Form 18
Notice of Requirement for alteration of a designation under s181 of the Resource Management Act 1991

TO: Hutt City Council
Private Bag 31-912
Lower Hutt 5040

FROM: KiwiRail
Wellington Railway Station
2 Bunny Street, Wellington
PO Box 593
Wellington 6140

Pursuant to Section 181(1) of the Resource Management Act 1991 (RMA) KiwiRail Holdings Limited (KiwiRail) gives notice of its requirement to alter a designation.

KiwiRail is a network utility operator approved as a requiring authority under Section 167 of the RMA. Refer to the Gazette Notice included in **Attachment B** of this Notice:

- The Resource Management (Approval of KiwiRail Holdings Limited as Requiring Authority) Notice 2013 (NZ Gazette, Notice Number 2013-go1447).

The designation to be altered, and the nature of the alteration is as follows:

The designation to be altered is designation reference NZR1 in the Lower Hutt District Plan. The purpose of the designation is 'Railway Purposes – Melling Branch'.

The nature of the alteration is a change to the boundary of the designation.

The site to which the requirement applies is as follows:

The area of the proposed designation alteration is shown on the Designation Plans included in the KiwiRail Assessment of Environmental Effects at **Attachment A**. The requirement applies to an area of land located between Te Awa Kairangi/Hutt River and State Highway 2. The requirement applies to 28 land parcels (including local roads). The land directly affected by the requirement is also identified in the Designation Plans.

The nature of the proposed work is:

The nature of the proposed work is for the alteration of part of existing designation NZR1 of the Lower Hutt District Plan as shown in the Designation Plans included in the KiwiRail Assessment of Environmental Effects at **Attachment A** of this Notice. This alteration will enable relocation of the rail line (and authorise the associated construction works) and protect KiwiRail's ability to extend the rail line beyond the relocated Melling Station and through the new Melling Interchange (grade separated) in the future as a consequence of works undertaken for the RiverLink project.

The nature of the proposed conditions that would apply are:

No conditions are proposed. Construction effects will be addressed through the preparation of an outline plan of works.

The effects that the proposed work will have on the environment, and the ways in which any adverse effects will be mitigated are:

The KiwiRail Assessment of Environmental Effects included at **Attachment A** contains a description of the existing environment (Section 2), and assessment of the Project's effects on the environment (Section 6), including an outline of proposed measures to avoid, remedy or mitigate the adverse effects of the Project.

Positive Effects

The positive effects of the Project relate to maintaining the option of a possible future rail extension north of Melling. The designation alteration also facilitates the broader benefits of the RiverLink Project of improved pedestrian and cycling access to the relocated Melling Station from Lower Hutt City Centre.

Adverse Effects

There will be a range of potential adverse effects during the construction and operational phases of the project, which are assessed in the following sections of the KiwiRail Assessment of Environmental Effects:

- RiverLink Project (section 6.1)
  - Construction and operational noise and vibration (section 6.1.1)
- Future rail extension (section 6.2)
  - Construction and operational noise and vibration (6.2.1)
  - Cycleway effects (6.2.2)

The NoR Report draws on information provided in the KiwiRail NoR Noise and Vibration Assessment Report.

Alternative sites, routes, and methods have been considered to the following extent:

The Melling Transport Improvements Single Stage Business Case (SSBC) reviewed and selected alternatives for the State Highway 2 interchange, using Multi-Criteria Analysis to systematically narrow and refine the options. All options required the relocation of the existing Melling Station.

The SSBC also considered two options for the location of the relocated Melling Station; 250m south of the existing station, or 500m south of the existing station directly opposite the proposed pedestrian bridge into the Lower Hutt CBD.

The proposed work and designation are reasonably necessary for achieving the objectives of the requiring authority because:

The designation alteration is reasonably necessary to meet the objectives of KiwiRail. Refer to Section 3.2: *KiwiRail Objectives* of the KiwiRail Assessment of Environmental Effects. In addition, all rail corridors nationally are currently designated by KiwiRail, both operational and non-operational corridors, therefore this alteration is necessary to continue achieving that outcome.

KiwiRail's function as a requiring authority under section 167 of the RMA (as per 'The Resource Management (Approval of KiwiRail Holdings Limited as Requiring Authority) Notice 2013') is *"for its network utility operation being the construction, operation, maintenance, replacement, upgrading, improvement and extension of its railway line"*. The designation alteration will assist KiwiRail in continuing to meet this function in relation to the rail network.

KiwiRail's objectives for the RiverLink Project (as per its' Memorandum of Understanding with Waka Kotahi) are to:

- Allow a potential future grade separated extension to the Melling Line under the Melling interchange.
- On completion of the RiverLink Project and as a result of any ongoing impact caused by the Project to the operation of the rail network, be, and continue to be, in no worse a position than it was prior to the commencement of the RiverLink Project in terms of the longevity, value, safety, on-going operational costs, quality, security of tenure or otherwise of the Melling Line.

The designation alteration is reasonably necessary for achieving these objectives because it will:

- Provide for the realignment of the rail line while having no other ongoing impact on the operation of the rail network.
- Not preclude a future grade separated extension of the Melling Line under the Melling interchange.

The proposed designation is reasonably necessary as a planning tool, as it identifies and protects land required for the Project and will enable KiwiRail to carry out the proposed work. The principal reasons for requiring an alteration to the designation to facilitate the work to which this requirement relates are:

- It will allow the land required to be identified in the Operative Hutt City District Plan, giving a clear indication of the intended use of the land;
- It will provide certainty for landowners of the intended use of the land and the possible work to be undertaken at some time in the future; and
- It will protect the land from future development which may otherwise preclude construction of the proposed work.

The following resource consents are needed for the proposed activity and are being applied for:

No resource consents are needed for the proposed work.

The following consultation has been undertaken with parties that are likely to be affected:

Properties affected by the designation alteration are either already in the ownership of Greater Wellington Regional Council or are to be acquired by Greater Wellington Regional Council prior to Hutt City Council making a recommendation on the Notice of Requirement. Engagement activities including face to face meetings, workshops, hui, public open days, newsletters and online information are continuing for the RiverLink Project.

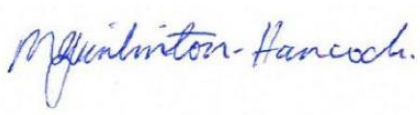
The consultation undertaken is detailed in Section 8: *Consultation and Engagement* of the RiverLink AEE Report.

Information required to be included in this notice by the district plan, regional plan or any regulation made under the Resource Management Act 1991:

KiwiRail attaches the following information required to be included in this notice by the district plan, regional plan, or any regulations made under the Resource Management Act 1991.

- Assessment of Effects on the Environment
- Supporting Technical Noise and Vibration Assessment Report
- Designation Plans

Signed on behalf of KiwiRail



Michelle Grinlinton-Hancock
KiwiRail RMA Team Leader
Pursuant to authority delegated by KiwiRail Holdings Limited

Dated: 29 July 2021

ADDRESS FOR SERVICE:

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AND

GHD Ltd
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Wellington

Attention: Mary O'Callahan
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Cell: 021 101 3603
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Attachment A – KiwiRail Assessment of Environmental Effects

Attachment B – Gazette Notice

Attachment A – KiwiRail Assessment of Environmental Effects

KiwiRail

NZR1 Designation Hutt City Council District Plan
Notice of requirement to alter an existing designation

July 2021

Table of contents

Table index

Figure index

Appendices

1. Introduction

Under section 181(1) of the Resource Management Act 1991 (RMA), KiwiRail Holdings Limited (KiwiRail), as the requiring authority for Designation NZR1 of the Lower Hutt District Plan, hereby gives notice of its requirement to alter the designation for the Melling Branch, at Melling.

KiwiRail is a requiring authority pursuant to section 166 of the RMA. As such KiwiRail is responsible for railway purposes designations throughout New Zealand, including Designation NZR1 of the Lower Hutt District Plan.

Designation NZR1 applies to the Melling Branch from Petone to Melling, with the designation title (and designated purpose) being 'Railway Purposes – Melling Branch'. It is noted that the requiring authority for the designation as listed in the Lower Hutt District Plan is the New Zealand Railways Corporation (NZRC). KiwiRail has since been established for the day-to-day operations of the rail corridor. KiwiRail have requiring authority status for all former NZRC designations.

The designation is being altered as a consequence of works undertaken for the RiverLink project.

For a period of time after this notice to alter this designation is confirmed there will be two NZR1 corridors in place in this section. This is to allow for construction activities to occur to disestablish the existing rail line that is no longer required.

Upon completion of the RiverLink realignment works, the existing NZR1 designation section that is no longer required will be removed (under s.182 RMA).

1.1 Purpose of this report

The purpose of this report is to provide an Assessment of Environmental Effects (AEE) to support a Notice of Requirement (NOR) for KiwiRail to be lodged with Lower Hutt City Council to alter existing designation NZR1 of the Lower Hutt District Plan.

1.2 Scope and limitations

This report has been prepared for the benefit of the RiverLink Project Partners and KiwiRail Holdings Ltd for the purpose agreed between GHD and these parties as set out in Section 1.1 of this report. No liability is accepted by this company or any employee or sub-consultant of this company with respect to its use by any other person. This disclaimer shall apply notwithstanding that the report may be made available to other persons for a permission or approval or to fulfil a legal requirement.

2. Site Description

2.1 Existing Designation Environment

The existing designation NZR1 extends from where the Melling Branch splits from the main Wairarapa Line in Petone, up to the termination of the line at Melling. The existing designation incorporates the rail line and vegetated strips adjacent to the rail line from Petone to Melling. It also incorporates the existing Melling Station.

2.2 Proposed Designation Environment

The proposed designation will shift slightly south-east of the existing designation (and rail) alignment. This shift in alignment will occur from where the rail line meets Pharazyn Street up to the location of the existing Melling Station.

This realigned designation will cross the following existing features from south-west to north-east:

- Pharazyn Street
- The north-western portion of industrial and residential sites on Pharazyn Street
- The Melling Station carpark
- Melling Branch just south-east of the intersection with SH2

2.3 Land Ownership

The properties KiwiRail seeks to be included into the designation is located within 28 separate but contiguous land parcels. The legal description, area, title and current ownership of these lots is provided at Table 1. Note that the last three parcels are existing road and rail lots, and therefore have no legal description or title.

Table 1 Proposed designation land ownership

Legal Description	Address	Area	Area of land to be designated	Title	Ownership
Part Lot 1 DP 16593	72 Pharazyn Street	5,919m^2	189m^2	WN41D/318	Wellington Regional Council
Lot 3 DP 20098	78 Pharazyn Street	1,139m^2	22m^2	WN41D/319	Wellington Regional Council
Lot 1-2 DP 20098	80A Pharazyn Street	550m^2	44m^2	WN807/74	Wellington Regional Council
Lot 1-2 DP 20098	80A Pharazyn Street	958m^2	11m^2	WN807/74	Wellington Regional Council
Lot 2 DP 20129	81 Pharazyn Street	499m^2	45m^2	WN789/99	Wellington Regional Council
Lot 1 DP 20129	82 Pharazyn Street	499m^2	54m^2	WN789/98	Wellington Regional Council
Lot 3 and Part Lot 2 DP 10668	84 Pharazyn Street	506m^2	66m^2	WN475/5	Camellia Investments Limited
Lot 4 DP 10668	85 Pharazyn Street	506m^2	77m^2	WN17D/1358	Wellington Regional Council
Lot 1 DP 26064	86 Pharazyn Street	582m^2	102m^2	WN26D/36	Wellington Regional Council
Lot 2 DP 26064	86A Pharazyn Street	1,414m^2	23m^2	WN26D/37	Wellington Regional Council
Unit 2 and Accessory Unit 2A DP 364357	88B Pharazyn Street	794m^2	24m^2	261600 & SRS 290585	Karen Elizabeth Thomson
Lot 1 DP 26826	88 Pharazyn Street	571m^2	129m^2	WND4/1240	Wellington Regional Council
Part Lot 14 DP 1731	89 Pharazyn Street	999m^2	115m^2	WN295/70	Pinkesh Rajandra Kansara & Rajendra Ratilal Kansara
Unit 11 and Accessory Unit 11A and 11B DP 68302	91 Pharazyn Street	1,220m^2	157m^2	WN36D/12 & SRS WN36D/26	Wellington Regional Council

Legal Description	Address	Area	Area of land to be designated	Title	Ownership
Unit 11 and Accessory Unit 11A and 11B DP 68302	91 Pharazyn Street	1,184m^2	172m^2	WN36D/12 & SRS WN36D/26	Wellington Regional Council
1/5 share in Lot 11 DP 1731 and leasehold in Flat 4 DP 77577	92 Pharazyn Street	1,149m^2	180m^2	WN43D/432	Wellington Regional Council
Unit 8 and Accessory Unit 8A and 1/4 share in Accessory Unit A DP 67115	93 Pharazyn Street	533m^2	150m^2	WN35A/591 & SRS WN35A/593	Wellington Regional Council
Unit 8 and Accessory Unit 8A and 1/4 share in Accessory Unit A DP 67115	93 Pharazyn Street	1,114m^2	34m^2	WN35A/591 & SRS WN35A/593	Wellington Regional Council
Lot 1 DP 21620	95 Pharazyn Street	546m^2	153m^2	WN903/60	Wellington Regional Council
Unit 6 and Accessory Unit 6A and 6B DP 77687	96 Pharazyn Street	1,043m^2	131m^2	WN43D/645 & SRS WN43D/647	Wellington Regional Council
Unit 2 and Accessory Unit 2A DP 308590	98 Pharazyn Street	888m^2	87m^2	33207 & SRS 68637	Wellington Regional Council
Unit 12 and Accessory Unit 12A DP 308588	98 Pharazyn Street	672m^2	18m^2	33195 & SRS 68641	Wellington Regional Council
Lot 1 DP 305377	100 Pharazyn Street	400m^2	42m^2	21607	Wellington Regional Council
Lot 5 DP 305377	N/A	2m^2	1m^2	21611	The Hutt City Council

Legal Description	Address	Area	Area of land to be designated	Title	Ownership
Part Lot 5 DP 1731	N/A	402m^2	1m^2	NZ Gazette 1971 p 625	Crown or Council
ROAD	N/A	6,025m^2	1,457m^2	N/A	ROAD
ROAD	N/A	10,400m^2	3,827m^2	N/A	ROAD
RAILWAY	N/A	7,973m^2	618m^2	N/A	RAILWAY

The majority of the above properties are owned by Greater Wellington Regional Council (GWRC). However, a number of properties are currently under negotiation to be acquired by GWRC. If remaining properties cannot be purchased through a willing-buyer willing-seller arrangement, compulsory acquisition of remaining properties will occur. It is expected that all properties will be in Project Partner ownership once this NOR is given effect to, and the relevant land parcels or part thereof will be transferred to KiwiRail ownership in due course to reflect the designation extent.

