

New Zealand Transport Agency

**SH2 Melling Intersection**

**TAIP Re-evaluation**

Accelerated Findings Report

Final | 16 October 2018

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## Executive Summary

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The Melling Intersection project along the SH2 corridor in Lower Hutt forms part of an inter-governmental flood mitigation and urban regeneration project known as RiverLink. NZTA is responsible investigating the Melling intersections and the connecting Melling Link bridge that crosses Hutt River, which is currently susceptible to flooding.

The proposed interchange and subsequent increased bridge clearance is intended to:

- Increase resilience to events such as flooding;
- Provide certainty of investment, enabling adjacent works to proceed;
- Increase travel choices to public transport via walking and cycling improvements;
- Improve safety;
- Improve journey times

Approximately \$1bn worth of infrastructure is at risk of flooding around the Lower Hutt area, with Melling Link bridge and parts of SH2 experiencing closure due to surface flooding on average every 10 weeks. The corridor also experiences closures for other reasons on average on a weekly basis.

HCC and GWRC are seeking to deliver increased flood mitigation and support urban regeneration in Lower Hutt as part of the growth strategy for the Hutt Valley. The Melling Link and intersection improvements are integral to the overall urban regeneration objectives and are a key enabler for the implementation of the flood protection improvements, due to the low Melling Link bridge clearance. The project also aims to reduce road severance for pedestrians and cyclists within central Melling and across the SH2 corridor to encourage access to services and to public transport. The redesign of the Melling intersection will also improve the safety and journey time performance of the network.

A review of the problems, benefits and investment outcomes as part of the re-evaluation processes has been undertaken and concluded that the case for increasing access and improving network resilience remains strong within the strategic context, especially when the transport improvements are considered as enablers to adjacent projects and investments.

To proceed in the short term, it is recommended that the Agency complete the Detailed Business Case (DBC) for the Melling Intersection, and designation and regional consents be sought for the intersection improvements.

In the medium term, it is recommended the Agency monitors partner and private sector investment in the Melling area to confirm the project is meeting wider urban regeneration objectives.

In the longer term it is recommended that the Melling Intersection improvements be implemented to support improved resilience.

# 1 Introduction and Context

## 1.1 Regional Context

Lower Hutt is Wellington's second largest city and employment centre – home to a population of 104,000 people with targets of 110,000 by 2032, as stated in the 2012 Urban Growth Strategy. However, the Lower Hutt CBD has suffered from poor occupancy of its commercial and retail buildings and a lag in development of apartments within the CBD. Much of the existing population is situated on floodplains next to Te Awa Kairangi (Hutt River) with insufficient flood management posing a significant risk to the people of Lower Hutt, their livelihoods, and an estimated \$1 billion in assets that are likely to be inundated during a 1-65-year flooding event.

The Melling Intersection is located along State Highway 2 (SH2) (Figure 1) in Lower Hutt – part of the key inter-regional route linking the city of Wellington with the Wairarapa region. The wider SH2 corridor runs along the east coast of the north island through to Wellington, connecting the Hawkes Bay cities of Gisborne, Napier and Hastings to Wellington. The Melling Link Bridge allows the Melling Link – the road connecting the Hutt City Centre to the SH2 corridor via the Melling Intersection – to cross the Hutt River, and provides the only direct access to the Hutt CBD from the SH2 corridor.

Within the study area, SH2 is a National (High Volume) route south of the Melling Intersection and a National Route north of the intersection carrying in the order of 35,000 vehicles per day, with 3-5% heavy vehicles observed. The intersection provides an important multi-modal access function for communities (with strong commuter populations) traveling within the Lower Hutt area and to destinations north and south of Melling.

It is a complex intersection with two sets of traffic signals and four intersecting roads connecting the Western Hill suburbs of Tirohanga and Harbour View to SH2, the Lower Hutt Central Business District (CBD) via Melling Link bridge, and the mixed-use suburb of Melling via Block Road. Block Road passes under the Melling Link bridge before connecting to SH2 at the northern end of the current SH2/Melling Intersection and is susceptible to stormwater and river flooding.

