greater WELLINGTON
REGIONAL COUNCIL
Te Pane Matua Taiao

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Kaiwharawhara station overbridge structural report and future use

1. Purpose

To provide an update on the cost of reopening Kaiwharawhara Station overbridge and seek a decision on the future of Kaiwharawhara Station.

2. Background

In July 2011 Greater Wellington Regional Council (GWRC) purchased from KiwiRail a range of infrastructure and rolling stock assets associated with the delivery of Wellington's commuter rail service. The transfer of assets was part of a wider Government initiative of restructuring and clarifying the responsibilities for commuter rail. This transfer included 48 stations (excluding Wellington station), the electrical multiple unit (EMU) depot and wheel lathe buildings within the main Wellington railway yard, 13 pedestrian subways and 14 pedestrian overbridges.

To understand the condition and on-going maintenance requirements of these assets a visual asset condition assessment was carried out by contracted engineers (Aurecon) in November 2011. Following this inspection the Kaiwharawhara overbridge was assessed at grade 4 (poor condition) which made it a high priority for repair or replacement. Access to Kaiwharawhara station is only possible via the pedestrian overbridge.

The **November 2011** report identified some of the structural elements of the bridge to be near the end of their serviceable life. In particular, the rail iron supports were deemed not serviceable and the steel deck beams were deemed near the end of their life. Immediate repairs to the east pier were carried out by strengthening the steel connections on the pier. A further non-invasive inspection of the bridge was carried out in **December 2012** which reported the condition of the bridge to be unchanged and remained at condition grade 4 (poor) but recommended a full engineering inspection needed to take place within the following 12 months.

In **June 2013** GWRC contracted specialist bridge engineers Spiire to carry out an invasive inspection of the bridge and their initial investigatory assessment identified that corrosion to the steel beams was more extensive than originally thought. As a precautionary move it was decided to close the overbridge to all foot traffic until a full engineering inspection had been completed. This has now occurred and the report is available to Council. This report identifies the cost to replace the bridge will be at least $2.4m and to repair the bridge a *minimum* rough order of costs to be $550k. A decision is now required on whether to replace the overbridge, repair the overbridge or close the overbridge and by implication Kaiwharawhara station.

2.1 Kaiwharawhara station

The Kaiwharawhara station is located off Westminster Street and is about 2.6km north of the Wellington Central railway station. It is a dual island platform railway station on the North Island Main Trunk Line (NIMT) and is served by metro trains operating on the Melling line, the Hutt Valley line and the Kapiti line.

