

RiverLink



PROUDLY DELIVERING

New Zealand
Upgrade
Programme



Non Technical Summary

July 2021

Introduction

RiverLink is a partnership project between Greater Wellington Regional Council (GW), Waka Kotahi NZ Transport Agency (Waka Kotahi) and Hutt City Council (HCC), together with Mana Whenua partners Taranaki Whānui ki Te Upoko o Te Ika (Taranaki Whānui) and Ngāti Toa Rangatira (Ngāti Toa), collectively known as the Project Partners.

RiverLink is the brand adopted by the Project Partners for the collective and integrated approach to a series of projects within a 3-kilometre section of the Te Awa Kairangi / Hutt River (Te Awa Kairangi or the river) between Kennedy Good Bridge and Ewen Bridge and the immediate urban environs on either side, including the edge of Lower Hutt as it meets the city centre. RiverLink involves the construction, operation and maintenance of infrastructure and associated works within the Lower Hutt city centre around Te Awa Kairangi to improve flood resilience, transport connections and to facilitate urban renewal and regeneration of the city.

GW, Waka Kotahi and HCC are lodging Notices of Requirement and applications for resource consent (collectively referred as the Application) for the RiverLink project.

Project outcomes

The outcomes sought by RiverLink are to:

- Improve the flood protection system between Kennedy Good Bridge and Ewen Bridge in accordance with the Hutt Floodplain Management Plan 2001 and subsequent amendments and alterations;
- Support the urban renewal and revitalisation of Lower Hutt city centre by promoting Te Awa Kairangi as the centre piece of the city;
- Improve transport access and safety between SH2 and central Lower Hutt;
- Provide a fit for purpose, integrated and accessible new Melling Station; and
- Promote, respect and provide for the cultural significance of Te Awa Kairangi and kaitiaki responsibilities upheld by Mana Whenua.

Project Description

RiverLink's three separate but interdependent projects include:

- Flood protection (GW) – lowering and widening the Te Awa Kairangi river channel and berms, and raising the height of the stopbanks;
- Melling transport improvements (Waka Kotahi) - a new grade separated interchange and river bridge at Melling, new intersections with local roads and realignments, enhanced pedestrian and cycle routes and better public transport integration at a new Melling Station (aligned with KiwiRail and GW Public Transport); and
- Urban renewal and revitalisation (HCC) – supporting urban renewal and revitalisation through improved access from the city centre to and alongside the Te Awa Kairangi through the creation of a promenade a new pedestrian and cycle bridge, a riverside park to supporting future commercial/retail/residential development in the city.

The design for RiverLink is informed by the:

- RiverLink Kaitiaki Strategy, prepared by Taranaki Whānui and Ngāti Toa
- Hutt River Floodplain Management Plan
- RiverLink Urban and Landscape Design Framework
- Central City Transformation Plan



In detail, the works associated with RiverLink involve:

River works – reshaping Te Awa Kairangi to a natural meander pattern within a widened and lowered channel. Gravel (associated with riverbed reshaping) and vegetation removal is required between Kennedy Good and Ewen bridges. Rock lining and vegetation will be placed along the river for erosion protection.

Stopbanks – upgrade and construction of new stopbanks between Ewen Bridge and Mills Street will result in stopbanks with a maximum height of 5.5 m and a minimum crest width of 4 m.

Melling interchange and bridge – ground improvements, construction of a new Melling River Bridge, removal of the existing Melling River Bridge, construction of grade separated diamond interchange which includes a single span bridge over SH2, construction of a new link road connecting Tirohanga to Harbour View Road, reconfiguration of Pharazyn Street, establishment of separated cycleways through the new interchange and connecting roads, and retaining walls along Queens Drive and Rutherford Street.

Melling Station and Line – realignment of the Melling Line, including moving it south to connect with the new pedestrian/cycle bridge, construction of a new Melling station south of the existing Melling Station, with approximately 200 car parks provided in the park-n-ride facilities.

Local roads – A number of changes are being made to local roads. These include:

- Road stopping of parts of Melling Link, Daly Street, Marsden Street, Fraser Street, Block Road, Margaret Street and Pharazyn Street.
- Re-alignment of the road network including parts of Marsden Street, Pharazyn Street, Harbour View Road, Tirohanga Road, Queens Drive, Andrews Avenue and High Street.
- Provision of a connected cycle and pedestrian network on both sides of Te Awa Kairangi.
- Reconfiguration of local roads to support active transport, including creating a shared space in Margaret Street, a new pedestrian accessway and service lane from Laings Road to the stopbanks, and changes to Bridge Street, Laings Road, Dudley Street, Bunny Street, Queens Drive, Marsden Street and Pharazyn Street to create better pedestrian facilities and dedicated on street cycle lanes within existing legal road.
- Reconfiguration of car parking resulting in a net reduction of approximately 711 car parks.
- Changes to the configuration of intersections, with some becoming signalised.
- Re-routing of traffic from the "western access route" (Daly Street and Rutherford Street to the "eastern access route" (Knights Road and Bloomfield Terrace/Cornwall Street) to facilitate traffic flow around the city centre.

