

**ENVIRONMENT COURT OF NEW ZEALAND
WELLINGTON REGISTRY**

**I MUA I TE KOOTI TAIAO O AOTEAROA
TE WHANGANUI-A-TARA**

ENV-2023-WLG-000005

Under the Resource Management Act 1991

In the matter of the direct referral of applications for resource consent and notices of requirement under sections 87G and 198E of the Act for the Ōtaki to North of Levin Project

By Waka Kotahi NZ Transport Agency

**STATEMENT OF EVIDENCE OF JAMIE JOSEPH POVALL
ON BEHALF OF WAKA KOTAHİ NZ TRANSPORT AGENCY**

DESIGN AND CONSTRUCTION

Dated: 4 July 2023

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INTRODUCTION

1. My full name is **Jamie Joseph Povall**.
2. I am currently Technical Director for Roads at Aurecon, in Sydney (Australia). Until June 2023 I was the Director of Major Projects, Transportation New Zealand at Stantec.
3. I was the lead author of the Design and Construction Report (**DCR**) prepared for the Ōtaki to north of Levin highway Project (**Ō2NL Project or Project**). The DCR is Appendix 4 to Volume II of the Assessment of Environmental Effects (**AEE**), which accompanied the application for resource consents and notices of requirement for designations (**NoRs**) lodged with Manawatū-Whanganui Regional Council (**Horizons**), Greater Wellington Regional Council (**GWRC**), Horowhenua District Council (**HDC**) and Kāpiti Coast District Council (**KCDC**) on 11 November 2022 in respect of the Ō2NL Project.
4. My qualifications and experience include:
 - (a) I hold a Master of Engineering (Civil) degree from Canterbury University completed in 2021 together with a Master of Science degree in Transportation Engineering obtained from Salford University (UK) in 2006. I also hold a Certificate in Engineering (Civil) obtained from John Moores University (UK) in 2008 and a Bachelors Degree in Geography from Liverpool University (UK) in 2002. I also hold an NZQA Diploma in Infrastructure Procurement achieved in 2018.
 - (b) I am a Chartered Engineer (UK), achieved in 2009, and a Chartered Professional Engineer (NZ), achieved in 2013. I am also a registered International Professional Engineer, obtained in 2017. My Chartered Professional Engineer (CPEng) Practice Area is *Lead designer of investigation and design of roading projects, road safety audits and traffic engineering analyses*. I am also an assessor for EngineeringNZ for both first time and continuing CPEng applicants in the areas of roading projects design and delivery.
 - (c) I have 20 years of professional experience in the fields of transportation and civil engineering, including project investigation and design of infrastructure projects.

- (d) Between 2002 and 2011 I was employed by Liverpool City Council in England, a large metropolitan local authority, where my final role was Highways & Traffic Safety Services Manager, responsible for Capital Project Delivery (as well as other technical services).
 - (e) Between 2011 and 2023, I was employed by Stantec New Zealand delivering civil infrastructure capital projects nationally for Waka Kotahi NZ Transport Agency (**Waka Kotahi**) and various local authorities. From 2016, I was the National Design Manager or Director for Stantec's largest civil transportation design projects nationally.
 - (f) I have been the lead design engineer / design manager on multiple large infrastructure projects in New Zealand including:
 - (i) State Highway 1 Johns Road four-laning and Greywacke Link Road in Christchurch; and
 - (ii) the State Highway 58 Upgrade between the Hutt Valley and Porirua; and
 - (iii) Eastern Bays seawall, beach nourishment and shared path project in the Hutt Valley; and
 - (iv) Riverlink alliance, including the new SH2 grade-separated interchange, structures and flood defences.
 - (g) I have also led, or been part of, the team that have delivered numerous transportation investigation and design projects including Melling Interchange Business Case, Greywacke Link Road, Dunedin one-way pairs separated cycleways, Papanui Parallel Major Cycleway in Christchurch, Waikare Gorge Realignment and KiwiRail Economic Freight Hub.
5. I am a member of a number of relevant associations including:
- (a) Engineering Council UK;
 - (b) Chartered Institution of Highways & Transportation (UK) (Chartered Member class – CMIHT); and
 - (c) Engineering New Zealand (Chartered Member class - CEngNZ).

6. In preparing the DCR and my evidence:
 - (a) I have been involved in matters related to the Project since September 2012, providing design and design leadership input;
 - (b) I have led the design work for the Project since 2016, through the Indicative and Detailed Business Case phases, and subsequently through to preliminary design for consenting. I have also attended and presented at numerous public / community meetings during that period.
 - (c) I have managed the technical design process (since 2016) as the Project's Design Manager, involving the integration and co-ordination of the multi-disciplinary inputs, including geometrics, structures, geotechnical / earthworks, pavement, shared path, stormwater and hydrology components, to deliver a design that meets the required technical standards and agreed design philosophy, in a cost-effective manner.
 - (d) I have led the *Engineering Degree of Difficulty (EDOD)* criteria of the various multi-criteria analysis exercises that have been completed to consider alternative options for the Project including for the alignment (corridor / route selection), interchanges, Taylors Road, Tararua Road / SH1 intersection, and 'East of Levin'. Each EDOD assessment was tailored to consider relevant engineering factors for that particular assessment / scope, including (for example) effect on watercourses, complexity of structures, earthworks volumes and complexity.
7. I have led the design team in the development of the Project Drawing set (drawings produced by Stantec), with my role to direct drawing requirements and then to instigate Quality Assurance as appropriate in accordance with the Stantec Quality Management Plan. I am the formal documented approver for all Stantec-produced drawings. In addition to approvals, I have also completed the technical check or review (as recorded in the individual drawing QA record) for a number of drawings where it is appropriate for me to do so.
8. Since the consent applications and NoRs were lodged I have attended a Project open day in Levin on Saturday 28 January 2023 for a Project speakers event, where I presented a summary of key Project design and construction information to approximately 100 community members. I have

also provided ongoing technical information to Waka Kotahi to assist in responding to landowner queries that arise.

Code of conduct

9. I confirm that I have read the Code of Conduct for expert witnesses contained in section 9 of the Environment Court Practice Note 2023. This evidence has been prepared in compliance with that Code. In particular, unless I state otherwise, this evidence is within my area of expertise and I have not omitted to consider material facts known to me that might alter or detract from the opinions I express.

Purpose and scope of the evidence

10. The DCR describes the concept design (including operational features) of the Ō2NL Project, and the works necessary to construct the Project.
11. My evidence does not repeat in detail the matters discussed in the DCR. Rather, in this evidence I:
 - (a) present a brief overview of the concept design and likely construction methodology for the Project;
 - (b) provide a description of the additional work carried out, information obtained, and discussions held since lodgement, and the subsequent updates to the concept design and expected construction methodology;
 - (c) comment on the issues raised in submissions received in respect of the Project;
 - (d) comment on the section 87F/198D reports prepared by Horizons, GWRC, HDC and KCDC (**council reports**); and
 - (e) Describe minor proposed changes to the proposed designation boundaries, which relate to submissions. I have attached updated land requirement plans showing those changes as **Appendix A**.

