



# Linden to MacKays (Transmission Gully)

Assessment of Environmental Effects: Non-technical summary



## Assessment of Environmental Effects: Non-technical Summary

This document provides a non-technical summary of the Resource Management Act 1991 (RMA) assessments undertaken as part of the regulatory consent process for the Transmission Gully project. It summarises the technical reports that have been prepared in support of the applications. More detailed analyses are provided within those reports, which can be accessed on the NZTA website <http://www.nzta.govt.nz/projects/transmission-gully-application/>. This document is intended to provide the reader with a summary of the environmental matters arising from the project.

### Introduction

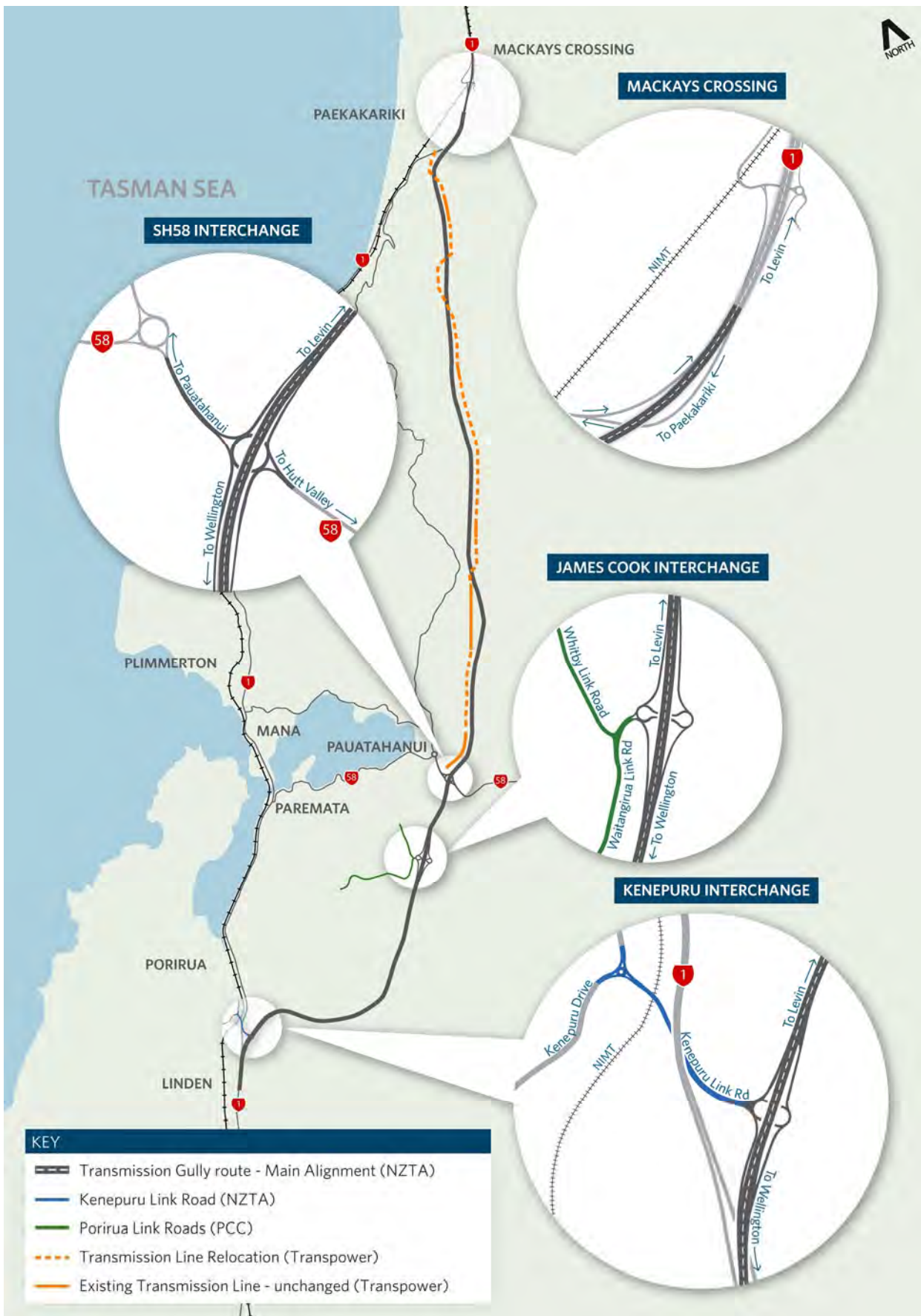
The NZ Transport Agency (NZTA), together with the Porirua City Council (PCC) and Transpower New Zealand Limited (Transpower), have lodged notices of requirement for designations and resource consent applications for the Transmission Gully project.