Pedestrian bridge, development envelopes and riverside promenade – The pedestrian bridge will provide a connection between the new railway station and the Lower Hutt city centre. A new walking promenade will be constructed between Margaret Street and Andrews Avenue, situated on top of the stopbank.

Earthworks and vegetation removal – Construction of RiverLink will require earthworks for the stopbanks, widening of the river channel, earthworks, ground improvement and raising land on the western side of the river for the interchange and new Melling Station. Approximately 23.9ha of vegetation (predominantly willows) will be removed to enable construction.

Te Awa Kairangi/riverside works – River amenity will be increased with the provision of public open spaces and planted areas that are connected to the shared paths and pedestrian/cycle bridge.

Culverts and stormwater – Construction of RiverLink requires rationalisation (where possible) and alterations to culverts in the new stopbanks, introduction of stormwater treatment to SH2 and the Melling interchange, and local roads where this can be retrofitted. Where culverts are being replaced, provision will be made for fish passage, where practicable.

Network utilities – Construction of RiverLink will impact network utilities in a number of roads, the railway track and under the existing stopbanks. Changes, rationalisation and relocation of network utilities is required, including water supply, wastewater, stormwater pump stations, high and low voltage power cables and substations, fibre optic cables and telephone lines.

Operation and maintenance – These activities, continuing beyond the construction period, relate to:

- Landscape furniture, accessways and stairs along the stopbank pathway and local streets
- Local roads, pedestrian and cycle facilities
- State highway road and cycle facilities
- Operational stormwater discharge, conveyance, detention and treatment (where provided) from the altered local roads and SH2
- Flood protection and erosion control in the river corridor. These activities are anticipated to be covered by Wellington Regional Council's existing global resource consents for flood maintenance works.

Construction activities

Construction is anticipated to begin with enabling works in late 2022, with the majority of construction expected to be completed by the end of 2026. Construction will include:

- Enabling works (vegetation clearance, removal/demolition of buildings and dwellings, removal of services, services relocation, site investigations)
- Early construction activities (site establishment, access and haul roads, trial embankments and the installation of erosion and sediment control devices)
- Main construction works including:
 - River channel works
 - Access to specific sites (culverting and access bridges)
 - Ground improvements
 - Earthworks
 - Building new structures
 - Pavements and surfacing, and
- Completion works (traffic services, landscaping).

Construction works will be managed through the proposed conditions of consent, including the implementation of proposed management plans which will outline specific measures to manage potential adverse effects during construction.

Notices of Requirement and resource consents

GW, Waka Kotahi and HCC have lodged Notices of Requirement to designate land for the Project and resource consents (together referred to as the Application) to undertake flood protection works, alteration of transport infrastructure and works to support urban renewal and revitalisation.

The Notices of Requirement include alterations to existing designations and application for new designations:

- GW: for the proposed construction, operation and maintenance of the stopbanks, river channel works and the new Melling station and surrounds (including new park-n-ride facilities)
- Waka Kotahi: for the proposed construction, operation and maintenance of the new Melling interchange, Melling River Bridge, new local road intersections and pedestrian and cycle network upgrades.
- HCC: for the proposed construction, operation and maintenance of the new promenade over the stopbanks, the pedestrian/cycle bridge over Te Awa Kairangi and changes to car parking and local roads.

In addition, KiwiRail has lodged a Notice of Requirement for relocation of the railway corridor and associated infrastructure.

Land use consents are required for:

- Earthworks, including in association with road and tracking
- Vegetation alteration, removal and planting

- Geotechnical investigations
- New culverts and extensions and alterations to existing culverts
- New river crossing structures
- New habitat features and erosion protection structures
- Maintenance, repair, replacement, upgrade and/or use of existing structures
- Demolition and removal of structures in Te Awa Kairangi
- Bed recontouring and gravel excavation in Te Awa Kairangi
- Vegetation alteration, removal and planting in the bed of Te Awa Karangi
- Tracking across Te Awa Kairangi
- Disturbing contaminated land.

Water permits are required for:

- Take and diversion of groundwater
- Diverting Te Awa Kairangi during construction, and
- Placing structures in the bed of Te Awa Kairangi.
- Permanent floodwater diversion by stopbanks

Discharge Permits are required for:

- Stormwater discharges during construction
- Sediment discharges associated with works in watercourses, including within Te Awa Kairangi
- Discharges of contaminants to air (i.e. dust).

Statutory Framework

RiverLink has been assessed against the relevant planning documents under the Resource Management Act 1991 (RMA). Development of the Project took into account relevant National Policy Statements, the Regional Policy Statement for the Greater Wellington Region and operative and proposed regional and district plans. This Project has been assessed as being generally consistent with the relevant provisions in these documents.

