

**Isthmus.**

ŌTAKI TO NORTH OF LEVIN DETAIL BUSINESS CASE

MCA WORKSHOPS

LANDSCAPE + VISUAL + URBAN DESIGN

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# 1 INTRODUCTION

1.1 This report backgrounds the ‘landscape and visual’ criterion for the Multi Criteria Analysis (MCA) workshops considering alternative alignment for the proposed Ōtaki to North of Levin (O2NL) expressway, alternative interchange locations and types, and options to reconfigure local roads in response to the expressway.

1.2 Scores were recommended, with an explanation of reasons, to the workshop participants by landscape architects engaged by the NZ Transport Agency. This report sets out the recommended scores and reasons. The final workshop scores, however, were agreed by the participants.

## *Methodology*

1.3 ‘Landscape and visual’ is a single criterion comprised of two main components:

- **Landscape effects** which is an assessment of ‘fit’ with the landscape’s characteristics and qualities. Factors include the landscape’s natural aspects (topography, features, water bodies, stands of bush), human overlay (‘grain’ – local road and cadastral pattern of roads, settlements, and significant places), its aesthetic qualities, and associated meanings and values.
- **Visual effects** which is the effect on views, in this instance measured principally on views from houses. Factors include view orientation, distance, screening, and the nature of the highway (e.g. whether it is in cut or elevated on fill).

1.4 Such ‘mind’s eye’ and viewpoint perspectives are overlapping and complementary ways of understanding the effects of the proposal.

1.5 The methodology is a continuation of that used in earlier stages of the project which considered the landscape at a broader scale and provided input to the selection of the preferred ‘corridor’.

## *Scoring*

1.6 The purpose of scoring is to compare alternative options. While the scores convey different degrees of effect, they are calibrated to an expressway in this landscape. Any expressway is likely to have substantial effects. A score of ‘1’ does not mean that there will be no adverse effects, rather that it is amongst the least effects that might be anticipated for an expressway in the landscape context, whereas a ‘5’ means the option is amongst the worst that might be anticipated in that context. This means the full range 1 to 5 can be used to distinguish between best and worst options where there are real differences between them.

## *Design and Mitigation*

1.7 It is assumed that the project will continue to be refined to avoid and reduce potential adverse effects. Most options could be improved with tweaks to alignment, and refinements of the design.

1.8 The scoring presumes that common-place mitigation will also be incorporated to address adverse effects. For example, that planting will be carried out adjacent to the alignment to

reduce adverse visual effects. The scoring takes a common-sense rather than pedantic approach.

## 2 LANDSCAPE CONTEXT

2.1 As discussed, the analysis presented in this report is a continuation of the process by which the preferred 'corridor' was selected by comparing alternatives at progressively finer scales. Preceding stages considered a Study Area between the Tararua foothills and the coast which is described in the earlier landscape 'Baseline Assessment'. In summary, characteristics of the area relevant to current stage include:

- Alluvial plains and terraces between the foothills in the east and the coastal dunes to the west.
- Rivers and streams flowing from the hills to the coast dividing the plains landscape into a pattern of east-west bands.
- The North Island Main Trunk (NIMT) railway and SH1 running up the middle of the plains, linking a sequence of historic settlements.
- A pattern of secondary east-west roads running either toward the hills or the coast meaning each settlement, therefore, has a community of interest between the hills and coast.
- Māori history and traditions associated in particular with (but not limited to) the waterways, the marae along the SH1 spine and associated productive land, and such features as Pukehou.
- Historic features such as Manakau village and the Prouse homestead at Queen Street East.
- Cropping, horticulture and other intensive agriculture on the area's high-quality soils.
- Occasional remnants of lowland tōtara and kahikatea forest (including some within the corridor).
- Clusters of lifestyle properties, notably those at Manakau Heights, north of the Ōhau River, and around the fringes of Levin.
- The junction at Levin between SH1 and SH57 to Palmerston North. Historically the intersection was in the town centre. Currently it is at the intersection of the Kimberley Road/Arapaepae Road by-pass.

