



Section B - Route appreciation

The purpose of this section of the report is to:

- Confirm the overall urban and landscape design approach established in the Urban Design Overview and the Visual Assessments completed for Designations, by way of mapping and identification of design issues
- Present additional relevant information gained through investigation of the route (by urban designers and landscape architects)
- Synthesise key elements and issues for the urban and rural landscape context that inform the development of the overall design principles and concept design for the road corridor.

It includes an analysis of the road corridor, identifying built, natural and community constraints and opportunities, with view analysis and landscape character. The analysis diagrams relate to the urban and landscape design by ensuring:

- Familiarity with the route
- Understanding of landscape opportunities and constraints
- 'Cues' to develop a cohesive and integrated urban and landscape design vision for the road corridor

Topography

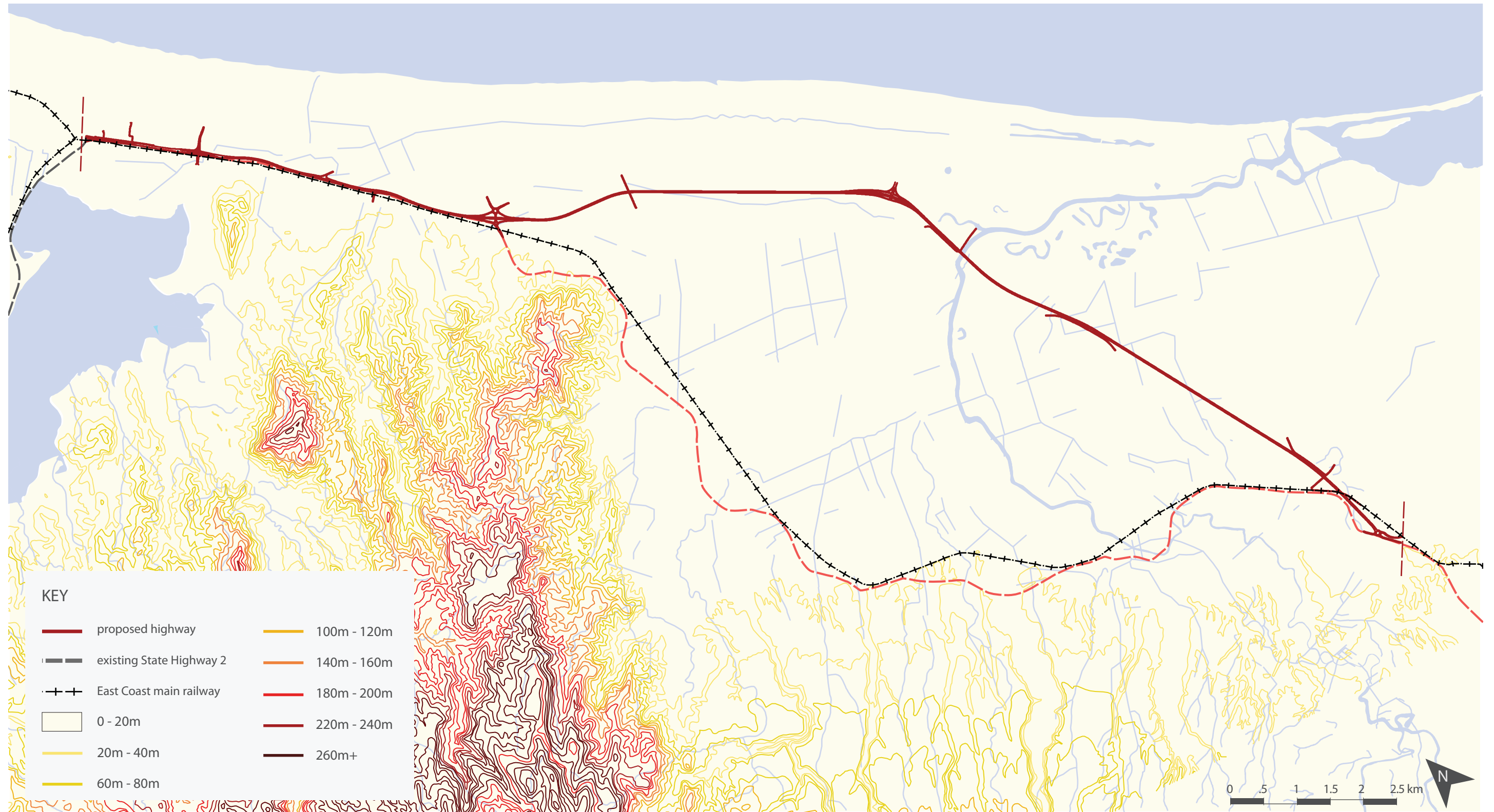
Design issues

- The route of the TEL passes through areas of varying environments; however the overriding quality of the landscape is its relative flatness, with, to the south, the Papamoa Hills rising out of the very flat plains to heights of 200-300m above sea levels. These landforms are the most visually obvious landscape feature.
- The route of the proposed TEL commences at Te Maunga on hummocky foredunes and continues south eastwards on the dunes crossing the toe of a terrace near Mangatawa Lane. The route continues south eastwards over alternating lowlands and ridges until Domain Road. The alignment runs along the foothills of the Papamoa Hills to the west and the low lying Papamoa urban area to the east.
- Beyond Domain Road the route turns eastward and progresses over the lowlands until it reaches the foredunes, where it turns south eastwards again and runs along the rear of the foredunes.
- The route turns southward at the end of the foredunes at Bell Road and crosses the Kaituna river and adjacent lowlands, before rising onto the undulating terrain to the north west of Te Tumu Road.

Design implications

- Due to the relatively flat topography the objective of the design is to minimise the visibility of the new road from the surrounding areas, by limiting the 'verticality' of the highway and its related structures.
- The design aims to optimise opportunities to retain and enhance wide views across the countryside, and to direct views to striking landmark features.
- The vertical profile along the length will be kept as low as practicable in order to reduce embankment fill quantities and long term settlements.

Section B Route appreciation



Geology

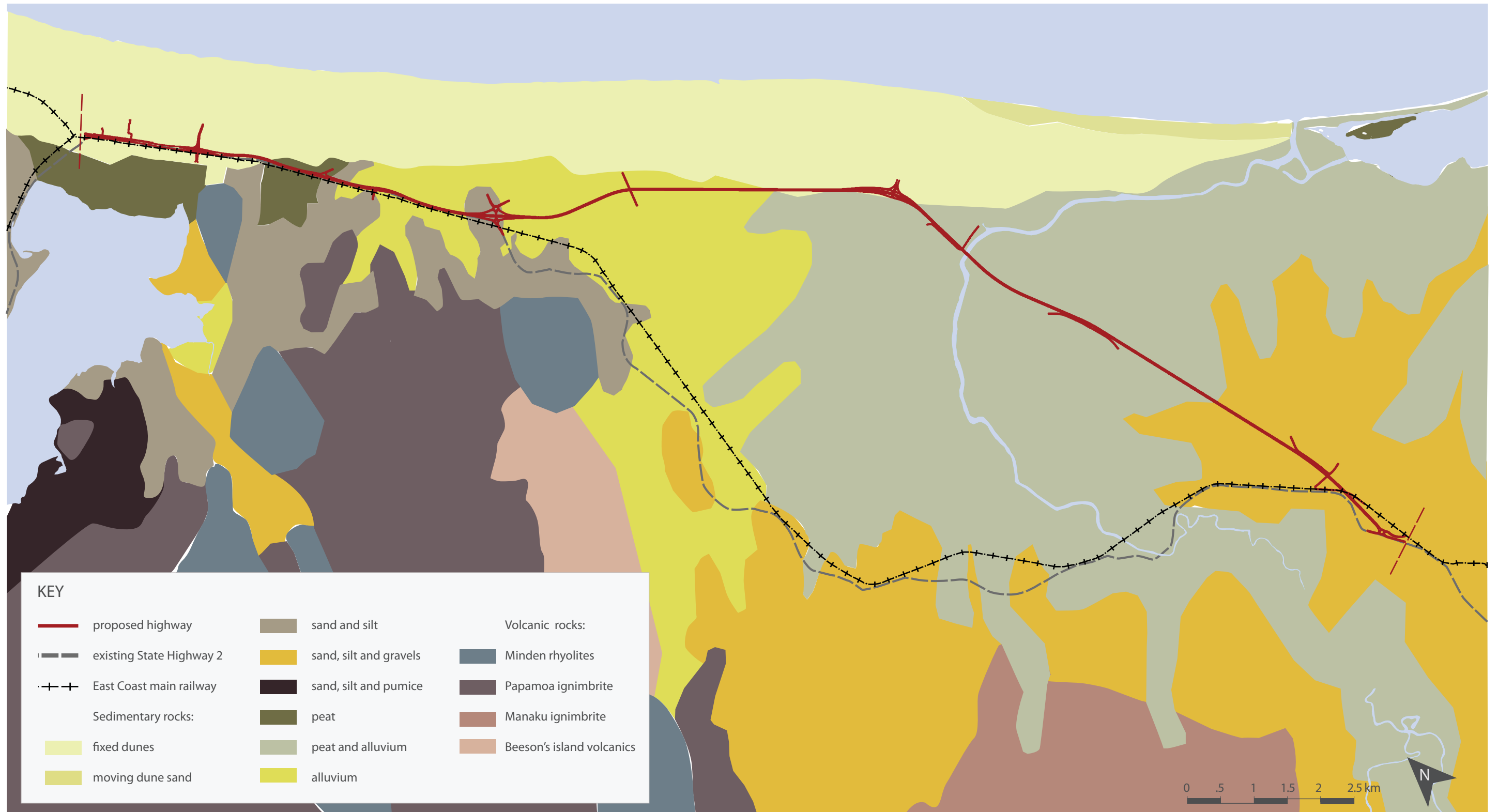
Design issues

- From the existing Te Maunga roundabout to Mangatawa Lane the route is essentially underlain by Foredune Sand and Alluvium, with the Fluvial Terrace at depth. The thickness of the Foredune Sand varies depending on the position of its south western boundary in relation to the route alignment. The base of the alluvium is not anticipated to vary significantly.
- From Mangatawa Lane to east of Parton Road the route is underlain by varying thicknesses of Peat, Alluvium and Fluvial Terrace. The ridges of Fluvial Terrace and intervening low lands reflect a historical topographical surface formed of the Fluvial Terrace. The low lands having been subsequently infilled, firstly with Alluvium and more recently with Peat.
- East of Parton Road the route is essentially underlain by a varying thickness of Foredune Sand. Alluvium, and Fluvial Terrace at depth, underlie the Foredune Sand.
- At the end of Bell Road the route turns south eastwards onto the Kaituna flood plain, which comprises variable Alluvium overlying the Fluvial Terrace. The Alluvium is variable, in some places dominated by silt and elsewhere by sand, reflecting deposition from the Kaituna River as its historical course meandered over the Te Puke basin.
- From south of Pah Road the Fluvial Terrace, which is likely to include volcanic air fall deposits, underlies the route.