2.4 Surrounding Environment

The area to the north-west of the existing rail line is occupied by State Highway 2. Beyond this, vegetated reserve land and low-density residential uses extend up into the western hills. Pharazyn Street, containing a mix of industrial and residential sites is located to the south-east. Te Awa Kairangi (the Hutt River) is located further to the south-east. Industrial sites on Pharazyn Street are located to the south-west of the designation alteration area, while the Melling interchange is located to the north east of the existing Melling Station.

3. Background

3.1 Naming interpretation

For clarity, Figure 1 below outlines the areas of the designation subject to this Notice of Requirement, and details how they are named throughout this document. The two portions of realigned rail line are named as follows:

- **RiverLink realignment** (green dashes in Figure 1): This is the short piece of rail line that will be realigned to provide a rail track adjacent to the proposed new Melling Branch station. These are the works that will occur as part of RiverLink, extending only to the northern end of the new Melling Branch station.
- **Future extension** (red dashes in Figure 1): This is the future extension of the rail line beyond the new Melling Branch station. This future extension extends to the same location as the northern extent of the existing Melling Branch.

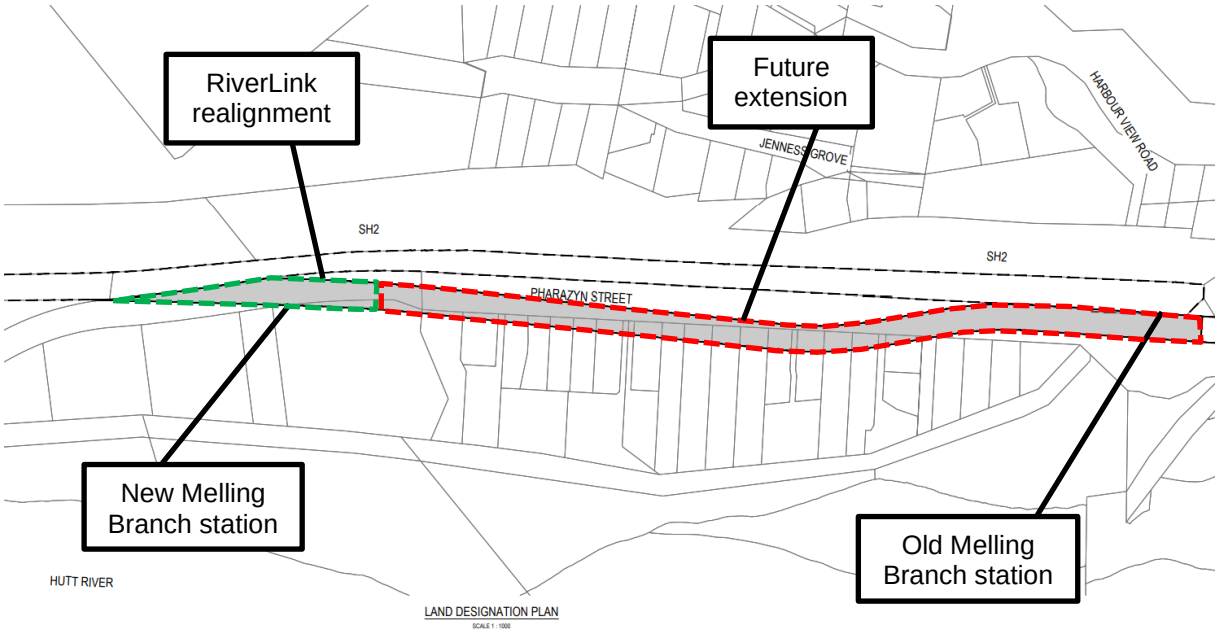

Figure 1 Interpretation

3.2 RiverLink

RiverLink is a project located within part of the existing NZR1 designation that combines three separate pieces of work for three government entities into one project, as described below:

- **Greater Wellington Regional Council:** Upgrades to flood protection in the vicinity of the Lower Hutt city centre, incorporating raising the existing stopbanks between Ewen Bridge and Mills Street, and instream works between Kennedy Good Bridge and Ewen Bridges to re-align, deepen and widen the active river channel. Public transport improvements including a new Melling Branch station and associated carparking.
- **Waka Kotahi NZ Transport Agency (Waka Kotahi):** Safety improvements to State Highway 2 at Melling, incorporating the replacement of the two signalised at-grade intersections of SH2/Harbour View Road/Melling Link and SH2/Tirohanga Road with a new grade separated interchange, construction of a 220m long road bridge with a direct connection across the River from the new interchange to Queens Drive, and removal of the existing Melling Bridge.

- **Hutt City Council:** Creation of six new development areas to integrate urban development with infrastructure works, and construction of a walking promenade located along the stopbank between Margaret Street and Andrews Avenue.

As part of RiverLink, a pedestrian and cycle bridge is proposed to be constructed across Te Awa Kairangi. This bridge is proposed to land on the Melling side south-west of the location of the existing Melling Station. Therefore, a new Melling Branch station is proposed to be constructed approximately 500m south-west of the existing station site, and the rail line itself will be realigned slightly south. In summary, a new Melling Branch station location is required, and the associated rail line realigned, to make way for the proposed new state highway interchange.

Due to the new location of the new Melling Branch station and realignment of the rail line, the existing designation NZR1 needs to be altered to reflect and accommodate these changes. This application authorises the RiverLink realignment works, and proposes to control construction effects within the RiverLink realignment section through preparation of an outline plan of works. Should the rail line be installed within the Future extension area at some stage in the future, an outline plan for those works will be prepared for works within that section at that time.

3.3 KiwiRail Objectives

KiwiRail assets and operations are affected by the proposed state highway interchange upgrade being undertaken by Waka Kotahi. In response to this, KiwiRail has outlined the following broad objectives to be achieved on completion of the highway interchange upgrade:

- The highway interchange upgrade will not foreclose the ability to extend the Melling Branch further north beyond the Melling interchange in the future.
- The Melling Project will allow a potential future grade separated extension to the Melling Branch under the Melling interchange.
- On completion of the RiverLink Project and as a result of any ongoing impact caused by the Project to the operation of the rail network, be, and continue to be, in no worse a position than it was prior to the commencement of the RiverLink Project in terms of the longevity, value, safety, on-going operational costs, quality, security of tenure or otherwise of the Melling Branch

The above objectives are derived from a Memorandum of Understanding (MoU) entered into by KiwiRail and Waka Kotahi

This NOR to alter NZR1 assists in implementing the intent of the above objectives of maintaining KiwiRail's ability to extend the Melling Branch further north beyond the Melling interchange in the future. It is not KiwiRail's intention to install a rail line beyond the new Melling Branch station at this time, however the realigned designation protects KiwiRail's ability to extend the rail line beyond the new Melling Branch station and through the new Melling Interchange (grade separated) in the future.

3.4 Division of assessment between RiverLink and this Notice of Requirement

This NOR and the RiverLink project are connected in that the Notice of Requirement is only necessary due to RiverLink. The alteration of the NZR1 designation is addressed by this Notice of Requirement. This includes an assessment of the construction and operational effects of the RiverLink realignment and the future extension. This Notice of Requirement does not include an assessment of the effects of the location of the new Melling Branch station, and associated effects such as carparking as these are located outside the NZR1 designation.

This designation alteration authorises the construction of the RiverLink realignment, and proposes that an outline plan of works is prepared to control construction effects within the realigned NZR1 designation. The new Melling Branch station and associated carparking are addressed by a new designation under the RiverLink project for public transport purposes in which GWRC is the requiring authority.

4. Description of Alteration

This NOR seeks to alter the boundaries of the operative rail designation NZR1 to include the land parcels outlined at Table 1. This alteration will result in a realignment of the NZR1 corridor to the south-east of the existing NZR1 designation between where the existing rail line meets Pharazyn Street and the existing location of Melling Station, as shown in Figure 2 (red = existing alignment, green = proposed alignment). The altered designation's northern extent extends to be parallel to the northern extent of the existing designation.

For a period of time after the notice to alter this designation is confirmed there will be two NZR1 corridors in place. This is to allow for construction activities to occur to disestablish the existing rail line that is no longer required.

Upon completion of the RiverLink realignment works, the existing NZR1 designation (red section) will be removed (under s.182 RMA).

Figure 2 Proposed designation alteration (red = existing alignment, green = proposed alignment

The altered NZR1 designation does not include the new Melling Branch station or associated carparking. These are addressed through the RiverLink project as a new designation for public transport purposes in which GWRC is the Requiring Authority. Note that KiwiRail maintains and operates the rail lines and rail infrastructure, while GWRC operates the public transport rail network.

The designation alteration is sought to the Lower Hutt District Plan. The physical locations of the titles to be incorporated are detailed in the Land Requirement Plans provided at **Appendix A**.

It is proposed that an outline plan of works relating to construction works within the RiverLink realignment section of realigned NZR1 will be prepared and submitted to Hutt City Council closer to the time of construction works. The outline plan will detail mitigation measures proposed to address construction effects, through the preparation of a Construction Environmental Management Plan (CEMP). The CEMP will confirm the management procedures and construction methods to be used in order to avoid, remedy or mitigate potential adverse effects arising from Construction Works, and will include:

- Construction programme, general site layout, proposed hours of work, complaint procedures and incident management procedures.

- Construction traffic management
- Construction air quality management
- Construction noise and vibration management

Note that it is expected the above requirements will be addressed by the broader CEMP prepared for the RiverLink Project; it is expected that the outline plan will tie this broader CEMP to the RiverLink realignment works.

At the time of the future extension works, an outline plan of works will be prepared to address construction effects at that time.

4.1 Reasons for the Alteration

Part of the NZR1 existing designation is required to be altered because the rail line is proposed to be shortened and realigned, and due to the proposed location of the new Melling Branch station as part of the RiverLink project (i.e. the RiverLink realignment), as outlined at Figure 3. Therefore, the designation needs to be altered to reflect these changes. In addition, as outlined at section **Error! Reference source not found.**, KiwiRail wishes to maintain the ability to extend the Melling Branch further north beyond the new Melling Branch station via a potential future grade separated extension through the Melling interchange.

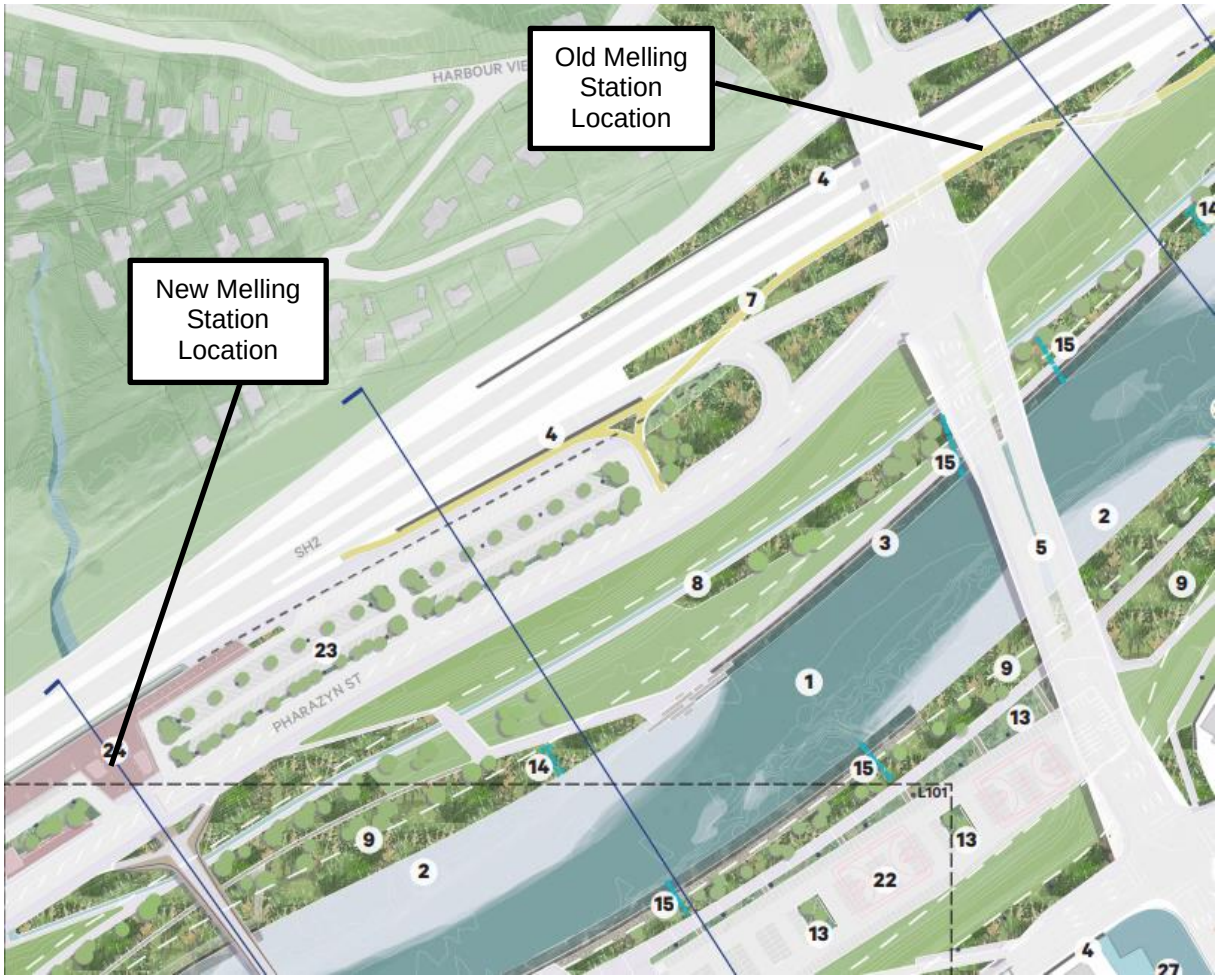

Figure 3 Melling Station former and proposed locations

The new Melling interchange is being designed not to preclude a future rail extension. In the event of a future rail line extension, the following works would be required:

- Track works requiring minor retaining walls adjacent to the new Melling Branch station park and ride carpark. This work would likely require some minor reconfiguration of the park and ride carpark resulting in some reduction in carpark numbers and garden areas.
- North of the park and ride carpark, there would likely be a need for work to raise the highway entry ramp and underpass construction, likely including regrading of the southbound entry ramp.