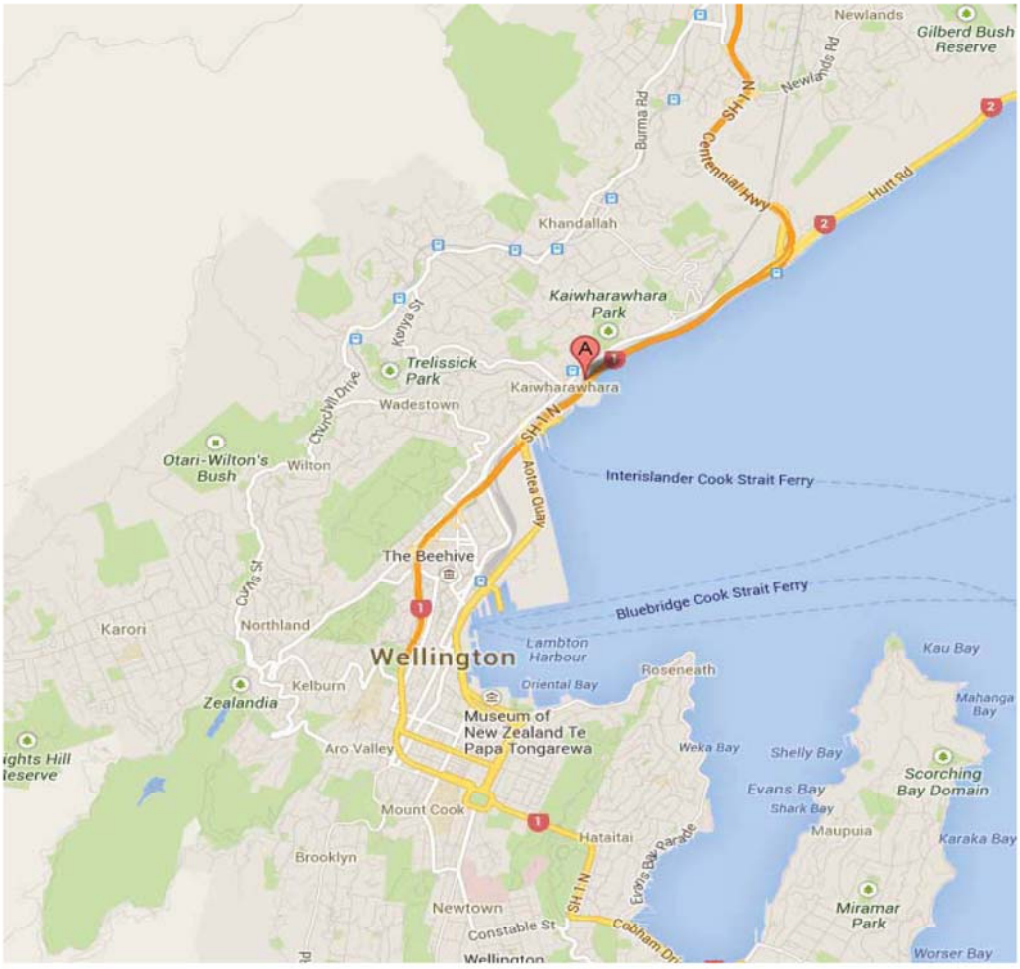

Figure 1: Kaiwharawhara station

Figure 2: View of the dual Islands at Kaiwharawhara station

The location and layout of the access ramps and platforms, due to the narrow corridor and servicing of 4 tracks, already render the station relatively more hazardous than any other on the network. The extremely limited space between the ramps and the edge of the platform is clearly shown in the bottom right portion of Figure 2. This situation is present on both sides of each island platform.

The above situation is exacerbated by the fact that already Kaiwharawhara Station is not serviced by all trains that pass by. Kapiti services from Wellington stop to pick up only, and travelling to Wellington stop to set down on request only. Hutt Valley services do not stop at all in the peak direction. Melling line services all stop at Kaiwharawhara. As a consequence, freight trains and many non-stopping passenger services traveling at mainline speeds all pass the narrow platforms.

The last official counts for the number of passengers boarding and alighting at Kaiwharawhara station were taken in 2011 and recorded 14 morning (AM) peak boardings and alightings. Just prior to the unexpected closure TranzMetro were asked to informally record passengers using the station during the AM peak and reported similar numbers boarding or alighting the train.

These numbers represents the lowest level of peak patronage anywhere on the metro network.

There are no park and ride facilities in operation at the Kaiwharawhara station. On street parking restrictions are in force and parking is monitored and controlled by local businesses within Westminster Street.

2.2 Replacement versus repair

The cost of re-opening Kaiwharawhara station will depend on the decision to either replace or repair the overbridge and this is dependent on the conditions attached to the building consent that will be required for work on the bridge. It is highly probable that the Wellington City Council (WCC) consenting process will trigger the need to provide an accessible bridge and this will mean the provision of access ramps. The narrowness of the corridor and the number of mainline tracks severely restrict the ability to construct complaint wheel chair ramps. Even if the space was available for the provision of ramps, the cost of including ramps is currently estimated at a *minimum* of $2.4m (see **Attachment 1**).

It may be possible for WCC to grant a dispensation for a non-complying structure incorporating stairs rather than a ramp. We have spoken to WCC about the probabilities of requiring an accessible bridge, not unreasonably they have responded that they cannot make the call until they receive a full submission. If dispensation was granted, then the cost of repair would be closer to $550k, although experience shows this would be likely to increase by at least $100k (see **Attachment 2**). To test whether or not WCC would entertain a dispensation would require a full proposal which in itself would take approximately three–four months to process and cost approximately $30k. This would only be worth doing if repairing the bridge was deemed to be a worthwhile proposition.