RiverLink will have and support significant transport, flood protection and urban renewal benefits, and can be constructed, operated and maintained in a way that appropriately avoids, remedies, mitigates or offsets potential adverse effects on the environment.

Consideration of Alternatives

GW, Waka Kotahi and HCC individually considered an extensive range of options over the last 30+ years before coming together with Mana Whenua in 2014 to develop the integrated RiverLink project. A number of strategic investigations, scoping studies, scheme assessment and business case processes have been undertaken between 2015 and 2019 which identified the following key problems, which are sought to be addressed through RiverLink:

- The existing level of service for flood protection is compromised, which has the potential to cause significant flooding within Lower Hutt

- The existing transport infrastructure has poor resilience, accessibility, efficiency and safety performance at the Melling Intersection on SH2, and
- There has been difficulty encouraging investment in the Lower Hutt central city resulting in a lack of urban renewal and revitalisation measures being undertaken in Lower Hutt’s city centre.

The alternatives assessment included:

- A review of background studies;
- Identification and evaluation of recommended options;
- Further refinement of the preferred options; and
- Refinement of the preferred option, which is the subject of this Application.

Consultation and Engagement

HCC began engaging in 1987 to support the development of plans for the Lower Hutt central city. GW, in consultation with HCC and UHCC and the Lower and Upper Hutt communities, prepared the Hutt River Floodplain Management Plan, which was completed in October 2001 and which sets a long-term strategy for the management of Te Awa Kairangi, including replacing Melling bridge as this is a significant constraint during flooding. In 2014 Waka Kotahi identified that the Melling intersection on SH2 was becoming congested.

Consultation has been on-going throughout integrated Project development in the phases summarised in **Figure 1**. In addition to public engagement, there has been direct engagement with the key stakeholders listed in **Table 1**.