The construction effects of the future rail extension will be managed through a future outline plan process.

5. Statutory Considerations

Section 181(1) of the RMA provides for the alteration of designations by a requiring authority at any time. Section 181(2) states that sections 168 to 179, and 198AA to 198AD apply to a requirement referred to under section 181(1) as if it were a requirement for a new designation.

Sections 168 to 179 and 198AA to 198AD are analysed in the following table:

RMA Section	Comment
168 Notice of Requirement to a territorial authority	KiwiRail is an approved requiring authority.
169 Further information, notification, submissions, and hearing for notice of requirement to territorial authority	These matters are to be determined by Hutt City Council.
170 Discretion to include requirement in proposed plan	N/A – There is currently no proposed plan, although a district plan review has recently commenced.
171 Recommendation by territorial authority	KiwiRail cannot gain a competitive trade advantage through this requirement. An assessment of the relevant planning framework, environmental effects and alternate options is made in the subsequent sections of this report. The designation assists KiwiRail in providing for a possible future extension to the existing Melling rail line. KiwiRail therefore seek a recommendation by the territorial authority that confirms the designation.
172 Decision of requiring authority	Sections 172-176A will be addressed as necessary by the Requiring Authority once Council has made its recommendation on this NOR.
173 Notification of decision on designation	
174 Appeals	
175 Designation to be provided for in district plan	
176 Effect of designation	
176A Outline Plan	
177 Land subject to existing designation or heritage order	The subject land is not subject to an existing designation or heritage order.
178 Interim effect of requirements for designations	The altered designation will have interim effect on the day the requiring authority (KiwiRail) gives notice to Lower Hutt City Council under section 168. It is noted that the interim effect of the designation is tied to approvals (including new and altered

	designations) required under the RiverLink project which will be proceeding concurrently with this NOR.
198AA – 198AD	These sections relate to time periods regarding the processing of the NOR and will be addressed during the process as necessary.

6. Assessment of Environmental Effects

The actual and potential environmental effects resulting from the alteration of the designation to include the subject land are assessed in this section. This assessment is divided into effects resulting from the RiverLink realignment (i.e. will be in physical existence at the conclusion of RiverLink construction works, assessed at section 6.1), and effects resulting from the future extension (assessed at section 6.2).

6.1 RiverLink Realignment Effects

6.1.1 Noise and Vibration

Operational Noise

The RiverLink Noise and Vibration Assessment1 identifies that changes to the rail alignment resulting from the RiverLink realignment are minimal, with changes in alignment only occurring parallel to properties at 57-63 Pharazyn Street with a change in horizontal and/or vertical alignment of less than 0.5m. The distance between the tracks and the residential properties is approximately 25m. The assessment, undertaken using a railway noise model, has found that rail noise levels at the nearest sensitive receivers (i.e. Nos. 61 and 63 Pharazyn Street) are predicted to be equal to the existing levels after the construction of the new Melling Branch station and RiverLink realignment.

Operational Vibration

As the shortening of the track length (due to the location of the new Melling Branch station) is likely to result in the trains travelling slower past properties along Pharazyn Street, it is anticipated that rail vibration levels received at Nos. 57-63 Pharazyn Street will be imperceptible after the construction of the new Melling Branch station and RiverLink realignment.

Construction Noise

The assessment of construction noise below relates to RiverLink project works as a whole and will be further assessed in the Outline Plan of Works to be submitted closer to construction. The construction of the RiverLink realignment will occur as part of the RiverLink Project works and will be managed in a cohesive manner.

To simulate the worst-case scenario during construction, the two loudest items of equipment have been modelled as a point source to calculate the overall sound power level for each activity. The loudest modelled activity relates to impact driven piling for the construction of bridges crossing the river, which was modelled at 133 dBA.

Unmitigated construction noise levels from construction activities have been assessed at noise sensitive receivers within 100m of the Project works area using a construction noise model. The predicted noise levels represent a worst case 15-minute period of operation where the two loudest items of equipment are operating at full power.

The results of construction noise modelling indicate that construction noise levels are likely to exceed the recommended noise limits at a number of noise sensitive receivers. Since construction work is inherently noisy, it is sometimes impracticable to comply with the noise limits at all receivers. With the implementation of best practicable option (BPO) mitigation measures and effective communication and stakeholder engagement, construction noise effects can usually be managed to an acceptable level.

Key construction noise mitigation measures proposed include:

[1] Riverlink Technical Assessment #10 Noise and Vibration, GHD

- Community engagement to inform affected receivers, since inherently high noise and vibration levels are generally tolerated because of the transitory nature of construction works.
- Noisiest works will be kept within standard working hours where practicable.
- Mobile noise barriers or enclosures will be used when higher noise levels are predicted, and
- Where possible, the quietest machinery and methods available and practicable will be used.
- A construction contractor (once appointed) will develop and implement a project Construction Noise and Vibration Management Plan (CNVMP) based on NZS 6803 and the Waka Kotahi Construction Guide.

Construction Vibration

As above, the assessment of construction vibration below relates to RiverLink project works as a whole. The construction of the RiverLink realignment will occur as part of these works and will be managed in a cohesive manner.

The key typical construction vibration generating activities during construction of the RiverLink Project are vibratory fill compaction and impact driven piling. An assessment of the vibration risk for specific properties has been undertaken. Some properties have been identified as being subject to high risk vibration levels that exceed 5mm/s (potential to exceed cosmetic building damage criteria).

Similar to construction noise, it can be impracticable to fully comply with all of the recommended vibration criteria at all properties, at all times. Construction vibration risk levels are indicative and must be refined with the support of site-specific measurements at the commencement of construction vibration generating activities. Construction vibration effects will be managed through the implementation of the BPO mitigation measures and the CNVMP.

6.1.2 Mitigation of RiverLink rail effects

Mitigation measures relating to effects associated with the construction of the RiverLink realignment will be managed through the preparation of an outline plan of works, as outlined at section 4 above.

6.2 Future Extension Effects

6.2.1 Noise and Vibration

GHD has prepared a KiwiRail Noise and Vibration Assessment Report[2] for the proposed designation alteration to support this Notice of Requirement. This report is provided at **Appendix B** and its findings summarised below. This report assesses construction and operational noise and vibration effects of the Future Extension section of realigned NZR1.

Sensitive Receivers

The location of the identified noise and vibration sensitive receivers is provided at Figure 4.

[2] KiwiRail NZR1 Designation Lower Hutt District Plan Noise and Vibration Assessment Report, prepared by GHD, dated June 2021

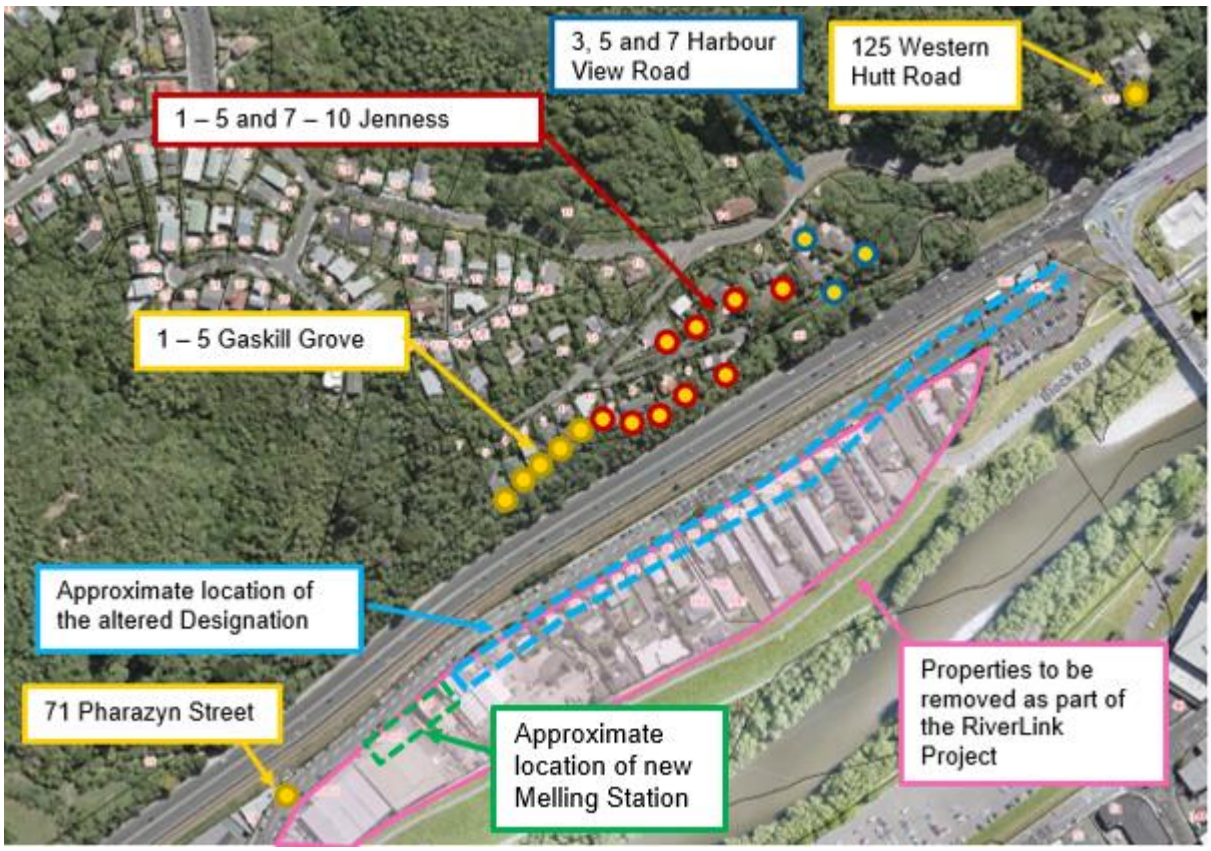

Figure 4 Future extension noise and vibration sensitive receivers' location

Construction Noise Assessment

The main activities anticipated to give rise to the highest levels of noise during the construction of the future extension are site formation and earthworks, and the construction of the new section of rail track. Typical construction equipment to be used during such construction includes dump trucks, excavators, and rail tamper/regulators.

To simulate the worst-case scenario during construction, the two loudest items of equipment were modelled as a point source to calculate the overall sound power level for the construction of the future extension. The worst-case activity sound power level as modelled is 116dBA.

Table 3 of NZS 6803:1999 recommends an upper limit of 70 dB L_{Aeq} for long-term duration construction works. The predicted unmitigated construction noise levels at sensitive noise receivers are shown in Table 2. The predicted noise levels represent a worst case, 15 minute period of operation, where the two loudest items of equipment are operating at full power.

Table 2 Predicted unmitigated noise levels

Receiver No.	Address	Criteria dB $L_{Aeq(15min)}$	Predicted worst case noise level, dB $L_{Aeq(15min)}$	Exceedances
1	1 Gaskill Grove	70	64	No
2	2 Gaskill Grove	70	65	No
3	3 Gaskill Grove	70	66	No
4	4 Gaskill Grove	70	66	No
5	5 Gaskill Grove	70	67	No

6	3 Harbour View Road	70	66	No
7	5 Harbour View Road	70	66	No
8	7 Harbour View Road	70	63	No
9	1 Jenness Grove	70	63	No
10	2 Jenness Grove	70	62	No
11	3 Jenness Grove	70	63	No
12	4 Jenness Grove	70	64	No
13	5 Jenness Grove	70	66	No
14	7 Jenness Grove	70	66	No
15	8 Jenness Grove	70	66	No
16	9 Jenness Grove	70	66	No
17	10 Jenness Grove	70	65	No
18	125 Western Hutt Road	70	62	No
19	71 Pharazyn Street	70	59	No

The results presented in Table 2 indicate that the highest unmitigated future extension construction noise levels are predicted to comply with the recommended daytime noise limits at all surrounding sensitive receivers.

Notwithstanding compliance with the relevant standards, the KiwiRail Noise and Vibration Assessment Report nevertheless recommends the implementation of BPO mitigation measures referenced within NZS 6803:1999, community engagement to inform affected receivers, and the implementation of a Construction Noise Management Plan. These matters are standard recommendations expected through a subsequent outline plan application process, in the event that the future extension work is undertaken,.

Construction Vibration Assessment

The future extension construction activities are not likely to involve significant vibration generating activities. In addition, on the basis that works areas are at least 70m from the nearest receivers, vibration levels from the future extension construction works are expected to comply with the recommended vibration criteria at all surrounding construction vibration sensitive receivers.

Operational Rail Noise Assessment

Operational rail noise levels have been predicted at the noise sensitive receivers as shown in Table 7-1 of the KiwiRail Noise and Vibration Assessment Report. The following four noise scenarios have been modelled:

- Existing alignment during night-time peak hour of 6pm-7pm, with a train frequency of 1 passenger train arriving and departing per hour.

- Future extension during night-time peak hour of 6pm-7pm with train frequency of 1 passenger train arriving and departing per hour.
- Existing alignment during daytime peak hour of 7am-9am and 4pm-6pm with train frequency of 3 passenger trains arriving and departing per hour.
- Future extension during daytime peak hour of 7am-9am and 4pm-6pm with train frequency of 3 passenger trains arriving and departing per hour.