Design implications

- Batter design should recognise and use the area geology; frangible parent material will be ripped rather than blasted, resulting in a finer textured finish to cuttings with no large boulders.
- Typical low soil ph requires major soil improvement to enable the establishment and successful growth of plants.
- The significant depth, low strength and high compressibility of the recent peat and alluvial sediments, volcanic soils, high groundwater levels and soft or loose sediment may affect the stability and settlement of the earthworks, and is a consideration for detailed design and construction.

Section B Route appreciation



Vegetation communities

Design issues

- Nearly all of the route lies in pasture predominantly utilised for dairy farming, and land utilised for cropping.
- From Te Maunga to Domain Road most of the area north of the TEL corridor is residential, with some remaining agricultural land in the east.
- The largest catchment that contributes to stormwater runoff to the TEL is the area inland and south of the corridor. This area is mostly agricultural with pasture and orchards, with established tree plantations at higher elevations.
- From Domain Rd to the Kaituna River the current area is agricultural land.
- From the Kaituna river to Rangiuuru the area is flat with predominant land use of dairy farming, and kiwifruit orchards further south.
- Due to the Kaituna Drainage Scheme implemented in the 1900s, native vegetation (originally flax, cabbage tree scrub and kahikatea forest) is now found only on the wettest ground towards the Kaituna river mouth and out of the footprint of the Tauranga Eastern Link.
- At the end of Bell Road is an oxbow of the Kaituna River which was isolated as a result of the Kaituna Drainage Scheme.
 - The northern arm of the oxbow is a standing water and wetland habitat with good marginal vegetation along shallower edge areas. There is a small stand of raupo at the Bell Road end.
 - The remainder of the oxbow, from Bell Road around to the River, contains habitat similar to that in the lower main river although water velocities are lower. The riparian zones lack any substantial cover

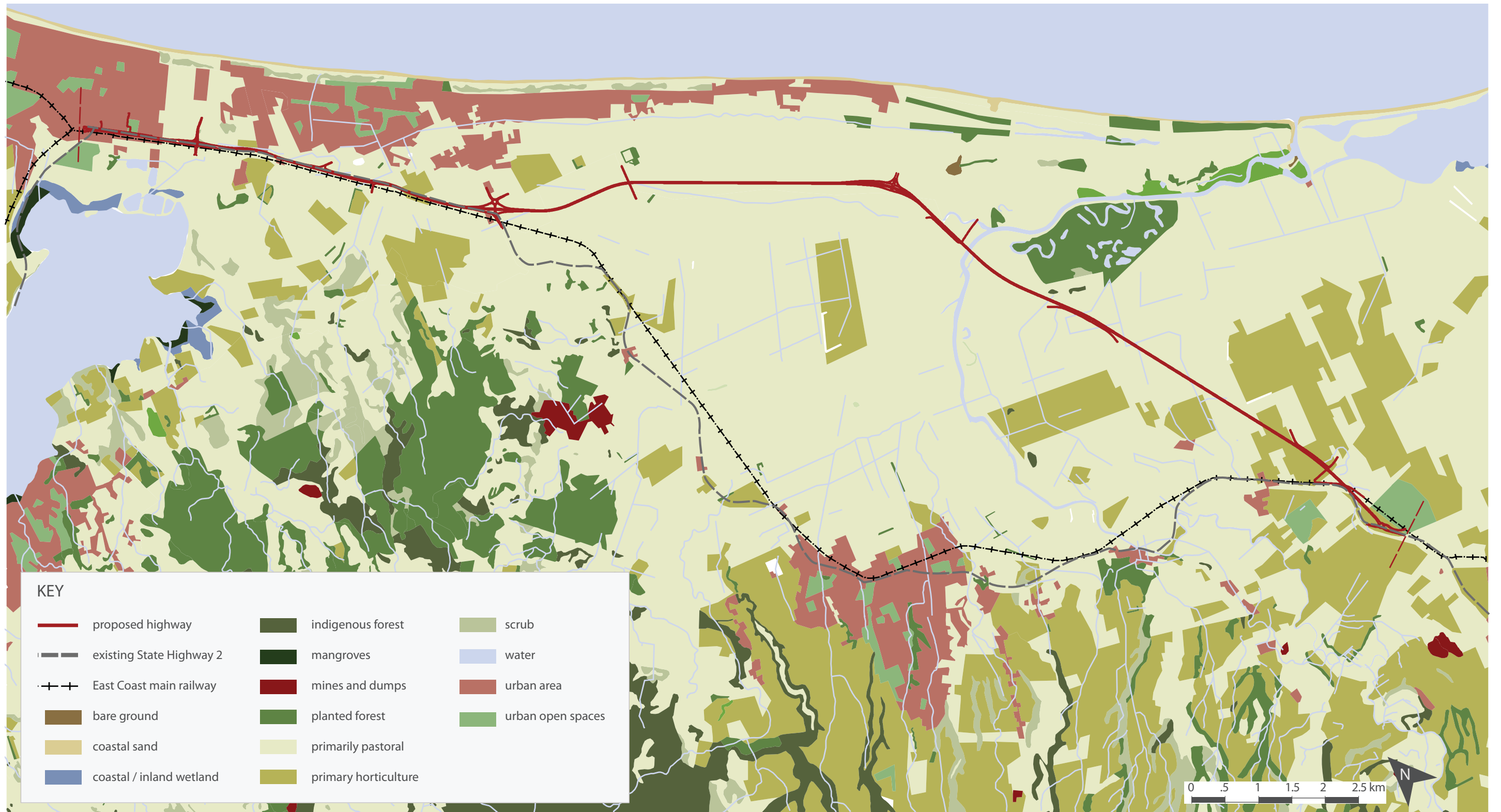
except at the major bend where there is a grove of tall willows along a section of the southern bank.

- The AEE denotes the section of the oxbow to the north of Bell Road as a higher value habitat than the southern section.
- The proposed Kaituna River crossing location, upstream from the existing boat ramp and car park, has limited marginal vegetation and grazed pasture to the riverbanks
- The ephemeral Waimarae Stream crosses grazed pasture that once contained kahikatea forest (at least in parts) and now contains extensive, and often large, drainage channels. The stream then goes into the Kaituna Wildlife Management Reserve, a Department of Conservation reserve.
- The Reserve is partly native vegetation and partly under restoration.
- The nearest area of native tree habitat to the alignment is a small area of remnant kahikatea and exotics adjacent to the Department of Conservation grazing lease access track. A larger, more significant area of kahikatea-dominated vegetation is present nearby to the east.
- To the north of the band of young kahikateas, but separated by grazed pasture, is an area of willow-dominated “sand ridge” habitat.

Design implications

- The planting palette is to reinforce, re-establish and supplement existing vegetation communities where appropriate.
- The framework of each of the major vegetation community types should be re-established to allow for future natural reseeding of a more complex vegetation community.
- The landscape treatment at Sandhurst Drive is to relate to the Papamoa sand spit, with planting to reflect open coastline and inner harbour connections.
- The Domain Road landscape context and open Bay of Plenty plains landscape character is to reflect the landward natural landforms of Otawa and Otanewainuku and protect sightlines.
- The design and landscape treatment of Kaituna bridge, the northern oxbow, shared paths and riverfront areas is to reinforce that this is an important gateway to the Tauranga urban area.
- At the oxbow and river crossing the road will be 3-4m above current ground level to gain clearance over the stop bank.
- Planting within riparian margins will aim to enhance the habitats where practicable through native, non-invasive species.
- Remnant kahikatea (within the Kaituna Wildlife Management Reserve) is to be retained, protected and strengthened.
- Pah Road planting is to reflect the local remnants of lowland indigenous forest and the Kaituna Wildlife Management Reserve habitat.
- The Paengaroa connection is to reflect the strong horticultural patterns in the area with geometric planting patterns.

Section B Route appreciation



Ecology and fauna

Design issues

- Rainbow skinks were recorded adjacent to the East Coast Main Trunk (ECMT) railway on Mangatawa Lane at the northern end of the TEL, and copper skinks on the Steiner property (between Parton Road and the Kaituna River) about halfway along the TEL.
- Introduced mammals such as hedgehog, rodents, mustelids (stoat, ferret, weasel) and feral cats (Garrick, 1990) have been recorded in the area. European rabbit (*Orytolagus cuniculus cuniculus*) was observed and brush-tailed possum (*Trichosurus vulpecula*) sign was recorded in the constructed pond area.
- Freshwater habitats throughout the TEL route consisted almost entirely of small, channelized drains or larger canals within grazed pasture, predominantly utilised for dairy farming. Historical land clearance and drainage projects have resulted in the removal of almost all riparian native vegetation. A total of five species of freshwater fish have been recorded to date.
- Overall the water quality of the sites assessed to date was poor, with the water being poorly oxygenated and containing elevated levels of nutrients and bacteria (attributed to adjacent land use). In general water quality declines in the lower reaches of the Kaituna River.
- The TEL earthworks will be undertaken in areas that predominantly comprise grazed and cropped farmland that contain no vegetation and flora, wildlife, reptiles and amphibians of note; there will be minimal effect on the terrestrial habitats of the area.
- The TEL passes close to the west of the Kaituna Wildlife Management Reserve (KWMR).
- The Kaituna River crossing, upstream from the existing boat ramp and car park, is typical with limited marginal vegetation and grazed pasture to its banks. Shags, especially black shags, are particularly common, with mallards, little shags, pukekos, spur-winged plovers and Australasian harriers. A large group of shags utilises rocks in paddocks, waters edge boulders and horizontal wooden fence tops for roosting in this area.
- The wildlife values of the lower Kaituna River (22 km) have been described by Rasch, 1989, as high, but the proposed crossing area does not have any particularly notable values relative to similar areas both upstream and downstream.
- The Waimarae Stream crossing within the KWMR is used by similar species as above. It is also adjacent to a large truncated oxbow, previously the main River channel, whose northern side is heavily vegetated and contains a reasonable diversity of common native and introduced “terrestrial” species.
- There are numerous duck shooting maimai in the KWMR, including one on the northern bank of the truncated oxbow within 60 metres of the alignment’s crossing of the ephemeral Waimarae Stream.
- The nearest area of native tree habitat to the alignment within the Reserve is a small area of remnant kahikatea and exotics adjacent to the DOC grazing lease access track. Typical birds utilising that stand were fantail, goldfinch, silvereye, housesparrow, grey warbler and chaffinch, with pukeko, Australasian harrier, mallard and paradise shelduck in surrounding grazed areas. No small land snails were located in leaf litter