2.2 A relevant consequence of these patterns is that each settlement has a community of interest, which will be intercepted by the expressway, running between the hills and coast.

2.3 The selected corridor is in the eastern side of the Study Area:

- It follows the back of the plains between Pukehou and the Ōhau River
- It skirts the eastern edge of Levin to the junction with SH57 near the north-east corner of the town
- It swings around to tie in with SH1 north of Levin.

2.4 It is relevant to note in passing that earlier stages considered:

- Western routes which would affect more sensitive features and areas, especially with respect to Lakes Horowhenua and Papaitonga and the Hokio Stream.
- Central routes which would pass through Levin or between Levin and Lake Horowhenua.

- Alternative eastern routes including along the valley between the foothills and the Tararua Ranges, and those skirting further east of Levin.
- Combinations, such as a central route in the southern part of the district and an eastern route around Levin.

### 3 EXPRESSWAY ALIGNMENT OPTIONS

3.1 The following section describes scores for the expressway alignment options within the 300m 'corridor' for each of 10 identified zones, with consideration of effects on the overall landscape (fit with landscape) and visual effects from houses.

#### Zone A

- 3.2 *White* is the better of the two options in Zone A because it has a slightly better fit with the landscape and slightly fewer visual effects from houses.
- 3.3 The *White* option describes a more pronounced 'S' alignment that responds more positively to Pukehou when seen in conjunction with the *White* option in Zone B: The alignment highlights the hill as a landmark, and reduces the cut around the toe of what is an important feature.
- 3.4 The sweep also moves the alignment further toward the heads of tributary gullies on the terraces south of Pukehou. It crosses five headwater gullies incised in terrace, crossing them at right angles and a little further upstream than the *Green* option. It is in shallow box cuts across parts of the terrace which will reduce prominence.
- 3.5 The 'S' alignment is a little further behind houses at the north end of the zone, which leads to fewer visual effects in aggregate from houses. The following table compares the number of houses estimated to fall into different categories of effect (refer **Appendix One**).

<i>Estimated effect</i>	<i>White</i>	<i>Green</i>
removal	0	1
very high	0	1
high	7	5
mod-high	3	3
moderate	6	6
mod-low		1

3.6 The *Green* option also describes a similar, but less pronounced 'S' alignment, and has a reasonably good fit with landscape. The differences are small, with *White* slightly preferred.

Option	Recommended score
<i>Green</i>	3
<i>White</i>	2

#### Zone B

3.7 Zone B is especially important in landscape terms because it is recognised as having 'high landscape amenity'. The hills and terraces form an amphitheatre, with fine-grained features on the valley floor including meanders of Waiauti Stream tributaries, small knolls, stands of trees,

South Manakau Cemetery. The valley is overlooked by closely settled rural residential properties.

3.8 The *White* option is the best of the three alignments:

- It skirts the toe of Pukehou in a more responsive manner as discussed in Zone A
- It minimises encroachment on Waiauti Stream meanders (it crosses a knoll that could be used to launch a bridge over both the stream and South Manakau Road)
- It best avoids the rural residential clusters at Manakau Heights and Mountain View Drive.
- Its sweeping 'S' alignment is a more elegant response to the valley. The location where it crosses the terrace scarp is anchored by a distinctive knoll – it is at a natural junction between the knoll and terrace.

3.9 The *White* and *Cyan* alignments clip a stand of bush ('forest fragment 3'). It was confirmed in the workshops that the alignments could be fine-tuned to avoid this bush. The scoring is based on this assumption.

3.10 The *White* alignment will also have fewer adverse visual effects from houses (notwithstanding some significant effects). As above, the following table compares the number of houses estimated to fall into different categories of effect for each option (refer Appendix One).