Together with the predicted railway noise levels, the predicted 2036 Do Minimum (Project + existing roads) road traffic noise levels presented in the RiverLink Technical Assessment #10 Noise and Vibration[3] (RiverLink Assessment) at the corresponding receivers are also provided in Table 7-1 of the KiwiRail Noise and Vibration Assessment Report. These levels indicate the predicted road traffic noise levels for 2036 with the RiverLink project constructed.

Table 7-1 shows that the predicted future rail noise levels during night-time and daytime peak hours are up to 41 and 46 dB $L_{Aeq(1hr)}$ respectively. Whilst the majority of sensitive receivers (10 out of 18) would experience a change in noise levels from -1 dB $L_{Aeq\ (1hr)}$ to +3 dB $L_{Aeq\ (1hr)}$, some sensitive receivers (8 out of 18) will experience a change in noise levels from +6 dB $L_{Aeq\ (1hr)}$ to +12 dB $L_{Aeq\ (1hr)}$. Notwithstanding this increase in rail noise levels, the predicted 2036 Do Minimum road traffic noise levels at the corresponding receivers are at least 18 dB (during night-time peak hour) and 13 dB (during daytime peak hour) higher than the predicted future rail noise levels. The road traffic noise levels are therefore expected to be sufficiently high to mask operational railway noise levels, and the railway noise levels will not affect the cumulative road traffic and railway noise levels.

On this basis, the KiwiRail Noise and Vibration Assessment Report concludes that in the event the rail track is extended the full extent of the altered designation, the effects associated with increased rail noise levels with the future extension, given that they are significantly lower than the predicted road traffic noise levels, are considered acceptable and would be imperceptible in the context of the cumulative road traffic and railway noise environment.

Operational Rail Vibration Assessment

On the basis that all of the operational vibration sensitive receivers are at least some 70m from the proposed rail alignment, rail vibration levels at the receivers are expected to be lower than 0.05 mm/s which is considered as imperceptible in accordance with BS 5228-2.

Noise and Vibration Summary

The KiwiRail Noise and Vibration Assessment Report concludes that the recommended construction noise and vibration limits are predicted to be complied with at all surrounding receivers and the change of operational noise and vibration from the future extension is expected to be imperceptible at all surrounding receivers.

6.2.2 Cycleway Effects

The future extension will result in the loss of a separated cycle lane which is currently being designed into the space as part of the RiverLink Project but that will be designated NZR1 for the future extension of the rail line. The section of cycle lane to which this relates is identified in red in Figure 5.

[3] Riverlink Technical Assessment #10 Noise and Vibration, GHD

Figure 5 Section of affected cycleway in the event of a future rail extension

If Kiwirail were to extend the rail line within the Future extension section of NZR1in future, the loss of this cycle connection proposed as part of RiverLink could be mitigated by rerouting cyclists along the segregated cycle lane proposed on the true right bank stopbank, or by providing a cycleway along SH2. Both of these options could be provided. It is therefore considered that the possible loss of this section of cycleway would be a minor effect that could be effectively mitigated. The realigned NZR1 designation protects KiwiRails' ability to extend

the rail line in the future, but does not preclude the ability of other Requiring Authorities to undertake work within the NZR1 designation with KiwiRail's approval.

6.3 Effects conclusion

Overall, on the basis of the above effects assessment, which relate primarily to construction and operational noise and vibration, the alteration of the designation will have a less than minor effect. It is proposed that the outline plan of works will provide for the management of construction effects for the RiverLink realignment through the preparation of a Construction Environmental Management Plan that will be included in the outline plan. Similarly, a future extension will go through an outline plan process to address construction effects.

7. Assessment of Statutory Documents

Section 171 of the RMA requires a Notice of Requirement to assess a proposal against relevant National and Regional Policy Statements, and relevant District Plans. The relevant documents for this Notice of Requirement are the Wellington Regional Policy Statement and the Lower Hutt District Plan. There are no relevant National Policy Statements. The below assessment is relevant to both the RiverLink realignment and the future extension.

7.1 Wellington Regional Policy Statement

The Wellington Regional Policy Statement (RPS) outlines the importance of infrastructure at section 3.3(b). It notes that infrastructure (including rail) *"forms part of national or regional networks and enables communities to provide for their social, economic and cultural wellbeing and their health and safety"*. It also notes that infrastructure affects, and is affected by, surrounding development, since *"the efficient use and development of such infrastructure can be adversely affected by development"*, and conversely *"infrastructure can also have an adverse effect on the surrounding environment"*.

The Melling Branch is part of the Wellington Region's Strategic Transport Network, and is therefore defined as regionally significant infrastructure (RSI) in the RPS. Objective 10 of the RPS is that *"The social, economic, cultural and environmental, benefits of regionally significant infrastructure are recognised and protected"*. This objective is strengthened by Policy 7 (*Recognising the benefits from renewable energy and RSI – regional and district plans*), Policy 8 (*Protecting RSI – regional and district plans*), and Policy 39 (*Recognising the benefits from renewable energy and RSI – consideration*) of the RPS. Policy 7 requires that district and regional plans include policies and/or methods that recognise the social, economic, cultural and environmental benefits of RSI. Policy 8 requires that district and regional plans include policies and rules that protect RSI from incompatible new subdivision, use and development occurring under, over, or adjacent to the infrastructure. Policy 39 requires that particular regard shall be given to protecting RSI from incompatible subdivision, use and development occurring under, over, or adjacent to the infrastructure when considering an application for a resource consent, notice of requirement or a change, variation or review of a district or regional plan.

The proposed designation alteration will provide for a corridor to facilitate both the RiverLink realignment and the future extension of the Melling rail line, protecting this corridor from adverse effects of other developments, noting however that the corridor will be utilised by RiverLink for a cycleway and amenity landscaping for the immediately foreseeable future. The effects of the designation alteration on the surrounding environment, particularly noise and vibration, are assessed at section 6 of this report.

7.2 Lower Hutt District Plan

Without a designation, the proposed works (both the RiverLink realignment and the future extension) would be subject to the provisions of the Lower Hutt District Plan. The subject site traverses land zoned as 'General Business' and 'General Residential'.

7.2.1 District Plan Objectives and Policies

The following objectives and policies of Chapter 14A (Transport) of the Lower Hutt District Plan are relevant to this statutory assessment:

- Objective 14A 3.1: *A safe, efficient, resilient and well-connected transport network that is integrated with land use patterns, meets local, regional and national transport needs,*

facilitates and enables urban growth and economic development, and provides for all modes of transport.

- Objective 14A 3.2: *Adverse effects from the construction, maintenance and development of the transport network on the adjacent environment are managed.*
- Policy 14A 4.1: *Additions and upgrades to the transport network should seek to improve connectivity across all modes and be designed to meet industry standards that ensure that the safety, efficiency and resilience of the transport network are maintained.*
- Policy 14A 4.7: *The transport network, land use, subdivision and development should provide for all transport modes.*

The NOR will meet Objective 14A 3.1, since in relation to the RiverLink realignment it will better integrate Melling Station with existing and proposed development and enable future residential growth in the Lower Hutt City Centre. The designation alteration provides for the upgraded State Highway 2 interchange, which will enhance road user safety in the region. Adverse effects resulting from the track realignment works are being managed via the preparation of an outline plan of works and therefore satisfy Objective 14A 3.2.

The designation alteration and associated works will improve pedestrian and cycle connectivity to Melling Station and continue to enable a safe and efficient rail network to operate, satisfying Policy 14A 4.1. Since the proposed works will continue to provide for commuter rail services, the proposal will continue to provide for all transport modes, consistent with Policy 14A 4.7.

7.2.2 Construction of RiverLink realignment and future extension

Chapter 13 of the Lower Hutt District Plan provides rules for network utilities. Rule 13.3.1.15 provides for *"All network utilities that are not otherwise listed as a permitted, controlled, restricted discretionary or non-complying activity"* as a **Discretionary Activity**. As rail is not otherwise listed in other rules in the District Plan, this becomes the applicable rule under which consent would be required. This rule requires compliance with Standard 13.3.2.1, reproduced below. Compliance with this standard can be achieved.

> *"Where specified as relevant, network utilities shall comply with the following standards:*
>
> *The maximum exposure levels shall not exceed the levels specified in NZS 2772:1999 'Radiofrequency Fields– Maximum exposure levels – 3kHz to 300 GHz'.*
>
> *Network utilities that emit electric and magnetic fields shall comply with the International Commission on Non-ionising Radiation Protection Guidelines for limiting exposure to time-varying electric and magnetic fields (1 Hz – 100 Hz), Health Physics 99(6):818-836; 2010, and the recommendations from the World Health Organisation monograph Environmental Health Criteria (No 238, 2007)."*

Chapter 14I of the Lower Hutt District Plan provides rules for earthworks. As per permitted activity condition 14I 2.1.1(b), the maximum permitted volume of earthworks is 50m^3 per site. Any earthworks beyond this are restricted discretionary activities as per Rule 14I 2.2(a).

7.2.3 Operation of RiverLink realignment and future extension

Rule 13.3.1.2 provides for *"The operation and maintenance of network utilities"* as a **Permitted Activity**, subject to compliance with relevant standards. An assessment of the relevant standards of Rule 13.3.1.2 is provided at Table 3.

Table 3 Assessment against relevant standards of Rule 13.3.1.2

Standard	Provision	Comment
13.3.2.5.1 Sediment and Erosion Control	Erosion and sediment control measures shall be installed and maintained for all network utility activities, in accordance with the "Erosion and Sediment Control Guidelines for the Wellington Region – September 2002" – reprinted 2006.	Erosion and sediment control measures can be complied with.
13.3.2.6 Native Vegetation Clearance - Rural Residential and General Rural Activity Areas	Within the Rural Residential and General Rural Activity Areas there shall be no destruction of any native vegetation where: a) the area of native vegetation in one site exceeds 1 hectare with an average height of 3 metres or more, or b) the area of native vegetation is part of an area in one or more sites, which exceeds 1 hectare with an average height of 3 metres or more.	Not applicable.
13.3.2.7 Noise	Noise associated with the activity shall not exceed the permitted activity noise standard(s) within the zone in which the activity is located.	The residential properties within the subject site are located within Noise Area 2. The permitted activity noise standards in all residential activity areas for Noise Area 2 are maximum 55dBA from 7:00am – 10:00pm and maximum 45dBA from 10:00pm – 7:00am. The permitted activity noise standard in the General Business Activity Area is 65dBA. The current advice is these standards are complied with, however if these noise standards cannot be met during the operation and maintenance of the rail line, a separate resource consent as a **Controlled Activity** under Rule 13.3.1.5 would be required.

7.2.4 Summary of consent requirements

The sections outlined above demonstrate that resource consent for the following activities would be required for the rail realignment (both the RiverLink realignment and the future extension) under the current Lower Hutt District Plan, if there were no designation:

- Construction of the rail realignment as a **Discretionary Activity** under Rule 13.3.1.15.

- Earthworks greater than 50m^3 per site as a **Restricted Discretionary Activity** under Rule 14I 2.2(a).
- Operational and maintenance noise beyond the permitted activity noise standards as a **Controlled Activity** under Rule 13.3.1.5.

If the alteration to the designation is confirmed, any future changes to activities on the site beyond the RiverLink realignment would be subject to the Outline Plan of Works process, with effects considered at that time, including any compliance or otherwise with existing District Plan provisions at that time.

8. Alternatives

8.1 Melling Transport Improvements Single Stage Business Case (SSBC)

The Melling Transport Improvements SSBC (Stantec, September 2019) outlines the option development and alternatives assessment process undertaken for the State Highway 2 interchange. The construction of the interchange requires a new location for a new Melling Branch station, therefore this work is relevant to this NOR to alter the existing rail designation.

At-grade options for an upgraded Melling Link/SH2 intersection that may not have necessitated a rail alteration were discarded early in the optioneering process, since an at-grade solution would not achieve flood capacity and road safety outcomes. Relevantly, an extension of the Melling Branch in the future would require a level crossing if an at-grade solution was adopted; this was another reason to discard the at-grade options.

Of the three options shortlisted in the SSBC (Queens Direct, Queens Indirect and Melling Direct), all resulted in a new Melling Branch station closer to Hutt City Centre (i.e. moved to the south).

Queens Direct was chosen as the recommended option from the shortlist. Benefits of this option cited in relation to the rail line were that the rail station would be moved closer to the Hutt City Centre, and this option would also future proof a possible extension of the Melling Branch.

8.2 Melling Station Location Options Assessment

Appendix J of the SSBC specifically undertook a Melling Station Location Options Assessment. This assessment considered two possible station locations, indicated in Figure 6.

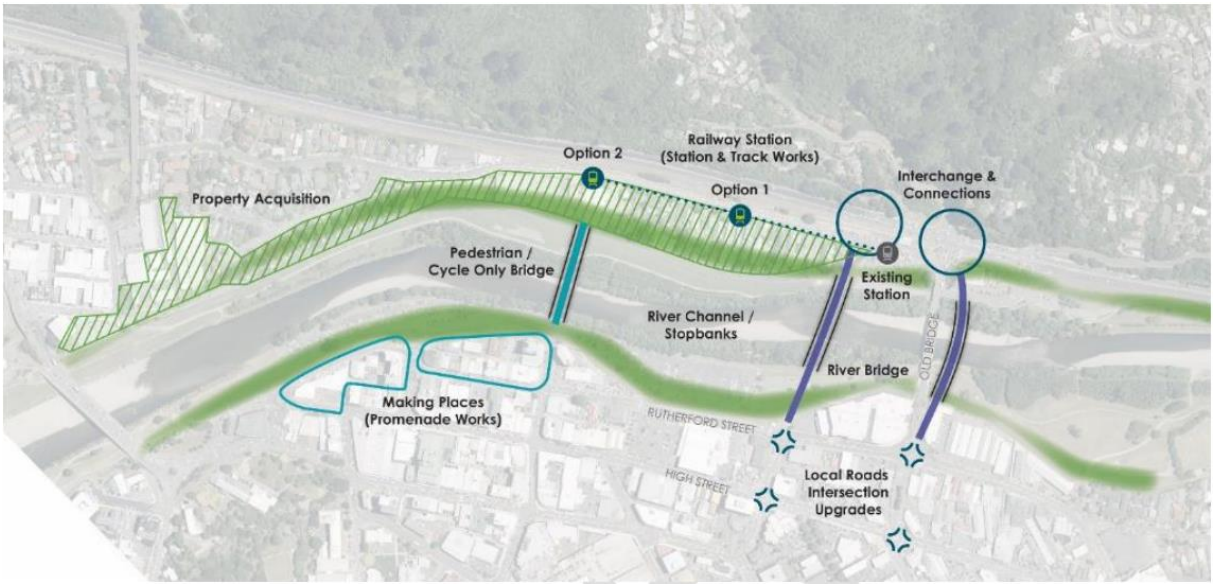

Figure 6 Melling Station location options (source: Appendix J of SSBC)

Option 1 would locate the station 250m south of the existing station. This is the minimum amount by which the station location could be adjusted to accommodate the interchange footprint. Option 2 would locate the station 500m south of the existing station, directly opposite the proposed pedestrian bridge into the Lower Hutt city centre.