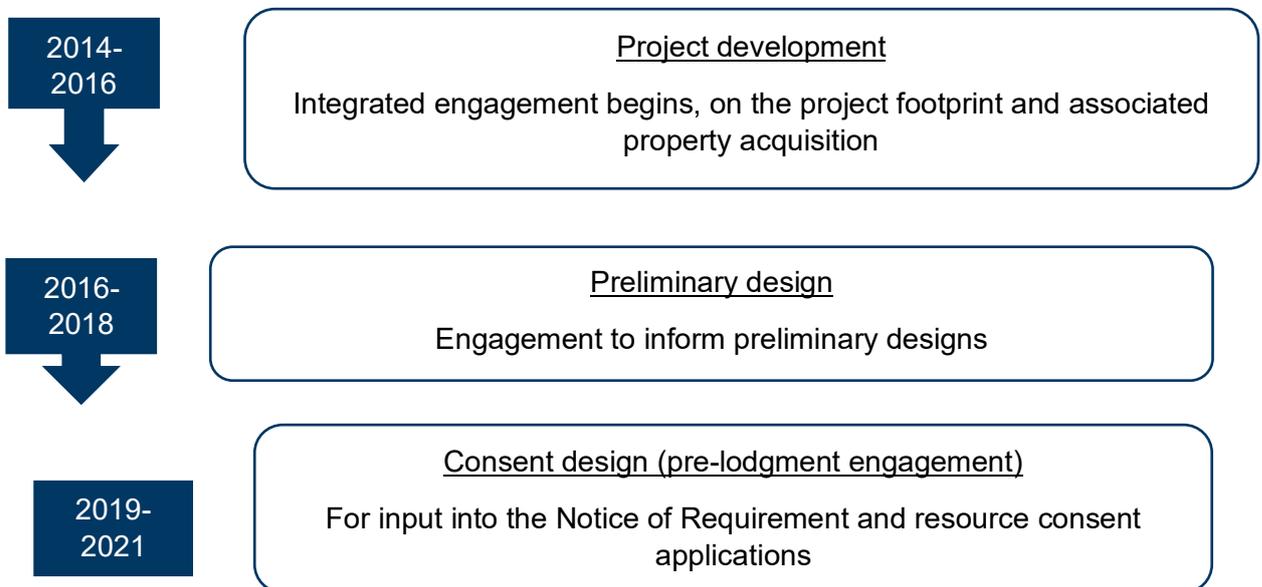


Figure 1 Engagement phases between 2014 – 2021

Table 1 Stakeholders

Stakeholders	
Landowners and neighbours	Directly affected and nearby residential and business landowners, and the Riverbank market operator
Local Government and statutory agencies	Hutt City Council (regulatory) Greater Wellington Regional Council (regulatory), Department of Conservation (DOC), KiwiRail, Heritage NZ Pouhere Taonga, Ministry of Education and Upper Hutt City Council
Local schools	Belmont School in conjunction with the Ministry of Education
Business interest groups	Hutt Valley Chamber of Commerce, Hutt Valley NZ (tourism organisation), Southend Business Group, road user groups including the AA, Road Transport Association and the Heavy Haulage Association
Environmental interest groups	Forest and Bird, Friends of Hutt River, Fish and Game, and Whaitua Te Whanganui-a-Tara
Not for profit groups	Rotary Club, E Tu Awakairangi Hutt Public Art Trust, Normandale Residents Association, Grey Power and CCS Disability Action Group
Cycling and walking advocacy groups	Cycle Aware Wellington, Cycle Action Network, Hutt Cycle Networks, and Living Streets Aotearoa
Utility providers	Wellington Water Ltd, Transpower, Powerco, Wellington Electricity, Spark, Chorus, Vodafone and FirstGas
Emergency Service Providers	Police, fire and ambulance
Lower Hutt community	River and river path users, train commuters, local residents
Elected Representatives and central government officials	Minister of Transport, Minister of Finance, Hutt South MP, National list MPs based in the Hutt South, Remutaka electorate MP and Māori electorate MPs

Assessment of Environmental Effects

Part of the resource consent application and Notices of Requirement includes an assessment of actual and potential effects of the construction, operation and maintenance of the Project on the environment as informed by a range of technical specialists. The technical specialists have considered effects on the following key areas:

- River hydraulics and containment
- Construction water quality and erosion and sediment control
- Geomorphology
- Terrestrial ecology
- Traffic effects and transport integration
- Air quality
- Contaminated land
- Natural hazards and geotechnical risk
- Social and recreation impact
- Effects on network utilities
- Stormwater
- Groundwater
- Freshwater ecology
- Marine ecology
- Noise and vibration
- Archaeology and historic heritage
- Landscape and visual impact
- Cultural impact
- Economic assessment
- Land use and property disruption effect

The following paragraphs summarise some potential positive and/or adverse effects that the technical specialists have identified in their assessment of the Project.

River hydraulics and flood containment

Areas adjacent to the main river channel in Lower Hutt are known to be potentially located on its floodplain and prone to flooding; modelling of various flood events has demonstrated that existing stopbanks would be breached and areas of Lower Hutt inundated to varying degrees depending on the severity of the flood.

Modelling shows that the proposed new stopbanks will largely eliminate all out-of-channel flooding to Lower Hutt in a 100-year Average Recurrence Interval (ARI) flood event in a 2020 climate model, and significantly reduces the area and depth of out-of-channel flooding and depth of out-of-channel flooding in a 100-year ARI flood event in a 2130 climate scenario (taking into account climate change) and a 2,800m³/s flood event.

In the larger modelled flood scenarios, a small increase in flood depth and extent around the river mouth is predicted to occur because the better containment of flood flows through Lower Hutt means that a greater volume of flood flow will be conveyed downstream within the channel. A future review of the Hutt River Floodplain Management Plan will be undertaken to identify measures to mitigate this adverse effect.

When assessed in accordance with the 'Risk-based Land Use Planning for Natural Hazard Risk Reduction' guidelines (GNS, 2013), the potential flood risk for the overall Lower Hutt area reduces for all modelled flood scenarios.

Overall the flood effects are significantly positive and natural hazard resilience will be substantially improved by the flood protection work.

Stormwater and operation water quality

RiverLink will incorporate significant upgrades to existing stormwater infrastructure to:

- Service the SH2 and Melling interchange upgrades
- Provide an appropriate design life of pipes through the new stopbanks, and
- Make provision for future climate change impacts.

The scope of the stormwater upgrades, and the significant spatial and topographical constraints, limit the opportunity for large scale treatment and storage to reduce high volumes of flows within the Project area. Nevertheless, the design has addressed treatment and flow management and has endeavoured to capture opportunities for inclusion of improvements where practicable, such as where road narrowing or closure is proposed.

The proposed stormwater design for the Project includes treatment of discharges from the area of the highway upgrade, the railway station development, the new Melling Bridge, some areas of road narrowing and for the Riverbank car park alterations. The treatment will result in a reduction in the contaminant load discharged to Te Awa Kairangi. This will result in improvements in water quality in the receiving environment, particularly during and immediately following rainfall events.

Localised flow increases will be minor and overall there will be a reduction in flows.

Overall, volumetric operational water discharges are expected to have negligible adverse effects, and, in the case of water quality effects, a minor net beneficial effect on the receiving environment is expected.

Construction water quality and erosion and sediment control

Discharge of sediment and other construction related contaminants could have a potential adverse effect on water quality, the aquatic habitat and biodiversity values of Te Awa Kairangi and affected tributaries.