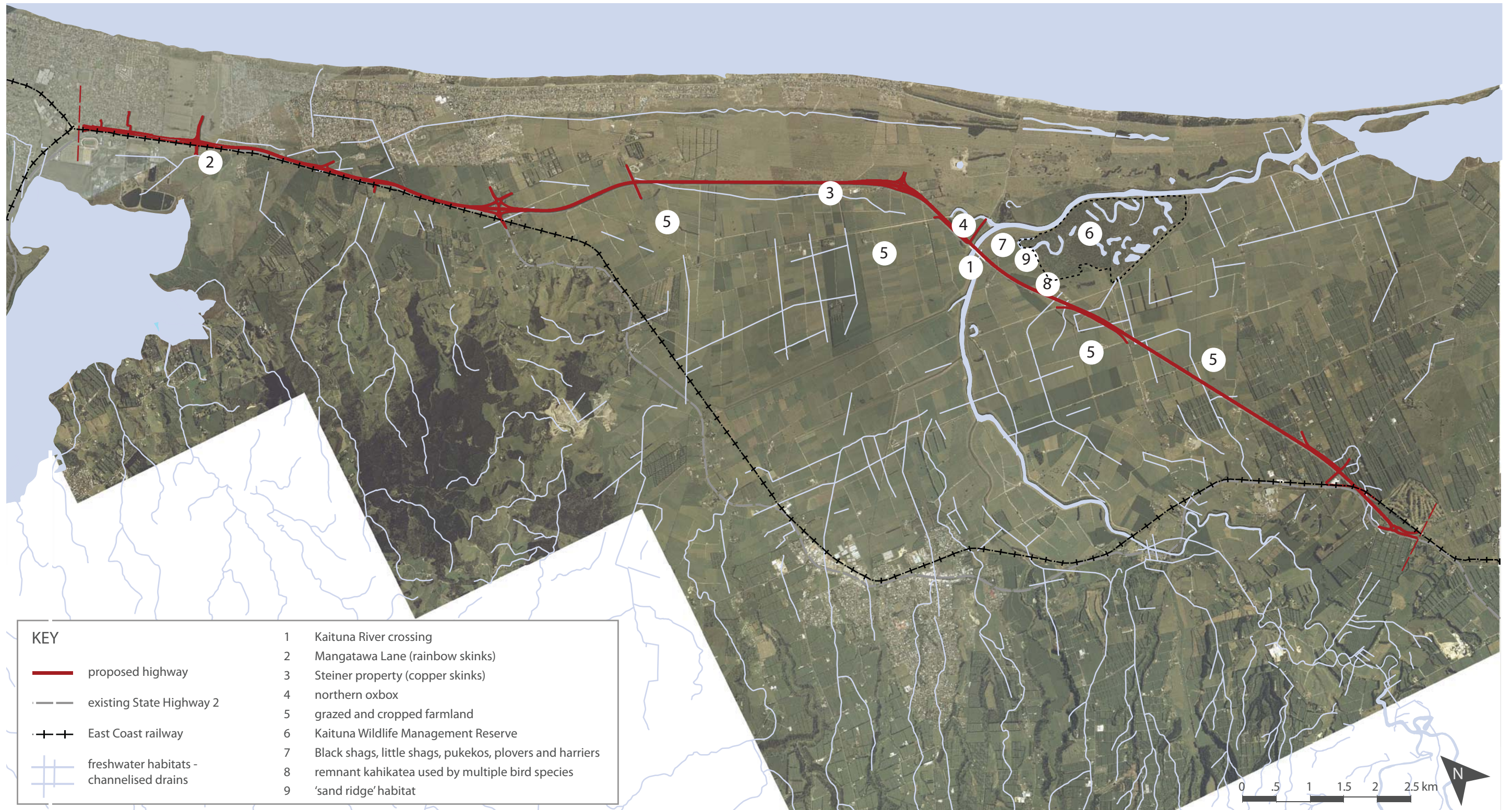
from within this stand.

- There is a larger, more significant area of kahikatea-dominated vegetation nearby to the east.
- To the north of the band of kahikateas, but separated by grazed pasture, is an area of willow-dominated “sand ridge” habitat.

Design implications

- Management plans prepared for the earthworks will ensure that any runoff is controlled and treated, through devices such as swales.
- Planting strategies for swales will assist in the treatment of stormwater before entering the receiving watercourses.
- The alignment has been located to minimise requirements for the removal of native vegetation and thus habitats.
- At Kaituna River:
 - Bridges and culvert design can reduce the impact on water flow regimes and fish passage
 - Works in the Kaituna River should be undertaken outside fish migration periods and construction effects on aquatic communities are to be minimised
 - The Kaituna Bridge design should not exacerbate flooding
 - The ecology of freshwater habitats during major flood events, and the water quality of the Kaituna river that flows into the Wetland Reserve, will be protected by appropriate planting strategies
 - The northern oxbow will be rehabilitated.
- Culverts will be placed at a height designed to maintain passage for fish throughout the existing watercourses.
- Landscape design is to link new planting in the corridor with existing stands of kahikatea in the Reserve area for visual and habitat connectivity.
- Landscape design will provide ecological corridors that enhance the linkages between the Kaimais and the coast.
- A landscaped noise bund at the KWMR will protect fauna in the reserve and will also buffer recreational shooting activities.

Section B Route appreciation



History and heritage

from the Cultural and Archaeological Assessment: Papamoa Hills Cultural Heritage Regional Park ('Te Rae o Papamoa'), September 2003, Boffa Miskell

The area in and around Papamoa has been occupied for at least seven hundred years before the arrival of Europeans. The history of this area, from its earliest inhabitants the Te Tini-o-Toi people, has been recorded and remembered in the korero and the waiata of each successive generation of the tangata whenua. During this time, Papamoa and the Western Bay of Plenty area have witnessed many waves of migration as the forebears of the Maori arrived from Eastern Polynesia and then from the movement of peoples around Aotearoa. Each wave of migrants that settled in and around Papamoa, contributed to the dynamic and diverse whakapapa, folklore and traditional knowledge that survives today among the tangata whenua of the area.

The strategic position of the Papamoa area, along with the contribution of the many successive groups that have occupied the area, means that the wetlands of the coast and the hills above have an intensive and rich cultural history. An indication of this is the number of important archaeological sites and wahi tapu that are to be found in and around the Papamoa area. The area is particularly notable for its strategic pa sites such as the Hikutawatawa pa complex that allowed the occupants the ability to command the hills and the surrounding area.

Every feature of the landscape has become known intimately by the indigenous people who can recall the history of the land back through the generations. It is for them to tell the story in its entirety and to interpret the many different layers of understanding within these stories.

part of the complex of pa sites in the Papamoa Hills



Section B Route appreciation



clockwise from top:

- flax milling
- flax industry, Te Puke 1905
- Scow at Kaituna Landing c. 1900s
- bend in the Kaituna River c. 1930s

photographs courtesy of Tauranga City Library

History and heritage (continued)

Design issues

- This part of the Bay of Plenty is rich in archaeological evidence of Maori occupation, with the majority of recorded archaeological sites relating to the period before the arrival of Europeans. The study area is within the rohe of Ngaiterangi, Ngati Pukenga, Nga Potiki, Ngati Whakare and Te Arawa including the Tapuika and Waitaha Hapu. All groups have significant historical links to all or part of the alignment.
- There are eight archaeological sites affected by the alignment.
- There are 27 archaeological sites within 300 meters of the proposed construction corridor, but it is not anticipated that these sites will be affected by construction of the TEL.

Te Maunga to Domain Road

- Between Te Maunga and Mangatawa Lane the construction corridor follows the alignment of a subdued back dune, described in 1904 as covered in titree and short fern and used as a walking track in prehistory
- Elevated land to the west of Kairua Road and extending north of Taranaki Lane was covered in high titree in 1904
- Intervening wetlands were covered in raupo and rushes in 1904 and flax, manuka and wiwi in 1911.

Domain Road to Pah Road

- In the 1970s and 1980s the region became known for its kiwifruit orchards.

Around Kaituna River

- The Te Kopua Pa (U14/220) site lies within 200 metres of the modified alignment between Kaituna River and Bell Road Interchange.
- The Wai-Omarai Stream, a small tributary of the Kaituna River running north-east, probably provided navigable access to the sand ridges from Kaituna River. These sand ridges were used for temporary or permanent camps.
- One archaeological site (U14/1851) within the construction corridor is a 'findspot' for an adze. The site shows no visible features or evidence of archaeological deposits.
- Significant post 1900 modification of the river, wetland and dune landscape has occurred. However, there is surviving intact archaeological deposits and information indicating pre-European occupation.
- Wetlands surrounding the lower Kaituna were an important resource area as flax became a commodity for trade (for muskets) in the 1820s. The river itself was used for transport of goods to and from Te Puke.
- In 1872, a steam powered flax mill began operation at Waihi near Maketu and by the 1880's extensive operations began in the Te Puke-Maketu-Pongakawa districts. Mills were located on the Kaituna River at the end of Bell Road near the Pa Site and Te Paroa. Mills closed in the 1930s.
- Between the 1930s and 1980s, the lower Kaituna River course was altered. The area between Kaituna River and Kaituna Road now encompasses drained wetlands and a distinct low sand ridge, 300 metres wide.
- The Kaituna River has long been used for recreation and transport by both Maori and European. The boat ramp provides access to fishing.