2.3 Cost benefit

To bring the bridge back into operational service will require use of the funds from GWRC's like-for-like and minor improvement programme. The current budget is $3.5m per annum which is allocated in accordance with the Council approved investment priority framework. The two key principles which underpin the investment framework are to ensure that the worst infrastructure receives priority funding and that higher use stations receive the highest proportion of the budget. Although unsafe, Kaiwharawhara is the lowest use station on the metro network. Even if WCC allow us to repair the existing structure at an expected minimum cost of $550k, the question needs to be asked as to whether or not this money is well spent to retain the station for approximately 14 AM peak passengers. This is especially relevant in light of the close proximity of numerous alternative public transport services which are available in this area (see section 2.4).

Opportunity costs also need to be considered. Within the current programme of work stations such as Porirua, Waterloo, Upper Hutt, Paremata, Paraparaumu, Trentham, Woburn and Linden all require significant work, much of which is safety related. The table below shows the relative June 2011[1] AM peak patronage for the stations requiring significant works in 2013/14.

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[1] 2012/13 peak patronage was 1.3% up on 2011/12, but actually 0.93% down on 2010/11 peak patronage – therefore the June 2011 numbers are a reasonable guide.

Table 1: June 2011 AM peak patronage by station

Porirua	1103	Paremata	391
Waterloo	1601	Paraparaumu	524
Upper Hutt	211	Woburn	288
Trentham	294	Linden	245
Kaiwharawhara	14		

The Kaiwharawhara overbridge would push some of these projects out by at least a year which disadvantages a much greater number of passengers and contrary to the intent of the investment priority framework. There is a budgeted allowance across all low use stations of $350k pa which Kaiwharawhara will far exceed and additional funding will need to be drawn from the higher use stations.

2.4 Alternative public transport services

There are several bus services operating to and from various destinations either stopping or passing close to Kaiwharawhara station. Through services operate along the Hutt Road stopping at both north and southbound bus stops which are located at the corner of Westminster Street and Hutt Road (see Figure 3.).

Table 2 Southbound bus services

Route number	Direction	Operating times
54,52,83,43,55,57,58,56	Southbound all buses passing through Lambton Quay	Mon – Fri 05.35 – 11.50pm
52,83,43,54	Southbound all buses passing through Lambton Quay	Saturday 05.35 – 12.25am
83,52,54	Southbound all buses passing through Lambton Quay	Sunday 08.30 – 10.45pm
N88, N22, N5, N6	Southbound all buses passing through Lambton Quay	Night buses operating Saturday & Sunday 12.30am – 05.30am

Table 3 Northbound bus services

Route number	Destination	Operating times
44 54 83	Strathmore Park Churton Park Eastbourne	Mon – Fri 05.35 – 11.50pm

52 55 57 46 58	Johnsonville Station Mandeville Crescent Woodridge Broadmedows Baylands Drive	
83 44 52	Eastbourne Strathmore Park Johnsonville Station	Saturday 05.35 – 12.25am
83 52	Eastbourne Johnsonville Station	Sunday 08.30 – 10.45pm

The bus services offer a viable alternative to the trains, particularly in light of the number of commuters currently using the train services.

2.5 Impact on commuters and local business

At the time of the closure of the overbridge complaints were received from 9 commuters. These complaints were related to the additional time and cost incurred to them by having to pay for the additional bus trip required from Wellington station.

Media interest recently has suggested that neighbouring businesses were being negatively impacted by the closure. However there has been no contact made directly with GWRC by those businesses.

2.6 Platform structure for emergencies

The Kaiwharawhara station is currently designated as a disembarkation point for emergencies just north of the Wellington main station. Whether or not there is an overbridge this requirement will remain. Officers have discussed this with KiwiRail and both parties agree that access and egress through the adjacent KiwiRail Depot double vehicle gate and car park provides the safest and most direct route to the Hutt Road foot path where buses could be made available. The benefits of this route include:

- Once passengers have crossed the 'up main' track from the north end island platform they will have much safer footing as they will be walking on the vehicle track used for entering the KiwiRail Depot.