The following assessment was made against the two options:

- Walking: Both options increase the walking distance from Western Hills and Boulcott to the station. Both options, but particularly Option 2, bring Queensgate, the Dowse Art Museum and High Street to around a 10 minute walk or less.
- Park and ride: Both location options facilitate park and ride spaces and neither option significantly increases travel time by car.
- Bus: Both options show negligible difference for existing bus users accessing Melling Station from Belmont (the only current service). Walking time from the station to Queensgate bus hub would be reduced from 14 minutes to 9 minutes for Option 1, and 7 minutes for Option 2.
- Rail: Rail patronage changes purely resulting from the new station location are expected to be minimal, however there is significant potential for increased patronage when the new station location is combined with future development in the Hutt city centre and expansion of rail services (e.g. weekend and evenings).

The rail location options assessment cited public consultation for RiverLink that occurred in June 2017. Fifty individuals responded to the question about where the railway station should be located, with the following results:

- 48%: Opposite city centre/Margaret Street
- 18%: Unsure, it depends on other factors such as – the intersection, car park facilities, access
- 16%: Move it north
- 12%: Don’t move it
- 6%: Move it to the city

The rail location options assessment concluded that on balance, the differences between the two options were minimal, with both having beneficial aspects.

8.3 Summary

The altered designation will provide a corridor for the possible future extension of the Melling Branch and facilitates the construction of RiverLink and the rail design has been informed by a robust assessment of alternatives process.

9. Conclusion

KiwiRail seek to alter their existing NZR1 rail designation as recorded in the Lower Hutt District Plan to realign the rail corridor slightly to the south-east of the existing designation location. For a period of time after this notice to alter this designation is confirmed there will be two NZR1 corridors in this section in place. This is to allow for construction activities to occur to disestablish the existing rail line that is no longer required.

Upon completion of the RiverLink realignment works, the existing NZR1 designation section that is no longer required will be removed (under s.182 RMA).

The need for this alteration is to respond to the location of a new Melling Branch station and realignment of the rail line resulting from the RiverLink project (RiverLink realignment). The alteration provides for a future extension of the Melling rail line to the north of the new Melling Branch station ending aligned with the existing rail designation (future extension). As set out in the assessment above, it is considered that the alteration to the designation will have only minor effect on the surrounding environment. Construction effects for the RiverLink realignment are proposed to be managed through the preparation of an outline plan of works, which will include the preparation of a Construction Environmental Management Plan.

For these reasons it is requested that Hutt City Council amend the Lower Hutt District Plan maps to show the alterations to the existing NZR1 railway purposes designation as set out in this NOR.

Appendices

Appendix A – Designation Plans

LAND REQUIREMENT PLAN

SCALE 1 : 1000

LEGEND

- LAND TO BE DESIGNATED FOR RAIL
- PROPERTY BOUNDARIES

PROPERTY REFERENCE NUMBER	LEGAL DESCRIPTION	OWNERSHIP	LAND TO BE DESIGNATED (m²)	TOTAL LAND (m²)
1	Part Lot 1 DP 16593	Wellington Regional Council	189	5,919
2	Lot 3 DP 20098	Wellington Regional Council	22	1,139
3	Lot 1-2 DP 20098	Wellington Regional Council	44	550
4	Lot 1-2 DP 20098	Wellington Regional Council	11	958
5	Lot 2 DP 20129	Wellington Regional Council	45	499
6	Lot 1 DP 20129	Wellington Regional Council	54	499
7	Lot 3 and Part Lot 2 DP 10668	Camellia Investments Limited	66	506
8	Lot 4 DP 10668	Wellington Regional Council	77	506
9	Lot 1 DP 26064	Wellington Regional Council	102	582
10	Lot 2 DP 26064	Wellington Regional Council	23	1,414
11	Unit 2 and Accessory Unit 2A DP 364357	Karen Elizabeth Thomson	24	794
12	Lot 1 DP 26826	Wellington Regional Council	129	571
13	Part Lot 14 DP 1731	Pinkesh Rajandra Kansara & Rajendra Ratilal Kansara	115	999
14	Unit 11 and Accessory Unit 11A and 11B DP 68302	Wellington Regional Council	157	1,220
15	Unit 11 and Accessory Unit 11A and 11B DP 68302	Wellington Regional Council	172	1,184
16	1/5 share in Lot 11 DP 1731 and leasehold in Flat 4 DP 77577	Wellington Regional Council	180	1,149
17	Unit 8 and Accessory Unit 8A and 1/4 share in Accessory Unit A DP 67115	Wellington Regional Council	150	533
18	Unit 8 and Accessory Unit 8A and 1/4 share in Accessory Unit A DP 67115	Wellington Regional Council	34	1,114
19	Lot 1 DP 21620	Wellington Regional Council	153	546
20	Unit 6 and Accessory Unit 6A and 6B DP 77687	Wellington Regional Council	131	1,043
21	Unit 2 and Accessory Unit 2A DP 308590	Wellington Regional Council	87	888
22	Unit 12 and Accessory Unit 12A DP 308588	Wellington Regional Council	18	672
23	Lot 1 DP 305377	Wellington Regional Council	42	400
24	Lot 5 DP 305377	The Hutt City Council	1	2
25	Part Lot 5 DP 1731	Crown or Council	1	402
26	ROAD	ROAD	3,827	10,400
27	RAILWAY	RAILWAY	618	7,973
28	ROAD	ROAD	1,457	6,025

NOTICE OF REQUIREMENT

No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Checked	Approved	Date
B	NOTICE OF REQUIREMENT		PG			
A	DESIGN FREEZE 1		RG			

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SCALE 1:1000 AT ORIGINAL SIZE

RiverLink
Isthmus. Tonkin+Taylor GHD Holmes

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Approved			
Date			
Scale	1:1000	This Drawing must not be used for Construction unless signed as Approved	

Client RIVERLINK
Project RIVERLINK
Title LAND REQUIREMENT PLAN

Original Size A1
Drawing No: A16-4381-D211
Rev: B

Plot Date: 28 July 2021 - 2:46 pm
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LAND DESIGNATION PLAN

SCALE 1 : 1000

LEGEND

- LAND TO BE DESIGNATED FOR RAIL
- EXISTING RAIL DESIGNATION
- PROPERTY BOUNDARIES

NOTICE OF REQUIREMENT

No	Revision	Note: * indicates signatures on original issue of drawing or last revision of drawing	Drawn	Checked	Approved	Date
B	NOTICE OF REQUIREMENT		PG			
A	DESIGN FREEZE 1		RG			

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SCALE 1:1000 AT ORIGINAL SIZE

RiverLink

Isthmus. Tonkin+Taylor GHD Holmes

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Client RIVERLINK
Project RIVERLINK
Title LAND DESIGNATION PLAN

Original Size A1

Drawing No: A16-4381-D212

Rev: B

Plot Date: 28 July 2021 - 2:46 pm

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Appendix B – KiwiRail NOR Noise and Vibration Assessment Report

KiwiRail

NZR1 Designation Lower Hutt District Plan
Noise and Vibration Assessment Report

July 2021

Table of contents

Table index

Figure index

Appendices

1. Introduction

1.1 The proposal

The RiverLink Project requires the existing Melling Station to be relocated to make way for the new state highway interchange to be constructed. In addition, a pedestrian and cycle bridge is proposed to be constructed across Te Awa Kairangi/Hutt River. This bridge will land on the Melling side of the river to the southwest of the existing location of the Melling Railway Station. The Melling Railway Station will therefore be relocated approximately 500m southwest of the existing Station location with the existing railway line being shortened. The existing Designation NZR1 of the Lower Hutt District Plan for Melling Branch Line needs to be altered to reflect these changes and this is addressed separately under the Notification of Requirement (NoR) for the Riverlink Project.

It is important to note that the timing and extent of an extension of the railway line to the north/north-east of the relocated Melling Railway Station is uncertain at this time. However, this report deals with that future 'extension' section and assesses the noise and vibration effects of a proposed realignment of the railway line to the north/north-east of the relocated station in order to provide future provision, thereby clearly signalling to surrounding land owners the Requiring Authority's (RA) future use of the land.

1.2 Purpose of this report

GHD has been engaged to assess the levels of noise and vibration at surrounding sensitive receivers arising from the construction and operation of the proposed realignment of the Melling Line to the north/north-east of the relocated train station and advise how to best manage any effects. This assessment addresses the construction and operational noise and vibration effects from this alteration to the NZR1 designation only i.e. from the relocated Melling Station up to the northern extent of the existing Designation as shown as Study area in Figure 1.

This report provides a description of the works required; assesses the likely noise and vibration levels at surrounding properties and compares them to the provisions of the City of Lower Hutt District Plan (the District Plan). Advice is provided to ensure best acoustics practice is used to manage both construction and operation noise and vibration effects arising from the proposed realignment.

This report has been written to provide the requisite acoustics advice to accompany the Notice of Requirement (NoR) submitted for the alteration to designation. The NoR is to be referred to for a full description of the NZR1 designation realignment this application allows for.

1.3 Scope and limitations

This report: has been prepared by GHD for KiwiRail and *may only be used and relied on by KiwiRail for the purpose agreed between GHD and the KiwiRail as set out in section 1.2 of this report.*

GHD otherwise disclaims responsibility to any person other than KiwiRail arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

GHD has prepared this report on the basis of information provided by KiwiRail and others who provided information to GHD (including Government authorities)], which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

1.4 Assumptions

This report has been written to accompany the Notice of Requirement to be submitted to Hutt City Council (HCC). The details provided in this report have been developed with reference to the following drawings and reports produced for the Project and/or the RiverLink Project:

- Track Alignment Plan and Profile, Drawing No. 12505727-SK201 – 205 Rev. A dated October 2020, GHD
- Track Alignment Typical Cross sections, Drawing No. 12505727-SK206 Rev. A dated October 2020, GHD
- Track Alignment Design Memorandum, dated 27 October 2020, GHD
- Riverlink Technical Assessment #10 Noise and Vibration, dated June 2021, GHD

2. Project description

2.1 Proposed railway alignment

The proposed alteration to designation NZR1 will shift slightly southeast of the existing designation and railway alignment. The proposed railway alignment is shown in Figure 1 (reference GHD drawing 12505727-SK201 – SK203 Rev A).

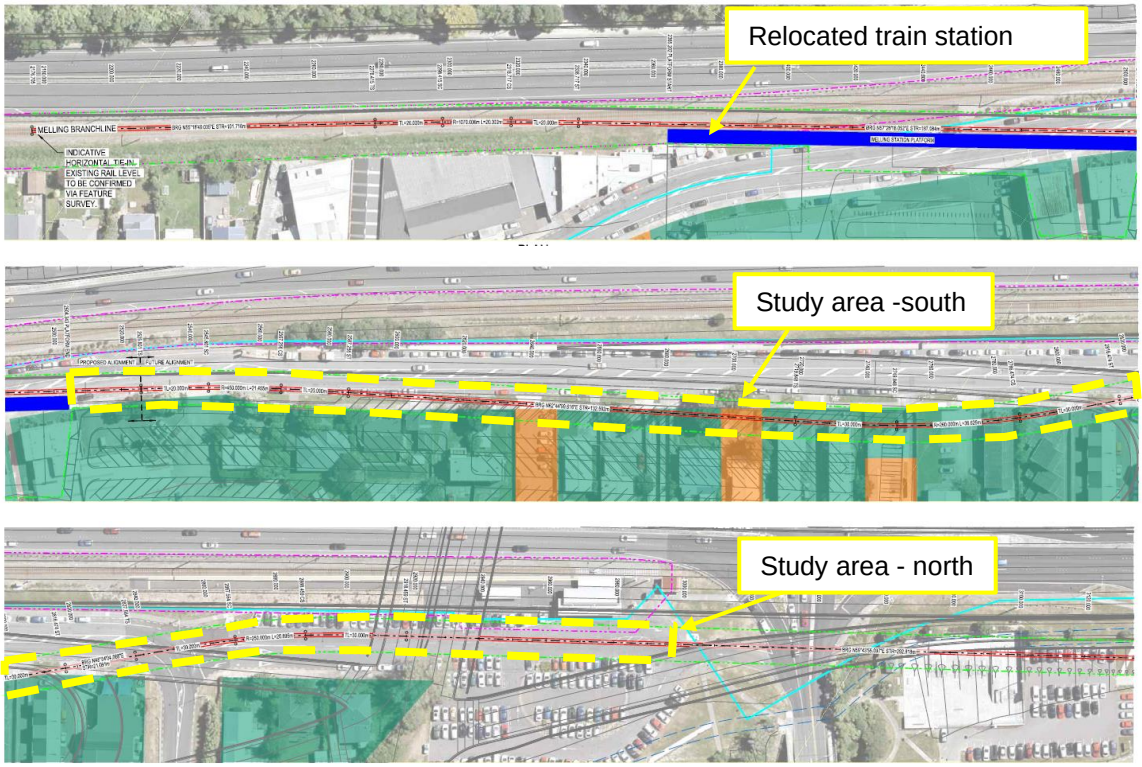

Figure 1 Proposed railway alignment

2.2 Site location

The proposed railway alignment is bounded by the existing State Highway 2 (SH2) and the future on and off ramps for SH2 (after implementation of the RiverLink Project) to the west, and Pharazyn Street, the future park-n-ride facility and the future on and off ramps to SH2 (after implementation of the RiverLink Project) to the east. The existing residential and commercial properties on Pharazyn Street to the southeast of the new station will be removed as part of the RiverLink Project as shown in Figure 2.