Adjacent to the intersection is Melling Railway Station (at the end of the Melling line) connecting to Wellington. Melling Station is served by up to 3 trains per hour in each direction during the AM peak. A 2010 passenger survey suggests boarding numbers of between 170-240 across the three-hour AM peak. The station is supported by a 200 space Park 'n' Ride facility within the vicinity of the station.

The pedestrian and cycling environment between the Hutt CBD, Melling Station and the Western Hill suburbs can best be described as inadequate, with movement restricted to a narrow pedestrian walkway on the bridge, and traffic dominated intersection treatments on both sides of the river. Cyclists are forced to use either using the pedestrian pathway or the narrow traffic lanes on Melling Link bridge.



These poor transport connections impact the amenity and functionality of the area for pedestrians and cyclists and has reportedly raised concerns of personal safety.



Figure 1 - Map of Project Area

Local commercial and retail growth is understood to be tracking with wider growth metrics leading to further investment anticipated at Queensgate Shopping Centre.

## 1.2 Project Context

### Partner Projects

Hutt City Council (HCC) and Greater Wellington Regional Council (GWRC) have identified Melling as an area for investment and improvement. Through the RiverLink project and supporting Programme Business Case, investment in infrastructure to mitigate risk of flooding and to deliver public realm improvements to stimulate private sector investment has been outlined by both parties along with NZTA. Furthermore, both HCC and GWRC have committed funding to their portion of works in their respective long-term plans.

The RiverLink project seeks to invest over \$300m into the flood mitigation, transport and public realm upgrades, with both HCC and GWRC committing funding for the works in their respective long-term plans. The RiverLink plan is the cornerstone project of the 'Making Places' programme – HCC's long-term development strategy to transform the CBD through an increased connection to the Hutt River.

NZTA's role as part of this multi-agency approach is to provide an intersection design that allows for the increase in clearance of the current Melling Link bridge (owned by HCC) to enable better flood protection and provide assurance of access to SH2. Subsequent opportunities exist to improve the Melling Intersection through these improvements. The interface between the Transport Agency's objectives and the GWRC and HCC objectives (Figure 2) highlights that while the

transport improvements are not the end goal, they are a critical enabler for the other funded initiatives to occur.

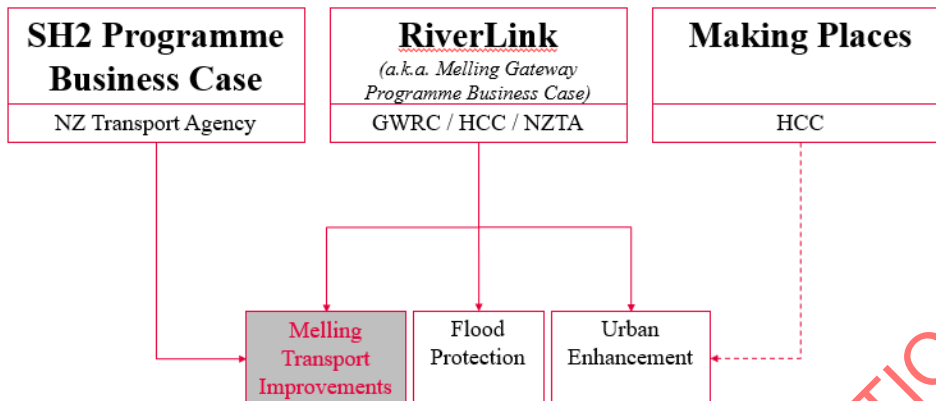


Figure 2 - Interface between transport improvements and other initiatives

## Project Status

The RiverLink project is funded and seeking confirmation of NZTA's involvement in the Melling Intersection project. The agency's involvement will allow the final form of the intersection to achieve optimal outcomes through an integrated government agency approach, with the final design achieving targets for all parties involved. The NZTA Melling Intersection project has completed its PBC and IBC, with the DBC significantly progressed but currently on hold pending the re-evaluation. A short-list of long-term options was specified in the IBC.