The applications comprise (as shown in Figure 1):

- The Transmission Gully main alignment (the proposed new highway) involves the construction, operation and maintenance of a State highway formed to an expressway standard from Linden to MacKays Crossing. The main alignment passes through four districts; Kapiti Coast District, Upper Hutt City, Porirua City and Wellington City. The NZTA is responsible for the main alignment.
- The Kenepuru Link Road involves the construction, operation and maintenance of a limited-access State highway connecting the main alignment to the existing western Porirua road network. The NZTA is responsible for the Kenepuru Link Road.
- The Porirua Link Roads involve the construction, operation and maintenance of two local roads (the Whitby Link Road and the Waitangirua Link Road) connecting the main alignment to the existing eastern Porirua road network. The PCC is responsible for the Porirua Link Roads.
- The relocation of 24 transmission towers to accommodate the main alignment of which six towers are located in the Kapiti Coast District with the remainder (18) being located in the Porirua City. The applications for the relocation project are being made by Transpower New Zealand Limited.

While there is already an existing designated route for the project in the relevant district plans, the current proposal is sufficiently different that a new designation is being sought. Changes include shifting some lengths of the proposed highway to the western side of the Te Puka and Horokiri streams valleys, combining the two PCC link road connections into a single interchange, and changes to the Kenepuru, Waitangirua and Whitby link roads alignments and a number of other minor design changes.

Figure 1: The Transmission Gully Project



## Background to the project

The Transmission Gully project has a long history with the proposal for an inland alternative route for State Highway 1 (SH1) between Wellington City and the Kapiti Coast having been discussed for many decades. A number of strategic studies and investigations have concluded that providing an inland alternative for SH1 is preferable to upgrading the existing coastal route SH1 as it will provide greater benefits in terms of travel time savings, safety and route security. Accordingly, the project is a key component of a number of national, regional and local transport strategies, policies and plans to improve transport in the region and nationally. The project will provide the following benefits:

- Improved **route security and resilience** (in the event of a major storm or earthquake) of the Wellington region's state highway network.
- Improved **safety** for motorists when compared to the existing State Highway 1 between Linden and Mackays Crossing.
- **Reduced travel times** and improved travel time reliability along key routes, and increased accessibility to many parts of the region's road network.
- Removal of long distance traffic from the coastal **communities** allowing easier movement across the existing highway for local traffic, pedestrians and cyclists.
- **Economic benefits** resulting from travel time savings, improved trip time reliability and increased accessibility to and throughout the Wellington region.
- Improved **accessibility** to eastern Porirua (the Porirua Link Roads) and western Porirua (the Kenepuru Link Road).

## Description of the environment

The project mainly passes through rural land with the southern portions of the project area lying east of the urban suburbs of Porirua and Wellington City including Whitby, Waitangirua, Cannons Creek, Ranui Heights, Linden and Tawa.

The project area consists almost entirely of pasture, although there are pockets of both native and exotic (mainly plantation forestry) vegetation. Because the area has been highly modified by human activity, there is only limited terrestrial (land-based) ecological habitat. The project traverses nine hydrological catchments which are part of four different watersheds. The ecological values of the streams in these catchments vary and all are in highly modified catchments. Five of the catchments (comprising approximately 65% of the length of the project) drain into the Pauatahanui Inlet. Approximately 93% of the length of the project drains into the Porirua Harbour which contains areas of significant ecological value including wetland and estuarine ecosystems.

A range of network utilities are present throughout the project area - the most significant being a 110kV electricity transmission line (from which the project takes its name) which runs parallel to the route between MacKays Crossing and the Takapu Road Substation.

## Description of the project

The main alignment has been designed to an expressway standard which comprises a minimum of four lanes (two in each direction) with continuous median separation. Access to and from the main alignment will only be via three new interchanges in addition to the northern and southern tie-ins to the existing SH1. At all interchanges, the main alignment will pass over the connecting roads and in some locations, underpasses are provided for access across the route. Along the steepest parts of the main alignment, crawler lanes will be provided for slow-moving vehicles. The Kenepuru Link Road has been designed to state highway standards. The Porirua Link Roads have been designed to local road standards, with adjacent properties being able to access onto them directly.