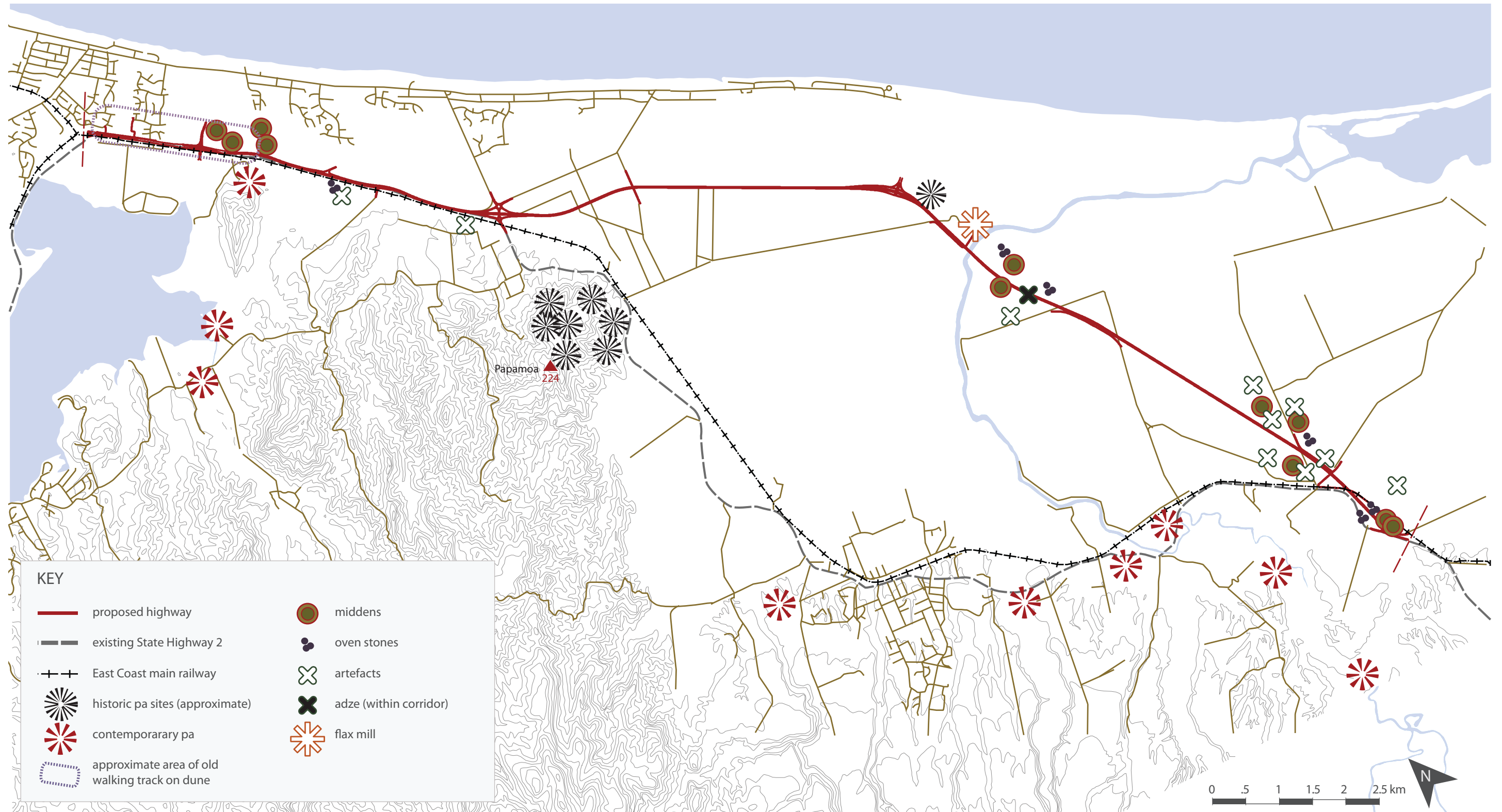
Design implications

- The alignment has been designed to avoid impact on archaeological deposits at Te Kopua Pa.
- Iwi and Hapu raised interest in retaining the life supporting capacity or 'Mauri' of the waterways. The Kaituna River crossing is a site of particular significance to local Maori as well as to Europeans and requires sensitive design treatment. Bridge piers will be positioned outside the main channel of the river.
- Gateway features should reflect the heritage, history, and coastal character of the area.
- Possible design themes draw on early European and Maori associations and land use: European themes may be drawn from the rural, horticultural and flax milling history. Consultation with Tangata Whenua is critical.

Management and implementation issues

- While indigenous heritage items were not seen in the AEE as presenting an impediment to construction, archaeological survey techniques cannot necessarily detect sites of traditional significance to Maori.
- The Historic Places Act (HPA) 1993 protects all archaeological sites whether recorded or not, and they may not be damaged or destroyed unless an Authority to modify an archaeological site has been issued by the New Zealand Historic Places Trust (NZHPT).
- Earthworks in the entire project are subject to archaeological monitoring, including controlled stripping of topsoil under supervision of a qualified archaeologist. The attendance of a Hapu representative during topsoil removal will occur under the terms collectively defined in the TEL Tangata Whenua Protocol.

Section B Route appreciation



Zoning and land use

Design issues

- The main land uses are: pastoral farming (dairy and meat), horticultural (orchards), commercial activity including exporting, infrastructure uses (rail, road, drainage/ flood protection), and residential to the west in the City area.
- Within the Tauranga City area the zonings are residential and rural. Within the Western Bay of Plenty District Council area the zonings are rural with the Rangioru Business Park straddling the alignment to the south west.
- The land to the north of the TEL between Parton Road and the Kaituna River is subject to Plan Change 44, and is expected to develop as urban over the next few years.
- The Plan for the Wairakei Urban Growth Area (see 'future urban area' on plan) is for additional residential development with a buffer of business and open space to the TEL corridor, extending as far as the Kaituna River oxbow. The land use to the south and east of this is currently principally agricultural. Between Te Maunga and Domain/Tara Roads, on the seaward side of the TEL, much of the area has already been developed as low density residential development.
- The Te Puke Golf Club, the Kaituna Wildlife Management Reserve, Kaituna River and Papamoa Beach are key physical features and important recreational features near the alignment.
- At Te Maunga existing residences have direct (and dangerous) access to the State Highway, which will be replaced by a new service road connecting into the urban community.

Design implications

- The road design should respond to different land use characters, especially town, country and nature reserve
- The road design should provide access to/ from and connectivity between areas to the east and west of the road corridor, including safe pedestrian access across the highway especially for Mangatawa residents.
- Access will be provided to the Kaituna River bank for all users, by means of:
 - a cycle and pedestrian path on both sides of the river, from the main shared path
 - access beneath the Kaituna River bridge to the boat ramp (north side) from the local access road for cars and boats.
- A low noise road surface, noise barriers, and a planting programme will mitigate the effects of the highway and proposed interchanges on adjacent and future housing, the Kaituna Wildlife Management Reserve, and community uses.
- Native tree and shrub planting are to provide screening to the environmentally sensitive area of the Kaituna Wildlife Management Reserve and some rural and residential properties.
- Improved safety for Te Maunga residents will be provided by a separate access road and links into the suburbs to Gloucester Road.

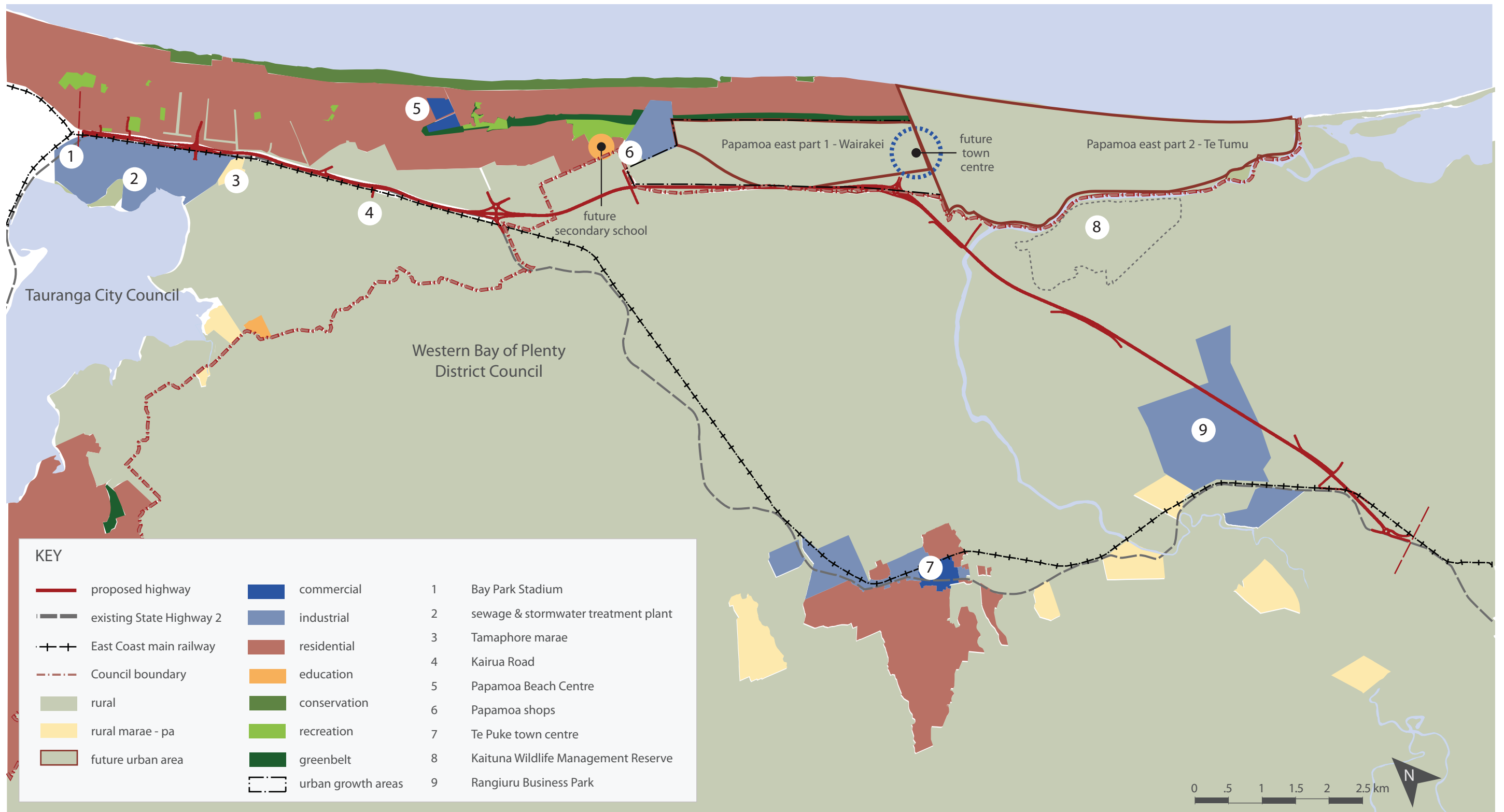


clockwise from top left:

- new residential at Papamoa
- East Coast Main Trunk railway east of Sandhurst
- dairy farming near Bruce Road
- near Mangatawa orchards and Tamaphore marae
- rural residential on Tara Road flats
- Kaituna River and wetlands
- horticultural shelter belts near future business park



Section B Route appreciation



Pedestrian and cycle paths

This section maps the existing connections, and those included in Council's regional strategy (both existing and proposed). It also discusses the issues that the new motorway needs to take into account. Section E Pedestrian and Cycle Paths describes and maps the design, and explains how the shared paths within the TEL connect to the existing and future pedestrian and cycle network.