DESIGN OVERVIEW

Concept design

12. The concept design for the Project, described in the DCR and shown on the drawing set, has been prepared to demonstrate that the designations are sound and to help provide an 'envelope of effects' for the Project. The

intention is not to 'fix' the highway design but provide flexibility of alignment and design, while providing sufficient certainty to appropriately quantify potential environmental effects for the RMA consenting and designation process. In particular:

- (a) Design is at a level of detail suitable for seeking designations and resource consents. It is not yet at a stage of progression to allow construction. This next level of detail will be completed in subsequent phases (which may include a Specimen Design and also a final Detailed Design).
 - (b) The concept design has been used as a practical basis to understand the nature and scale of the actual and potential effects on the environment that result from the Ō2NL Project. Consideration of effects and mitigation at a fine scale will be addressed through an Outline Plan of Works.
 - (c) The level of advancement of different design elements has been targeted to ensure adequacy for consenting. For example, stormwater and earthworks have been well advanced, whereas for other items, such as subsurface works and road furniture (barriers, lighting poles etc.) designs are at an early stage only in light of the limited potential environmental effects associated with those elements.
13. Overall, the intent of the concept design is not to 'firmly fix' the highway design but provide flexibility of alignment and design, to be finalised as part of detailed design.
14. It is expected that the final design will be broadly in line with the consented concept design solution. Design progression will result in some design changes in later stages, as is usual with projects of this nature and the stage of design currently available in seeking designations and resource consents.

Design elements

15. The concept design of the Ō2NL Project is shown on the Project drawings, and described in the DCR. It includes the following key elements:
- (a) Approximately 24km four-lane (two lanes in each direction), median divided new highway between Taylors Road north of Ōtaki, linking with PP2Ō, and ending just north of Levin, where it connects back into the

existing SH1 and to State Highway 57 (**SH57**) towards Palmerston North.

- (b) Built to the east of the current state highways and east of the Manakau, Ohau and Levin townships.
- (c) Access to the new highway being limited, and provided only as follows:
 - (i) Grade separated diamond interchange at Tararua Road (CH18200), and a half diamond interchange with south-facing ramps near to Taylors Road (CH34200).
 - (ii) At-grade roundabouts at SH57 (CH13100) and SH1 north of Levin (CH10300).
- (d) Bridges over the Waiauti (CH30400), Waikawa (CH26500) and Kuku (ST23800) Streams, the Ohau River (CH22600) and the North Island Main Trunk rail line (CH10700).
- (e) Underpasses (local road beneath the new highway) near to Taylors Road (CH34200) for connectivity to the existing SH1 where Ō2NL connects with PP2Ō, and at South Manakau Road (CH30200).
- (f) Overpasses (local road over the new highway) at Manakau Heights Drive (CH29000), North Manakau Road (CH27100), Kuku East Road (CH24000), Muhunoa East Road (CH21500), and Queen Street East (CH15600).
- (g) New local road links as follows:
 - (i) Realignment of part of Kuku East Road (CH23900).
 - (ii) Realignment of part of Muhunoa East Road (CH21600)
 - (iii) New link provided between McLeavey Road and Arapaepae Road South (west of new highway) (CH20000-20500).
 - (iv) New link provided between Kimberley Road and Arapaepae Road South (east of new highway) (CH19600-20200).
 - (v) New link provided between Kimberley Road and Tararua Road South (east of new highway) (CH18200-19600).
 - (vi) New link provided to connect Waihou Road with Macdonald Road and SH57 (CH13200-14000).

- (vii) Extension of Sorensens Road to the south (CH11100).
 - (viii) New link provided between Koputaroa Road and Heatherlea East Road, with access onto the new highway roundabout (CH10100).
 - (ix) Realignment of current SH1 (the Avenue) to connect to northern roundabout (CH10300).
- (h) Closing the current SH1 and Cambridge Street South intersection in urban Levin (including the rail level crossing), and replacing with a new intersection at Tararua Road and the current SH1 190m to the south. The new intersection will become a signalised crossroad intersection (inclusive of a new rail level crossing), with integration of rail signalling and barriers.
- (i) A separated shared use path (**SUP**) for walking and cycling along the entire length of the new highway (but deviating away from being directly adjacent to the new highway in some locations) that will link into shared path facilities built as part of PP2Ō (and further afield to the existing Mackays to Peka Peka shared path).
- (j) Stormwater treatment wetlands, stormwater swales, drains, and sediment traps.
- (k) Culverts to reconnect streams crossed by the proposed works and stream diversions to recreate and reconnect streams.
- (l) Spoil sites at various locations.
- (m) Four Material Supply Sites at various locations.

Design principles

16. The design has been, and will continue to be, guided by:
- (a) cultural design principles; and
 - (b) engineering principles.

Cultural design principles

17. Cultural design principles have been established for the Project through the partnership with Waka Kotahi and its Iwi Partners (Muaūpoko Tribal Authority and hapū of Ngāti Raukawa ki te Tonga).

18. The core (overarching) principles developed for the Ō2NL Project and the Cultural and Environmental Design Framework (provided as Attachment Three to Volume II) are to:
 - (a) Tread Lightly, with the whenua:
 - (i) Me tangata te whenua (treat the land as a person).
 - (ii) Kia māori te whenua (let it be its natural self).
 - (b) Create an Enduring Community Legacy:
 - (i) Kia māori te whakaaro (normalise māori values).
 - (ii) Me noho tangata whenua ngā mātāpono (embed the principles in all things).
 - (iii) Tū ai te tangata, Tū ai te whenua, Tū ai te Wai (elevate the status of the people, land and water).
19. These core principles flow from tikanga Māori and Te Ao Māori cultural values. They define the framework for interaction between those working on the Ō2NL Project and for the relationship between the project team, the Ō2NL Project itself, and the natural world.
20. The values endorsed within the partnership include:
 - (a) Te Tiriti (spirit of partnership).
 - (b) Rangatiratanga (leadership – professionalism – excellence).
 - (c) Ūkaipotanga (care – constructive behaviour towards each other).
 - (d) Pukengatanga (mutual respect).
 - (e) Manaakitanga (generosity – acknowledgement – hospitality).
 - (f) Kaitiakitanga (environmental stewardship).
 - (g) Whanaungatanga (belonging- teamwork).
 - (h) Whakapapa (connections).
21. The partnership process throughout the development of the Ō2NL Project has assisted in the route selection for the corridor and provided critical insight for the detailed location of the alignment and various design features. Those matters include interfaces with watercourses and stormwater management

and the overarching aim of fitting the new highway sensitively into the landscape.

22. Key changes to the physical alignment through the development of the concept design of the Ō2NL Project have been made in response to feedback from iwi partners and these include:
 - (a) Design of the new state highway immediately east of Levin was modified to avoid adverse effects on the land and on groundwater, by keeping the highway close to the existing ground level instead of being below ground in an earthworks cutting.
 - (b) Realignment of the reconnection of Queen Street East local road bridge and approaches, and the inclusion of a new active mode path over the new state highway at Queen Street East to retain the connections between the Tararua Range and Punahau / Lake Horowhenua.
 - (c) Pulling back the new state highway alignment from Pukehou as much as practicable and design changes to allow reinforcement of watercourses and connection from Pukehou through to Waiwaro and Otepua Swamps.
 - (d) Aligning the new state highway to avoid the toes of the important ridgelines of Ōtarere, Poroporo and Hanawera.