- A double gated entrance is available to enhance the flow of passengers through the KiwiRail controlled Depot car park area to waiting buses.

- The option provides a readily available point of access for emergency vehicles enabling better access to the scene of an incident in this area.

2.7 Strategic corridors and community impacts

Discussions with Wellington City Council's (WCC) Safe and Sustainable Transport Manager revealed high level investigations that have been occurring in the area mainly in relation to the proposed Great Harbourway cycle route and accessing the Kaiwharawhara Stream mouth and Reclamation from the Hutt Road.

As can be seen from the aerial photograph (see Figure 3.) there is no legal access from the Kaiwharawhara station overbridge to anywhere but the station platform. Anyone using the overbridge to access the Reclamation or stream is trespassing on KiwiRail's corridor, which is both illegal (subject to a $10,000 fine) and extremely dangerous, then walking between SH1 and the railway line for about 100metres before passing underneath the SH1 viaduct by or in the stream – all of which is unpleasant at best and at worst very hazardous especially at high tide.

Proponents of the Great Harbourway cycle route have the issue of how to get from the harbourside path to the city across SH1 and the railway line. Some initial thoughts had centred on effectively extending and modifying the station overbridge across SH1 to allow for cyclists to reach the Hutt Road via Westminster Street (by Animates). WCC advise that this option has been dismissed because the cost was prohibitive (it would require a completely new, fully accessible and much larger bridge spanning at least six lanes of motorway), it would not avoid some of the more hazardous car/bike conflict points on the Hutt Road, and there isn't enough room in the rail corridor to provide bike/ wheel chairs ramps.

WCC has now placed their focus for the city access of the cycleway on the NZTA Ngauranga to Aotea SH1 8-laning project. From about Kaiwharawhara Stream south the additional lanes will be clipped to the existing viaduct. The WCC proposal is to have pedestrian and cycle access included in the "clip-ons", from the Aotea overbridge to the Kaiwharawhara stream mouth/ Reclamation, where the lanes would join the proposed Great Harbourway.

The salient fact from the overall discussions with WCC is that any of the major initiatives in this area would either require a totally redesigned and essentially new pedestrian bridge at Kaiwharawhara station or not interfere with the station bridge at all.

Figure 3: Aerial view of Kaiwharawhara Station, Stream mouth, Reclamation and bus stops

3. Summary

The Kaiwharawhara station is reliant on an overbridge to remain open and this overbridge has been closed for safety reasons. To replace or repair the overbridge will require significant expenditure. Replacement will cost a minimum of $2.4m whilst repairs will cost a minimum of $550K (note these are the figures quoted in the engineering report and need to be considered as rough order cost only and very likely to increase). The station has extremely low patronage and the area is well served by other public transport options. Many important (including safety related) station work programmes exist across the network, in 2013/14 and beyond, any number of which benefits a vastly greater number of passengers and ratepayers than reopening Kaiwharawhara station.

Three options are available to Council regarding the future of the Kaiwharawhara station.

Option 1: Replace the existing over bridge with a compliant overbridge for a minimal cost of $2.4m. This option will see a fully functional and reasonably compliant (access may still be partially restrictive due to space constraints) station at Kaiwharawhara.

Option 2: Repair the existing overbridge for a minimum cost upwards of $550k. However, this option will require dispensation from the WCC for a non-compliant structure and this dispensation might not be forthcoming. Testing this option with the WCC is likely to take three – four months and cost $30K.

Option 3: Close the station for revenue service but retain the platform structures for emergency disembarkations. This option will see the removal of the bridge structure with the three relatively new staircases being retained and made available for other bridge projects in order to reduce wider programme costs. As the platforms will be retained, the station could be reopened if sufficient demand or a complimentary project justified the construction of a new overbridge.

4. Conclusion

In light of the cost of either replacing or repairing the overbridge, the extremely low patronage of the station, the availability of alternative public transport services and the impact on other renewal projects within the programme were funding to be committed to Kaiwharawhara, it is considered that neither replacement nor repair is a cost effective option. While closure of a station is always a difficult decision, and clearly one for councillors to make, in this case officers recommend that the station be closed.

5. Communication

Depending on the final decision, a communications plan may be required for the general public.

6. The decision-making process and significance

Officers recognise that the matters referenced in this report have a high degree of importance to affected or interested parties.

The matter requiring decision in this report has been considered by officers against the requirements of Part 6 of the Local Government Act 2002 (the Act). Part 6 sets out the obligations of local authorities in relation to the making of decisions.

6.1 Significance of the decision

Part 6 requires Greater Wellington Regional Council to consider the significance of the decision. The term 'significance' has a statutory definition set out in the Act.

Officers have considered the significance of the matter, taking the Council's significance policy and decision-making guidelines into account. Officers recommend that the matter be considered to have low significance.

The Kaiwharawhara Station has extremely low patronage and is well served by other public transport options.

Officers do not consider that a formal record outlining consideration of the decision-making process is required in this instance.

7. Recommendations

That the Council:

1. ***Receives*** *the report.*

2. ***Notes*** *the content of the report.*

3. ***Agrees*** *to close the Kaiwharawhara station and remove the existing over bridge.*

Report prepared by:	Report approved by:	Report approved by:
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Attachment 1: Replacing the over bridge
Attachment 2: Repairing the over bridge

Replacing the over bridge

Replacement of the structure incorporating a fully complying ramp while re-using the existing stairs has been considered and includes:

- Reinforced concrete or galvanised structural steel piers with new reinforced concrete foundations for the span and ramp supports
- Precast reinforced concrete deck with either steel or concrete supporting beams for both the spans across the tracks and for the ramp spans. Galvanised steel balustrade.

Reinforced concrete impact wall as protection to the bridge supports along the west boundary in addition it is noted:

- Approximately eight lighting poles and two traction support poles will require relocating, working around or incorporating into a design for ramps on the two platforms
- A ramp along the west boundary will reduce the width for vehicle access along the maintenance track beside the railway track
- Ramps landing on the platforms are required to be a minimum of 1.5 metres clear width for a wheelchair and a pram to pass. With a structure width of say 1.8 metres, and a platform width of 4.3 metres overall, this leaves only 1.25 metres either side of the ramp to the edges of the platform. There will be over 25 metres of narrow platform and it is a sub-standard width for passengers to walk on the platform and pass others. The ramps are likely to be non-compliant for width but compliant for steepness grade. This would require dispensation from WCC.

A budget cost estimate for a replacement bridge structure. This incorporates ramps complying with requirements for disabled while also re-using the existing stairs. The rough order budget cost estimate for the above is $2,470,000.00.

It is considered that this is not to be a practical option for the following reasons:

- Significant cost
- Station platforms too narrow for the required width of ramps.

Figure 5 Concept drawing for new bridge and ramps

Repairing the over bridge

The main bridge I-beam spans are severely corroded and require replacement. The rail iron piers are also in very poor condition with significant loss of section evident and are in need of replacement. It is considered that the only parts of the bridge able to be incorporated into an upgraded structure are the three relatively new sets of stairs installed 2005. These are constructed of galvanised steel channel stringers with galvanised folded plate treads and risers. Because of the extremely poor condition of the rest of the existing structure, the extent of corrosion and loss of section of some of the bridge components it is not deemed practical or economic to repair the existing bridge piers or I-beam spans. Engineer's recommendation is to 'repair' the bridge by building new bridge spans and piers incorporating:

- Reinforced concrete or galvanised structural steel piers with new reinforced concrete foundations. Re-use or extending the existing foundations would be considered in the design process
- Concrete deck with either steel or concrete supporting beams
- Galvanised steel balustrade.

Rough order budget cost estimate for the above is $550,000.00. This covers all but the stairs and does not include any charges for preparing an application for resource or building consents and necessary dispensations or additional works as a result of the submission.

Figure 1: Corrosion of the footings