Key features include:

- Approximately 112 stream crossings by either bridges or culverts. No bridge piers are proposed within the wetted stream channels. All bridge and culvert structures include associated erosion protection works to prevent scouring during storm events.
- Permanent realignment of approximately 6.5km of streams, with a total of 10.5km of streams being affected in some way.
- Cut and filled earth embankments which include reinforced soil embankments, mechanically stabilised earth walls with concrete facing panels (typically around bridges) and soil-nail walls. Examples of the type of landscape treatments that are proposed for finished cut and fill slope faces are described in the technical reports that can be accessed on the NZTA website, including the urban and landscape design framework document.
- Stormwater runoff to be collected and treated using filtration type devices, or in some places along the route, constructed wetlands.
- Enabling works involving relocating electricity transmission lines (the Transmission Line Relocation project) and the formation of construction access tracks and site compounds. A main site compound and concrete batching plant will be located next to the proposed SH58 Interchange and will be accessed directly from SH58.
- Comprehensive erosion and sediment control measures for all earthworks and for works in and around streams.
- Approximately 6.3million cubic metres of excavated (cut) material and approximately 5.8million cubic metres of fill material. Potential disposal sites for surplus fill have been identified.
- Retirement from farming of approximately 450 hectares, and planting of selected areas including along a number of stream edges.
- A new walking and mountain bike track along the Te Puka and Horokiri stream valleys connecting Queen Elizabeth Park to Battle Hill Farm Forest Park.

Construction will be undertaken by a number of work crews working on different parts of the project either at the same time or at different stages. Construction is expected to take approximately six years.

## Consideration of alternatives

An extensive option evaluation exercise was undertaken and this resulted in some significant changes that provide environmental benefits (particularly ecological) and cost savings compared to the previously designated route and design. These include:

- Through the Te Puka and Horokiri stream valleys and at Battle Hill, the road alignment was shifted to the west to reduce the impact on streams and terrestrial habitat.
- Previously two interchanges to provide access to eastern Porirua were proposed. These have been combined to enable the two local road connections to eastern Porirua from Whitby and from Waitangirua (the Porirua Link Roads) to be accommodated with a single interchange.
- Avoiding the loss of an area of significant native bush through the Wainui Saddle and a heritage structure (World War II brick fuel tank) at the northern end of the Te Puka valley.
- Transpower, together with the NZTA, undertook a route selection process to determine the most appropriate alignment for the transmission relocation project. This process confirmed a route which generally runs parallel to the existing transmission line but with a western bypass at the Wainui Saddle.

## Consultation and engagement

Consultation has been undertaken in accordance with recognised good practice and has included engagement with local, regional and national stakeholders, and a series of one-on-one meetings and group meetings. In addition, public open days were held and newsletters and online material produced.

On-going involvement and communication with the relevant regulatory agencies has also been undertaken as part of the preparation of regulatory consent documentation and this activity will continue.

## Assessment of effects on the environment - The NZTA's Main Alignment, Kenepuru Link Road, and Porirua City Council's Link Roads

In accordance with the relevant provisions of the RMA, an Assessment of Effects on the Environment (AEE) of the project has been carried out. Under the RMA all environmental effects need to be considered. The AEE concludes that the project will have a number of actual or potential positive and adverse effects. The effects will vary in significance, scale (local, regional and national), intensity and duration both during construction and operation.

## Traffic and transport

The project will have significant positive transport effects at a local, regional and national scale, including:

- Improved route security and resilience for the region's state highway network.
- Improved safety and reduced crash risk.
- Significant travel time savings and reduced trip time variability.
- More efficient freight movement and associated economic benefits.
- Improved connections to regional freight hubs including wellington port, wellington international airport and distribution centres.

- Improved access to eastern porirua (porirua link roads) and western porirua (kenepuru link road).

During construction there will be some localised short-term traffic effects, including possible delays or inconvenience arising from increased heavy construction traffic using local roads, generally only until direct access can be provided from a state highway. These effects will be managed through the development and implementation of a Construction Traffic Management Plan which will involve engagement with local residents.

### Land use and property effects

The land that is required for the project includes Crown land, Council owned land including road and reserves, and private ownership, with approximately half already owned by the Crown for roading purposes. There are some properties where part acquisition will be required. All property owners whose land is directly affected have been advised and made aware of the extent required. Effects on other property rights (such as access) have been identified through existing property agreements and consultation with property owners.