The following measures are proposed to avoid, remedy or mitigate any potential adverse effects on the receiving environment:

- best practice erosion and sediment control management;
- avoidance of works in the active channel outside of 'low flow' conditions and time periods sensitive to the ecological value of the River;
- minimisation of the footprint and duration of works in the active channel by carrying out works in the "dry", through use of temporary bunds where possible;
- minimisation of the area of disturbance in the active channel by the staging of river channel reshaping work from downstream to upstream in 500 lineal metres stages, which will be completed and stabilised prior to commencing the next stage;
- minimisation of the daily work duration in the active channel to 12 hours per day with 2 consecutive work free days within every 7 days to allow the river to return to ambient water quality, relieving the aquatic habitat from sediment exposure every day;
- construction activities outside of the active channel are conducted in a staged and confined manner with progressive stabilisation to minimise the extent and duration of land disturbance associated with each activity;
- treatment of sediment discharges from activities outside the river corridor; and

monitoring, using continuous turbidity sensors and grab sampling, to ensure erosion and sediment control measures meet the Project performance criteria and use of adaptive management measures when performance criteria are not met or triggers are exceeded. With the proposed management measures in place, potential adverse effects associated with the construction of the Project on water quality will be minor.

Groundwater/hydrogeology

The Project works could potentially affect groundwater quantity and quality. In particular the proposed riverbed reshaping, and the construction of piles within the Waiwhetu aquifer, could potentially result in adverse groundwater effects.

The riverbed reshaping is anticipated to result in slightly increased shallow groundwater discharges to the river within the Project area. Controls on sediment discharges during the riverbed works will minimise any potential adverse effect on groundwater quality.

Construction of piles into the Waiwhetu aquifer could potentially result in contamination of the aquifer and mean depressurisation of the aquifer is incorrectly constructed. The proposed construction methodology for the piles that will penetrate the Waiwhetu aquifer is considered a robust and proven construction methodology to address the potential quality and quantity risks to groundwater.

Conditions and management plans are proposed to ensure appropriate controls are implemented during the works. With the recommended conditions and management measures, it is considered that the effects of the project on groundwater can be appropriately managed such that they will be only minor.

Geomorphology

Short-term effects on geomorphology during the Project construction phase could include exposure of erosion-prone riverbanks to flooding, sediment release resulting in increased turbidity, sediment

transport and deposition downstream, and channel and bank edge distortions. These Project construction effects will be minimised by staging the sequence of works in the river corridor, restricting working areas and re-establishing exposed banks and disturbed berm areas as soon as possible, such that only minimal adverse short-term effects on geomorphology are expected during Project construction.

Long-term effects on geomorphology anticipated to occur from the Project include increased deposition of gravel along the upper reach above the existing Melling Bridge, and reduced deposition along the lower reach below the new road bridge, allowing for an easier and less disruptive sediment management regime. In addition, the increased width of the active channel will allow a more natural channel sinuosity and meander mobility, leading to an overall improvement enhancing Te Awa Kairangi's geomorphic condition and having a positive effect on the natural character of the river.

Freshwater ecology

Short-term adverse effects on freshwater ecological values during the Project construction phase could include the temporary modification of freshwater habitats, impacts effects on freshwater fauna, temporary fish migration and spawning restrictions, and water quality effects resulting from sedimentation. These Project effects will be minimised through the implementation of fish salvage protocols, good practice erosion and sediment control measures, and construction methodologies, such that the overall effects during the Project works are expected to be minor.

Potential long-term adverse effects anticipated to occur from the Project include reduced fish passage within the tributary sites and loss of stream ecological function and habitat area within a small tributary next to Harbour View Road. A variety of measures to avoid, minimise and mitigate the long-term effects of the Project are proposed to be implemented. Residual adverse effects resulting from the loss and modification of stream habitat which cannot be avoided or mitigated are proposed to be addressed by offsetting, which is aimed at achieving no net loss of ecological function.

Overall, the proposed mitigation and offset measures are expected to appropriately address the long-term effects of the Project on freshwater ecology, with overall effects on ecological values expected to be minor.

Terrestrial ecology

Eight vegetation/habitat types have been identified within the Project area. These habitats range in ecological value from negligible to high. The primary impact will be on the tall stature exotic vegetation, namely willows that have been planted for flood protection - 15.9 ha of this habitat type will be cleared. While this vegetation type has limited botanical value, it provides habitat for common native birds and the native carnivorous land snail *Wainuia urnula* and has been assigned an overall ecological value of 'Moderate'. A further 1.65 ha of mixed broadleaved forest and scrub, also assessed as having 'Moderate', ecological value is proposed for removal. The other vegetation/habitat types impacted are considered to have Negligible to Low ecological values, except for gravel beach habitat considered to be High value, which will be temporarily removed.

A total of 23.9 ha of vegetation/habitat mapped within the Project area is proposed for removal. This calculation does not include the gravel beach habitat as its spatial extent varies naturally and thus has not been measured.