3. Performance requirements

3.1 Construction noise

Rule 14C 2.1(f) of the District Plan states that all construction, demolition, and maintenance work shall comply with NZS 6803P:1984 Measurement and Assessment of Noise from Construction, Maintenance and Demolition Work (NZS 6803P). In 1999, NZS 6803 superseded NZS 6803P. The construction noise criteria in NZS 6803:1999 are adopted in this assessment.

Table 3-1 below shows the recommended upper limits in Section 7.2 of NZS 6803:1999 for construction noise received in residential zones and dwellings in rural areas measured at 1 metre from the façade of any nearby building that is occupied at the time of the works.

Table 3-1 Recommended upper limits for construction noise received in residential zones and dwellings in rural areas (reproduction of Table 2 of NZS 6803:1999)

Time of Week	Time period	Duration of Works					
		Typical duration[1] (dBA)		Short-term duration[2] (dBA)		Long-term duration[3] (dBA)	
		L_{eq}	L_{max}	L_{eq}	L_{max}	L_{eq}	L_{max}
Weekdays	6:30am – 7:30am	60	75	65	75	55	75
	7:30am – 6:00pm	75	90	80	95	70	85
	6:00pm – 8:00pm	70	85	75	90	65	80
	8:00pm – 6:30am	45	75	45	75	45	75
Saturdays	6:30am – 7:30am	45	75	45	75	45	75
	7:30am – 6:00pm	75	90	80	95	70	85
	6:00pm – 8:00pm	45	75	45	75	45	75
	8:00pm – 6:30am	45	75	45	75	45	75
Sundays and public holidays	6:30am – 7:30am	45	75	45	75	45	75
	7:30am – 6:00pm	55	85	55	85	55	85
	6:00pm – 8:00pm	45	75	45	75	45	75
	8:00pm – 6:30am	45	75	45	75	45	75

[1] Typical duration means construction work at any one location for more than 14 calendar days but less than 20 weeks.

[2] Short-term duration means construction work at any one location for up to 14 calendar days.

[3] Long-term duration means construction work at any one location with a duration exceeding 20 weeks.

Table 3-2 shows the recommended upper limits in Section 7.2 of NZS 6803:1999 for construction noise received in industrial and commercial areas measured at 1 metre from the façade of any nearby building that is occupied at the time of the works.

Table 3-2 Recommended upper limits for construction noise received in industrial or commercial areas for all days of the year (reproduction of Table 3 of NZS 6803:1999)

Time Period	Duration of work		
	Typical duration[1] L_{eq} (dBA)	Short-term duration[2] L_{eq} (dBA)	Long-term duration[3] L_{eq} (dBA)
7:30am – 6:00pm	75	80	70
6:00pm – 7:30am	80	85	75

[1] Typical duration means construction work at any one location for more than 14 calendar days but less than 20 weeks.

[2] Short-term duration means construction work at any one location for up to 14 calendar days.

[3] Long-term duration means construction work at any one location with a duration exceeding 20 weeks.

Where there is no practical method of measuring noise outside a building, the recommended NZS 6803:1999 limits for noise measured inside the building are the levels stated in Table 3-1 and Table 3-2 minus 20 dBA.

With reference to Section 6.2 of NZS 6083, the construction noise limits are referenced to a representative assessment duration of between 15 and 60 minutes.

The duration of construction of the proposed rail realignment beyond the relocated Melling Station is unknown at the time of writing. It could exceed 20 weeks' duration and hence 'long-term' duration noise limits have been applied to the Project e.g. 70 dB L_{Aeq} and 85 dB LAmax between 7.30am to 6pm Monday to Saturday. At the time of construction of the future extension, an Outline Plan of Works is anticipated to be lodged which can confirm the construction period duration and thereby these assumptions.

3.2 Construction vibration

While there are no rules relating to construction vibration in the District Plan, reference is made to the BS 5228-2:2009 Code of Practice for noise and vibration control on construction and open sites Part 2: Vibration (BS 5228-2). For example BS 5228-2 is referenced in Rules for Scheduled Sites[1] and Designation conditions applying to GWRC Designation WRC11 – construction, upgrading and maintenance of stopbanks (Boulcott)[2].

For guidance purposes, it is useful to refer to the Waka Kotahi Construction Guide which also provides construction vibration criteria based on standards (including BS 5228-2 and DIN 4150-3 Structural vibration – Part 3 Effects of vibration on structures (DIN 4150-3)) from other countries (i.e. the UK and Germany) and is shown in Table 3-3 and Table 3-4 below. The recommended construction vibration criteria in the Waka Kotahi Construction Guide have been adopted for this assessment. These criteria consider both human, and cosmetic and structural response of a building to vibration. The construction vibration criteria are presented in terms of peak particle velocity (ppv), in units of millimetres per second (mm/s).

[1] Rule 4A 5.2.2.1 of the District Plan for Scheduled Site - 32A Hathaway Avenue Boulcott - Housing for the Elderly

[2] Chapter 15, Appendix Designations 11 of the District Plan for WRC 11 – Conditions: The Boulcott Hutt Stopbank Project

Table 3-3 Waka Kotahi construction vibration criteria

Receiver	Location	Details	Category A	Category B
Occupied PPFs	Inside the building	Night-time 2000h – 0630h	0.3 mm/s ppv	1 mm/s ppv
		Daytime 0630h – 2000h	1 mm/s ppv	5 mm/s ppv
Other occupied buildings	Inside the building	Daytime 0630h – 2000h	2 mm/s ppv	5 mm/s ppv
Unoccupied buildings	Building foundation	Vibration – transient	5 mm/s ppv	BS 5228-2 Table B.2
		Vibration - continuous		BS 5228-2 50% of Table B.2 values

Table 3-4 Transient vibration guide values for cosmetic damage (Table B.2 from BS 5228-2)

Type of building	Peak component velocity in frequency range of predominant pulse 4 to 15 Hz	 15 Hz and above
Reinforced or framed structures Industrial and heavy commercial buildings	50 mm/s	50 mm/s
Unreinforced or light framed structures Residential or light commercial buildings	15 mm/s at 4 Hz increasing to 20 mm/s at 15 Hz	20 mm/s at 15 Hz increasing to 50 mm/s at 40 Hz and above

Section 2.2 of the Waka Kotahi Construction Guide states that:

> "If measured or predicted vibration levels exceed the Category A criteria then a suitably qualified expert should be engaged to assess and manage construction vibration to comply with the Category A criteria as far as practicable.
>
> If the construction vibration exceeds the Category B criteria then construction activity shall only proceed if there is appropriate monitoring of vibration levels and effects on those buildings at risk of exceeding the Category B criteria, by suitably qualified experts."

3.3 Operational rail noise

Section 14C 1.1 of the District Plan excludes the effects of train noise, other than when a train is within a railway station or in railway yards. Nonetheless, Section 16 of the Resource Management Act (RMA) places an explicit duty to avoid creating unreasonable levels of noise at

neighbouring properties from activity on the subject site regardless of any requirements placed upon a development through the provisions (or lack thereof) of the District Plan.

The best way to capture any changes in effects brought about by the proposed realignment is to assess them in terms of changes in noise level.

3.4 Operational rail vibration

The District Plan does not address the effects of vibration emissions from the use of rail tracks. This assessment therefore compares the existing levels of rail vibration at nearby sensitive receivers to the predicted levels of rail vibration arising from the changes in alignment of the tracks.

4. Noise and vibration sensitive receivers

The location of the identified noise and vibration sensitive receivers is provided in Figure 2 and listed in Table 5-3 and Table 7-1.

These receiver locations are the most acoustically exposed properties surrounding the Study area; which are expected to be subject to the highest noise and vibration levels from the construction and operation of the realignment of the line and relocation of the station.

No.71 Pharazyn Street is a commercial property identified as a construction noise and vibration sensitive receiver. All other receivers are residential properties and are both construction and operational noise and vibration sensitive receivers.

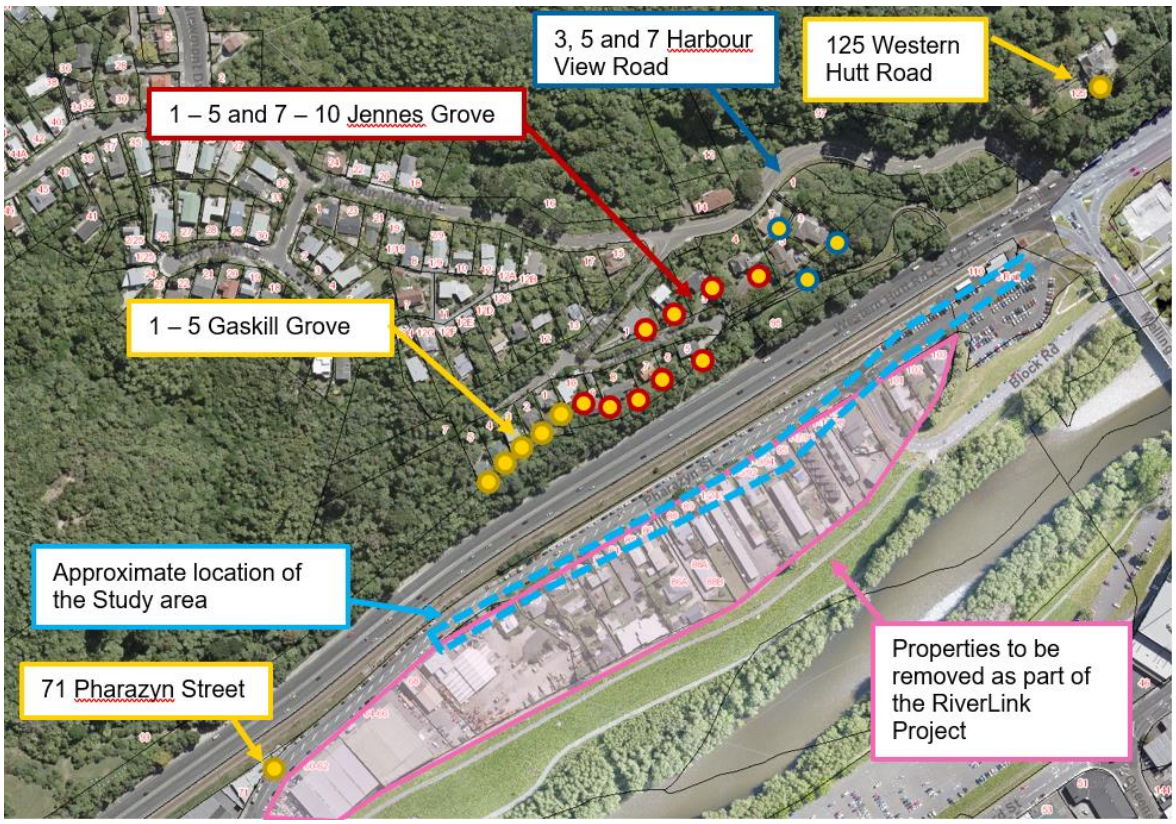

Figure 2 Noise and vibration sensitive receiver locations

5. Construction noise assessment

5.1 Description of construction works

The main activities anticipated to give rise to the highest levels of noise during the construction of the proposed railway line realignment within the Study area are described below.

- Site formation and earthworks; and
- Construction of new section of rail track

5.2 Construction noise sources

The typical construction equipment likely to be used during construction are shown in Table 5-1 below. Reference noise levels of construction equipment have been obtained from BS 5228-1:2009+A1:2014 Code of practice for noise and vibration control on construction and open sites – Part 1: Noise (BS5228-1), the U.S. Department of Transportation Federal Transit Administration's Transit Noise and Vibration Impact Assessment Manual, September 2018 (US FTA 2018) and AS 2436-2010 Guide to noise and vibration control on construction, demolition and maintenance sites (AS 2436).

Table 5-1 Construction equipment sound power levels, dBA

Equipment	Sound power level (typical), dBA
Dump trucks (40T), truck and trailer	107
Excavator (12 – 20T)	103
Wheeled loader (1m^3 plus)	97
Grader	110
Vibratory roller (9T)	103
Watercart	109
Concrete mixer truck	107
Rail tamper / regulator	115

The sound power levels for equipment for the key noise generating construction activities are provided in Table 5-2 below.

To simulate the worst-case scenario, the two loudest items of equipment have been modelled as a point source positioned at the closest point to any one receiver whilst still located within the works area, in order to calculate the overall sound power level for the construction of railway realignment. This approach is considered conservative as the Project extends over a relatively large and elongated area. For most of the time there will be greater distances between the items of equipment and receivers over the full duration of construction.

Table 5-2 Construction activities sound power levels, dBA

Activities	Construction equipment	Activity sound power level[1]
Melling Line rail track realignment	Dump trucks, truck and trailer	116 dBA
	Excavator	
	Wheeled loader	
	Grader	
	Vibratory roller	
	Watercart	
	Concrete mixer truck	
	Rail tamper / regulator	

[1] The activity sound power level is calculated from the logarithmic sum of the two loudest construction equipment items to simulate the worst-case scenario.

5.3 Predicted construction noise levels to buildings from works

Noise levels at the sensitive receivers have been predicted using a construction noise model. Construction noise modelling details are provided in Appendix A.

Unmitigated construction noise levels have been predicted at the noise sensitive receivers at 1 metre from the façade of interest and between 1.2 to 1.5 metres high above the floor level of interest and shown in Table 5-3 below. As such, construction noise levels include a nominal +3 dBA correction for the reflection of noise from the façade. The predicted noise levels represent a worst case, 15 minute period of operation, where the two loudest items of equipment are operating at full power.

