

The study provides a high-level assessment with respect to each of the site scenario locations as a function of the overall port regeneration plan, and develops possible indicative layouts for each, which aim to accommodate the ferry operators' user requirements as best as possible within that site. The study built on the operational knowledge and functional user requirements established during the development of the concept design for the Picton Interislander Ferry Precinct also being carried out by WSP.

The purpose of the options study and indicative layouts was to enable the subsequent assessment of the site scenarios relative to various other aspects of the wider port operational precinct and connectivity to the city and wider transport network. These include the impacts and effects, and challenges and possible solutions with respect to:

- Road transportation connectivity to the local road and national highway network.

- Rail and rail freight yard connectivity to the rail network and ferry rail freight operation.
- Pedestrian and cycle passenger connectivity to the Wellington CBD
- Ferry operation user requirements including passenger, vehicle, road/rail freight and vessel berth facilities.
- CentrePort's other operations and cargo trade, and master plan.
- Statutory and environmental planning requirements including existing Port Operational Zone, Coastal Plan, District/Regional Plans.
- Seismic risk and geotechnical engineering considerations.

Several possible layouts were considered for each site scenario option, in order to arrive at one or two possible options which balance the requirements and constraints as best as possible given the site constraints. WSP noted that this process was not exhaustive, such that other variations of the layouts may exist, and the layouts as prepared are likely to be able to be optimised further including solving any critical traffic cross-flow issues.

For each site scenario, the preferred layout is referred to as the Base Case.

The key issues, risks and opportunities for each site identified in the report are:

Site	Key Issues, Risks and Opportunities
Kaiwharawhara	<ul style="list-style-type: none"> • The ferry precinct is a constrained site adjacent to main trunk rail and SH1/Hutt Motorway • Requires approx. 3.25Ha land reclamation • Limited opportunity for further expansion without significant additional reclamation • Good connectivity to road network subject to new road overbridge and on/off-ramps in an already complex and congested road network system. • Requires land acquisition • Poor connectivity to rail freight yard • Terminal building located adjacent Bluebridge berth, with poor connectivity to long term carparking • Relatively poor pedestrian and cycle connectivity to Wellington CBD. • City-ferry precinct access relocated from via Aotea Quay (as at present) to be via Hutt Rd (Thorndon Quay). Option exists for precinct exit from Interislander lower deck to remain via Aotea Quay • No scope to adjust shared boundary between operators • Poor connectivity for vehicles / pedestrians from ferry precinct to the southern area of the existing precinct comprising yard overflow, long term parking and area for future expansion during vessel (un)loading • Requires environmental consents and District/Coastal Plan amendments. • Requires good environmental management with respect to Kaiwharawhara Stream • Site constructed on reclamation land • Frees up land area at existing Bluebridge ferry precinct at Kings Wharf in the inner harbour for consideration of other alternative uses
Kings Wharf	<ul style="list-style-type: none"> • Ferry precinct extends into the main operational port area behind Thorndon Quay container terminal.

Site	Key Issues, Risks and Opportunities
	<ul style="list-style-type: none"> • Subject to consideration of potential other port operational uses, reasonable opportunity exists for further expansion in southern and eastern areas, and Kings Wharf footprint itself (other than that already as required for the Bluebridge linkspan access route) • All vehicle access to/from SH1/Hutt Motorway via Aotea/Waterloo Quays, and to/from City via Waterloo Quay • Connectivity to northern road network via Waterloo Quay has good separation from the network but will become significantly more congested at peak traffic and ferry sailing times • Reasonable connectivity to rail freight yard under new overbridge and Stadium podium • Terminal building located on Bluebridge side of main exit route, with poor connectivity to long term parking • Good pedestrian and cycle connectivity to Wellington CBD • Some scope to adjust shared boundary between operators but only within southern area for future expansion, without relocating precinct exit road. • Requires environmental consents and District Plan and Coastal Permit amendments • Site constructed on existing Thorndon reclamation • Frees up land area at existing Interislander ferry precinct at Kaiwharawhara for consideration of other alternative uses
Thorndon Wharf	<ul style="list-style-type: none"> • Ferry precinct occupies the existing main Thorndon Quay container terminal and log yard / berth operational port areas, and rail ladder rack and railroad extend along Aotea Quay wharf frontage • All vehicle access to/from SH1/Hutt Motorway via Aotea/Waterloo Quays, and to/from City via Waterloo Quay • Connectivity to northern road network via Waterloo Quay has good separation from the network but will become significantly more congested at peak traffic and ferry sailing times • Poor connectivity to rail freight yard along rear of Aotea Quay and around northern end of main rail yard precinct • Terminal building located between marshalling yards, with good connectivity to long term parking • Good pedestrian and cycle connectivity to Wellington CBD. • Minimal scope to adjust shared boundary between operators • Areas for future expansion of each yard available in areas at southern (Bluebridge) and northern (Interislander) ends • Requires environmental consents and District Plan and Coastal Permit amendments • Site constructed on existing Thorndon reclamation • Frees up land at existing Interislander ferry precinct at Kaiwharawhara for consideration of other alternative uses
Aotea Quay	<ul style="list-style-type: none"> • Ferry precinct occupies a significant portion of the existing Thorndon & Aotea Quay berth frontage and Aotea Quay back lands • Vehicle access from SH1/Hutt Motorway via existing Aotea Quay off-ramp. All other vehicle access to/from City and Hutt Rd, and to SH1/Hutt Motorway via new Aotea Quay diversion and new road network modifications