<i>Estimated effect</i>	<i>White</i>	<i>Cyan</i>	<i>Green</i>
removal	2	4	5
very high	3	5	4
high	3	5	8
mod-high	7	6	6
mod	6	3	4
mod-low	9	7	3

3.11 *Cyan* is somewhat similar to *White* but will not fit the landscape quite as well:

- It is located higher on Pukehou – albeit on a natural terrace.
- Its embankments spill slightly more over the Waiauti Stream.
- The straighter diagonal alignment across valley is a less aesthetically coherent response to the topography.
- It encroaches on the edge of Manakau Heights.
- It will have slightly higher aggregate visual effects on houses,

3.12 *Green* will have greater effects than the other two options. It will not fit the landscape as well and will have greater visual effects:

- Its cut batters encroach more into the toe of Pukehou,
- Its embankments spill further over meanders of the Waiauti Stream,
- It bisects the Manakau Heights area and will displace Manakau Heights Drive.
- It will have the greatest aggregate effects on views from houses.

3.13 The differences between *White* and *Cyan* are small. *Green* will have markedly greater adverse effects.



Option	Recommended score
<i>Cyan</i>	3
<i>Green</i>	5
<i>White</i>	2

### Zone C

3.14 The three options all follow a similar alignment through the middle of the zone through the low point in a valley (or saddle) between Manakau and the backdrop hills. The differences are at either end of the zone. Because the middle sections are nearly identical, the north and south ends of each option could be mixed-and-matched.

3.15 At the zone's south end:

- The *White* and *Purple* options cross the scarp dividing the terrace and valley floor adjacent to a distinctive knoll. As discussed above, it is a natural junction at one end of the terrace, and the knoll will help anchor the highway. The *White* and *Purple* also align with the better options in Zone B.
- The *Green* option bisects Manakau Heights area and will disrupt Manakau Heights Drive and the pattern of settlement in this area. It also aligns with the worst option (*Green*) in Zone B.

3.16 At the zone's north end:

- *The Green* option keeps to lower terrain and will be less prominent but encroaches the most across a rectilinear pattern of crop paddocks.
- *The White* option keeps closest to the hills at the back of the plains, minimising disruption of the cropping pattern, but is slightly more elevated and prominent, and will have greater effects on the cluster of houses at the bend in North Manakau Road.
- *Purple* is in-between. It follows the toe of the hills behind the plains but has a more pronounced 'S' alignment at the northern end that swings further to the west to reduce effects on the cluster of houses.

3.17 The options will have similar aggregate visual effects from houses.

<i>Estimated effect</i>	<i>White</i>	<i>Purple</i>	<i>Green</i>
removal	4	3	2
very high			2
high	5	5	4
mod-high	1	2	2
mod	5	6	7
mod-low	4	3	2

3.18 The *Purple* option is scored '2' to reflect a slightly better fit with landscape at both north and south ends. While differences at the south end also relate to tie-ins with Zone B, care has been taken to avoid double-counting effects in the adjacent zone. Otherwise, differences between the options are small.

Option	Recommended score
<i>Green</i>	3
<i>Purple</i>	2
<i>White</i>	3

## Zone D

3.19 The 'corridor' in Zone D follows the toe of the hills at the back of the plains through the Kuku area between the Waikawa and Ōhau Rivers. The corridor crosses the Kuku Stream and a cluster of houses at Kuku East Road. The plains have a rectilinear pattern of cropping paddocks.

3.20 There are pros and cons to each of the two options:

3.21 *The Cyan* option:

- Is aligned with a more natural (i.e. logical) crossing point of the Ōhau River – i.e. it is opposite a location where the banks are pronounced and come closer together.
- However, it bisects the cluster of houses at Kuku East Road and encroaches further into the plains rather than following the toe of the hills.

3.22 *The Blue* option:

- Is aligned with a less natural or logical crossing point of the Ōhau River. While the crossing point is adjacent to the quarry (and therefore an area of modified natural character), it is opposite a concave area of floodplain where an embankment might be anticipated.
- On the other hand, the *Blue* option is closer to the back of the plain, although the straight alignment is not an aesthetically coherent response to the subtle topography at toe of the hills. While it affects a similar number of houses at Kuku East Road, the *Blue* options is closer to the 'back' of the cluster.

3.23 Both options have similar aggregate visual effects from houses.

<i>Estimated effect</i>	<i>Blue</i>	<i>Cyan</i>
removal	2	2
very high	4	5
high	4	3
mod-high		3
mod	2	1
mod-low	3	1

3.24 Both options are scored the same because differences are small and involve pros and cons, although the *Cyan* option is slightly preferred because of the weight given to the Ōhau River crossing.

Option	Recommended score
<i>Cyan</i>	3
<i>Dark Blue</i>	3

3.25 It is suggested that the options could be combined and fine-tuned:

- Connect the *Cyan* option's crossing of the Ōhau River with the *Blue* option for the balance of the zone, by following an 'S' alignment immediately south of the Ōhau River.
- Fine-tune the *Blue* alignment to skirt the cluster of houses further east at Kuku East Road. This could echo the curvature at the toe of the hills where the Kuku Stream emerges onto the plains. It might enable a Kuku East Road underpass to be combined with a bridge over the stream. It is acknowledged that this might fall outside the bounds of the corridor.

## Zone E

3.26 Zone E is the area north of the Ōhau River. It comprises:

- Flat river terrace between the river and Muhunua East Road that is characterised as open, productive farmland.
- Undulating terraces between Muhunua East and McLeavey Roads that is characterised as a comparatively finer grain pattern of rural residential properties on the perimeter roads (especially Muhunua East and Arapaepae Roads) and rolling farmland in the middle of the block.

3.27 Both options have a good fit with landscape, picking relatively open locations to cross Muhunua East and McLeavey Roads, and sweeping 'S' alignments to follow the 'rear' of properties on Arapaepae Road. *Cyan* is depicted as requiring slightly less prominent earthworks (fewer fill embankments). The *Cyan* alignment also has a slightly squarer approach to the Ōhau River and would 'land' the bridge at a 'natural' (i.e. logical) location.

3.28 *Cyan* has marginally fewer visual effects from houses.

<i>Estimated effect</i>	<i>Cyan</i>	<i>Green</i>
removal	1	2
very high	1	1
high	5	6
mod-high	5	3
mod	5	5
mod-low	6	7

3.29 *Cyan* is slightly preferred, but the differences in effects are insufficient to warrant different scores.

Option	Recommended score
<i>Cyan</i>	3
<i>Green</i>	3

3.30 The alignment in Zone E also needs to tie in with Zone F where there are greater differences in effect. Both the *Cyan* and *Green* options would need to be adjusted to tie in with the best option from a landscape perspective in that zone (i.e. *Orange*) as discussed below.

## Zone F

3.31 Zone F is one of the more sensitive parts of the route:

- It has a close pattern of rural residential properties extending from the intersection of Arapaepae and Kimberley Roads, and including Riveredge Terrace.
- The highway must diagonally cut across the landscape grain, including crossing three roads (McLeavey, Arapaepae and Kimberley Roads).

3.32 The *Orange* option would have the best fit with the landscape (acknowledging that it inevitably cuts across the landscape):

- The alignment best fits the landscape 'grain': It is the most square to the road and cadastral pattern (typically aligned near boundaries) in the north part of the zone, and adopts a more pronounced 'S' bend to cross Arapaepae Road in the south part of the zone.
- The bend best threads the clusters of houses on Arapaepae Road and Riveredge Terrace
- It is furthest from the intersection of Arapaepae and Kimberley Roads.

3.33 The *Orange* option also will have fewer adverse effects in aggregate on views from houses (while recognising some significant effects are unavoidable).

<i>Estimated effect</i>	<i>Orange</i>	<i>Purple</i>	<i>White</i>
removal	0	4	3
very high	4	8	2
high	5	4	9
mod-high	3	6	3
mod	12	5	9
mod-low	5	3	4

3.34 *Purple* is the least preferred option: It has a poorer fit with the landscape.

- While it is square with the cadastral pattern in the north part of the zone, the alignment does not respond as well to the 'grain' in the south part of the zone. This is reflected by its diagonal alignment across Kimberley Road close to the intersection with Arapaepae Road.
- It bisects the cluster of houses on Arapaepae Road.
- It has the greatest adverse effects in aggregate on views from houses.