Engineering principles

23. In addition to ensuring that the Project is designed to safely and appropriately accommodate transport demand, the key design principles and associated elements adopted are summarised as follows:
 - (a) Safety in design: applied across the Project, for the full lifecycle of the Project, in accordance with Waka Kotahi Zero Harm, Health and Safety in Design standards.
 - (b) Maintenance in design: principles applied so that maintenance of assets can be undertaken safely, at a low whole-of-life cost, with as little disruption to the road operations and in the safest way possible.
 - (c) Road geometry:
 - (i) Design in accordance with Waka Kotahi and Austroads standards and guidance.

- (ii) Meet the principles of Safe System design.
 - (iii) Meet the requirements for a safe and resilient state highway.
 - (iv) Provide appropriate access onto and off the new highway, including providing appropriate local connectivity.
 - (v) Enhance walking and cycling connectivity and safety.
- (d) Bridges and structures:
- (i) Structures that will be durable, low maintenance and economical.
 - (ii) Fully integral design adopted where possible to minimise whole-of-life costs by removing the need for costly expansion joint and bearing replacements.
 - (iii) Mechanically Stabilised Earth (MSE) abutments used on single span bridges as they are quick to construct and perform very well seismically.
 - (iv) Piled foundations used on the larger Waikawa Stream and Ohau River bridges to prevent any long-term scour issues.
- (e) Earthworks design:
- (i) Provision of resilient cut / fill slopes which have appropriate seismic resilience, low maintenance, and mitigation against slope face erosion.
 - (ii) Where practicable; balance cut / fill volumes along the route, maximise borrow sources from within the designation, and provide frequent spoil sites, to avoid large spoil areas and long haul distances.
- (f) Geology:
- (i) Appropriate investigations and interpretation of geological features to influence the engineering design outcomes and inform risk.
 - (ii) Ongoing instrumentation and monitoring to verify design assumptions.

(g) Stormwater and hydrology (see the evidence of **Mr Nick Keenan** and **Dr Jack McConchie**):

- (i) Main watercourse crossings designed to accommodate the 1:100 AEP event with climate change (RCP 6.0 to 2130).
- (ii) Stormwater run-off collection and conveyance systems are designed to manage up to a 1:100 AEP event, including climate change. The initial surface and collection systems are designed to accommodate a 10-minute duration storm event (as per NZTA P46 Stormwater Specification).¹
- (iii) Cross culverts of existing flow paths inclusive of fish passage provision, and construction of new stream channels where needed.
- (iv) Attenuation of road stormwater runoff to below pre-development catchment responses; the overall pond areas will have a holding volume up to the 24 hour duration in a 1:100 AEP magnitude event (with climate change).
- (v) Treatment of road runoff will be by a treatment train approach, based on current established passive systems incorporating landscape and ecological benefits, and will seek to provide coverage to approximately 95% of the road surface area.
- (vi) Ground soakage disposal following treatment will be specified where suitable soils exist and where disposal to surface water is not available.

(h) Lighting:

- (i) Location, spacing and lighting levels, where required, to be in accordance with NZTA M30² and AS/NZS 1158.6.³ At this preliminary design stage, specific locations of lighting apparatus has not been shown on the drawing set.
- (ii) Will maintain the rural nature of the locality, with lighting provided at key conflict points and critical locations only.

¹ <https://nzta.govt.nz/assets/resources/stormwater-specification/nzta-P46-stormwater-specification.pdf>.

² <https://www.nzta.govt.nz/assets/resources/specification-and-guidelines-for-road-lighting-design/docs/m30-road-lighting-design.pdf>.

³ <https://www.standards.govt.nz/shop/asnzs-1158-62010/>.

CONSTRUCTION METHODOLOGY

24. The construction methodology described within the DCR (including the proposed staging) and summarised below represents a realistic and feasible methodology from which the anticipated effects on the environment of these activities can be identified and assessed for consenting. As is normally the case with large infrastructure projects, further refinement will occur as the Œ2NL Project progresses into the detailed design and construction phase enabling optimisation of the design and construction methodologies.

Construction duration

25. The construction of the Œ2NL Project is expected to be completed within approximately five years from the commencement of the main construction works, which are anticipated to commence in 2025. Establishment works, required to allow construction of the main works to proceed in a timely and efficient manner, would likely commence in 2024. The target date for opening the new road is by end of 2029.
26. Construction works are likely to be undertaken in a general sequence, as described in the DCR and summarised below. This sequencing is common practice on projects of this nature. Some activities may move around in sequence in all or part of the project extent, once the contractor has completed detailed construction programming and detailed design is complete. Further, to achieve the target completion date, many elements of the Œ2NL Project will likely need to be undertaken concurrently during the construction period, including the completion of works in multiple sectors.
27. Whilst works will take place concurrently and following the general sequence described, activities will ebb and flow throughout the duration of the works due to, for example, seasonal/weather restrictions, construction programming and material, resource and plant availability. This means that there will be periods of lesser or no activity on particular sections of the construction site throughout the duration of the five-year programme as works are completed on adjacent sections.

Construction access and laydown / compound sites

28. Construction access (and egress) will be required, primarily for:
 - (a) transport of site sourced material such as earthworks – generally on haul roads within the Project site / alignment;
 - (b) transport of material from off-site sources such as culvert pipes; and
 - (c) access and egress by construction staff.
29. Access for the supply of materials from off-site sources, as well as for construction staff, will be most effectively achieved by minimising the length of travel on slow and uneven site access tracks. Site access points (**SAPs**) will be located, designed and constructed with the safety of all road users and construction staff in mind.
30. Anticipated categories of SAPs include:
 - (a) access from SH1 at both the northern and southern tie-in locations;
 - (b) access from SH57 at various points associated with intersections, local road connections and cross overs of the new highway, and coordinated with any construction of the Tara-Ika development;
 - (c) access from local roads that intersect with the construction corridor; and
 - (d) infrequent SAPs from SH1 where the distance between other SAPs, described above, is excessive.
31. Management of site access will be through the Construction Traffic Management Plan (**CTMP**) (refer to Condition DCT1 and the evidence of **Mr Phil Peet**). Currently anticipated SAPs are described in the DCR.
32. It is anticipated that between five and seven main compound areas will be established along the length of site. These are likely to vary in size from 5,000m² to 10,000m² for satellite compounds and 20,000m² to 30,000m² for the head office / main compound. Potential site compound locations are listed in the DCR and shown on the Accommodation Works drawing set.
33. In addition, it is likely that smaller temporary compounds will be established at each of the bridge sites to specifically support the construction of the bridges. These are likely to vary in size from 400m² to 4,000m² for the larger

bridges. Compounds for constructing bridges may be located at either abutment of the bridge, or both.

Construction activities and methodology

34. The DCR includes a breakdown of the anticipated Project construction activities for the Project, and a summary of the methodology likely to be employed for those activities. Activities include:
 - (a) site preparation (including clearance, demolition, fencing, site office establishment);
 - (b) erosion and sediment control (such installation of sediment retention ponds and decanting earth bunds, silt fencing);
 - (c) temporary crossings of streams (including temporary culverts or channel construction);
 - (d) drainage (installation of culverts, headwalls, swale excavation and treatment ponds);
 - (e) bridge construction (abutment ground improvement, foundation, pile and mechanically stabilised earth walls, installation of pre-fabricated units);
 - (f) earthworks (bulk cutting and fill operations, material processing including drying and stockpiling, transportation of bulk earthworks material, placement and compaction);
 - (g) aggregate supply (from commercial quarry sources for upper layers of road pavement including transportation within the site);
 - (h) pavements (preparation of pavement including subgrade proof rolling, compaction and improvement, laying of granular and asphaltic / bituminous materials);
 - (i) local road realignments (including earthworks, drainage and pavement works);
 - (j) planting and landscaping (topsoil supply and preparation, landscape planting); and
 - (k) traffic services (installation of street lighting, road side safety barriers, road markings and signage).