Other nearby NZTA projects including the Petone to Grenada Link Road and the Cross Valley Link were thought to impact the operation of the Melling Intersection, but the impacts of both projects on the Melling Intersection were tested and are anticipated to be negligible.

The current objectives for this work include:

- Improving the safety of all road users by reducing the collective risk from medium-high to medium (including intersections)
- Contributing the reliability of the SH2 corridor by reducing the maximum delays on SH2 between Dowse and Grounsell from 5 minutes down to 2 minutes
- Improving the access to quality transport choices in the vicinity of Melling by improving the connectivity and level of service of the walking and cycling commensurate with their function in the Network Operating Plan
- Improving the security and availability of the road network by reducing the number and duration of unplanned events down to a level of service consistent with a medium resilience risk.



## 2 Overview of re-evaluation findings

### 2.1 Problems & Investment Objectives

A review of the project ILM as part of the re-evaluation processes concluded that the case for increasing access and improving network resilience remain strong when the transport improvements are considered as enablers to dependent projects and investments.

However, the investment objectives stated in the IBC do not emphasise the wider multi-agency benefits to a sufficient degree and place a high level of emphasis on safety. While the occurrence of DSIs within the project area is noted, Melling's safety record does not justify the level of investment proposed when compared with other high-risk intersections nationwide.

#### Resilience Issues

Journeys through the Melling Intersection are being impacted regularly by unplanned (non-natural) and natural (weather and natural hazard) events. The most common cause of closure on the network is heavy rainfall events, with the SH2 highway being particularly susceptible to surface flooding. Road crashes – while generally not serious; reflected by the relatively low DSI numbers as well as the high proportion of rear-end crashes (42%) – are frequent and are the primary cause of unplanned events.

Table 1 - Summary of key unplanned events (TREIS 2011-2015; as outlined in IBC)

Event Type	Frequency of Events (2011-2015)
Crashes	~75 events including 1 road closure (~1 per 4 weeks)
Obstruction	~50 events (~1 per 5 weeks)
Surface Flooding	27 events including 3 road closures (~1 per 10 weeks)
Slips or Fallen Trees	11 events (~1 per 5-6 months)
Traffic Signal Fault	~55 events (~1 per 5 weeks)
<b>Total Events (if all in isolation)</b>	<b>~216 events over a 5-year period (~1 per week)</b>

These unplanned events reduce the capacity of the surrounding transport network by a significant degree, as the SH2 corridor is the key inter-regional route linking the Hutt region to Wellington. Furthermore, the primary alternative route is via SH58 and SH1; the former being a route through challenging topography that adds an additional 30km of travel between Wellington and Lower Hutt.

## Access Issues

The Melling Link bridge is one of three connections between SH2 and Lower Hutt, it sees the highest AADT of 23,400 vehicles per day as it is also the most direct connection. The SH2 corridor is a 4-lane divided carriageway, with Melling Link bridge featuring a 2-lane undivided carriageway.



Figure 3 - Daily flows within project area

The capacity of the intersections was modelled in 2010 to forecast the 2026 volume capacities within the project area. It was deemed that a high proportion of movements through intersection are approaching or already exceeding capacity (i.e. the right turn bay length on the northbound SH2 lanes is regularly exceeded, impacting through traffic), with more movements approaching/exceeding capacity during the PM peak than during the AM peak.

This has resulted in queueing occurring at the Melling Intersection during peak hours, which purportedly results in increased rat-running or users choosing to not travel at certain times.