Site	Key Issues, Risks and Opportunities
	<ul style="list-style-type: none"> • Connectivity to northern road network and City via new Aotea Quay diversion has good separation from the network but will become significantly more congested at peak traffic and ferry sailing times • Good connectivity to rail freight yard along west side of new ferry precinct. • Terminal building located adjacent Interislander marshalling yard, with reasonable connectivity to long term parking on seaward side of former Aotea Quay • Good pedestrian and cycle connectivity to Wellington CBD • Some scope to adjust shared boundary between operators • Good opportunity for further expansion of Bluebridge yard only in the area at northern end of new precinct adjacent Bluebridge marshalling yard • Requires environmental consents for road rerouting and network alterations only • Site constructed on existing historical reclamation • Frees up land at existing Interislander ferry precinct at Kaiwharawhara for consideration of other alternative uses.

Seismic Risk Assessment for the Four sites

Work was completed on seismic risk assessments for all four sites. This work was undertaken by Beca and included a high-level assessment of the seismic risks in relation to the proposed infrastructure with respect to both life safety as required by the Building Code and potential loss of service due to infrastructure damage.

A summary of the conclusions is shown in the table below.

Site	Conclusions
Aotea and Container	<p>The report identified significant seismic hazards for the proposed development relating to:</p> <ul style="list-style-type: none"> • Earthquake shaking including amplifications of shaking due to basin effects • Ground movements due to liquefaction and lateral spreading • Tsunami and seiching <p>Wellington Fault movement is not a hazard at these two sites other than through causing ground shaking.</p> <p>We do not believe that any of these risks would be grounds for the consenting authority to reject a building consent based on building code requirements, provided that the designs could be satisfactorily demonstrated to achieve the minimum performance objectives of the stated importance levels.</p> <p>Substantial investments in ground improvement and/or buildings/structures are likely to be required to mitigate these risks, particularly if high levels of seismic resistance/resilience are expected.</p> <p>These sites are particularly vulnerable to seismic effects and not ones that are easily addressed or quantified. We note that the Building Code defines a minimum standard. Even after further investigation there will remain</p>

	<p>significant uncertainty that the effects and therefore risks have been reliably quantified. This level of uncertainty must reflect in the degree of resilience that can be expected at this site.</p>
Kaiwharawhara	<p>This has identified significant seismic risks for the proposed development relating to:</p> <ul style="list-style-type: none"> • Earthquake shaking • Wellington Fault movement • Ground movements due to liquefaction and lateral spreading • Tsunami <p>We do not believe that any of these risks would be grounds for the consenting authority to reject a building consent based on building code requirements, provided that the designs could be satisfactorily demonstrated to achieve the performance objectives of the stated importance levels.</p> <p>Substantial investments in ground improvement and/or buildings/structures are likely to be required to mitigate these risks, particularly if high levels of seismic resistance/resilience are expected.</p> <p>This site is particularly vulnerable to seismic effects and not ones that are easily addressed or quantified. We note that the Building Code defines a minimum standard. Even after further investigation there will remain significant uncertainty that the effects and therefore risks have been reliably quantified. This level of uncertainty must reflect in the degree of resilience that can be expected at this site.</p>
Kings Wharf	<p>This has identified significant seismic risks for the proposed development relating to:</p> <ul style="list-style-type: none"> • Earthquake shaking including amplifications of shaking due to basin effects • Wellington Fault movement • Ground movements due to liquefaction and lateral spreading • Tsunami <p>We do not believe that any of these risks would be grounds for the consenting authority to reject a building consent based on building code requirements, provided that the designs could be satisfactorily demonstrated to achieve the performance objectives of the stated importance levels.</p> <p>Substantial investments in ground improvement and/or buildings/structures are likely to be required to mitigate these risks, particularly if high levels of seismic resistance/resilience are expected.</p> <p>This site is particularly vulnerable to seismic effects and not ones that are easily addressed or quantified. We note that the Building Code defines a minimum standard. Even after further investigation there will remain significant uncertainty that the effects and therefore risks have been reliably quantified. This level of uncertainty must reflect in the degree of resilience that can be expected at this site.</p>