Design issues

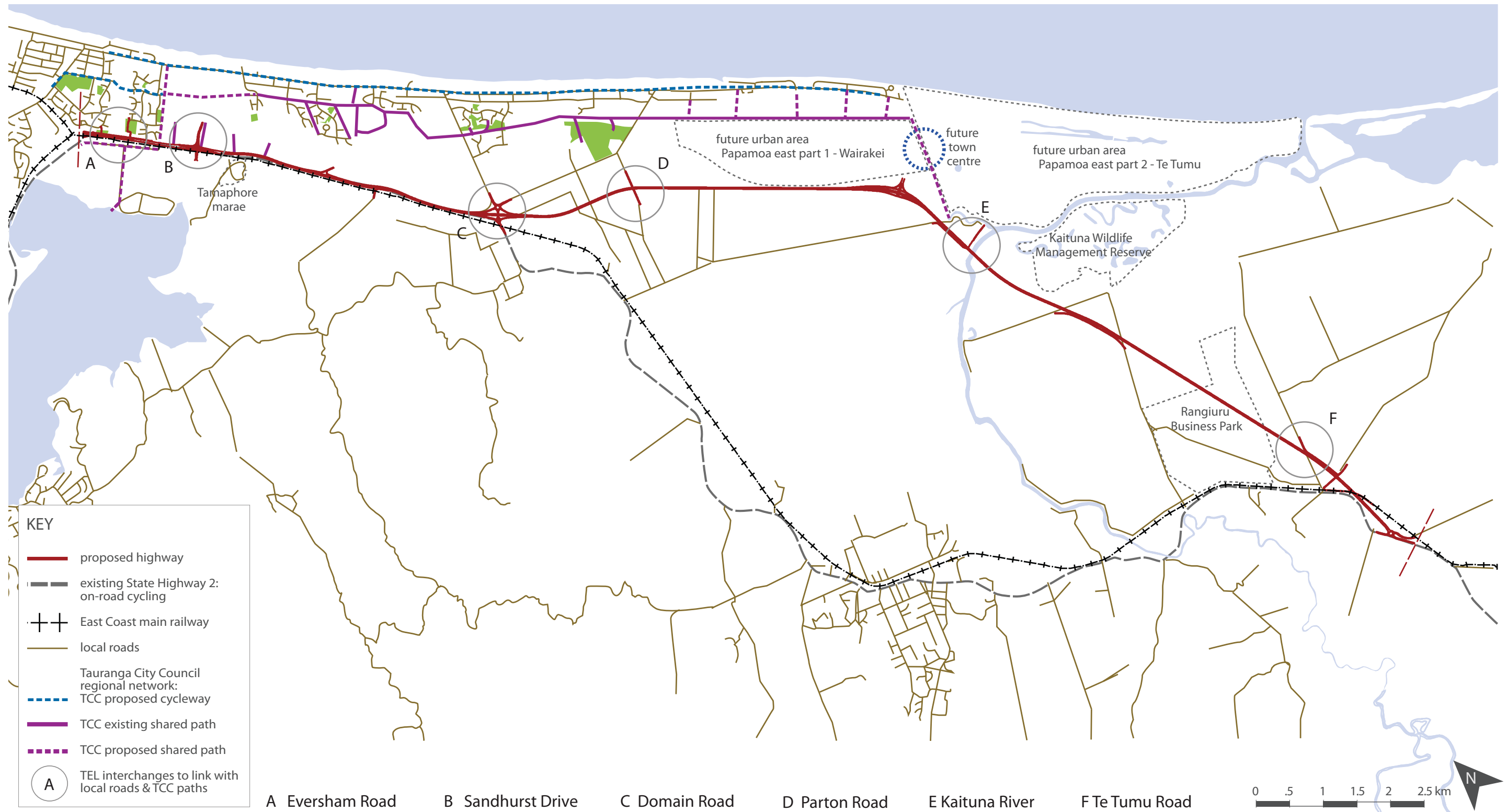
- Pedestrian and cycle demand is projected to increase along with increasing residential development in Papamoa, putting pressure on the local road network and on the need for connections between suburbs / neighbourhoods and to activity areas and community facilities. Tauranga City Council in its regional cycling and pedestrian strategy proposes new shared paths that link Papamoa Beach Road to the main east-west shared path. This is also proposed to be linked to the Kaituna River.
- Severance of the north-south access for residents, particularly along Kairua Road and from Tamapahore Marae, was an issue raised in consultation with Nga Potiki.
- Houses adjoining the State Highway at Te Maunga will no longer have direct access.
- Near the Sandhurst Drive interchange is a mix of residential, industrial and commercial land uses where commuter as well as recreational cycling and walking need to be accommodated.
- The Domain Road interchange is a large piece of infrastructure that requires north-south travelling pedestrians and cyclists to negotiate two roundabouts. Heavy traffic can be a barrier to pedestrians and cyclists, and multi-lane highways and slip lanes increase the path of travel and reduce the perception of safety and convenience for pedestrians and cyclists. However, an early alternative design approach, undergrounding the pedestrian and cycle paths, while more direct had significant safety implications in isolating the modes of travel and not providing for casual surveillance.
- Anticipated pedestrian and cycle demand at Parton Bridge will be greater in the future as Papamoa East develops.

- Parton Road is regularly used by recreational cyclists, and sometimes used by competitive cyclists travelling from Mt Maunganui.
- While outside the scope of this project, the future Papamoa East Interchange will provide an important vehicular link to the future Papamoa East town centre. There will be no pedestrian or cyclist access to the motorway.
- The Kaituna River bridge will be a significant 'marker' for the TEL and a special place in its own right. Access to the riverbank for pedestrians and cyclists (and for vehicles to the boat ramp on the southern side) should be accessible and inviting.
- There is currently no connection between Papamoa East and the future Rangiuru business park. The Smartgrowth multi-mode philosophy of locating pedestrian and cycle facilities to support an integrated live/work/play community is an important driver for shared path connections in this location.
- There is generally a lack of off-road facilities for both pedestrians and cyclists.
- A condition requiring rehabilitation of the northern oxbow creates the potential to provide new access to the river for pedestrians and cyclists.
- The Public Transport strategy for the region has been developed with the TEL in mind and around the function it provides. Parts of the motorway are likely to be used by (probably express) buses which will not stop on the motorway. Buses through and between Papamoa and Bayfair (the regional transport hub) will use the local road network.

Design implications

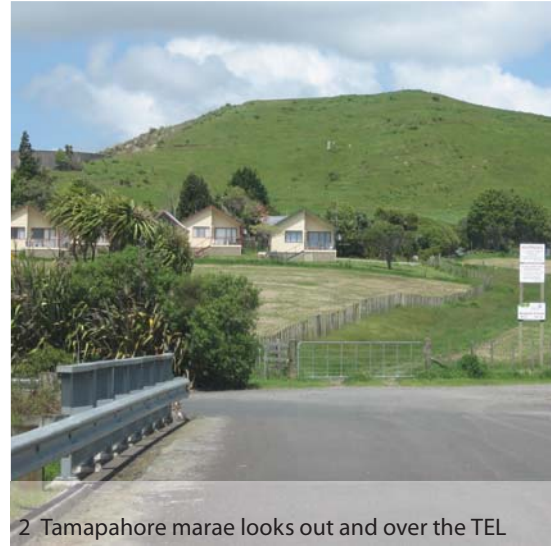
- Shared paths in the project are in different places with different character, and require a different design response.
- A new access road will be provided for Te Maunga residents adjacent to the corridor, connecting into the local road network. There will be no access from the State Highway.
- A new interchange at Mangatawa will provide for safe crossing of the highway from the Tamapahore marae.
- Signalised crossings at Sandhurst Drive interchange assist pedestrians and cyclists cross large expanses of road safely.
- Refuges, fences and signage will improve safety and assist with wayfinding. Generous refuges are provided at large interchanges where there is significant demand (in particular at Domain Road).
- The pedestrian and cycle path network at the Domain Road interchange will feature generous refuges, wide shared paths and crossing points as narrow as possible, to support safety. The off road access through the interchange will be of high quality.
- NZTA acknowledges and is responding to the trend to urbanisation with a new pedestrian and cycle way that links the Papamoa East interchange to the Rangiuru Business Park and beyond to Te Tumu Road. The path will enhance access to the Kaituna River (see below) and enable a pedestrian connection back to Te Puke, as desired by WBOP District Council and Te Puke residents.
- There is potential to extend the shared path that provides access to the Kaituna River bank along the edges, linking to rest areas where people can enjoy the river and (with the assistance of interpretive signage or artwork) appreciate the cultural significance of the place.
- Highway and associated landscape design will enable future pedestrian and cycle paths to connect to those within the TEL scope, to contribute to a regional network. The access that NZTA is providing to Kaituna River gives Councils the opportunity to further develop recreational areas and facilities.
- Cyclists will not be permitted on the motorway. Clear, well located signage will be required to direct cyclists to alternative routes.
- For regional cycling the current State Highway is envisaged to become the main cycling route. Local recreational and future commuting cyclists will use the new off-road shared path between the future Papamoa East interchange and Te Tumu Road.
- The TEM provides an efficient route for buses between Te Puke and Bayfair and access to the future urban areas at the major interchanges. The design of the motorway accommodates buses without the need for additional facilities.
- Section E Pedestrian and Cycle Paths gives more detail on the principles that will guide the design of shared pedestrian and cycle paths.