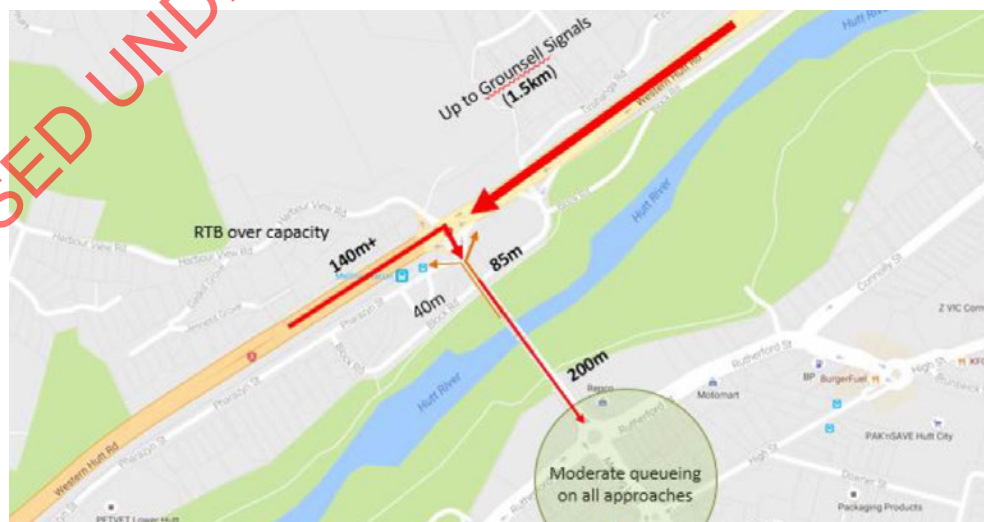


Figure 4 - Peak period queuing (AM)

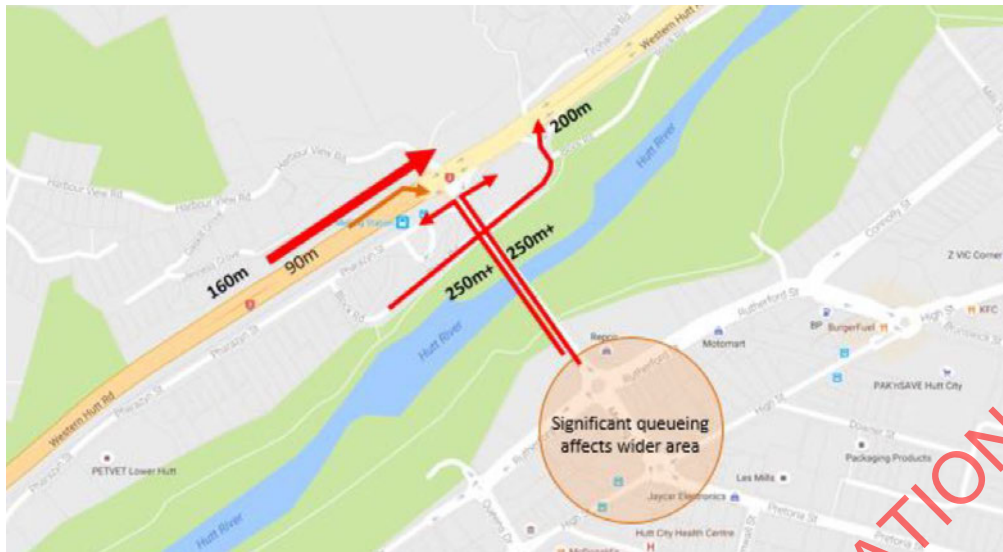


Figure 5 - Peak period queuing (PM)

There are also significant hindrances to the increased patronage of a wide range of travel modes. While the Melling Railway Station is situated in a prime location for access from the Hillside suburbs, it is not well located to provide good access (in conjunction with the location of the Melling Link bridge) to the Hutt CBD due to the distance and the route between the station and CBD being indirect, unintuitive and approximately 500 metres longer than a direct route connecting the Melling Station with the CBD.

Furthermore, Melling Link bridge is the only link connecting the Hutt CBD, Melling Station and the hillside communities. Both SH2 and the Hutt River act as barriers connecting people from one side to the other. The Melling Link bridge itself also presents a barrier for walking and cycling due to the lack of facilities commensurate with encouraging more walking and cycling activity – outlined further in the project IBC.

There are limited Park ‘n’ Ride facilities to meet the demand for passenger train services. The car parks associated with Melling Station are fully occupied before the last morning peak hour train has departed.

Several MetLink bus services travel through the project area; however, only one features a stop at Melling Station. There are no services in the suburbs of Harbour View and Tirohanga, and it is noted that the steep topology of these suburbs could be a hindrance to people making the decision to walk or cycle to Melling Station or Lower Hutt CBD.

## 2.2 Integrated Land-Use, Transport Planning & Mode Neutrality

The Melling Intersection links two areas with very different land-uses, with the western hillside suburbs of Harbour View and Tirohanga being heavily residential and the eastern banks of the Hutt River predominantly featuring a commercial land-use (Hutt CBD). The Hutt City Council is projecting a total population increase of 11,000 by 2032 across 6,000 additional homes in the city as outlined

in the Hutt City Urban Growth Strategy, with over 1,300 of those as apartments in the CBD. Both the RiverLink and Making Places strategies acknowledge that a key approach to revitalising the CBD and achieving the wider intended benefits is through linking the core of the city centre to strategic movement routes.

The IBC notes that there is currently a heavy emphasis on car travel within the project area due to the low-quality facilities for walking, cycling, park 'n' ride and few bus connections. However, the proximity of the railway station, residential areas, commercial areas and the CBD mean that there is a significant opportunity for alternative modes to be real and attractive travel choices.

### 2.3 Re-evaluation Findings

The Investment Logic Map (ILM) for the Melling Intersection transport improvements follow through from the Melling Gateway PBC (which aims to improve the resilience of the Hutt River flood plain and improve accessibility across the river and SH2 corridor) and the SH2 Ngauranga to Te Marua PBC (which aims to provide a more holistic approach to moving people/goods throughout the Hutt Valley). The re-evaluation deemed that the issues initially identified in both PBCs flow through to the problem and benefit statements for the transport improvements and are generally well aligned with the new strategic environment. There is no indication that the new context changes the relevancy of the existing ILM.

Furthermore, the investment objectives used in the IBC did not preclude any potential options from being considered supporting their suitability within the new strategic context as well as aligning with the NZ Transport Agency's intervention hierarchy. There was sufficient evidence of the consideration of mode-neutrality.



## 3 Recommended Programme

### 3.1 IBC Recommended Options

The IBC recommended a short-list with four potential long-term options – three of which were taken to public consultation. All four featured a number of common design elements such as more lanes on the Melling Link bridge, increased capacity for alternative modes, a grade-separated intersection at SH2 and the relocation of the Melling Railway Station.