3.35 *White* likewise has a poorer fit with the landscape.

- It follows a straight alignment somewhat similar to *Purple* that cuts across the underlying cadastral and road pattern. It crosses Kimberley Road diagonally, quite close to the intersection with Arapaepae Road.
- It bisects the cluster of houses on Arapaepae Road.
- It has greater adverse effects in aggregate on houses than the *Orange* option, although its more south-easterly alignment means it will be 'behind' more houses and has fewer effects than the *Purple* option.

- 3.36 Overall, the *Orange* option would have markedly fewer effects than the other two options. While *White* would have fewer effects than *Purple*, it has been scored the same (rather than a '4') because the effects between *Purple* and *White* would more similar than between *White* and *Orange*.

Option	Recommended score
<i>Orange</i>	3
<i>Purple</i>	5
<i>White</i>	5

## Zone G

- 3.37 Zone G comprises flat land east of Levin. It is currently open farmland. The notable features are the Prouse homestead on Queen Street East at the northern end of the zone, and the two adjacent stands of bush. The area is earmarked for future urban development. A masterplan (known as 'Gladstone Green') is being prepared for this area although it is understood the masterplan currently has no status in a statutory planning sense. The assessment below considers the extent to which the alignment options fits the existing landscape and would 'fit' with generic future urban development, but it does not consider the specifics of the 'Gladstone Green' masterplan.

- 3.38 All three options have a similar 'fit' with landscape:

- The *White* and *Purple* options are both parallel with the cadastral pattern and Arapaepae Road, which 'fits' the existing landscape and would provide regular shaped parcels that would lend themselves to urban development. The *White* option provides a deeper area between the highway and Arapaepae Road (although it is understood the *Purple* option is more consistent with a masterplan already prepared for the area). The *White* option has a more definite bend at the northern end which ensures it weaves between the stands of bush and around the Prouse property. While the *Purple* option is depicted as clipping one stand of bush at 1006 Queen Street East., the workshops confirmed that the alignment would be refined to avoid the bush.
- The *Cyan* option avoids the bush and Prouse property but is slightly diagonal to the 'grain' which is slightly less aesthetically coherent with the landscape grain and means slightly less regular future urban development areas.

- 3.39 The adverse effects on views from existing houses are similar in aggregate between the options (Such effects would be moot if the area were to be urbanised as planned).

<i>Estimated effect</i>	<i>Cyan</i>	<i>Purple</i>	<i>White</i>
removal		1	
very high	2		2
high	1	1	
mod-high	8	11	9
mod	14	12	4
mod-low	15	28	17

- 3.40 Overall, there is a slight preference for the *White* alignment, but the difference in effects is so small as to not warrant differentiation between scores for the three options. This area is flexible as to precise alignment, which could be fine-tuned to fit future development plans.

Option	Recommended score
<i>Cyan</i>	3
<i>Purple</i>	3
<i>White</i>	3

### Zone H

- 3.41 Zone H is a short zone on flat farmland east of Levin. The area is characterised by areas of cropping and horticulture, and pockets of rural residential properties.
- 3.42 Both options follow sweeping alignments ‘behind’ properties on Arapaepae Road. The alignments are parallel, offset from each other by roughly 70m. Both have the same fit with landscape patterns.
- 3.43 The *Cyan* option has fewer effects in aggregate on views from houses which reflects a greater separation from properties on Arapaepae Road.

<i>Estimated effect</i>	<i>Purple</i>	<i>Cyan</i>
removal	5	2
very high	2	2
high	11	7
mod-high	6	10
mod	2	5
mod-low	3	3

- 3.44 While *Cyan* is slightly preferred because of it has fewer visual effects, the differences in effects are not sufficient to warrant different scores.