Section B Route appreciation





1 Mangatawa Hill - distinctive exposed rock face



2 Tamapahore marae looks out and over the TEL



3 Mt Maunganui rises out of the otherwise flat landscape just east of the Domain Road interchange



4 typical mix of individual vertical elements against the gently undulating or flat terrain



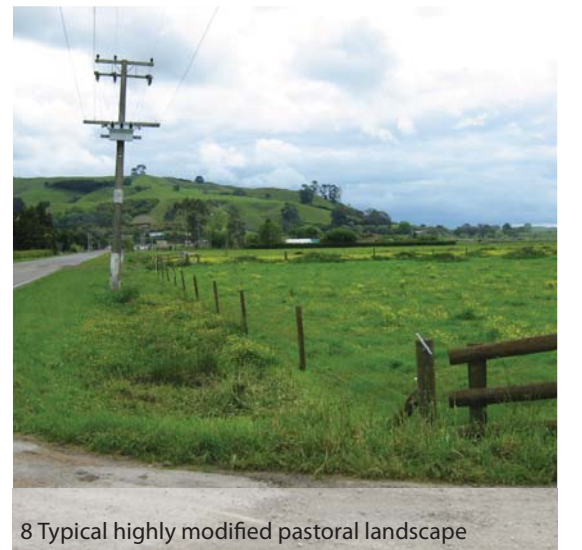
5 The Papamoa Hills ridges stand out on the skyline in the background behind the farming lands of the flats



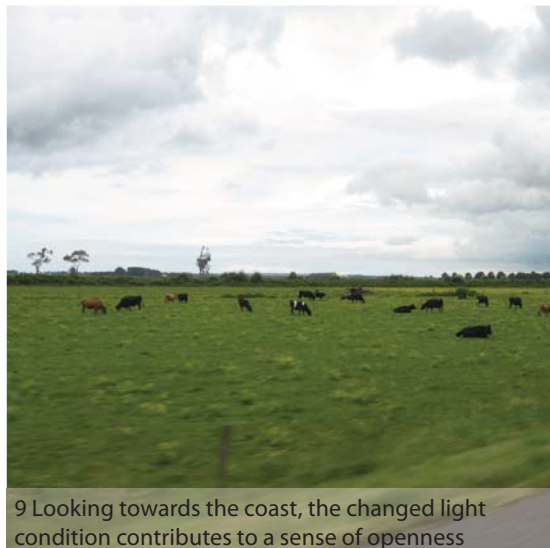
6 The texture of the hill face is a reference for the design of wall details



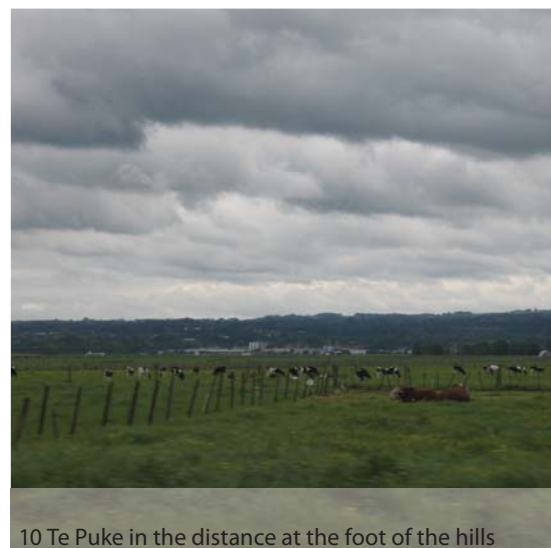
7 The current rolling rural landscape character will change as Papamoa develops



8 Typical highly modified pastoral landscape



9 Looking towards the coast, the changed light condition contributes to a sense of openness



10 Te Puke in the distance at the foot of the hills

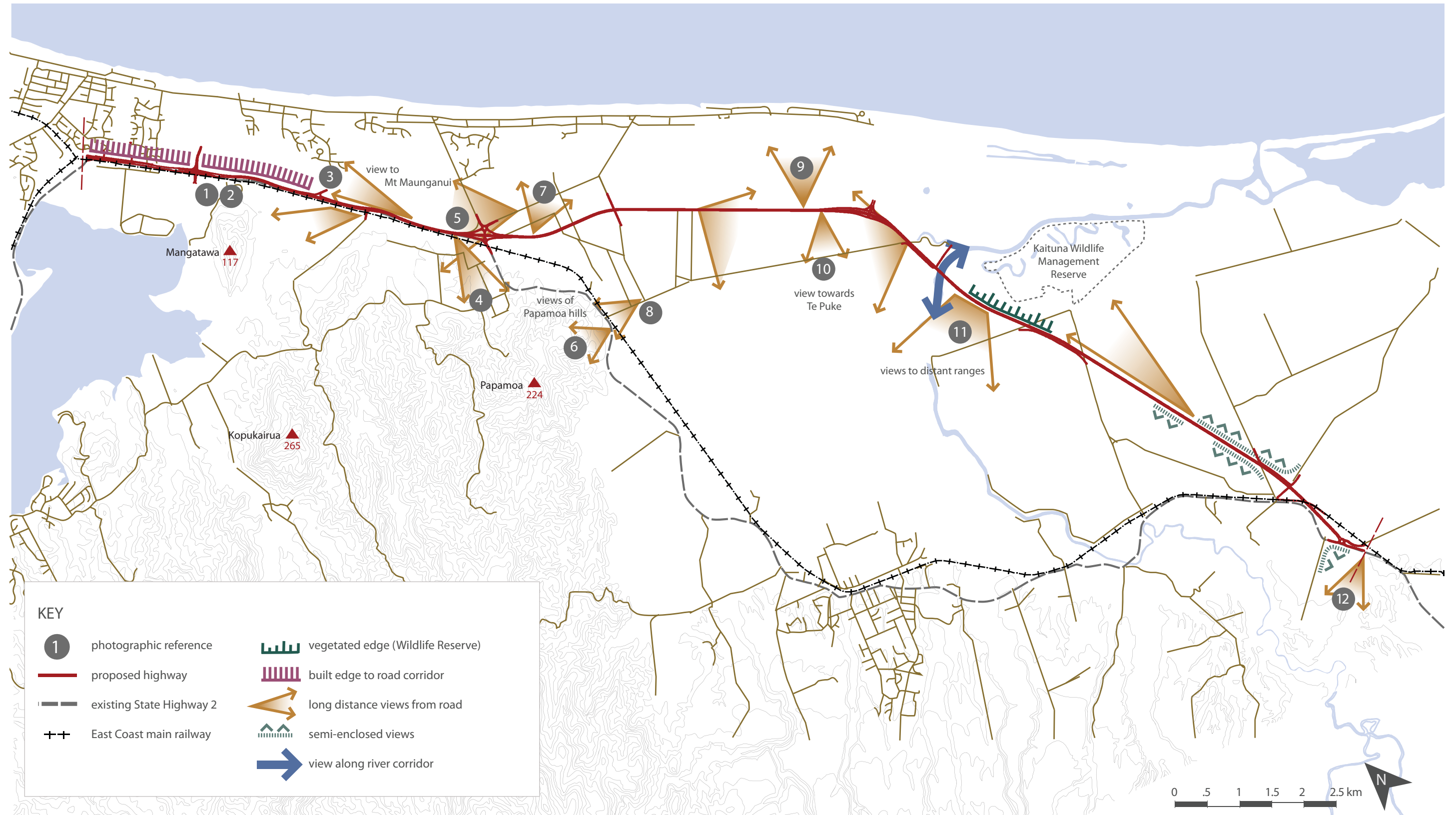


11 Occasional hedges and windbreaks under high, dramatic skies punctuate the otherwise open landscape



12 Towards the east, shelter belts break up the landscape and direct views across horticultural fields

View analysis





1 'pinch point' near Te Manuga - houses and fences create a strong eastern edge to the corridor



2 The ECMT railway defines the western edge as far as Domain Road



3 Typical of the southern part of the journey is a 'one sided' experience with rolling hills on one side and open farmland on the other



4 The existing highway, like the new alignment, opens from the hills to wide views west and south



5 The Kaituna River is both marked and masked by riparian vegetation and the stop banks



6 The new route will offer glimpses of the Kaituna River, and riverside access for cyclists and pedestrians



7 Shelter belts begin to appear after the river, in groups and often with breaks between, contrasting in height and colour to the fields