Former landfill site at Ohau River

35. In the engineering design, I have considered the presence of historical landfill material within the extent of the proposed road alignment on the southern bank of the Ohau River.
36. Extensive ground investigations have been conducted in this area to ascertain the extent of type of contamination, and from an engineering sense, I do not anticipate this being a highly complex issue for remediation. It is of greater importance, in terms of engineering risk and cost, to locate the new multi-span Ohau river bridge in the optimal location for the bridge crossing.
37. This is covered further in the evidence of **Ms Kathryn Halder**.

WORK SINCE LODGEMENT

38. Since the application was lodged, I have been involved in further work related to design and construction as set out below.

Engagement with stakeholders

39. I have been involved in ongoing post-lodgement engagement with the Councils and other stakeholders. Since the consent applications were lodged, this has included:
 - (a) Presentation to the community alongside Project team members and iwi partners at a public event on 28 January 2023.
 - (b) A project induction workshop in Levin including a bus tour with iwi partners on 29 March 2023.
 - (c) Discussions with HDC officers in relation to access and property related to the Tara-Ika subdivision.

Award of Principals Technical Advisor Contract

40. In March 2023, Stantec, supported by Resolve Group, were confirmed as the successful bidder for the Waka Kotahi Principals Technical Advisor contract for procurement and technical advice, and support to Waka Kotahi for the post-consenting stages of the Project (alliance procurement for the detailed design and construction). This work is now underway. Since June 2023 I have not been involved in delivery of PTA related work. **Mr Lonnie Dalzell** discusses alliance procurement in his evidence.

COMMENTS ON SUBMISSIONS

41. Below I address submission points related directly to design details and construction methodology. A number of other Waka Kotahi experts address matters related to the design of the Project, and to effects arising from construction.

Wendy McAlister-Miles & Dion Miles, 195 Muhunoa East Road

42. The submitter raises a number of concerns in relation to construction and access. Access, noise and air quality issues are addressed in the evidence of **Mr Peet, Mr Michael Smith** and **Mr Andrew Curtis** respectively.
43. I note the proximity of the construction yard to this dwelling and access. The details of both use of, and access to, this yard will be confirmed when a constructor is appointed and through the Construction Environmental Management Plan (**CEMP**) / CTMP.
44. Due to the construction of the required road embankment rising up to a higher vertical level for the new Muhunoa East Road bridge, I expect the access to this construction yard to be taken from the eastern-most side of the property boundary. The management of this access, including safe access and egress onto existing Muhunoa East Road for construction-related traffic, and ongoing access for local residents will be detailed in the aforementioned management plans.
45. The construction yard in question is shown in purple in Figure 1 below; the submitter's property is directly opposite on the other side of Muhunoa East Road.

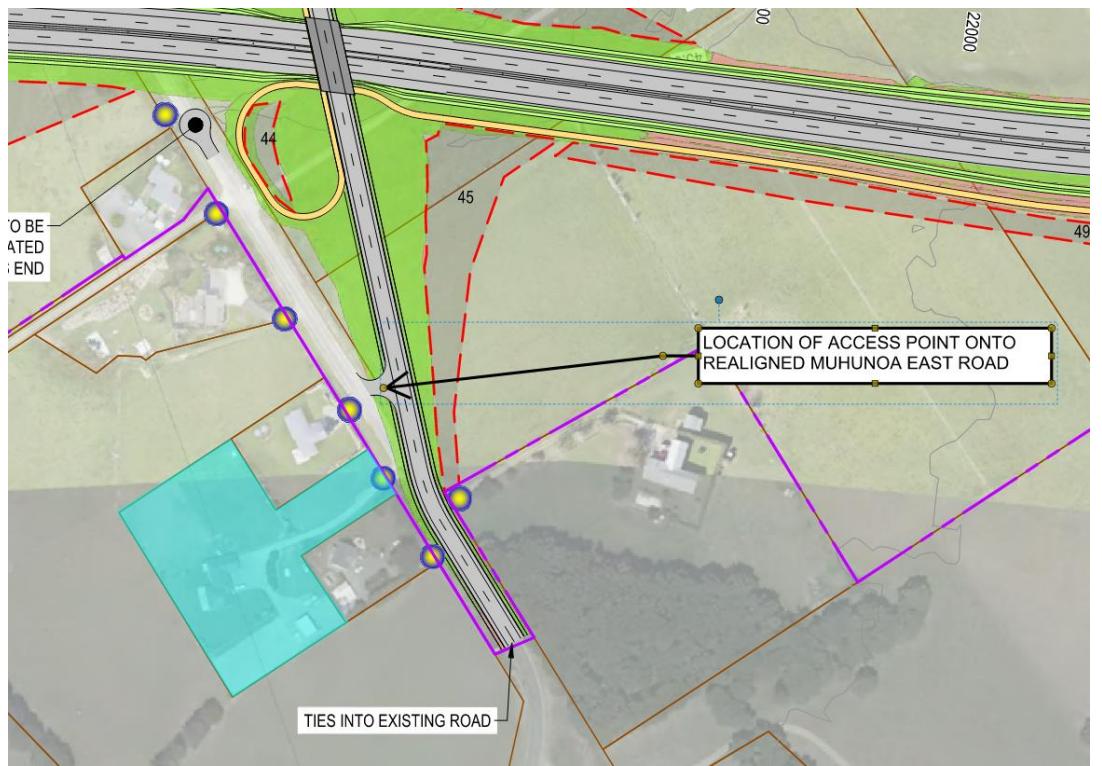


Figure 1: Construction yard opposite Muhunoa East Road

Adam & Joanne McCallum, 213 Muhunoa East Road

46. The submitter has requested that the new highway is relocated to the east, further away from the shared driveway of 213 and 213a/b/c/d and 211 and 211a/b Muhunoa East Road.
47. The shared driveway is shown in Figure 2 below:

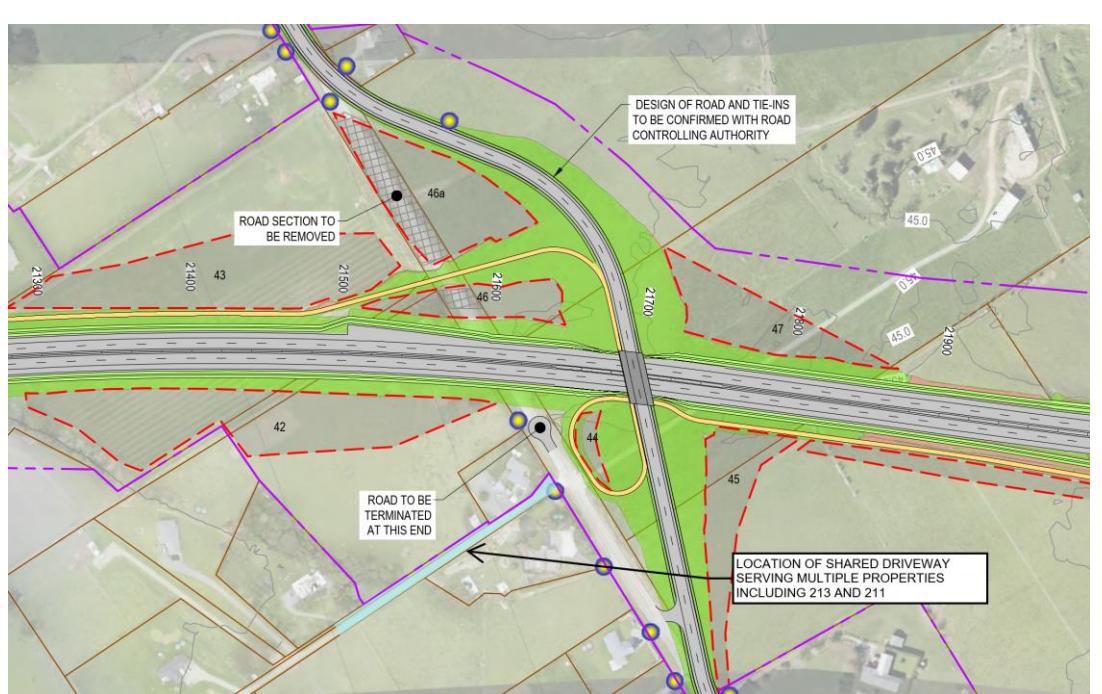


Figure 2: Shared driveway at 211 and 213 Muhunoa East Road

48. The location of the proposed new highway maintains the existing access in its current location, avoiding the need to realign or redirect this accessway. Access onto Muhunoa East Road for these properties will, however, change, given Muhunoa East Road will shift slightly south relative to the property and accessway to provide the space necessary to allow construction of a bridge to across the new highway and to avoid severing Muhunoa East Road. This creates a section of cul-de-sac approximately 180m in length on the 'old' section of Muhunoa East Road. This cul-de-sac will connect onto the new section of Muhunoa East Road.
49. Shifting the highway (or proposed designation) further east at this location would not be desirable given the location of property boundaries and dwellings that will remain to the east of the new highway. Additionally, a shift of the highway eastwards in this locality pushes closer to an existing watercourse within the Ohau river floodplain. Such a lateral shift of the alignment / designation may also complicate access to Riveredge Terrace further north, which is immediately adjacent to the designation, but currently unaffected for the ten or so properties situated on this road.
50. The submission requests that safe access to the driveway is maintained. The design has considered appropriate sight distance, and Stopping Sight Distance (**SSD**) and Safe Intersection Sight Distance (**SISD**) requirements are achieved, meaning this location meets the required standards to achieve safe operation. I also note Austroads Guide to Traffic Management Part 6,⁴ which is often used by councils to determine whether turning bays are needed, identifies that a turning bay is not warranted based on the level of accessway traffic that is likely to be turning into the cul-de-sac and the volume of traffic forecast on Muhunoa East Road. In 2046, it is forecast that there will be up to 40 vehicles per hour on Muhunoa East Road in the PM peak, and this is not enough to justify any sort of turning facility.
51. The submitter also requests safe cycling provision though the construction site / activities. I support this request, and note that providing for safe access for all road users will be a requirement of the construction staging and temporary traffic arrangements which will be determined once a contractor has been appointed, and via the conditioned CTMP (Condition DCT1). Arrangements will also be discussed with affected residents to ensure understanding and suitability for residents' use.

⁴ <https://austroads.com.au/publications/traffic-management/agtm06>.

Lesley Grant, 46/47 Wi Tako Street

52. The submitter has identified an existing paddock gate is within the draft designation boundary, and as such creates an access restriction between the paddock gate and Wi Tako Street. It could be possible to relocate the gate westwards, however this is not necessary and might require the unnecessary removal of established trees. I would support amending the draft designation boundary at this location, by moving the designation boundary to the south side of this section of Wi Tako Street (with the effect of removing around 40m of Wi Tako Street from the draft highway designation), thereby reinstating uninterrupted access from the paddock gate to the remaining section of Wi Tako Street. I do not anticipate any adverse impacts to the future design or construction.
53. The location of gate and recommended change to the proposed designation is shown in Figure 3 below, and in the updated land requirement plan included in **Appendix A**:

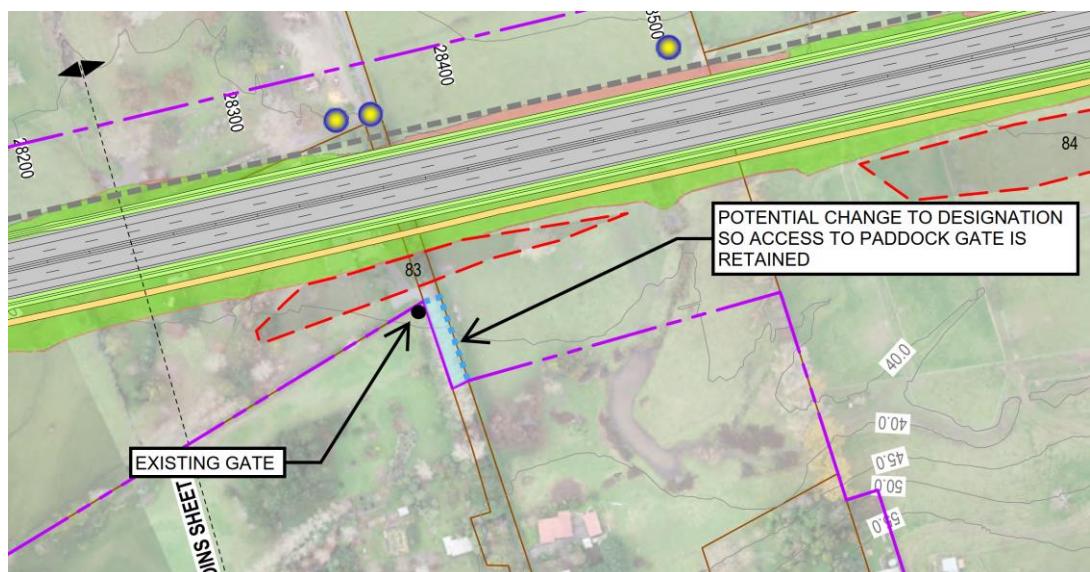


Figure 3: Change to designation at Wi Tako Street

John & Jenny Brown, 1134 Queen St East, Levin

54. The gully and limitations / challenges with access are noted for the land parcel to the west of the proposed new highway. The intention will be for the project team to agree appropriate access requirements with the landowner for any residual land that is not subject to the acquisition. Access provision for property that is not acquired for the road (and will remain in private ownership) will be agreed as part of the land acquisition process.

