

Managing the effects of construction

Managing construction noise and dust

Where the proposed route is close to houses, people may be affected by noise and dust from construction. Steps will be taken to limit these effects on homes and properties. Methods for managing these effects include:

- Water spraying on site and on haul roads to manage dust from earthworks
- Wheel wash and cover sheets over trucks
- Stabilising exposed areas including through rolling, mulch and planting
- Careful management of equipment and working areas, and construction traffic activity

- Temporary noise barriers and muffling of otherwise noisy machines
- Considerate construction equipment choices
- Managing hours of work including daily start up and close down procedures
- Maintaining communication with nearby property owners to ensure 'no surprises' and identify potential issues at an early stage

A construction environmental management plan will be prepared to establish processes for managing effects. This will require constructor compliance and set out the management methods, as well as monitoring, review and corrective action processes.

Construction - erosion and sediment control

Before construction starts, we will install devices to reduce and to catch sediment runoff from earthworks areas before it can reach a stream or river. These devices typically remove 85% of sedimentation from water before discharging to a stream/river. Construction methods are also used to reduce sedimentation and include stabilising earthworks and careful management.

Maintaining community connections during construction

The construction of the proposed highway has the potential to disrupt access to properties and connections to communities. We will manage construction traffic to ensure people can still travel to and from their homes. We will aim to reduce or avoid delays to your journeys but acknowledge that this will not be possible at all times.



Protecting our heritage & history (Tū ai te tangata)

The land around this project is rich in cultural history. Sites of cultural or historic significance are places of special importance to New Zealanders. These sites contribute to our knowledge of our history and may include artefacts and physical remains of past activities.

As part of our research to identify cultural or heritage sites, we've searched historical documents and databases, some dating back as far as 1840, and visited sites of interest.



Photo: Archaeology Solutions.

Archaeological sites

The Heritage New Zealand Pouhere Taonga (HNZPT) archaeological values framework has been used to determine archaeological values and assess potential effects on those values.

Our investigations have determined there are no listed archaeological sites within the proposed highway alignment.

There's one verified and one potential archaeological site identified in the vicinity of the proposed highway. There's also evidence of three Māori hunting camps at the southern end of the project that'll be protected and investigated further.

There is always a chance previously unidentified, or unknown, archaeological sites could be uncovered during construction. However, the area has low archaeological potential because, prior to the late 19th century, the landscape was almost entirely covered in a dense podocarp forest with the main settlements being mostly located in the dune-country to the west of the proposed highway.

Built heritage

Investigations have found no heritage sites, buildings or structures within the new highway alignment – and no statutorily listed heritage sites, buildings, or structures located in the vicinity.

While not located within the proposed highway alignment, the Ashleigh Homestead on Queen Street East was assessed as being of regional significance, and measures are proposed to be put in place to manage potential noise, vibration and dust effects during construction.

Selection of an eastern route avoids the coastal areas that contain numerous pā and kāinga, hunting and cultivation grounds, battle sites, urupā and midden and therefore avoids what would likely be significant adverse effects on cultural values. The new highway alignment has also been refined to avoid effects on a small number of verified pre-1900 historic houses.

Understanding the landscape, streams and rivers

We have assessed the landscape surrounding the proposed alignment of the new highway, identifying existing landscape and natural character values – relating to rivers, streams, and wetlands.

Building the road in the east avoids significant landscape features including lakes, sensitive sand dune country, and Levin township. However, the new highway will have some landscape, visual and natural character impacts.

In line with our core principles to tread lightly, with the whenua and to create an enduring legacy, we are proposing measures to soften the visual impacts of the highway and reduce the effects on the landscape and natural character. The approach is to showcase the landscape through a design that provides views to elevated landmarks, beyond the highway, highlighting significant places and using endemic native plants.

We aim to restore and enhance the landscape to 'let it be its natural self' by:

- Reconnecting streams with forest remnants and wetland through the use of planted riparian corridors upstream and downstream of the highway
- Using culverts and bridges that maintain naturalised stream flow, aquatic habitat and fish passage upstream and downstream
- Delivering a net improvement in water quality in rivers and streams, and water flowing to lakes
- Enhancing existing forest stands as remnants and ecological stepping stones
- Reconnecting local roads across the highway
- Reinforcing ki uta ki tai – from mountains to sea. This could include a journey narrative through interpretative signs to recognise areas of importance and their history
- Identifying opportunities of mahinga kai, rongoa and food forests

Visual impacts will be managed and reduced through a variety of carefully designed planting options, for example plant species that:

- Screen the highway and traffic on it
- Soften and filter views
- Emphasise the foreground to increase perspective depth



Photo © www.eoecology.co.nz

Looking after our communities – Air & Water Quality

Air quality

Once the new road is open there will be a significant reduction in traffic on the existing state highway network. Most traffic will prefer to use the new road as it will allow vehicles to move efficiently at consistent speeds.