### Network utilities

Protection and/or relocation of utilities located within the vicinity of the project will be required. Largely these works will be undertaken as enabling works for the project. The most significant network utility affected is the electricity transmission line which runs along much of the main alignment and requires realignment of some sections. Regulatory consents are being sought for these works as part of this application. The NZTA, in liaison with PCC, has worked closely with the relevant organisations and are satisfied that any adverse effects on network utilities will be able to be managed appropriately.

### Noise and vibration

Because most of the project area is located well away from urban areas, construction noise will generally be within the limits of the appropriate national standard (NZS 6803:1999). Where construction works are proposed in close proximity to sensitive receivers (for example, residential dwellings), methods to manage noise and vibration effects are set out in a Construction Noise and Vibration Management Plan.

A small number of areas will require specific noise mitigation measures to manage effects from the operation of the road, and this is assessed using the process set out in the appropriate national standard (NZS 6806:2010). Measures include noise barriers and at a few locations, modification to existing dwellings in consultation with relevant property owners.

### Air quality

Construction of the project (particularly the earthworks and concrete batching plant) has the potential to generate nuisance dust. This will be managed through measures that are outlined in the Construction Air Quality Management Plan and include measures such as water sprays. The effect of operational vehicle emissions on air quality is also assessed. The assessment concludes that on completion of the project there will be an overall reduction in public exposure to vehicle emissions on a regional basis primarily due to the removal of vehicles from the existing coastal route, and reduced congestion.

## Contaminated land

Managing risks around discovery and handling of contaminated materials involves careful investigation, excavation and management / disposal methods following protocols set out in the Contaminated Land Management Plan. The majority of areas identified as currently being contaminated are at levels that do not present a risk to human health, or ecology, or that would cause difficulties during the construction or operation of the project. There are two areas where there is potentially a relatively high risk of contamination effects on people (including construction workers) and ecology. These are at MacKays Crossing and at the Porirua Gun Club. In addition, there are other sites where there are lower risks of either finding contamination or of effects arising from contamination but the potential effects can all be fully managed using standard practices.

## Hydrology

Hydrological and hydraulic modelling has been undertaken as part of the environmental assessment and design process. The majority of potential adverse hydrological affects have been avoided through refinements to the road and drainage design. At a few locations there are small changes in flood risk resulting in a possible increase in flood levels as a result of a "1-in-100 year" rainfall event. In most locations, the changes in flood flows are negligible and in some instances the project results in a small reduction in downstream flood risk by containing and managing flows in high rainfall events.

The proposed stream realignments and crossings (bridges and culverts) will result in changes to how the affected streams flow. By constructing realigned streams as close as possible to their existing form (slope, channel size and shape), effects on stream performance (velocity, flow paths etc.), and hence water quality and ecology are minimised.

## Water quality

Best-practice erosion and sediment control management measures will be used during construction and will achieve high levels of performance minimising the amount of sediment that enters streams. Consequently water quality effects during construction are predicted to be minimal with suspended sediment in water clearing quickly out of streams and with minimal levels of deposition.

All stormwater runoff from finished road surfaces will be treated. As a result, contaminants entering the Wainui Stream mouth and the Onepoto Arm of the Porirua Harbour will decrease, providing a positive effect. Contaminant levels entering the Pauatahanui Inlet will mostly remain unchanged from the present situation, with the exception of total petroleum hydrocarbons which will increase. This increase will not cause conspicuous oil or grease in the water or any change in odour, and the effects are considered to be minor.

## Terrestrial ecology

Surveys have been undertaken along the route which has confirmed that most of the route comprises modified pastoral landscape that currently has limited ecological diversity and values. Adverse effects of construction will be addressed by retirement of land (from farming) and replanting with indigenous (native) vegetation in some areas. Sites have been identified for retirement and revegetation on the basis of the range of potential ecological and hydrological benefits they can provide in comparison to the actual and potential effects generated. The retirement and revegetation of areas "upstream" of the project route will



provide additional long-term benefits such as reduced erosion and improved water quality in streams discharging to the Porirua Harbour.

Effects on the habitat of terrestrial fauna (animals) will be minor and can be effectively managed. Examples include the relocation of fauna such as lizards, and the recreation of habitats such as logs and boulder fields, in combination with careful construction management methods.