8 Looking towards the future business park area



9 A local road with solitary farmhouse screened by vegetation - a typical pattern around the area

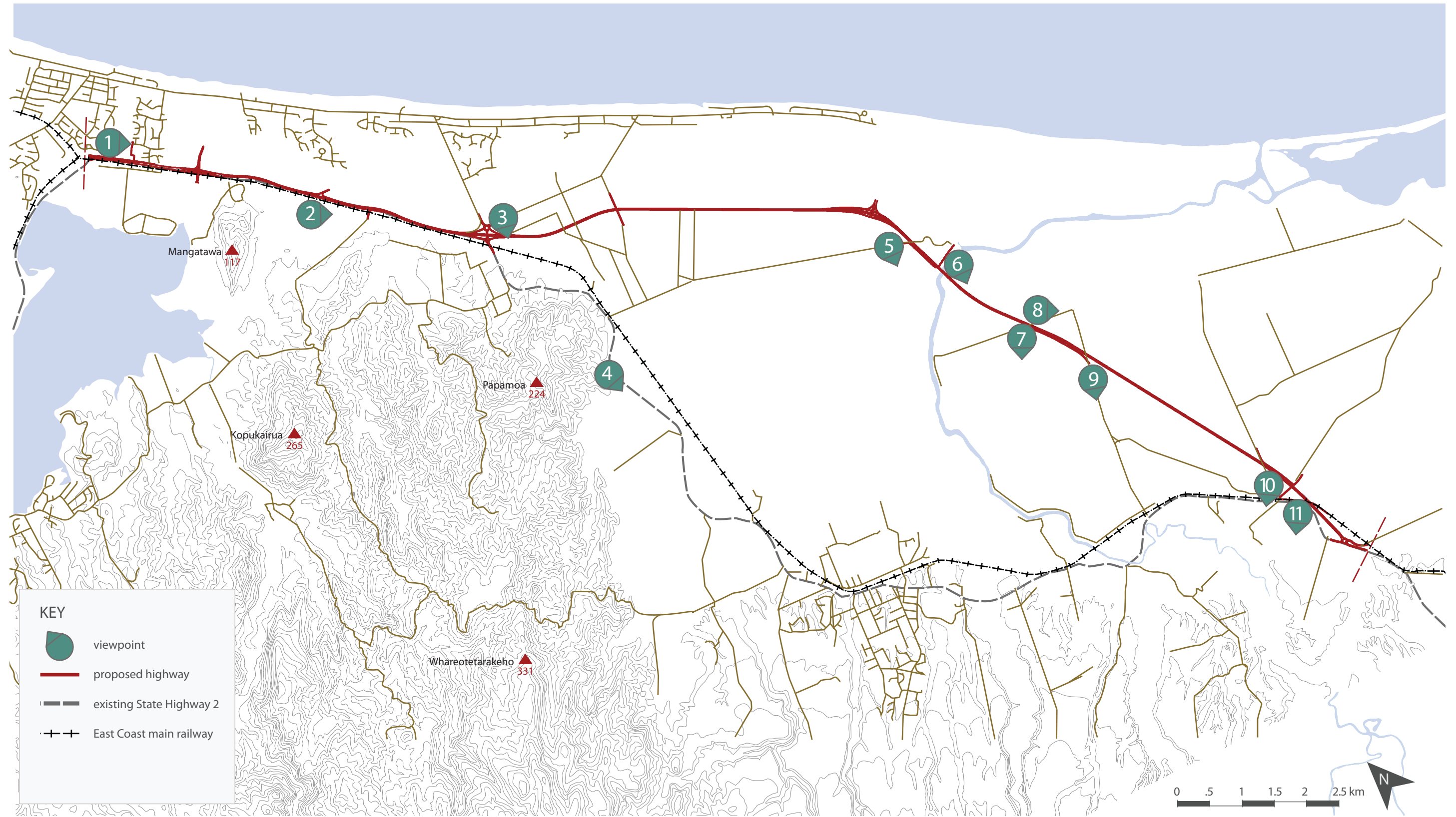


10 The southern part of the alignment is characteristically horticultural - smaller fields, more elements located in the landscape - with generally a sense of less rural, more intensive development



11 Shelter belts have become a strong feature and create a sense of enclosure to the road

Photographic record of southbound journey





1 At the beginning of the alignment looking north, where the highways come together is an opportunity to create a stronger sense of arrival



2 Shelter belts along the road strongly define the edge and in this case take the eye around the curve



3 Immediately adjacent to the highway, the local roads have a markedly informal character



4 The fields are criss-crossed by drainage channels that subtly break up the horizontal plane



5 The existing network of long straight roads gives good locating views to hills and towards the coast



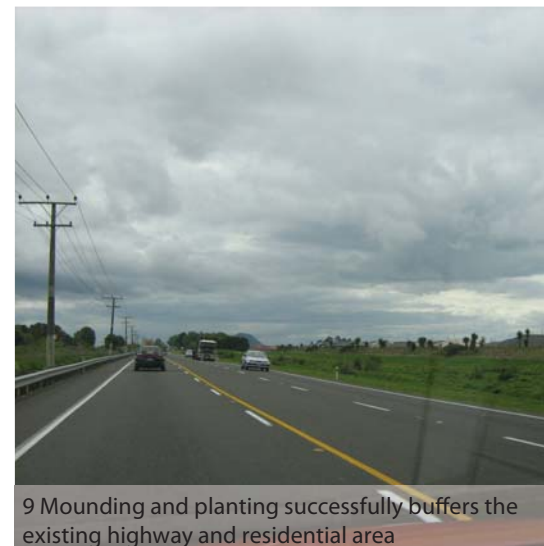
6 At this point travellers see Mount Maunganui and know they are approaching Tauranga



7 Intermittent single trees create a vertical rhythm on the approach to Te Maunga



8 New residential subdivision presents a somewhat bland and repetitive appearance to the motorway



9 Mounding and planting successfully buffers the existing highway and residential area

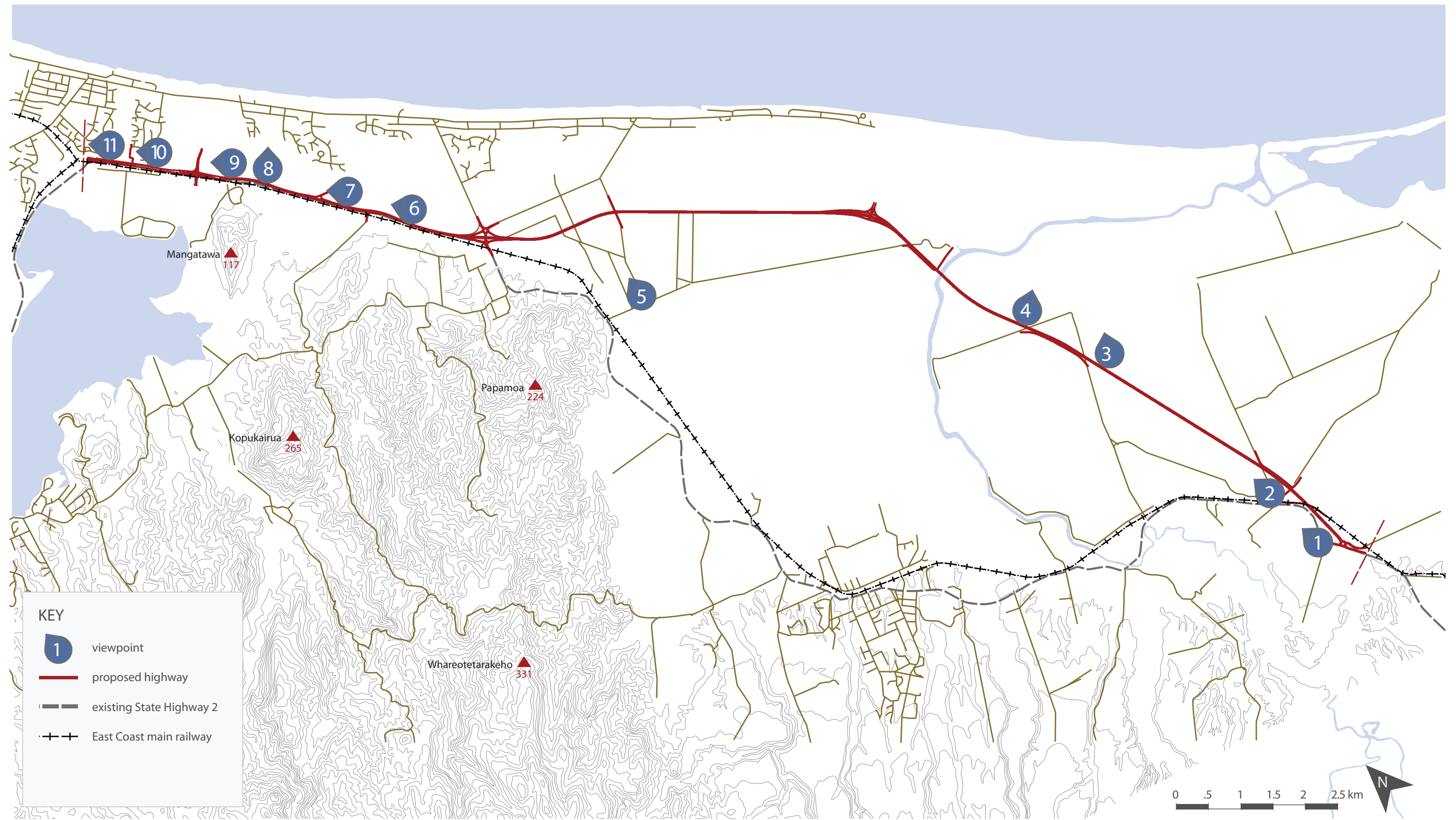


10 Different edges at the northern end: planting to the rail on the west and fences to houses on the east



11 Signage, solid fencing and a lower speed limit announce the arrival into the urban area

Photographic record of northbound journey



Urban and landscape character

Character precincts

Precinct 1 Papamoa foothills

The Papamoa hills including Mt Mangatawa and Mt Kopukarua rise out of the coastal plain to form a dramatic backdrop to the travel experience. This area is characterised by a contrasting sense of containment to the south and openness to the north. The context to the north is of low-scale but comparatively tightly packed housing subdivisions, where the type and scale of planting relates to the residential character. Approaching from the east, Mt Maunganui appears ahead and to the right.

Precinct 2 Dunes and pasture (Bell Road flats)

This area is characterised by flat or very gently undulating topography. It is a highly modified pastoral landscape where formerly were dunes and the Kopuroa swamp. A network of drainage channels crossing the rural land is a reminder of how water once dominated this landscape. There are expansive views, particularly towards the ocean. Occasional hedges, clumps of kahikatea or isolated trees punctuate the otherwise open terrain. To the south-west, the peaks of the Papamoa hills – Mauao, TeTae O Papamoa, Otawa and Otanewaikuku – are 'markers' on the skyline. Future planned development will extend the residential subdivision pattern towards the east, and will create a continuous urban edge along the north of the future highway corridor in this precinct.

Precinct 3 Kaituna River

The Kaituna River meanders through the area and has formed oxbow lakes in places, including adjacent to the proposed bridge. The river is the only significant feature in the immediate landscape, although its stop banks screen the water from any distance. The willows, rush and flax that line the oxbow and river corridor provide a sense of relative enclosure in the otherwise flat plain, with focused views along the waterways contrasting with the otherwise panoramic vistas.

Precinct 4 Kaituna River basin (Pah Road flats)

This area, like the Bell road flats, is typically open with a wide visual catchment. The topography is flat. It is dominated by very large fields set to pasture, whose boundaries cross the new highway at an angle. The area also includes the Kaituna Wildlife Management Reserve, whose dense, tall planting provides a distinctive strong edge. Travelling west, there are striking views to the Papamoa hills.