Overall, there will be a positive impact on air quality, as the improved traffic flows will result in reduced emissions and significantly fewer vehicles on the existing state highway.

We plan to manage effects from vehicle emissions through a number of design approaches including maximising buffer distances to sensitive receivers; using landscape to help filter emissions; minimising gradients of the new road; and by controlling vehicles speeds and flows.

Stormwater treatment and surface water quality

Permanent stormwater treatment devices will be installed to catch runoff from the new road carriageway and treat it to a high level before it is discharged to natural water courses. Around 80% of all particles and

contaminants which gather on roads will be removed using naturalised swales, stormwater pond systems/constructed wetlands and engineering treatments.

The current state highway network has no specific treatment for runoff and so shifting traffic onto the proposed new highway will result in a small overall improvement in water quality in the region.

The proposed new highway runs in a north/south direction while the main surface water catchments flow east/west, from the mountains to the sea. The project crosses the Waitohu Stream, Waikawa Stream, Kuku Stream, Ohau River and Koputaroa Stream.

The new highway includes numerous culverts and bridges that maintain current flows of water across the road. Culverts are oversized and embedded to allow a naturalised stream bottom to form, providing fish habitat and maintaining current flows rates. In larger storm events, the new highway will throttle some stormwater flow and help reduce potential downstream flooding.



Wetlands planting on Peka Peka to Ōtaki. Photo: Mark Cootes

Looking after our communities – Noise

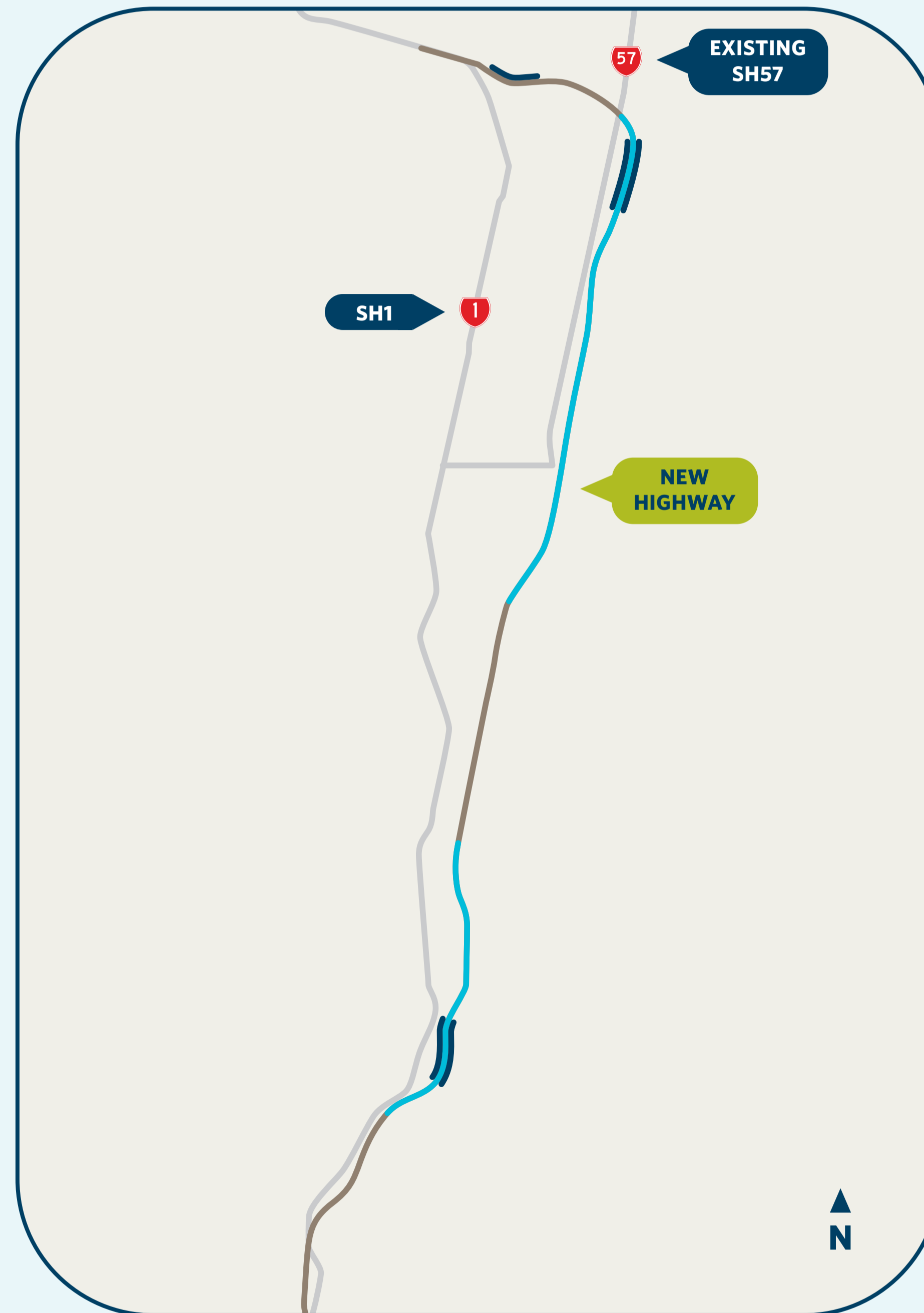
- Open graded porous asphalt (OGPA)
- Additional depth OGPA
- Existing highway
- Noise barriers

Managing noise

The potential change in the noise environment has been raised by communities and we have been working with them to share information collected through noise monitoring and ideas that help to address noise impacts.