### Freshwater ecology

As discussed above, sediment runoff from the earthworks has the potential to adversely affect freshwater habitats and species. The potential ecological impact of sediment runoff is assessed to be negligible, based on existing knowledge of stream environments and predicted sediment runoff levels. During construction, the earthworks areas are likely to increase sediment levels in streams – particularly during large rainfall events. The assessment concludes the ecological effects will be minor because the freshwater species existing in these streams currently, are able to tolerate temporary increases in sediment levels. The steepness of the streams combined with the increased stream flows during rain events means that sediment is rapidly transported downstream rather than being deposited on stream beds.

The project will require the modification of streams in eight of the nine catchments in order to construct culverts and bridges and realign in parts. While considerable efforts have been made to reduce the degree of modification to streams, this cannot be avoided completely. Approximately 10.5km of streams will be affected and to address the effects of this, the restoration and protection of approximately 30km of streams is proposed, meaning the project will result in a net gain in freshwater habitat quality across the project area. This positive effect will be on-going and complements the retirement areas (predominantly in the Te Puka and Horokiri catchments) and indigenous vegetation replanting proposed.

### Marine ecology

Although there are no works within or any discharge of contaminants directly into the coastal marine area, the marine environment is the ultimate receiving environment for sediment-laden water (from construction of the project) and stormwater runoff from the road during operation. There are two receiving environments of relevance: the Kapiti Coast, comprising the mouths of the Wainui and Whareroa Streams; and the Porirua Harbour, comprising the Pauatahanui Inlet and the Onepoto Arm.

The mouths of the Wainui and Whareroa Streams are dynamic environments on the open coast and effects in this environment will be negligible. In contrast, the Porirua Harbour is more enclosed and is the receiving environment for the large proportion of the discharges associated with the project.

Whilst the project is being constructed, rainfall will result in an increase in the amount of sediment entering the Porirua Harbour but compared to current levels of sedimentation, the increase is minimal. For most rainfall events, any additional sediment entering the Porirua Harbour will deposit in areas where high levels of sediment deposition is already occurring and minimal ecological impacts are expected. An exception to this is when specific combinations of high wind and high rainfall events occur when large areas of bare earthworks are open. It is predicted that these unusual combinations of events could result in some additional (over and above what occurs normally) deposition in the tidal zones close to the stream mouths causing moderate adverse effects on marine ecology. Where sediment is suspended in the water, there will be negligible ecological effects because the sediment can disperse more readily. Long-term, the reduction of

sediment entering the harbour as a result of retiring land and the planting that will be undertaken as part of the project, will offset any sedimentation effects in the harbour.

Operation of the project will involve the discharge of treated Stormwater road runoff to the Porirua Harbour which will contribute to the existing long term accumulation of contaminants in central subtidal basins. Operational stormwater runoff to the marine environment (Kapiti Coast) adjacent to the Wainui and Whareroa Streams will be diluted and widely dispersed given the large, high-energy receiving environment. Operational water quality and ecological effects are assessed as being minor.

### **Tangata whenua**

The protection of stream habitats and resident native fish species is the key matter of interest to Tangata Whenua iwi (Ngati Toa) both during the construction and operational phases of the project. Parts of the project alignment and surrounds are customary food gathering areas, and consequently there are areas of historical and cultural significance that have been recognised and provided for. Of particular interest to iwi are the direct and indirect effects of construction on waterbodies, the most significant of which is the potential for increased levels of sediment entering waterways. Operational effects include discharge of stormwater from the road surface to streams and eventually to the Porirua Harbour, and effects on water and habitat quality.

Ngati Toa has provided a Cultural Impact Assessment for the project which concludes that the methods proposed by the applicants to manage adverse effects on the environment are supported.

### **Landscape and visual**

The scale of the project means that it will create a significant change to the environment, and the scale of adverse visual and landscape effects varies as the road traverses through the landscape. The approach to designing the road and all associated works has been to avoid effects as far as practicable and to manage the remaining adverse visual and landscape effects. There is also the potential for positive visual effects for users of the road who will travel through the bold natural landscapes that are largely inaccessible at present.

A number of general and specific measures are proposed which will avoid, remedy and mitigate the adverse landscape and visual effects resulting from the construction and operation of the project. These measures have been underpinned by the urban and landscape design principles developed for the project and documented in the urban and landscape design framework.

### **Archaeology and built heritage**

There are no known archaeological or built heritage sites within the earthworks footprint of the project. An accidental discovery protocol to manage unexpected discoveries during construction, including suitable training of construction staff, is proposed as a condition of the designation.