Three nationally Threatened and At Risk plant species were identified in the Project area (plus two naturalised native species), and several other regionally Threatened or At Risk species could potentially occur in the Project area but were not confirmed during site investigations. Numerous Threatened or At Risk bird species are known to use habitat downstream of the Project area and likely disperse along the river corridor, through the Project area, on occasion. Notable species confirmed as regularly using the Project area include red-billed gulls, pied shag, black shag and New

Zealand pipit. No Threatened or At Risk terrestrial invertebrate species were identified in the Project area, but two notable species, the native land snail *Wainuia umula*, and the velvet worm *Peripatoides novaezealandia*, were incidentally recorded. One species of lizard, the Not Threatened northern grass skink was recorded in the Project area, but the mixed broadleaved forest and scrub adjacent to SH2 has been assessed as potentially supporting other lizard species including At Risk geckos and skinks.

A variety of measures to avoid, minimise and mitigate the potential adverse effects of the Project on terrestrial ecological values are proposed to be implemented. These measures include pre-clearance surveys to ensure birds are not nesting within areas to be cleared, seasonal restrictions on vegetation clearance in higher-value habitats, and revegetation to replace lost habitats.

Overall, the proposed mitigation measures will appropriately address the adverse effects of the Project on terrestrial ecology, with overall adverse effects on terrestrial ecological values expected to be low to very low.

Marine ecology and coastal avifauna

It is unlikely that there will be any more than a negligible amount of Project-related fine sediment that will reach the marine environment. This means construction activities will result in an overall very low level of effect on both marine ecological values and coastal avifauna downstream of the Project area in and around the Wellington Harbour. Stormwater treatment will improve operational phase water quality and result in a net gain in ecological value resulting from the Projects operational phase.

Proposed mitigation measures during construction include the implementation of best practice erosion and sediment control measures, and minimisation of production of fine sediment.

Traffic and transportation

The Project delivers the following significant positive transport and traffic effects:

- The Project will support and enable an increase in the mode share for active and public transport modes;
- Improved safety to cyclists and pedestrians within Lower Hutt as a result of the additional paths and crossing facilities delivered by the Project;
- Improved multi-modal access to the new Melling Station and between the new Melling Station and the Lower Hutt city centre as the new bridge provides a more direct connection over Te Awa Kairangi, which is segregated from vehicular traffic;
- More reliable bus journeys arising from the signalisation of current roundabouts in the Lower Hutt city centre; and
- Improved safety on SH2 and a safer and less congested environment in central Lower Hutt as a result of more through traffic movements occurring on SH2 as the delays at Melling Interchange are removed by the grade separation.

Some adverse effects will arise from the Project, including changes to property access in some locations.

The Project results in the total reduction of 711 car parking spaces. The reduction in carparking could have a moderate adverse effect on the safety for all road users if appropriate mitigation through the management of available parking is not undertaken.

The construction of the Project will take several years and cover a wide area of Lower Hutt. There will be delays and localised access restrictions for periods. During some phases of construction there will also be adverse effects on the reliability and journey times through SH2 and for access and egress to Lower Hutt central city. The magnitude of these effects varies during the construction with moderate effects over longer periods, and significant effects for some shorter periods.

To mitigate adverse effects, it is proposed that a comprehensive review of the management of all public parking will be undertaken through developing a Transitional Parking Plan which identifies the optimum allocation of spaces between short and long stay parking. The frequencies and hours of operation of public transport are recommended to be increased where required to support mode shift away from private cars to mitigate the reduction in available parking.

A construction traffic management plan is proposed, which will address temporary routes for pedestrians and cyclists, measures to limit delays on SH2 and other key routes to minimise safety effects and delays during construction.

Overall, the Project will have significant positive transport and traffic effects once complete and moderate adverse effects because of the carparking reduction. During construction several moderate adverse effects arise as a result of direct construction movements and traffic potentially diverting onto less suitable routes to avoid delays

Noise and vibration

The operational effects of noise and vibration from the Project on individual sites have been shown to range from a generally positive acoustics outcome through to a negligible adverse effect. The exceptions to this are in respect of two sites in High Street where local road changes create a minor to noticeable change to noise levels. Mitigation will be offered to the relevant building owners to address any noticeable effects, where this is practicable.

Although construction noise modelling indicates that construction noise levels are likely to exceed the recommended noise limits at numerous noise sensitive receivers, implementation of best practicable option (BPO) mitigation measures (e.g. noisy works within standard construction hours, use of quietest practicable machinery) is expected to mitigate construction noise effects to an acceptable level. Similarly, although vibration risk levels are assessed as high for some properties, construction vibration effects are anticipated to be effectively managed through the implementation of the BPO mitigation measures. A Construction Noise and Vibration Management Plan will be implemented to manage construction noise and vibration effects.