Janice Jakeman, 197 Muhunoa East Road, Ohau

55. The submitter raises concerns regarding access and the interaction between the proposed local road bridge and traffic turning to access 197 Muhunoa East Road. The current concept design proposal changes the method in which a number of properties located on the existing Muhunoa East Road (including 197 Muhunoa East Road) will access the future layout of Muhunoa East Road.
56. Muhunoa East Road will shift south relative to the property and existing accessway to provide the space necessary to allow construction of a bridge across the new highway to reconnect Muhunoa East Road once the new four lane highway is constructed. This creates a section of cul-de-sac approximately 180m in length section on the 'old' section of Muhunoa East Road. This cul-de-sac will connect onto the new section of Muhunoa East Road. The access from the cul-de-sac onto the new alignment of Muhunoa East Road has been positioned such that it provides sufficient visibility in both directions, to provide sufficient perception and reaction times for decision-making when turning into, or out of, the 'old' section of Muhunoa East Road.
57. The submitter has requested a turning bay and lighting to aid turning movements at this location, neither of which have been specifically proposed in the concept design to date. They are not currently proposed on the basis that both SSD and SISD requirements are achieved.
58. As per my response to Adam and Joanne McCallum, a turning bay is not warranted based on the level of accessway traffic that is likely to be turning into the cul-de-sac and the volume of traffic forecast on Muhunoa East Road (up to 40 vehicles per hour on Muhunoa East Road in the PM peak in 2046).
59. The location is shown in Figure 4 below:

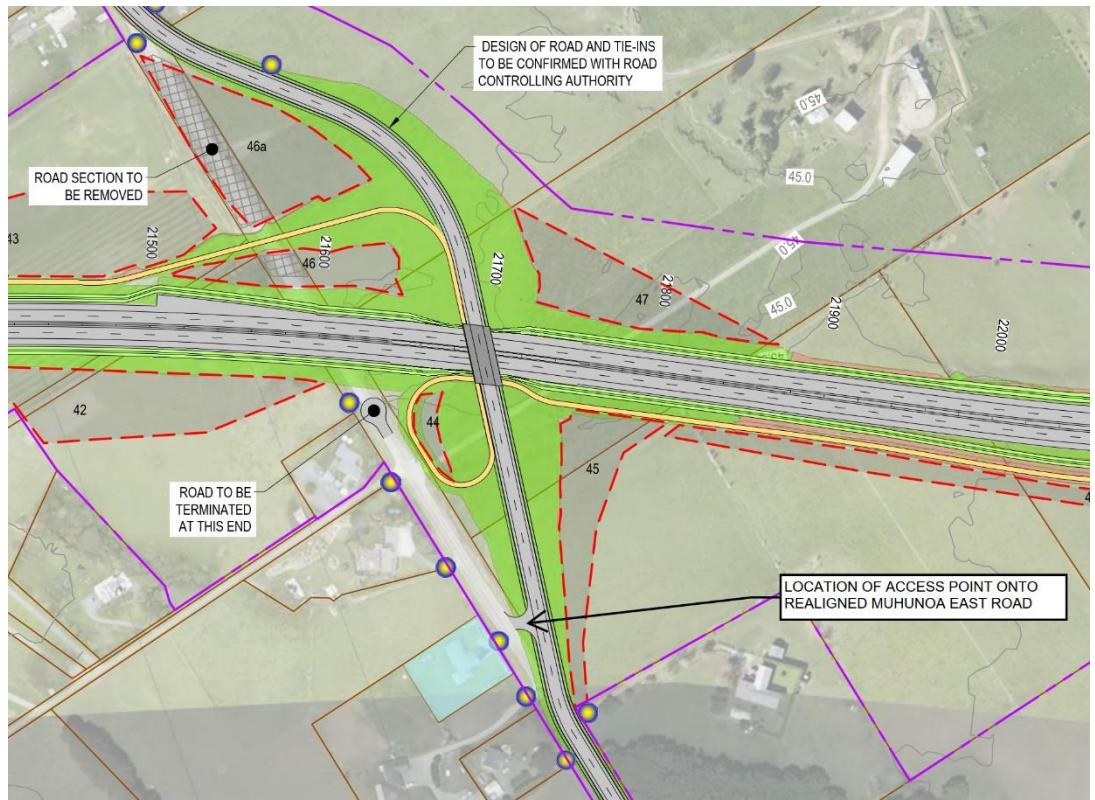


Figure 4: Proposed location of access onto Muhunoa East Road

Kevin Daly, 257/267 Tararua Road

60. The submitter has commented that Tararua Road does not appear to have safe and separated facilities for pedestrians without traversing the interchange. This is correct, and in fact the design seeks to ensure walking and cycling movements take place where they are safest to do so, in a direct and convenient manner. Tararua Road will become a key vehicular route into and out of Levin including for the growing industrial area located to the west of the new four lane highway. These vehicle volumes and types, with high percentages of heavier, larger vehicles are not conducive to providing an attractive walking and cycling facility. This is further compounded by the three roundabouts, (including ramp entry and exits) in terms of mixing pedestrians and cyclists with motorised traffic and at-grade crossing points. On this basis, the design intent is to provide high quality walking and cycling facilities in more appropriate locations, in order to reduce the need / demand for crossing Tararua Road interchange at grade, as well as providing for grade-separated crossing of the new highway, away from the concentrated conflict points and high traffic volumes at the Tararua interchange.

61. Grade-separation to remove pedestrian and cyclist conflicts with vehicles at Tararua Road is difficult to achieve because the roads will already be on two separate vertical levels. Instead, high quality and convenient grade-

separated movements are planned for Muhunoa East Road (to the south) and Queen Street (to the north). In addition, there are also a number of grade-separated walking and cycling movements being considered as part of the Tara-Ika development, though they do not form part of the Ō2NL proposal.

Prouse Trust Partnership, Karen & Stephen Prouse, 1024 Queen Street East

62. The submitter has noted that their property has road access across their entire northern boundary of Queen Street East and that the project has not identified how this will be provided for with the proposed works.
63. I note that the property is fenced along the entire northern boundary of Queen Street East and has two specific formed access points where access can take place between the property and the road. These access points are:
 - (a) the main accessway into the 'Ashleigh' property / residence; and
 - (b) a further gated access toward the western edge of the property boundary on Queen Street East, providing access to the 'run', being an area that is fenced from the main property and provides access to the rear of the section to the south.
64. The project drawings (General Arrangement plan set) show a turning circle at the eastern end of the Prouse frontage, with the intention being this would remain 'public', for example to allow bin collection trucks a suitable location to undertake collections. West of this turning circle an access track (the standard and design of which is not yet confirmed) will be provided that traverses the entire frontage of the Prouse property including providing access to the current heritage entrance and the 'run' to the rear paddocks at the western boundary of the property. This arrangement to provide access to both accesses following completion of the construction works is shown on the Figure 5 below:

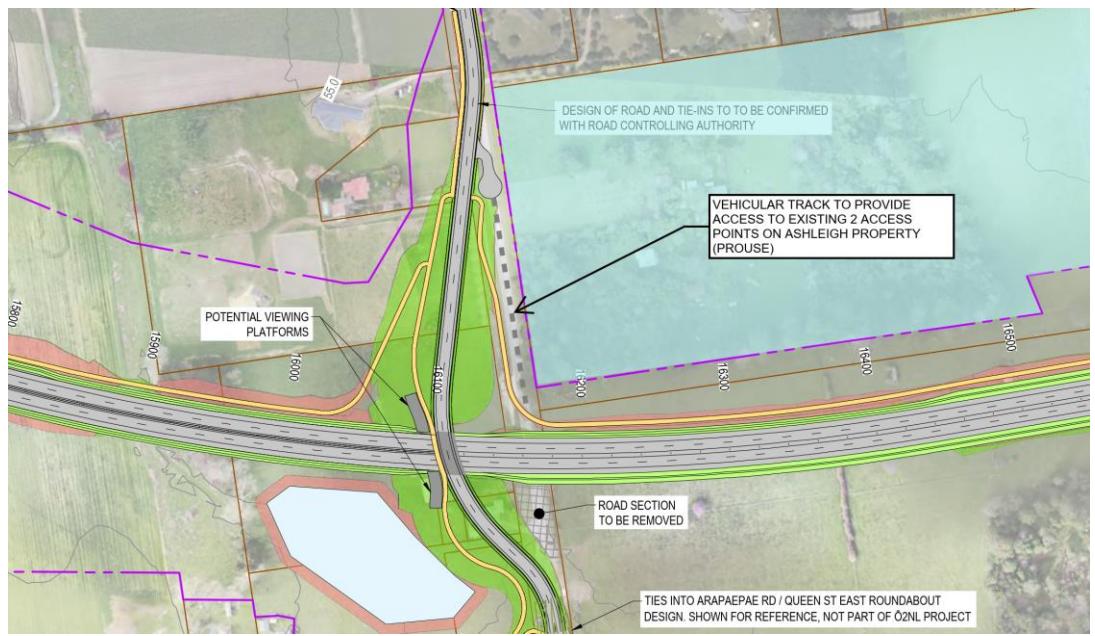


Figure 5: Proposed access to 1024 Queen Street East

65. During construction, the Prouse's will need continuous access to the property and the aforementioned access points. I do not foresee any significant challenges in maintaining this access as the new Queen Street bridge structure is offline northward of the existing Queen Street alignment, with Queen Street movements maintained on the existing road, until the point that the new bridge can be opened to traffic, and access to the Ashleigh property can take place as shown in Figure 5 above. Specific access details will be supplied and approved as part of the conditioned CTMP (Condition DCT1).

Cher McCartney, 1 Koputaroa Road

66. The submitter comments on the proposal to lease a portion of land on the property frontage with the existing SH1 at the northern extent of the project at/near Koputaroa Road (and asked that the land instead be purchased outright).
67. The area of land referred to is shown in Figure 6 below:

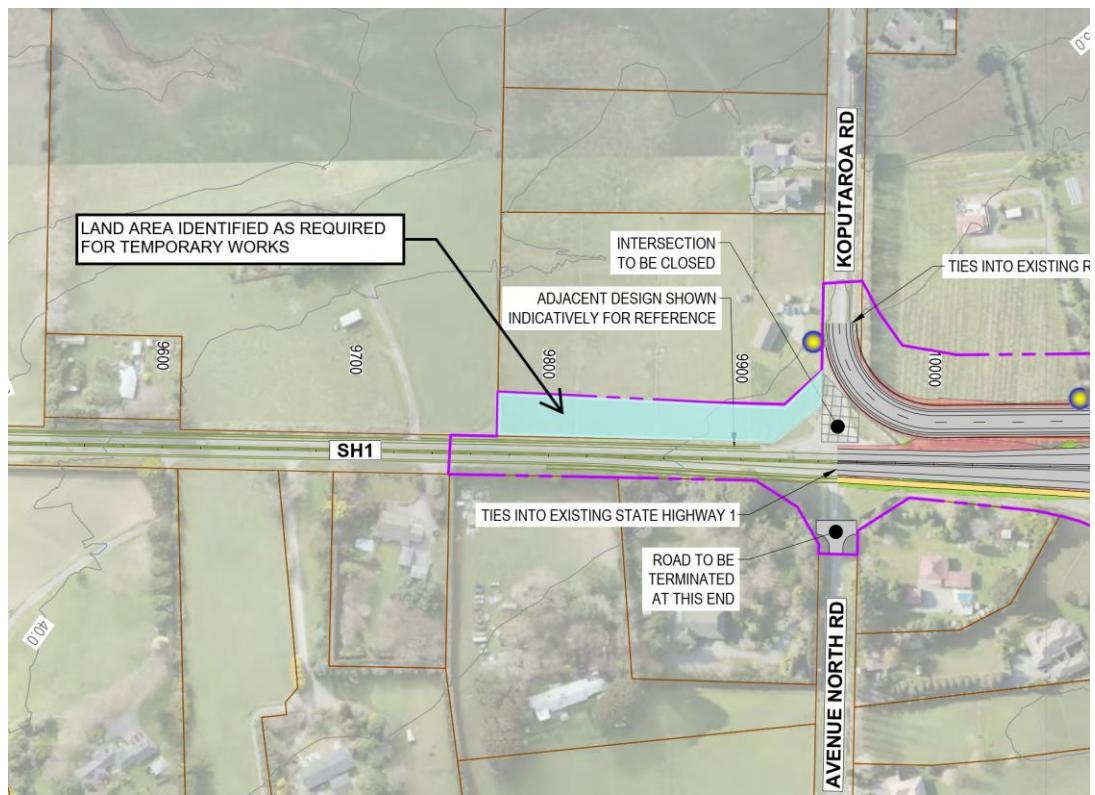


Figure 6: Temporary works area on current SH1

68. This area of land has been identified as required for the project works in order to provide additional width for temporary works, such as temporary traffic lanes to accommodate SH1 traffic, while the permanent works are being constructed. It is essential that additional width is provided at the tie-in points to provide a safe and separated working area for the permanent tie-in adjacent to the live state highway traffic.
69. This land would be required by Waka Kotahi for such temporary works during the Project construction period. Once the project works are completed the land would no longer be required as any temporary works and traffic lanes will be removed.
70. Provided access to the land is available when required to allow the construction of the final tie-in works, then whether the land is leased or fully acquired is immaterial for the design and construction activity.

Merie Cannon & Trevor Guy, 84 State Highway 1, Otaki

71. The submitters oppose the proposed property acquisition, including by reference to the impacts of the expressway projects to the south. They note the location of a water bore and identify adverse impacts from construction activities.

72. The proposed Project designation does extend into this property further than the extent of the PP2Ō project designation. The area of property is shown in Figure 7 below:

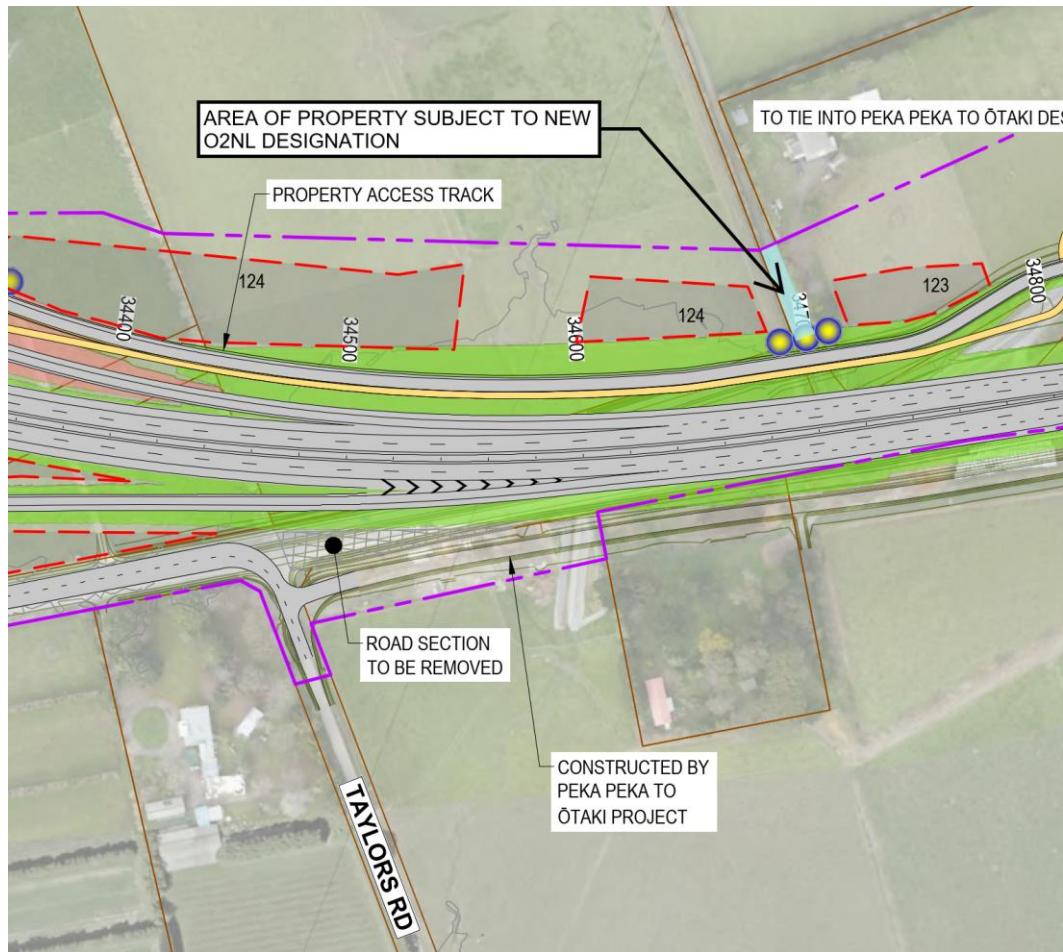


Figure 7: Area of 84 SH1 subject to the Ō2NL designation

73. This area of land has been identified as required for the project works in order to provide additional width for temporary works, such as temporary traffic lanes, while the permanent works are being constructed. It is essential that additional width is provided at the tie-in points to provide a safe and separated working area for the permanent tie-in adjacent to the live state highway traffic.
74. The location of the water bore, and its importance to the property owner, has been recognised by the Project team. Construction activity will be carefully managed for the duration of the works in consultation with the landowner to ensure the supply is not disrupted and these discussions are ongoing at present. This is explained in more detail in the evidence of **Dr McConchie**.

Carl & Emma Chalmers, 366 Arapaepae South Road

75. The submitters raise concerns about any night work that may be occurring during construction of the Project. Construction activities will mostly be undertaken during the day time. It is possible that some limited night work might be necessary / applicable, especially where the Project interacts with the road network. As there are minimal local road tie-in connections in the vicinity of the submitters property, I do not envisage frequent or significant night works near this dwelling. Any planned night works will be discussed with local communities in advance of commencement.
76. **Mr Peet** addresses the submitters' request that a footbridge be added into the project scope so that residents in the Kimberley Road area are able to connect to the west of the new highway.

Errol & Sally Christiansen, Whanganui

77. The submitters confirms that they fundamentally support the scheme, but they propose some alterations to its form or query certain aspects.
78. The submitters comment on the design standards and ask whether this road could have a 110km/h speed limit with all curves greater than 1100m radii. The new highway has been designed to expressway standards with very high radii curves. It has been designed to be enduring, in line with the Project objectives. Whilst constraints within the Project area mean the design cannot only have curves above 1100m radii, the curves used in the design have been accepted by Waka Kotahi and design specialists, and do not affect the design speed and would not affect the feel, safety or enduring nature of the project.
79. The submission notes a tighter horizontal curve of below 700m radius is included in the concept design. Whilst this is correct, the horizontal curve meets the design requirements of Austroads Guide to Road Design Part 3 Geometric Design for a design speed of 110km/h, by utilising a superelevation of 6%, which is well within design limits and has also been used on other sections of the Wellington Northern Corridor. While this is the tightest horizontal curve provided on the O2NL project, it is designed to meet all required design standards to achieve safety and comfort requirements, together with also balancing other Project requirements, such as impact on property.

80. The submission rightly notes that the scale and design of the roundabout at the SH57 connection needs to be appropriate to ensure safe operation at this conflict point. The preliminary design of the roundabout is in accordance with Austroads Guide to Road Design Part 4B Roundabouts for the route. Further, additional design work will be conducted in later stages to further develop the design beyond the concept design that has been concluded at this stage, which is a level of detail necessary for the consenting process.
81. At this stage of the concept design the key principles included are to ensure that the roundabout has significant Approach Sight Distance so that its presence is obvious to drivers. This is particularly true for northbound traffic as this will be the first at-grade intersection on SH1 from central Wellington. On this basis the northbound design includes a length of horizontal straight for northbound vehicles of over 200 metres (equating to around 6 seconds of travel time for a design speed of 110km/h) beyond the left-hand horizontal curve. Further, in accordance with current good practice, the vertical alignment is on a slight downgrade of 0.3%, to further enhance the conspicuousness of the approaching roundabout to drivers.
82. Additional features will also be included in later stages of design which are not yet included in the consenting level concept design, in-keeping with design standards and guidelines. Such features will signal to drivers the change in environment, and will likely include the introduction of edge and median kerbing on the approaches, street lighting and significant directional signage.

Alauta & Frederick Paul Van Iddekinge, 679 State Highway 1, Kuku

83. The submitter has requested the provision of security fencing alongside the shared use path to prevent easy access from the path to adjacent property.
84. In general terms, I do not support 'security fencing' being provided along the shared use path. Fencing could well impact on the attractiveness of the shared path, and may have potential adverse safety implications of 'penning in' users. In many locations the shared path will be used to provide access to the areas of the new highway by maintenance teams. It is expected that the shared path will provide foot and vehicle access for maintenance activities such as litter collection, landscape maintenance and access to drainage infrastructure and fencing could conflict with that function.

85. Of course, that is not to say that property owners cannot erect fences on their boundaries if they have concerns.

KiwiRail

86. The submitter has raised a number of issues in relation to design and construction, and the interaction between the Project and the rail line.
87. The specific points raised are addressed in the evidence of **Mr Gregor McLean** (erosion and sediment control), **Mr Keenan / Dr McConchie** (culverts), and **Mr Peet** (highway / rail line interaction).
88. I would add that the importance of managing the interaction with KiwiRail infrastructure, both during and post-construction, has been a key consideration in design development.

Kāinga Ora

89. Kāinga Ora asks that effects on its properties at 242 Muhunoa Road East and 96/98 Arapaepae Road be minimised in terms of land take, including with reference to the location of laydown areas and construction yards.
90. In response:
 - (a) 242 Muhunoa Road East: All of this property is included within the proposed designation for the purposes of the new local road construction including the bridge structure to cross the new four lane highway. The deviation of Muhunoa East Road alignment south of its existing location, together with the embankment fill to climb above the new four lane highway, impacts this property. In my view the designation boundary is appropriate as drawn.
 - (b) 96/98 Arapaepae Road: Part of this site is included within the proposed designation. The intention was to provide adequate width for the next stages of design and construction flexibility. However, in light of this submission the designation boundary has been considered, and Waka Kotahi has confirmed it is comfortable to adjust the designation boundary so that it avoids this property, accepting a localised reduction in the corridor width through this section. At the narrowest point, the corridor reduces from ~205m to ~147m. I note this section of the corridor is in relatively flat terrain, with a straight or very high radii horizontal alignment curvature, and with limited local road interaction,

which reduces the complexity for future detailed design in this locality.
This is now shown in the updated land requirement plan included in
Appendix A.

Jamie Povall

4 July 2023

APPENDIX A: UPDATED LAND REQUIREMENT PLANS

[Provided as a separate PDF document]