Table 5-3 Predicted unmitigated noise levels

Receiver No.	Address	Criteria dB $L_{Aeq(15min)}$	Predicted worst case noise level, dB $L_{Aeq(15min)}$	Exceedances
1	1 Gaskill Grove	70	65	No
2	2 Gaskill Grove	70	66	No
3	3 Gaskill Grove	70	67	No
4	4 Gaskill Grove	70	67	No
5	5 Gaskill Grove	70	67	No
6	3 Harbour View Road	70	66	No
7	5 Harbour View Road	70	67	No

Receiver No.	Address	Criteria dB $L_{Aeq(15min)}$	Predicted worst case noise level, dB $L_{Aeq(15min)}$	Exceedances
8	7 Harbour View Road	70	64	No
9	1 Jenness Grove	70	64	No
10	2 Jenness Grove	70	63	No
11	3 Jenness Grove	70	63	No
12	4 Jenness Grove	70	65	No
13	5 Jenness Grove	70	67	No
14	7 Jenness Grove	70	67	No
15	8 Jenness Grove	70	67	No
16	9 Jenness Grove	70	67	No
17	10 Jenness Grove	70	65	No
18	125 Western Hutt Road	70	63	No
19	71 Pharazyn Street	70	60	No

The results presented in Table 5-3 above indicate that the highest unmitigated construction noise levels are predicted to comply with the recommended daytime noise limits (e.g. 70 dB L_{Aeq} and 85 dB L_{Amax} between 7.30am to 6.00pm Monday to Saturday) at all surrounding noise sensitive receivers.

Construction noise levels are inherently loud. Whilst unmitigated noise levels are predicted to be compliant at surrounding receivers, implementation of the Best Practicable Option (BPO) mitigation measures referenced within NZS 6803:1999 are still generally recommended in order to minimise construction noise effects upon neighbouring properties. For example, the use of the smallest/quietest machinery practicable, minimisation of the number of items of equipment required on site and the idling of that equipment by planning and scheduling of works, etc.

Community engagement is often key to mitigating construction noise effects. Provided that the affected receivers are informed, inherently high noise levels from construction are generally tolerated because of the temporary nature of works. A programme of community engagement is

therefore recommended. For example, consultation advising the neighbouring properties of details of the upcoming works, scheduling of particularly noisy works for when they are least likely to cause disturbance (if practicable), updating residents as to ongoing progress, provision of a contact name and number should any issues arise, a complaints procedure, etc.

The best way to ensure that the BPO mitigation measures are being followed is by advising the contractor how to manage noise levels and the effects upon neighbouring properties. This is best achieved with the implementation of a Construction Noise Management Plan (CNMP) as recommended under NZS 6803:1999.

6. Construction vibration assessment

The construction activities are not anticipated to involve significant vibration generating activities (e.g. vibratory fill compaction). Even if such vibration generating activities are undertaken the works areas are at least 70 m from the nearest receivers (i.e. receivers shown in Table 5-3). Therefore, vibration levels from the construction works of the Project are expected to comply with all of the recommended vibration criteria at all of the construction vibration sensitive receivers identified.

7. Operational rail noise assessment

7.1 Operational rail noise source

This assessment has assumed that:

- the trains that would be used during operation in future would be the same as the trains currently operating on the Melling Line;
- train frequency and timetable in future would be the same as current operation.

A noise level survey to determine the train noise source levels was completed on the platform of the existing Melling Railway Station and within the rail corridor at 5 metres from the nearest track. Full details of the noise level survey are provided in Appendix B and Appendix C.

7.2 Predicted operational rail noise levels

Noise levels at the sensitive receivers have been predicted using a railway noise model. Railway noise modelling details are provided in Appendix D.

Railway noise levels have been predicted at the noise sensitive receivers shown in Table 7-1 below for four noise model scenarios:

1. Existing alignment during night-time peak hour of 6:00 am – 7:00 am with train frequency of 1 passenger train arriving and departing (i.e. 2 pass-by's per hour);
2. Proposed future alignment (during night-time peak hour of 6:00 am – 7:00 am with train frequency of 1 passenger train arriving and departing (i.e. 2 pass-by's per hour);
3. Existing alignment during daytime peak hours of 7:00 am – 9:00 am and 4:00 pm – 6:00 pm with train frequency of 3 passenger trains arriving and departing (i.e. 6 pass-by's per hour); and
4. Proposed future alignment during daytime peak hours of 7:00 am – 9:00 am and 4:00 pm – 6:00 pm with train frequency of 3 passenger trains arriving and departing (i.e. 6 pass-by's per hour).

It is important to understand the soundscape of the receiving environment is dominated by road traffic noise from vehicles using the adjacent SH2. As such, for the purposes of context, the predicted 2036 Do Minimum (Project + existing roads) road traffic noise levels presented in the Riverlink Technical Assessment #10 Noise and Vibration[3] (RiverLink Assessment) at the corresponding receivers are also provided in Table 7-1.

Analysis of measurements of the existing ambient noise levels undertaken for the RiverLink Project at 17 Tirohanga Road and 2 Pomare Road shows that the $L_{Aeq(1hr)}$ noise levels during the Melling Line night-time peak hour (6:00 am – 7:00 am) and the daytime peak hours (7:00 am – 9:00 am and 4:00 pm – 6:00 pm) are generally either the same, or 1 to 2 dBA higher than the measured $L_{Aeq(24hr)}$ noise levels. It is therefore considered that comparison of the predicted peak hour $L_{Aeq(1hr)}$ rail noise levels and predicted $L_{Aeq(24hr)}$ road traffic noise level is an appropriate, if potentially conservative approach.

[3] Riverlink Technical Assessment #10 Noise and Vibration, dated June 2021, GHD

Table 7-1 Predicted railway noise levels

No.	Address	Number of storey	Predicted rail noise levels, dB $LA_{eq(1hr)}$					Predicted road traffic noise levels 2036 Do Minimum (Project + existing roads), dB $L_{Aeq(24hr)}$	Difference between predicted road traffic and future rail (night-time peak hour) noise levels	Difference between predicted road traffic and future rail (daytime peak hour) noise levels
			dB $L_{Aeq\ (1hr)}$, 2 passby (night-time peak hour)[1]		dB $L_{Aeq\ (1hr)}$, 6 passby (daytime peak hour)[2] Future Alignment		Change from Existing to Future alignment, dB			
			Existing Alignment	Future Alignment	Existing Alignment	Future Alignment				
1	1 Gaskill Grove	2	34	36	39	41	2	60	24	19
2	2 Gaskill Grove	2	37	38	42	43	1	64	26	21
3	3 Gaskill Grove	2	38	39	43	44	1	65	26	21
4	4 Gaskill Grove	1	36	37	41	42	1	63	26	21
5	5 Gaskill Grove	2	39	38	44	43	-1	67	29	24
6	3 Harbour View Road	2	31	40	36	45	9	64	24	19
7	5 Harbour View Road	2	34	41	39	46	7	65	24	19
8	7 Harbour View Road	2	23	35	28	40	12	55	20	15
9	1 Jenness Grove	2	30	37	35	42	7	58	21	16
10	2 Jenness Grove	2	29	37	34	42	8	58	21	16

No.	Address	Number of storey	Predicted rail noise levels, dB $LA_{eq(1hr)}$					Predicted road traffic noise levels 2036 Do Minimum (Project + existing roads), dB $L_{Aeq(24hr)}$	Difference between predicted road traffic and future rail (night-time peak hour) noise levels	Difference between predicted road traffic and future rail (daytime peak hour) noise levels
			dB $L_{Aeq\ (1hr)}$, 2 passby (night-time peak hour)[1]		dB $L_{Aeq\ (1hr)}$, 6 passby (daytime peak hour)[2] Future Alignment		Change from Existing to Future alignment, dB			
			Existing Alignment	Future Alignment	Existing Alignment	Future Alignment				
11	3 Jenness Grove	1	27	38	32	43	11	56	18	13
12	4 Jenness Grove	2	29	38	34	43	9	57	19	14
13	5 Jenness Grove	2	38	41	43	46	3	67	26	21
14	7 Jenness Grove	2	38	41	43	46	3	67	26	21
15	8 Jenness Grove	2	39	40	44	45	1	67	27	22
16	9 Jenness Grove	3	39	39	44	44	0	67	28	23
17	10 Jenness Grove	2	36	35	41	40	-1	62	27	22
18	125 Western Hutt Road	2	27	33	32	38	6	64	31	26

[1] Melling Line night-time peak hour being 6:00 am– 7:00 am.

[2] Melling Line daytime peak hour being 7:00 am – 9:00 am and 4:00 pm – 6:00 pm.

Table 7-1 shows the predicted future rail noise levels during night-time and daytime peak hour are up to 41 and 46 dB $L_{Aeq(1hr)}$ respectively.

Whilst the predicted peak hour rail noise levels increased up to 12 dB from the existing levels, the predicted 2036 Do Minimum road traffic noise levels at the corresponding receivers are at least 18 dBA (during Melling Link night-time peak hour) and 13 dBA (during Melling Link daytime peak hours) higher than the predicted future rail noise levels. For noise levels from the rail noise and road traffic noise to be cumulative the noise levels must be within 9 dBA of each other. The minimum noise level difference between road traffic noise levels and rail noise levels is 13 dBA. Therefore, road traffic noise levels are predicted to be sufficiently high enough to mask operational railway noise levels, and the railway noise levels will not prove cumulative to the road traffic noise levels.

The effects anticipated with operation of the realignment are therefore considered negligible as train noise is predicted to be generally imperceptible in the context of the road traffic noise allowed for under the RiverLink Project.

8. Operational rail vibration assessment

Operational rail vibration levels at a receiver are dependent on multiple factors. US FTA 2018 describes factors that can influence ground-borne vibration in three ways:

- Vibration source: speed, vehicle suspension, wheel condition and track surface;
- Vibration path: soil type, rock layers, soil layering and depth to water table; and
- Vibration receiver: foundation type, building construction and acoustical absorption.

The only factors that will be changed due to the proposed rail realignment are the train speed and distance from the track.

Electric multiple unit (EMU) vibration data, sourced from Chapter 6 of the US FTA 2018 has been used to produce graphs of Vrms vibration velocity levels at distances from the railway track centre for EMU at various speeds and is shown in Figure 3.

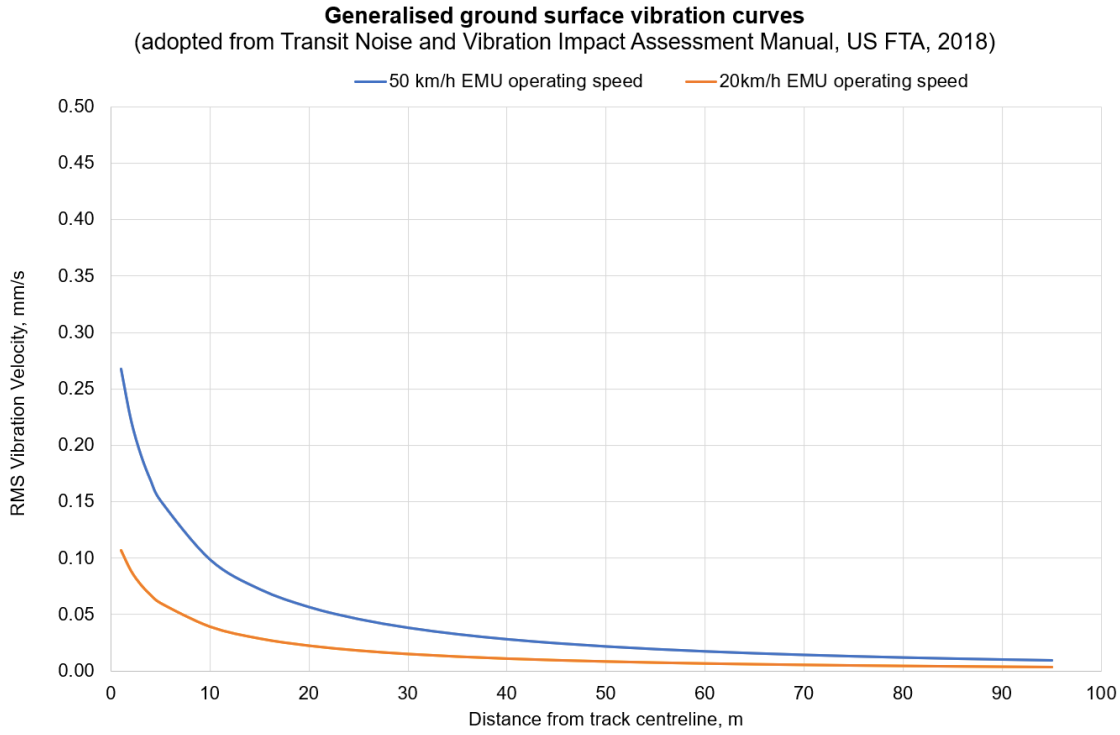

Figure 3 Generalised ground surface vibration curves (US FTA 2018)

All of the operational vibration sensitive receivers are at least some 70 m from the proposed rail alignment, rail vibration levels at the receivers (i.e. receivers shown in Table 7-1) are anticipated to be lower than 0.05 mm/s. This is a very low level of vibration and is generally considered as imperceptible.

9. Conclusion

GHD has undertaken an acoustic assessment of the proposed rail realignment from the relocated Melling Station up to the northern extent of the altered Designation (i.e. northern extent of the existing Designation).

Noise and vibration from the construction and operation of the proposed railway realignment beyond the relocated Melling Station has been assessed.

It has been found that the recommended construction noise and vibration limits are predicted to be complied with at all surrounding receivers and the changes in operational noise and vibration from the proposal are predicted to be generally imperceptible at all surrounding receivers given a soundscape that is now, and is expected to be in the future, dominated by road traffic noise from the adjacent state highway.

Appendices

Appendix A – Construction Noise Modelling Details

Construction noise levels have been predicted using an acoustics computer model with the following parameters.