Air quality

The operational air quality effects of the Project on the nearest highly sensitive receivers have been evaluated. This assessment demonstrates that the Project is likely to have minor effects on air quality with incremental increases in the effects of SH2 traffic flow and reductions in effects along key local links, such as Ewen Bridge and Queens Drive. Ambient PM₁₀ and NO₂ concentrations in the area are predicted to continue to remain well within the health-based assessment criteria levels. As a result there is unlikely to be any material increase in exposure of people in the local environment to ambient air contaminants.

Construction activities including demolition, earthworks, vehicle movement and material handling will result in the generation of dust and other construction emissions to air. The local receiving environmental is reasonably sensitive and includes high and moderate sensitivity urban activities within 200m of the works in places. As a result, a high standard of dust management is will be applied to mitigate potential air quality effects. ,With these measures in place, it is considered that offensive or objectionable nuisance or significant air quality impacts effects can be avoided, and residual effects will be minor at most in scale.

Archaeology and historic heritage

The archaeology and historic heritage assessment identified 20 known archaeological and/or historic heritage sites within and immediately adjacent to the Project area. The Project area is already heavily modified and most archaeological/historic heritage material and features are likely to have already been destroyed because of previous activity. Adverse effects on archaeological sites will be avoided to the extent practicable. Where this is not possible, mitigation measures include:

- Active monitoring of earthworks in areas of significance and an On Call Procedure in the event of unexpected discoveries.
- Visual and virtual records of representative examples of the buildings scheduled for demolition.
- Installation of interpretive material detailing specific archaeological and historic heritage sites and general history of Māori occupation and culture.
- Feasibility assessment to determine the potential to relocate and reuse the existing Melling Station.

Separate to the RMA approval process, a single general archaeological authority for the Project will be sought from Heritage New Zealand Pouhere Taonga. Overall adverse effects on known and potential archaeological and historic heritage values are likely to be low (less than minor), and mitigated to the extent practicable.

Contaminated Land

A Preliminary Site Investigation (PSI) has been undertaken over the Project area. The PSI identified 22 potentially contaminated sites (based on the presence of current and historic land use) within, and adjoining, the Project area. The moderate and high risk potentially contaminated sites will be examined through a Detailed Site Investigation prior to construction works commencing.

A Contaminated Land Site Management Plan will then be developed that will identify the measures to manage potential effects on human health and the environment from working in or near contaminated sites during construction. By implementing this, potential adverse effects will be adequately managed, such that the overall post-mitigation level of adverse effects from contaminated soil will likely be minor.

Landscape and visual impact

The Project works will have both adverse and positive landscape, visual amenity, and natural character effects. RiverLink will transform the landscape along this section of Te Awa Kairangi and greatly improve how the community experiences this environment and moves to and from the wider transport connections and the central city streets. This provides significant landscape and visual benefits.

During the construction phase of the Project, the effects will be moderate to high adverse for most aspects of landscape. Detailed construction management and sequencing will manage these effects, limiting the extent of adverse effects at any one time and ensuring the long-term positive effects of the Project are realised as soon as practicable in the programme.

Overall, and given time for the new naturalised patterns in the active channel and the significant areas of planting to re-establish, the operational effects of the Project will be moderate to moderate-high positive. In the lower reach of the river the character and quality of the landscape will shift from a car and willow dominated landscape to an active river landscape, city-community interface and multimodal transport node providing significant positive effects. In the upper reach there will be marked natural landscape and natural character benefits due to the widening of the river, use of indigenous planting for flood protection and its informal recreation character will be enhanced.

Natural hazards and geotechnical risk

There are several natural hazards (fault rupture, ground shaking, lateral spreading, regional uplift/subsidence, slope instability on riverbanks) that could cause severe effects on Project elements, albeit the stopbanks and new bridges will be substantially more resilient to ground based natural hazards than the existing infrastructure. Any risks assessed as tolerable risks and low risk in terms of the relevant planning policies relating to natural hazard management and risk effects will be mitigated through design and construction.

The Project does not cause or exacerbate land based natural hazards in other areas.

Natural hazard risks to the Project will be addressed adequately and appropriately through standard detailed design and the Building Act 2004 approvals required for the structures concerned. Such design and construction can will mitigate the effects of many of the natural hazards.

Cultural values

There are sites of significance to Māori within the Project area, and Te Awa Kairangi is of particular importance. The Project area has a strong association with iwi and hapū, and was the site of transitional pā, in addition to Te Awa Kairangi being a mahinga kai. The land based sites of significance have already been modified or destroyed to such a degree that it is considered unlikely that works will damage or destroy the known archaeological sites with cultural values. Mana Whenua generally support the works.

The proposed mitigation measures include the archaeological discovery protocols and procedures, treatment of stormwater before discharge to Te Awa Kairangi, recognition of Māori sites and history through the design as set out in the Urban and Landscape Design Framework, as well as site interpretation and naming, and the geomorphology measures proposed to enhance indigenous fish species habitat.

Social and recreation effects

The planning, construction and operational phases of the Project have the potential to generate both positive and adverse regional and local social effects. The Project is anticipated to provide significant social and recreational benefits to the local and regional community. The Project has a high level of support from the community because of the social benefits that are anticipated. These benefits include improved pedestrian and cycle connection, improved public access to the river contributing to recreational amenity, and, the construction of stop banks that will mitigate against future flood events, allaying the community's fears of such events particularly with regard to the potential loss of property and life. The Project will have some significant adverse social impacts effects and these are predominantly related to the construction phase that will extend over a minimum of four years. Overall, the potential adverse impacts effects can be mitigated to a satisfactory level, and the ultimate benefits of the project will far outweigh these adverse effects.

Economic effects

Construction and operation of the Project is expected to provide overall a significant net positive economic benefit to the local businesses, industries and economies of Lower Hutt City and the wider Wellington Region. The Project will generate significant positive effects during operation and construction, through increased employment, increased revenue to local businesses, urban renewal, flood resilience and transport improvements. The Project will also deliver indirect economic benefits such as increasing the night time and visitor economies in the Lower Hutt central city, improving access to skilled workers, additional economic activity from urban agglomeration and improving workforce amenity. Overall, the construction and operation of the Project is anticipated to provide significant net economic benefits to Lower Hutt.

The economic assessment has concluded that there are three matters with potential low adverse effects to Lower Hutt, relating to the loss of employment land, reduced movement and accessibility during construction and reduced car parking during construction and operation. However, they do not require specific mitigation strategies or conditions as their impact is low or can be addressed in the Construction Traffic Management Plan for the Project.

Network utilities

There are a large number of existing infrastructure networks throughout the Project area ranging from local service connections to regionally significant rail, water, electricity and gas transmission infrastructure. Given the scale of the Project, adverse effects on network utility infrastructure are anticipated and include effects from temporarily or permanently relocating existing network utilities and from construction activities.

The Project team has consulted with network utility operators to identify the relocation and/or protection of network utilities and to develop appropriate measures to manage adverse effects on network utilities during the construction and operation of the Project. There are well-established procedures across the industry for the relocation and/or protection of network utilities arising from construction activities.

Potential adverse effects on network utilities have been avoided through design of the Project, where practicable, or will be mitigated through relocation as part of the construction of RiverLink. Any adverse effects during construction can be managed through appropriate construction management measures and conditions.

Property and land use

The Project affects commercial, residential, and industrial land uses on both sides of Te Awa Kairangi between the Kennedy Good Bridge and Ewen Bridge. In addition, public land comprising roads, the river corridor, etc is also effected.

The main property effects of the Project are:

- Properties with land that is directly required for the Project;
- Properties within close proximity to the Project; and
- Potential business disruption effects.

The land holdings range from land already acquired by Project Partner(s) for RiverLink, and other public and private land holdings. Some private properties need to be purchased outright and there are some properties where part acquisition will be required. All property owners whose land is directly affected by the Project have been consulted and are aware of that their property is required for the Project. Negotiations with landowners and the relevant Project Partner(s) are ongoing.

Properties within close proximity to the Project are also subject to potential adverse effects and have been identified and consulted, with effects and mitigation considered through the technical assessments, including those covering social effects, traffic, noise, air quality and visual amenity.

Management of Effects

The assessment of effects on the environment identified a range of positive and adverse actual and potential effects on the environment from the construction and operation of RiverLink.

The consent design of the Project has sought to avoid adverse effects to the extent practicable through the iterative design and consideration of alternatives processes, which have been informed by numerous technical specialists, and the indicative construction methodology.

Key to the future management of effects is the development and implementation of a suite of measures, including conditions, management plans, monitoring, and maintenance requirements. Collectively, this will form the Project delivery framework.

Based on the mitigation and monitoring measures identified in the Application, a suite of designation and resource consent conditions are proposed to ensure that the potential adverse effects that might arise from the construction, operation and maintenance of the Project will be appropriately avoided, remedied or mitigated. The proposed conditions address pre-construction activities (including enabling works), requirements relevant to the detailed design process, management plans, monitoring as well as maintenance and the ongoing operation and maintenance of the Project.

Conclusion

RiverLink is a key partnership project for Greater Wellington, Waka Kotahi NZ Transport Agency and Hutt City Council, together with Mana Whenua partners Taranaki Whānui and Ngāti Toa. The RiverLink project will result in significant benefits for Lower Hutt and the present and future generations of people living there.

The effects assessment has identified a range of positive and potential adverse effects. A comprehensive mitigation and management framework is proposed to manage potential adverse effects, including offsetting where required. Taking into account the proposed suite of resource consent and designation conditions, potential adverse effects associated with construction and operation of RiverLink will be managed to an acceptable level.

The Project has been assessed as being consistent with overall objectives and policies of the relevant planning documents, and the purpose and principles of the RMA.

RiverLink will create a significant positive legacy for Lower Hutt and the Wellington Region.