The design of the road will include noise mitigations features that meet or exceed the New Zealand Standard (NZS 6806), with the aim of allowing people to comfortably enjoy the environment and their properties.

- Low-noise open graded porous asphalt (OGPA) will be used to surface the entire length of the project
- Additional depth OGPA will help reduce noise further for 14km of the highway - this new form of treatment provides a higher standard than any other previous roading project in the North Island
- Audible rumble strips will not be used near houses
- Careful design of bridge joints to reduce noise (avoiding mechanical expansion joints)
- Installing barriers in some locations will help reduce the spread of noise from the road corridor



New highway surface map.



Looking after our environment

The new highway alignment largely avoids indigenous forest habitats, and instead passes through land that has been mostly cleared and converted to pasture. There are some small isolated pockets of indigenous vegetation, wetlands, and streams that will be adversely affected.

Our ecologists have surveyed the entire project area and its surrounds and have recorded numerous indigenous bird species, two land snail species, two skink species, peripatus (velvet worm), freshwater fish and invertebrates species. They have also found a range of pest plants and animals.

How we plan to manage the effects of construction on our indigenous fauna and flora:

Vegetation

- Mark out areas of vegetation to be retained
- Search for and capture geckos, snails and peripatus ahead of vegetation clearance to relocate to equivalent or better habitats

- Identify times when vegetation can be removed so as to minimise potential effects on bird nesting and breeding seasons

- Collect vegetation cleared for future reuse

Streams and rivers

- Create temporary stream channels to maintain water flows and fish passage when working in a stream
- Search and capture freshwater fish and invertebrates in the affected stream reaches and relocate up or downstream
- Avoid working during fish spawning and migration periods
- Minimise duration of work in streams
- Prevent spillages from machinery and equipment into or near streams
- Comprehensive erosion and sediment controls to minimise sediment runoff to adjacent streams

Creating an enduring legacy

Despite these measures there will be an effect on our streams, wetlands and native bush. We will plant and then protect areas from further loss and development, including the exclusion of livestock from streams and wetlands. These measures will provide a net gain in indigenous biodiversity, compared with the existing state.

- Approximately 45 ha of native vegetation planting which will be set aside and protected in perpetuity
- Approximately 8.5 ha of wetland habitat rehabilitated and restored
- Approximately 9.5 kilometres of stream fenced to prevent stock access and planted up to provide riparian buffering and improve aquatic habitats

Material supply sites will be rehabilitated to include terrestrial and wetland planting, together with areas of open water that can provide enduring benefits to local communities.

Economic effects of the new highway

The construction and operation of this road will have a range of economic benefits associated with population and urban growth, employment, and economic activity. The overall net GDP impact of the project is estimated at \$1.157 to \$1.258 billion.

Population growth

Horowhenua is experiencing population growth, with an additional 16,000 people expected to be living in the district by 2040, and more than 760,000 people living within an hour's drive.

This project will support additional population growth in Horowhenua as travel time to Wellington reduces. A growing population means a larger district economy, with more employment opportunities.



Economic activity

Improving the transport connections from Levin is expected to help unlock economic benefits including an increase in jobs and incomes, as a result of improved accessibility creating a greater ability for consumers and businesses to connect.

The new highway will reduce travel time and costs – improving reliability of travel times. This will expand the market size and improve cost effectiveness.

Effects on agricultural and horticultural activity

This project crosses rural areas and will affect some farming operations. Some farms will be disrupted by construction and lose productive land, while other properties may no longer be viable for current farming activities.

The potential disruptions and loss of productive land are being considered and overall any effects on productive land have been assessed as minor.

A thriving town centre

About 20,500 vehicles per day are modelled to travel through Levin town centre without the new highway by 2039 – but when the new highway opens this will reduce to current day numbers (about 15,900 vehicles). However, the traffic will have fewer heavy vehicles and stock trucks and instead vehicles will be local people and visitors to Levin Town Centre.

Signage at exits of the new highway will promote available services in Levin town centre to support local businesses.

The reduction in heavy traffic will increase the attractiveness of the town centre as a retail destination, with a potential increase in tourism. It'll improve the town centre experience, make it easier to find car parks and provide a safer environment for people to bike and walk.