Parameter	Setting/source
Operator	Edmond Wu
Software	SoundPLAN version 8.2
Calculation algorithm	ISO 9613-2:1996 Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation
Parameter	$Leq_{(15min)}$ (i.e. noise levels during a typical worst case 15 minute period of operation where all equipment is operating at full power)
Receivers	1 metre from building façade 1.5m high at ground floor, 4.5m high at first floor, 7.5m high at second floor, 10.5m high at third floor, 13.5m high at fourth floor, 16.5m high at fifth floor
Building footprints	Buildings_footprint.shp (received from Hutt City Council on 4 November 2020) Buildings to be demolished due to the RiverLink Project are not included in the construction noise model.
Building's number of storeys	GIS information contained within PROP_INFO_QV_Nov2020.shp (received from Hutt City Council on 18 January 2021); and Site observations
Receivers address	NZ street addresses, LINZ Data Service (retrieved 19 October 2020)
Ground absorption	0.5
Terrain	Existing terrain: Contours_urban_1m.shp (1 metre resolution) (received from Hutt City Council on 13 November 2020) Future terrain within river works area: 12505727-XC-CONT-RIVER-WORKS.dxf (GHD, received on 12 January 2021)
Construction activities and relevant activity sound power level	Construction activities summarized in Table 5-2

Appendix B – Existing Rail Noise Level Survey (Design Speed)

Existing rail noise level survey details – train running at speed (approximately 50 km/h)

Parameter	Setting/source
Operator	Edmond Wu
Location	Rail Corridor, 5m from the nearest track
Equipment details	SVAN 977C SLM Serial 92628
Measurement dates	14 Monday to 22 Tuesday December 2020
Observation	Train noise being dominant source of noise and traffic noise on State Highway 2 reduced due to screening by the train during train pass-by's of the measurement location.

Summary of rail noise level survey results measured at 5m from the nearest track when train running approximately at design speed

Event no.	dB $L_{Aeq,T}$	Average dB $L_{Aeq,T}$	Duration, s	SEL dBA	Average SEL dBA
1	72	72	17	84	84
2	73		20	86	
3	73		16	85	
4	70		14	82	
5	71		19	84	
6	73		18	85	
7	72		17	85	
8	72		13	83	
9	72		12	82	
10	71		12	82	

Noise level survey location

Photographs of noise level survey position

Appendix C – Existing Rail Noise Level Survey (Low Speed)

Existing rail noise level survey details – train running at low speed entering or leaving station platform

Parameter	Setting/source
Operator	Edmond Wu
Location	Melling Railway Station
Equipment details	SVAN 979 SLM Serial 92066
Measurement dates	15 Tuesday December 2020
Measurement time	8:00am – 9:15am (weekday morning peak hour of Melling Line)
Observation	Train noise (low speed entering/leaving station platform) and traffic noise on State Highway 2 being dominant source of noise.

Summary of rail noise level survey results measured at 5m from the nearest track when train running at low speed entering or leaving station platform

Event no.	dB $L_{Aeq,T}$	dB $L_{Aeq,T}$ (estimated contribution from train noise)	Average dB $L_{Aeq,T}$ (estimated contribution from train noise)	Duration, s (train noise)	SEL dBA	Average SEL dBA
1	68	65	66	13	76	77
2	70	67		13	78	

Noise level survey location

Photographs of noise level survey position

Appendix D – Railway Noise Modelling Details

Railway noise levels have been predicted using an acoustics computer model with the following parameters.

Parameter	Setting/source
Operator	Edmond Wu
Software	SoundPLAN version 8.2
Calculation algorithm	ISO 9613-2:1996 Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation
Parameter	dB $L_{eq(1\ hour)}$
Receivers	Free-field; 1.5m high at ground floor, 4.5m high at first floor, 7.5m high at second floor
Building footprints	Buildings_footprint.shp (received from Hutt City Council on 4 November 2020) Buildings to be demolished due to the RiverLink Project are not included in the railway noise model.
Building's number of storeys	GIS information contained within PROP_INFO_QV_Nov2020.shp (received from Hutt City Council on 18 January 2021); and Site observations
PPF address	NZ street addresses, LINZ Data Service (retrieved 19 October 2020)
Ground absorption	0.5
Terrain	Existing terrain: Contours_urban_1m.shp (1 metre resolution) (received from Hutt City Council on 13 November 2020) Future terrain within river works area: 12505727-XC-CONT-RIVER-WORKS.dxf (GHD, received on 12 January 2021)
Rail alignment	Track Alignment Plan and Profile, Drawing No. 12505727-SK201 – 205 Rev. A dated October 2020, GHD
Train source noise levels (calibrated in noise model based on measurement)	Entering or leaving the platform low speed applied at 50 m from the station platform: 78 dB $L_{WA/m}$ Running at speed (approximately 50 km/h) applied at tracks other than 50 m from the station platform: 84 dB $L_{WA/m}$
Train speed	Maximum design speed of the proposed track alignment: 50 km/h[4]

[4] Track Alignment Design Memorandum, dated 27 October 2020, GHD

Parameter	Setting/source
Train frequency	6:00 am – 7:00 am (night-time peak hour): 1 passenger trains arrive and depart (i.e. 2 pass-by's per hour) 7:00 am – 9:00 am and 4:00 pm – 6:00 pm (morning and evening peak hours): 3 passenger trains arrive and depart (i.e. 6 pass-by's per hour)
Curves	+3 dB correction applied (300 m<r<500 m radius)[2] +8 dB correction applied (50 m<r<300 m radius)[2]

[1] Melling Line timetable is provided in Appendix E

[2] Adopted from Schall 03 corrections for curve radius (SCHALL 03 2006, Richtlinie zur Berechnung der Schallimmissionen von Eisenbahnen und Straßenbahnen)

Appendix E – Melling Line Timetable

Melling Line timetable available on https://www.metlink.org.nz/service/MEL/timetable at the time of writing.

6:35am	6:38am	6:41am	6:47am	6:53am
7:16am	7:19am	7:22am	7:28am	7:34am
7:33am	7:36am	7:39am	7:45am	7:52am
7:56am	7:59am	8:02am	8:08am	8:14am
8:16am	8:19am	8:22am	8:28am	8:34am
8:36am	8:39am	8:42am	8:48am	8:54am
9:01am	9:04am	9:07am	9:13am	9:19am
9:31am	9:34am	9:37am	9:43am	9:49am
10:01am	10:04am	10:07am	10:13am	10:19am
10:39am	10:42am	10:45am	10:51am	10:57am
11:39am	11:42am	11:45am	11:51am	11:57am
12:39pm	12:42pm	12:45pm	12:51pm	12:57pm
1:39pm	1:42pm	1:45pm	1:51pm	1:57pm
2:39pm	2:42pm	2:45pm	2:51pm	2:57pm
3:49pm	3:52pm	3:55pm	4:01pm	4:07pm
4:08pm	4:11pm	4:14pm	4:20pm	4:26pm
4:25pm	4:28pm	4:31pm	4:37pm	4:44pm
4:45pm	4:48pm	4:51pm	4:57pm	5:03pm
5:04pm	5:07pm	5:10pm	5:16pm	5:22pm
5:23pm	5:26pm	5:29pm	5:35pm	5:42pm
5:40pm	5:43pm	5:46pm	5:52pm	5:58pm
6:00pm	6:03pm	6:06pm	6:12pm	6:18pm
6:37pm	6:40pm	6:43pm	6:49pm	6:55pm

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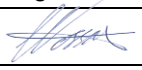
Document Status

Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
0	Edmond Wu	Christian Vossart				

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Revision	Author	Reviewer		Approved for Issue		
		Name	Signature	Name	Signature	Date
A	Rasmus Altenkamp	Helen Anderson		Mary O'Callahan		14/07/21

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Attachment B – Gazette Notice

Departmental Notices

Business, Innovation and Employment

Crown Entities Act 2004

Appointment/reappointment to the New Zealand Tourism Board

Pursuant to section 28(1)(a) of the Crown Entities Act 2004, the Minister of Tourism has appointed

Jamie Grant Daniel Tuuta, of Wellington

as a member of the New Zealand Tourism Board for a three-year term commencing on 7 March 2013 and expiring on 7 March 2016; and reappointed

Richard Ian Leggat, of Auckland

as a member of the New Zealand Tourism Board for a second term commencing on 1 February 2013 and expiring on 1 February 2016.

Dated at Wellington this 5th day of March 2013.

RT HON JOHN KEY, Minister of Tourism.

go1453

Culture and Heritage

Crown Entities Act 2004

Appointment to the Arts Council of New Zealand Toi Aotearoa

Pursuant to section 28 and Schedule 5 of the Crown Entities Act 2004, I appoint

Dr Richard Grant, of Havelock North

as chair and as a member of the Arts Council of New Zealand Toi Aotearoa for a term commencing on 1 April 2013 and expiring on 31 December 2013 (or such earlier date on which the current council is abolished).

Dated at Wellington this 2nd day of March 2013.

HON CHRISTOPHER FINLAYSON, Minister for Arts, Culture and Heritage.

go1479

Education

Education Act 1989

Waipaoa Station School (2722) **Closure Notice**

Pursuant to section 154 of the Education Act 1989, I hereby declare that **Waipaoa Station School**, Gisborne/East Coast Region, will close on 5 May 2013 and will cease to be established on that day.

Dated at Wellington this 5th day of March 2013.

HON HEKIA PARATA, Minister of Education.

go1553

Te Puia Springs School (2699) **Closure Notice**

Pursuant to section 154 of the Education Act 1989, I hereby declare that **Te Puia Springs School**, Tairāwhiti, will close on 5 May 2013 and will cease to be established on that day.

Dated at Wellington this 5th day of March 2013.

HON HEKIA PARATA, Minister of Education.

go1554

Te Kura Kaupapa Māori o Waipiro (2724) **Closure Notice**

Pursuant to section 154 of the Education Act 1989, I hereby declare that **Te Kura Kaupapa Māori o Waipiro**, Waipiro Bay, will close on 5 May 2013 and will cease to be established on that day.

Dated at Wellington this 5th day of March 2013.

HON HEKIA PARATA, Minister of Education.

go1555

Notice of Direction to Appoint a Limited Statutory Manager for the Board of Trustees of Sir Douglas Bader Intermediate School, Mangere (1215)

Pursuant to section 78M of the Education Act 1989, I direct the Secretary for Education to appoint a limited statutory manager for the board of trustees of Sir Douglas Bader Intermediate School because of risks to the educational performance of its students and the operation of the school.

The following functions, powers and duties of the board are to be vested in a limited statutory manager:

- All functions, powers and duties of the board as an employer (whether statutory or otherwise);
- all functions, powers and duties of the board in curriculum management including teaching and assessment practice (whether statutory or otherwise); and
- all functions, powers and duties of the board to establish board systems and processes (whether statutory or otherwise) for school-wide self-review.

A limited statutory manager must also advise the board on the following:

- Effective financial management; and
- effective communication with its staff and community.

This notice takes effect on the day of publication.

Dated at Wellington this 5th day of March 2013.

HON HEKIA PARATA, Minister of Education.

go1242

Environment

Resource Management Act 1991

The Resource Management (Approval of KiwiRail Holdings Limited as Requiring Authority) Notice 2013

Pursuant to section 167 of the Resource Management Act 1991, the Minister for the Environment gives the following notice.

Notice

1. Title and commencement—(1) This notice may be cited as the Resource Management (Approval of KiwiRail Holdings Limited as a Requiring Authority) Notice 2013.

(2) This notice shall come into force on the 7th day after its publication in the *New Zealand Gazette*.

2. Approval as a requiring authority—KiwiRail Holdings Limited is hereby approved as a requiring authority under section 167 of the Resource Management Act 1991, for its network utility operation being the construction, operation, maintenance, replacement, upgrading, improvement and extension of its railway line.

3. Revocation—This notice revokes the Resource Management (Approval of the New Zealand Railways Corporation as Requiring Authority) Notice 2004 (dated the 16th day of September 2004 and published in the *New Zealand Gazette,* 23 September 2004, No. 124, page 3070).

Dated at Wellington this 4th day of March 2013.

HON AMY ADAMS, Minister for the Environment.

go1447

Health

Medicines Act 1981

Consent to the Distribution of New Medicines

Pursuant to section 20 of the Medicines Act 1981, the Minister of Health hereby consents to the distribution in New Zealand of the new medicines which were referred to the Minister of Health under the provisions of section 24(5) of the Act and are set out in the Schedule hereto:

Schedule

Product:	**Enbrel**
Active Ingredient:	Etanercept 25mg
Dosage Form:	Powder for injection with diluent
New Zealand Sponsor:	Pfizer New Zealand Limited
Manufacturer:	Boehringer Ingelheim Pharma GmbH & Co KG, Biberach an der Riss, Germany
Product:	**Enbrel**
Active Ingredient:	Etanercept 50mg
Dosage Form:	Powder for injection with diluent
New Zealand Sponsor:	Pfizer New Zealand Limited
Manufacturer:	Boehringer Ingelheim Pharma GmbH & Co KG, Biberach an der Riss, Germany
Product:	**Enbrel**
Active Ingredient:	Etanercept 25mg
Dosage Form:	Solution for injection
New Zealand Sponsor:	Pfizer New Zealand Limited
Manufacturers:	Vetter Pharma-Fertigung GmbH & Co Kg, Langenargen, Germany Pfizer Ireland Pharmaceuticals, Dublin, Ireland Boehringer Ingelheim Pharma GmbH & Co KG, Biberach an der Riss, Germany
Product:	**Enbrel**
Active Ingredient:	Etanercept 50mg
Dosage Form:	Solution for injection
New Zealand Sponsor:	Pfizer New Zealand Limited
Manufacturers:	Vetter Pharma-Fertigung GmbH & Co Kg, Langenargen, Germany Pfizer Ireland Pharmaceuticals, Dublin, Ireland Boehringer Ingelheim Pharma GmbH & Co KG, Biberach an der Riss, Germany

Dated this 7th day of March 2013.

DR DON MACKIE, Chief Medical Officer, Clinical Leadership, Protection and Regulation Business Unit, Ministry of Health (pursuant to delegation given by the Minister of Health on 6 July 2001).

go1516

Consent to the Distribution of New Medicines

Pursuant to section 20 of the Medicines Act 1981, the Minister of Health hereby consents to the distribution in New Zealand of the new medicines set out in the Schedule hereto: