

APPENDIX 3 – SPECIALIST WORKING PAPER – LANDSCAPE AND
VISUAL

Peka Peka to Otaki – Assessment of Alternatives

Specialist Working Paper - Landscape and Visual

Introduction

This working paper provides a 'desktop' assessment of the potential landscape and visual effects of three PP2O expressway alternative corridor routes and also that of the NZTA Board preferred alignment. The actual routes are described in the briefing note for this specialist input and also in the PP2O *Alternatives Corridors Technical Feasibility Report*, April 2011.

Section 4.2 Topography from the Technical Feasibility Report provides an overview of the general landscape the three alternative alignments traverse:

Both alignments (A and B) begin in the north close to an outcrop of the foothills of the Tararua Ranges. Alternative A heads off to the east and then south down the Waitohu Valley. The valley floor is relatively wide and flat with maximum cut depths of approximately 20m and fill depths of approximately 15m across the Waitohu Plateau to the south of the Waitohu Stream. Significant lengths of Alternative A are located in cutting on sloping ground at the eastern foothill slopes which will result in interception of natural overland flows and increased requirement for cut off drains and drainage requirements (e.g. sta 14,000 to 15,900 and sta 16,900 to 18,000). Alternative B goes around the western side of the outcrop across rolling terrain before heading east through a small valley before exiting onto the Otaki plains.

Both Alternative A and B head south across the Otaki plains, traversing the river terraces as the expressway levels tend down towards the Otaki River crossing. Across the river the Alternative A alignment stays to the east on the Otaki plains close to the foothills. Alternative B tends back to the west once across the river and stays on the flat land until rejoining with the preferred alignment north of Te Horo.

Alternative A eventually skirts around the base of the foothills and climbs onto a small plateau close to Peka Peka. The southern connection for Alternative A is on a grade of 6% due to the topography and the connection constraints at Peka Peka. Apart from this exception the routes fit within the RoNS requirements for gradients and curvature over the entire alignments. The RoN's requirements being a minimum horizontal curve radius of 720m for a 110km/h design speed and gradients limited to 4% over lengths less than 600m and a maximum of 8% over lengths shorter than 300m.

In the southbound direction Alternative C heads west from just north of Taylors Road towards the coastline across rolling terrain before skirting Otaki town to the west. The terrain is such that only one area of significant cut is required. From Convent Road the terrain becomes flat as the expressway passes between the township and beach communities before it begins to elevate on fill embankments to go over Rangioru Road and the Otaki River. On the southern side of the Otaki River the terrain is relatively flat except for a small rise up onto a higher terrace. South of Te Horo the expressway enters a dune type terrain with more rolling hills. This continues until Mary Crest, generating further areas of cut before the expressway becomes parallel to the existing SH1.

Giving the preferred alignment the same consideration, this alignment most closely 'parallels' the existing SH1 alignment and commences just north of Taylors Road and heads directly south, crossing BB stream, cutting through a remnant dune ridge and under passing the current state highway to sweep immediately east of the historic Otaki Railway Station. The preferred route crosses the Otaki River a short distance upstream of the Otaki River railway bridge and continues on a straight alignment parallel and east of the SH1 Te Horo straight to the Mary Crest area. It sweeps southeast, crossing the NIMT railway line, through a set of dune ridges at Mary C rest and then runs directly south to the proposed interchange in the Peka Peka Road area.

Method and Background Information

Method

The following is from my scoping memo of 5 April 2011:

Proposed inputs:

- *Review of existing reports and AEEs for options, where available;*
- *Review KCDC District Plan relative to landscape matters;*
- *Review of aerial photographs and Google Earth to identify the landscape context of each route and likely areas of landscape 'conflict';*

- *Consideration of the ecological assessment that will be prepared by John Turner in parallel to this assessment so as to gain an understanding of vegetation patterns and likely issues along the routes, plus review of draft assessments prepared by other specialists where issues raised may be relevant to the landscape assessment.*

I am not familiar with the landscape to the east and to the west of the current route so as with the ecology assessment, there are limitations with desktop only assessments. The risks associated with such assessments include missing areas that may have particular landscape importance to the local community and incorrect attribution of values (as I have not been able to check the scale, extent and context of the particular landscape the routes would traverse and the ability or not of these landscapes to absorb/accommodate change...

Output:

A short assessment report for each option based on a template to be provided and including an effects rating as per previous assessments undertaken for this Project. The costing assumes that the report will be a maximum of two pages. Allowance is also made to prepare for and attend a 1 day workshop in Wellington.

While this assessment is not following a specific template; its observations are in bullet-point form that concludes in a comparison table of rankings.

Background Information

The following have been considered as part of my desktop assessment:

- Google Earth
- Horowhenua and Kapiti Coast District Plans and maps
- Current PP2O Expressway reports i.e. draft Alternative Corridors Technical Feasibility and draft Urban and Landscape Design Framework.
- Previous scheme assessment reports from NZTA PP2O project web site i.e. *Preliminary Landscape Assessment of Te Waka Highway Upgrade Alignment Alternative*, January 2003.
- District and region-wide landscape studies i.e. *Assessment of the Outstanding landscapes & natural Features of the Horowhenua District*, August 2009; *Wellington Regional Landscape Atlas*, May 2009.

'Desktop' Assessment

Alternative A – Eastern #1 or Foothills Route

- Foothills Route - sweeps close to south end of 'Hanawera Middle' ridge; traverses through Waitohu Valley, inland of Pukehou and its associated, localised ridges; crosses 'Waitohu Stream' terrace; crosses Otaki River and associated flood channel; crosses south river terrace/Mangaone Stream 'flats'; sidles across 'toe' of foothills between Mangaone Stream and Hadfield Road.
- Transmission Line Route - follows transmission lines through Waitohu Valley to Otaki River crossing, then just east of transmission lines south to re-join lines just north of Hadfield Road.
- Longest Route, equal – 19.5km long, same as Alternative C; based on same 'start' and 'finish' points as Preferred Route, which is 17.7km long; A is ~6% longer.
- 'Outstanding Landscapes' affected??? – traverses Horowhenua DC 'Manakau Downlands' outstanding landscape area and KCDC 'foothills of Tararua Ranges' outstanding landscape area in Waitohu Valley; clips Hillas Bush and Rahui Road Bush D and also Hautere Bush B

ecological areas/outstanding landscape areas⁴⁷; crosses Otaki River OLA; clips 'foothills of TRs' area again under transmission lines near Awatea Bush, north of Hadfield Road.

In terms of particular parts of the route the key landscape effects would be:

- The NIMT rail overbridge south of Manakau would introduce a new, obvious constructed element into the landscape.
- The underpass connecting Corbetts Road and Waitohu Valley Road could be particularly obvious if it 'sits' in the saddle between the local hills.
- Alternative A alignment with its sidling cuts and fills would impact on isolated, rural character of Waitohu Valley. Two sets of transmission lines that also traverse the valley would have a negative effect on the view from the expressway.
- Potential full interchange at Rahui Road would impact on terrace landform, native vegetation and rural character.
- The introduction of a new Otaki River bridge at a relatively un-modified section of the river would have a noticeable landscape effect. The bridge would allow an interesting view from the expressway upstream to Otaki Gorge and the ranges. Downstream view would be compromised by transmission lines immediately adjacent to the pair of expressway bridges.
- Te Horo Hautere Cross Road overpass would have minimal visual effect. Expressway formation rising up to overpass would provide elevated views across Te Horo flats.
- Mangaone Stream to Hadfield Road section of Alternative A is well located as a linear expression of the 'meeting' of hill and flats landforms, which is a natural line in the landscape.
- To the immediate north of Hadfield Road there will be a section of cut, then a length of fill embankment as the expressway rises up to overpass the NIMT and existing SH1 alignment. The skewed bridge and its associated cut and fill earthworks will have an obvious, but localised visual effect.
- Given that the current SH1 and NIMT 'corridor' remains, Alternative A will add a new 'greenfields' and additional transportation corridor to the landscape.

Alternative B – Eastern #2 or Pukehou to Te Horo Route

- Front of Foothills Route – sweeps around base of Pukehou towards main foothills and then across flats to Te Horo.
- Longer Route, – 18.1km long; B is ~2% longer than A and C=> hardly noticeable difference.
- 'Outstanding Landscapes' affected??? – traverses through (in cut) KCDC 'foothills of Tararua Ranges' outstanding landscape area south of Pukehou 'ridge'; clips Castlehill Farm Bush ecological area/OLA; crosses Otaki River OLA; bisects Braeview Bush and clips Mangaone Bush B ecological areas/OLAs.

In terms of particular parts of the route the key landscape effects would be:

- The northern 'sweeping curve' of the Alternative B aligns with curving, western 'frontage' of Pukehou approximating the natural line between hill and flats.

⁴⁷ Outstanding Landscapes include ecological areas in KCDC District Plan

- The route's proximity to well established rural-residential dwellings in the Sunglo Terrace/Greenwood Boulevard are could be problematic.
- The pair of bridges crossing of Waitohu Stream would introduce an obvious built structure into a treed, rural landscape.
- Potential full interchange at Rahui Road would impact on terrace landform, native vegetation and rural character.
- The introduction of a new Otaki River bridge at a relatively un-modified section of the river would have a noticeable landscape effect, particularly as the floodplain is quite broad at this point. There would be the need for two, relatively long lengths of approach embankment on both opposing terraces immediately above the river's flood channel. The southern embankment bisects Braeview Bush with a resultant vegetation effect. As with Alternative A, the bridge would allow an interesting view from the expressway upstream to Otaki Gorge and the ranges, but this view would be compromised by transmission lines just upstream of the pair of expressway bridges.
- South of Otaki Gorge Road the expressway would pass close to several stands of remanent native forest, adding interest to the view from the expressway. Clipping off the eastern corner of Mangaone Bush B ecological areas/OLA would have an obvious, localised visual effect.
- Returning to the existing SH1/NIMT corridor, the Te Horo underpass will be a new, obvious constructed element, particularly as seen from the expressway and from the adjoining Te Horo and School Road dwellings.
- Forming the proposed Mary Crest 'curves' will have a direct effect on local dune landforms and pockets of native vegetation.
- Given that the current SH1 and NIMT 'corridor' remains, Alternative B will add a new 'greenfields' and additional transportation corridor to the landscape, though this will be shorter than Alternative A.

Alternative C –Western or Te Waka Route

- Seaward Route – sweeps west away from Pukehou, crossing the NIMT at Taylors Road and the Waitohu Stream valley area then sweeping seaward of Otaki township. Runs parallel to transmission line route and crosses Otaki River; sweeps back towards Te Waka Road and then directly south through Mary Crest 'sand dunes' to SH1 and then Peka Peka Road intersection.
- Longest Route, equal – 19.5km long, same as Alternative A; based on same 'start' and 'finish' points as Preferred Route, which is 17.7km long; A is ~6% longer.
- 'Outstanding Landscapes' affected??? – in crossing Otaki River OLA, comes close to rivermouth section of 'foredune and consolidated sand dunes' OLA; impacts Mary Crest Bush ecological area/OLA.

In terms of particular parts of the route the key landscape effects would be:

- The NIMT rail overbridge at Taylors Road would introduce a new, obvious constructed element into the landscape.

- At Convent Road and Bennetts Road the effects of this option would be to significantly change the character of this area from a small scale quiet rural backwater to one influenced by a substantial highway and bridge structure. However, there would be space for buffer screening between the expressway and the church, urupa and other maori sites. This would require intense planting and creation of landforms that reflect the local dune system.
- At Tasman Road the grade separated intersection would have significant effects. While there is space for dense planting, greater design details are needed to consider mitigation in detail.
- At the Otaki River crossing the presence of industrial activities such as river gravel processing and sewage treatment would mean that a new bridge could be accommodated without significantly affecting the existing character.
- The expressway would have a distinct effect on the Swamp road/Te Waka Road area through the introduction of a large length of transport infrastructure into an open, pastoral landscape.
- In the Te Horo Beach Road area, the construction of the approach embankments to overpass the local road would create an obvious change within the local, flat landform of the Te Horo flat area.
- South of Te Horo Road, the expressway route would be more 'contained' by the more varied landform, which in turn, would help mitigate the effects of the expressway.
- In the Mary Crest 'dune' area, Alternative C cuts through some of the local dune landform, but avoids pockets of native vegetation that have been noted in recent PP20 'Mary Crest' ecology assessments as having a high ecological value.
- Given that the current SH1 and NIMT 'corridor' remain, Alternative C will add a new 'greenfields' and additional transportation corridor to the landscape; being longer than Alternative B but not as long as Alternative A when comparing lengths of 'greenfield' sections.

Preferred or Central Route

- Transport Corridor Route – Preferred Route is closely aligned to existing highway and NIMT railway route.
- Shortest Route – 17.7km long; 1.8km shorter than A and C; 0.4km shorter than B.
- 'Outstanding Landscapes' affected??? – crosses Otaki River OLA and in the Te Horo 'Straight' area does clip a number of remanent stands of totara and manuka.

In terms of particular parts of the route the key landscape effects would be:

- The underpass at North Otaki and at Rahui Road that would introduce a reconstructed element and a new, obvious constructed element into the landscape; both would be visible to highway and road users and to local residents.
- At the Otaki River crossing the presence of industrial activities such as river gravel extraction and processing would mean that a new bridge could be accommodated without unduly affecting the existing character. However having a pair of new highway bridges in a short section of the river landscape that already contains a highway bridge and a rail bridge will have a very obvious visual effect.
- Proposed Otaki Gorge Road underpass will be a new, obvious constructed element as seen from the expressway and from the adjoining area.

- Likewise, Te Horo underpass will be a new, obvious constructed element, particularly as seen from the expressway and from the adjoining Te Horo and School Road dwellings.
- Forming the proposed Mary Crest 'curves' will have a direct effect on local dune landforms and pockets of native vegetation.
- Over its total length, the proposed expressway will 'double' the landscape and visual effects of the existing transportation corridor. However this route is shorter than the three other routes being considered.

Rankings

In 'condensing down' the various potential landscape and visual effects that the four route alternatives being considered, I would rank these as follows:

<i>Route</i>	<i>Ranking</i>
Alternative A – Eastern #1 or Foothills	--
Alternative B – Eastern #2 or Pukehou to Te Horo	-
Alternative C – Western or Te Waka	-
Preferred or Central	0

The above rankings are based on the observation that the Preferred Route follows the current major transportation corridor through the local landscape and will therefore have the least effect relative to the other three routes that all follow 'greenfield' routes to varying degrees. On balance, all of the routes will have negative landscape and visual effects, but that which has the longest 'greenfield' route will have the greatest effect.

While it is not possible to assess the landscape mitigation requirements and potentials of each alternative route at the 'desktop' level, I concur with the following extract from the 2003 'Te Waka' landscape assessment:

Full mitigation is difficult and expensive to achieve due to the scale of change taking place, but the degree of mitigation is influenced by the size and nature of the buffer, and the landscape treatment within it. Any buffer would need to be of sufficient size to reduce both the adverse visual and landscape effects for the neighbouring properties, and to allow for a highway setting that would give a positive experience for the motorist.

David McKenzie
Principal, Landscape Architecture
Partner
Opus International Consultants Ltd, Christchurch

27 May 2011