Precinct 5 Te Tumu horticultural area

This area is made distinctive by the shelter belts that support kiwifruit and other fruit farming. The travel experience is characterised by a sense of enclosure and of a consistent 'patterning' created by the shelter belts that break up the landscape. They are significant vertical as well as horizontal elements, both directing the eye and also limited views to short and mid-range. The corridor alignment cuts across the small horticultural fields, resulting in oblique views along the line of the shelter belts to the variety of building types and uses within them.

Landscape opportunities and constraints

The Tauranga Eastern Link has a number of distinct landscape features that need to be integrated into the landscape design.

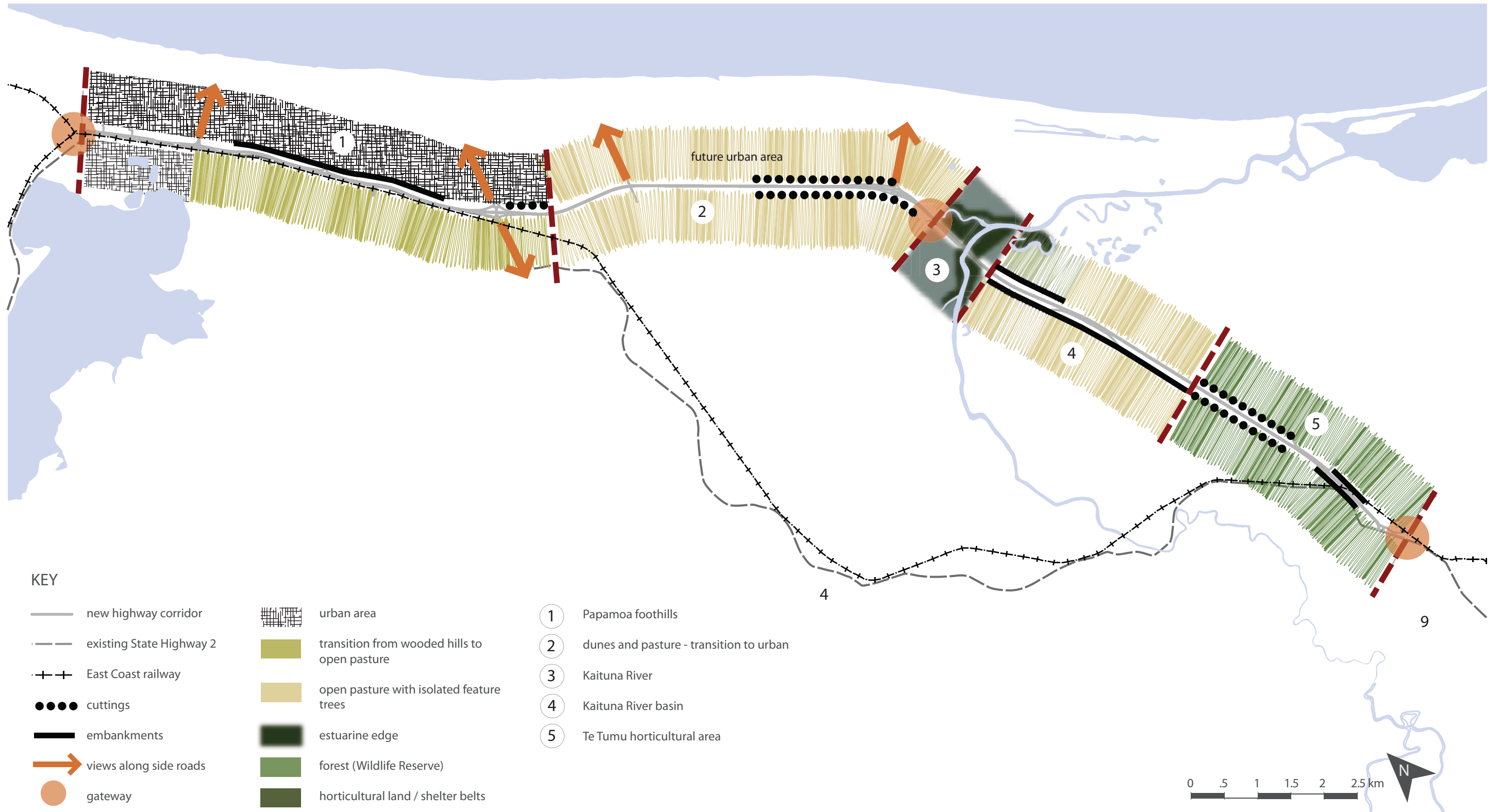
Opportunities

- The route offers views across open countryside to the Papamoa Hills on the south-west skyline and to Mauao (Mt Maunganui)
- The route passes over Kaituna River, which offers a new travel experience and appreciation of the riparian corridor
- Raised highway levels will improve vistas from the road
- There is sufficient width in the corridor for significant planting of trees and shrubs to soften the travel experience and integrate the highway with the surrounding landscape.
- There is potential for a sequence of unfolding views, from semi-enclosed to panoramic, to enliven the journey
- Batter slopes and treatments can be used to frame views through and beyond bridge elements
- Where landscape context permits, planting can soften or conceal noise walls and other structures
- Existing vegetation types will be re-established or rehabilitated through seed collection and/or landscaping with endemic species

Constraints

- Landscape design must respond to the variety of vegetated and non-vegetated conditions along the route, including open pasture, grassland fronting residential subdivisions, shelter belts alongside the highway, and wetland areas
- The proposed bridge over the Kaituna River will be a significant built structure in the flat natural landscape
- Noise bunds alongside the highway will create interruptions to the wide views across pastureland, changing the flat, open topography
- Areas of remnant indigenous vegetation must be retained and enhanced
- Delivering an attractive 'finished' landscape while managing the threat of weed infestation requires intensive management of resources
- Batter slopes and bunds must be shaped and sloped to avoid erosion and provide adequate topsoil and planting opportunities
- Balancing cut and fill is required to limit spoil being removed or brought onto site
- The landscape plan is to protect and enhance fauna habitats.
- Landscape must be able to be constructed, managed and maintained safely and efficiently, with costs minimised.

Section B Route appreciation



- KEY**
- new highway corridor
 - - - existing State Highway 2
 - + - + East Coast railway
 - cuttings
 - ▬ embankments
 - ➔ views along side roads
 - gateway
 - ▤ urban area
 - transition from wooded hills to open pasture
 - open pasture with isolated feature trees
 - estuarine edge
 - forest (Wildlife Reserve)
 - horticultural land / shelter belts

- ① Papamoa foothills
- ② dunes and pasture - transition to urban
- ③ Kaituna River
- ④ Kaituna River basin
- ⑤ Te Tumu horticultural area

Motorway design context

There is an existing design context for the TEL. Generally the aim for concept design for the Western Bay of Plenty Strategic Roding Network (which includes the northern arterial and bypass, and the Harbour Link) is to:

- relate to the existing urban design approach already established in Tauranga
- make reference to the immediate context of the roading environment and
- present solutions that both relate to the changing environments along the roading network and still read as a unified whole along the network.

Elements have been established along the constructed Harbour Link Project that earlier studies for the TEL suggested could be continued to provide a consistent coastal theme throughout the roading network. They are:

- on concrete-panel retaining walls on the Harbour Link project, a “three line convoluted moving line of pattern” representing the undulating character of the water environment of the Tauranga Harbour and Bay of Plenty and the constant flow and movement of vehicular traffic on the flyover
- the (related) placement of the lighting poles to ensure their positioning does not interrupt the ‘flow’ of the patterning on the concrete panels
- Column treatment (vertical ribbing) to create visual interest and patterns of light and shadow.

These concrete patterning treatments are not considered a ‘given’ in the design of the TEL. The intent behind them – to respond appropriately to the context and to create a consistent travel experience – is supported, but there is an opportunity to revisit the particular design responses for this project.

The relevance of the Harbour Link design, the patterning of internal barriers, and the vertical ribbing on columns is lessened both by the landscape context and character of the Tauranga Eastern Link.

For the TEL project, the primary visual focus has emerged through the various project stages and designations as the landscape itself. This is in contrast to the Harbour Link project which is dominated by large-scale infrastructure elements. On the TEL there are also opportunities for structural solutions other than columns and vertical retaining walls, and for landscaping that softens and conceals bridges and associated structures. Further, the employment of wire rope rather than F-type barriers for most of the length of the journey means that patterned barriers would be visually prominent - where the desired effect is that they blend into a simple and elegant roading solution to the rural, open environment. Less detail is therefore considered more relevant and appropriate.

The three line ‘wave’ pattern used on the Harbour Link Project is therefore not recommended on the TEL. Column treatment is also suggested to be as simple as possible, so as not to draw attention to the structures.

Route design principles

The urban and landscape design principles that underpin the design proposals presented in this report are drawn from the Tauranga Eastern Motorway – Urban Design Overview, the previous visual assessments of all four Designations and the consequential conditions. They are also consistent with NZTA’s Urban Design Policy, Implementation Principles, and Urban Design Professional Services Guide. By extension they also reference the NZ Urban Design Protocol. They also reflect the comprehensive route analysis presented above.

The principles are:

- Linear identity – provide a continuous and consistent identity for the highway for its length, and that relates to the character of the route to the south and to the north and west. Elements contributing to route continuity include:
 - Road pavement and line marking
 - Barriers
 - Retaining wall and noise wall treatment
 - Bridge parapet treatment
 - Signage
 - Lighting.
- Lateral integration – integrate the road corridor with the surrounding context, principally through identifying and responding to the identified landscape character of each of the character precincts.
- Landmarks – strengthen or create relationships with memorable landmark features along the route, to add interest and diversity to the travel experience .
- Views – maintain and enhance distinctive views from the road, particularly to Mt Maunganui, the Papamoa Hills and the Kaituna River.
- Environment – incorporate the physical characteristics of the area into the design of the highway corridor, including topography, watercourses and drainage patterns, geology and soil types, and endemic vegetation.
- Cultural and heritage values – include thematic references to the history of the region including Maori settlement sites, flax milling and horticulture.
- Lighting – installed service lighting is to ensure public safety, avoid adverse impacts on adjoining uses, and minimise light spill to the night sky and the environmentally sensitive Kaituna Wildlife Management Reserve.