There are two known sites of built heritage significance in close proximity to the main alignment (St Josephs Church on SH58 at Pauatahanui, and a World War II brick fuel tank near MacKays Crossing). Construction dust, noise and vibration management measures are proposed to protect these structures during construction. Positive effects of the project include changes to the driveway to improve access to the church, and an access track will be provided to enable public access to the brick fuel as part of a proposed walkway linking QE Park with Battle Hill Farm Forest Park.

## Social effects

Construction and operation of the project has the potential to generate adverse social effects such as noise-related effects and general community disruption. The Construction Environment Management Plans will introduce measures to manage potential project effects and these will be finalised and implemented in consultation with local communities and stakeholders. This flexible approach is proposed so that any adverse effects on the social environment in nearby communities can be understood and managed in consultation with the community.

Positive social benefits of the project include reduced traffic, especially heavy vehicles, passing through the coastal communities, with associated noise reductions, improved air quality outcomes, and improved local ease-of-access and community cohesion as a result.

## Assessment of Effects on the Environment: Transmission Line Relocation – Transpower’s applications

The relocation of six towers in the Kapiti Coast District and 18 towers in Porirua City is a restricted discretionary activity under the regulations in the National Environmental Standards for Electricity Transmission 2009 (NESETA). The NESETA directs that the following matters be considered:

- **Landscape and visual effects** - For the most part only small modifications will be made to the existing line resulting in minor landscape effects relative to the existing environment. The main exception is a four-span deviation at the Wainui Saddle (Towers 8-12) resulting in three towers on spurs above the saddle, within an area classified as an Outstanding Natural Landscape (ONL). The existing line already traverses the ONL and the landscape and visual effects of the relocated and replaced towers will be modest. Several other towers have also been identified as having modest visual effects when viewed from existing dwellings and so visual mitigation is proposed for these towers.
- **Ecological effects** - Of the 24 towers to be relocated, two are located in plantation pine, three in gorse scrub, and the remainder in pasture. No significant regenerating native bush or native forest will be affected by either the line relocation or the operations and maintenance activities.
- **Effects on historic heritage** - No known archaeological or built heritage sites are directly affected by the line relocation.
- **Effects on sensitive land uses** - No community facilities are in the vicinity of the line relocations. No new or relocated towers will be located in close proximity to dwellings, and any adverse effects on dwellings arise primarily due to visibility of the towers. Visual mitigation is proposed for four towers to minimise the views of these from existing dwellings. In some cases, the towers shift further away from the dwellings and this is considered to be a positive effect.
- **Construction** - A Construction Environmental Management Plan is proposed to manage construction effects.

The assessment of effects demonstrates that overall, the adverse effects of the line relocation are no more than minor.

## Management of environmental effects

Where practicable, the effects of the project on the environment have been avoided or remedied through an integrated design and refinement process involving a team of technical experts. Potential operational effects of the project will be managed through measures that include noise barriers, stormwater runoff treatment, landscaping and visual-screen planting, native revegetation and land retirement.

Prior to, during, and following construction, a programme of monitoring will provide information to help develop and implement the measures that may be used and adapted to manage the effects of construction. A comprehensive suite of conditions for the designations and resource consents has been proposed. The conditions propose a comprehensive environmental monitoring and management programme to monitor and manage the construction effects of the project. By implementing the conditions and framework, the adverse effects of the project will be adequately and appropriately avoided, remedied or mitigated.

## Statutory matters

There are a number of objectives and policies relevant to the Transmission Gully project in the national, regional and district planning documents. The main conclusions of the statutory assessment are:

- Overall, the project is not inconsistent with, and will give effect to (as required) the relevant objectives and policies of the statutory planning documents.
- The project is a key part of the Wellington Northern Corridor road of national significance programme which will, as a whole, provide significant travel time savings between Wellington Airport and Levin, and facilitate more efficient movement of freight into and out of Wellington – which is entirely consistent with the transport related policy in both the regional planning strategies and the district plans.
- The project achieves the sustainable management of natural and physical resources. It is intended to meet the growing transportation needs of the region and does not preclude future opportunities for other land transport developments such as public transport.
- The project safe-guards the life-supporting capacity of air, soils, water and ecosystems.
- The potential and actual adverse project effects on the environment can be adequately avoided, remedied, or mitigated.
- The project provides for, and has appropriately responded to, the matters in sections 6, 7 and 8 of the RMA.

The statutory assessment concludes that the project will have a number of positive benefits and some actual or potential adverse effects. The adverse effects will vary in significance, scale (local, regional and national), intensity and duration both during construction and operation. Overall, the statutory assessment concludes that the project meets the statutory tests of the RMA.