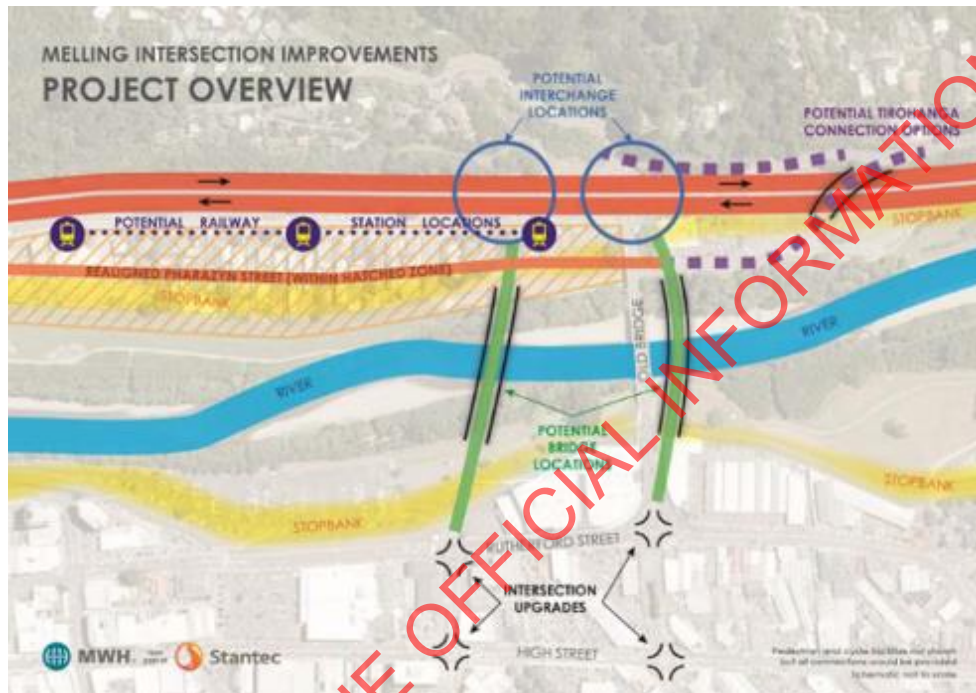


Figure 6 - Options recommended in IBC for further investigation

### 3.2 Proposed Programme

This project supports the wider suite of projects under RiverLink and is expected to support population growth, deliver infrastructure resilience for local and regional functions and drive regeneration into Melling. If successful in attracting investment as intended, RiverLink would prove to be a good example of cross government collaboration with urban regeneration outcomes.

To enable partner projects and investment, it is recommended that NZTA finalise the Detailed Business Case (DBC) and seek any required designation and regional consents for the land to accommodate the preferred design as a short-term outcome. Undertaking this step in the short to medium-term will provide the agency with a greater stake in the designation process to get better outcomes for the transport improvements making it easier to construct when the time comes.

It is recommended that the NZTA Melling Intersection project is progressed as a long-term project, subject to wider HCC, GWRC funding and the monitoring of private sector investment being realised in the short-medium term.

### 3.2.1 Short Term (<3 years)

HCC and GWRC project partners are seeking confirmation of NZTA's support for the wider RiverLink project. Both partners have committed funding to their portion of works in respective long-term plans, hence confirmation of NZTA's preferred design will enable wider flood mitigation and enhanced public realm project works to progress. It is recommended that the Detailed Business Case be completed, and designation and regional consenting be sought to enable the project to proceed when demand requires. The Detailed Business Case should also identify triggers as to when the transport improvements will be required, while being sensitive to the timeframe of works undertaken by HCC and GWRC.

### 3.2.2 Medium Term (3-10 years)

It is recommended to monitor partner and private sector investment in the Melling area to confirm that the project will be meeting wider urban regeneration objectives and attracting partner funding as intended.

Possible minor interventions such as local road intersection upgrades may be identified to address immediate safety issues. Furthermore, any long-term enabling works that may reduce the possibility of rework should also be identified in the medium term.

### 3.2.3 Long Term (10+ years)

As part of the wider suite of projects, the Melling Intersection upgrade will allow significant investment by HCC and GWRC to occur, intended at safeguarding around \$1bn in assets in Lower Hutt while encouraging new developments to enable an additional 2700 new jobs in the CBD.

Therefore, it is recommended that the project be proceeded to the implementation phase in the long term.

### 3.3 Alignment to the Transport Outcomes Framework & IAF

Activity	Timing			Key Benefits	Cost (\$m)	A transport system that improves wellbeing and liveability				
	Short (2018-2021)	Medium (2021-27)	Long (2028+)			Inclusive Access	Healthy & safe people	Economic prosperity	Resilience and security	Environmental sustainability
Allocate funding to allow the Detailed Business Case for the Melling Transport Improvements to finish	✓			<ul style="list-style-type: none"> <li>• Clarity on intended outcomes and quantity and return on investment</li> <li>• Assurance that the long-term proposed option can be implemented</li> </ul>	TBC	H	H	H	H	L
Finalise the co-investment plan	✓				TBC	H	H	H	H	L
Carry out designation and consenting to confirm NZTA’s role in the outcome of the Melling Intersection improvements, based on triggers for implementation identified in the DBC	✓				TBC	H	H	H	H	L
Re-evaluate market investment and monitor land acquisition to determine whether long term benefits are still valid		✓			TBC	H	H	H	H	L

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Implement the transport improvements			✓	<ul style="list-style-type: none"> <li>• Increase resilience to events such as flooding;</li> <li>• Provide certainty of investment, enabling adjacent works to proceed;</li> <li>• Increase travel choices to public transport via walking and cycling improvements;</li> <li>• Improve safety;</li> <li>• Improve journey times;</li> </ul>	\$110m to \$215m (based on IBC estimations)	H	M	H	H	M
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