Option	Recommended score
<i>Cyan</i>	3
<i>Purple</i>	3

### Zone K

- 3.45 Zone K is one of the more sensitive parts of the route:
- It has a reasonably close pattern of settlement that includes rural residential properties and intensive rural activities (cropping, horticulture, glasshouses, chicken farm).
  - The highway must describe a curve through 90° across the landscape grain. It must cross SH57 at an oblique angle and sever a loop road (Waihou Road).
- 3.46 The land is flat in the southern part of the zone, much of it compartmentalised by shelter-belt hedging. It transitions to undulating and more open landscape in the north part, with tributary fingers of the Koputaroa Stream.
- 3.47 The three options are similar in form and fit with landscape patterns:

- All are reasonably square to the ‘grain’ in the southern part of the zone, and all inevitably describe a curve across the grain in the northern part.
- The *Blue* and *Cyan* options are squarest to the grain in the southern part, but the latter is slightly further from Arapaepae Road (and therefore slightly closer to Waihou Road) which means it might just avoid some of the chicken farm sheds in this area.
- The *Yellow* option describes a tighter bend than the other two options which means it is not as square to the grain in the Waihou Road area (swinging across the chicken farm sheds), but also that it avoids the intersection of SH57 and McDonald Road (although the intersection would need to be shifted in any event).

3.48 The three options also have similar adverse effects in aggregate on views from houses.

<i>Estimated effect</i>	<i>Blue</i>	<i>Yellow</i>	<i>Cyan</i>
removal	5	5	6
very high	8	4	6
high	6	10	6
mod-high	5	3	6
mod	8	9	6
mod-low	9	9	8

3.49 Overall, all options are scored the same with no preference for any option.

Option	Recommended score
<i>Cyan</i>	4
<i>Dark Blue</i>	4
<i>Yellow</i>	4

## Zone L

3.50 Zone L is undulating farmland on Levin’s northern outskirts. The area is characterised by a mix of open pasture, a rural residential cluster at the end of Sorenson Road, and the heads of watercourse tributaries of the Koputaroa Stream.

3.51 The small area in the vicinity of the tie-in with the existing SH1 has a quite different character. It is triangular in shape, defined by the NIMT railway, Heatherlea Road and ‘The Avenue’ (SH1). It is a well treed and compartmentalised landscape, with large lot residential properties, and an area of cropping land.

3.52 The *Orange* alignment has the best fit with the landscape:

- It fits the landscape grain: it is relatively square to the cadastral pattern and follows a ridge between watercourse gullies of the Koputaroa Stream
- It skirts the rural residential cluster at the end of Sorenson Road (acknowledging that it does affect the perimeter properties)

3.53 The *Black* alignment also has a good fit with the landscape:

- It is relatively square to the cadastral pattern, but runs along a watercourse gully of the Koptuaroa Stream.

- It skirts the rural residential cluster at the end of Sorenson Road (it likewise affects perimeter properties but has slightly less net effects than *Orange*).

3.54 The *Green* and *Purple* alignments have a poorer landscape fit:

- The straight alignments cut diagonally across the 'grain' – both the cadastral pattern and the pattern of watercourses.
- It bisects the rural-residential cluster at end of Sorenson Road, which in turn would require an underpass or bridge to connect the severed properties.

3.55 The *Orange* and *Black* options would have less adverse effects in aggregate on views from houses, while the *Green* and *Purple* options would have markedly more effects.

	<i>Black</i>	<i>Green</i>	<i>Orange</i>	<i>Purple</i>
removal	4	8	3	8
very high	2	2	2	0
high	3	8	5	10
mod-high	4	3	6	3
mod	7	3	8	2
mod-low	6	2	3	3

3.56 Overall, there is a marked difference in effects between the *Orange* and *Black* options on the one hand, and the *Green* and *Purple* options on the other.

Option	Recommended score
<i>Black</i>	3
<i>Green</i>	5
<i>Orange</i>	3
<i>Purple</i>	5



## 4 INTERCHANGE LOCATIONS AND TYPES

4.1 The following section describes scores for the interchange options based on their estimated landscape and visual effects. As previously, the scores are calibrated to the range of effects one might anticipate from interchanges in the corridor. They do not compound the effects of alignments, although it is noted where an option precludes a preferred alignment.

4.2 In two instances there is a choice of location and interchange type. The following section therefore compares the landscape qualities of the alternative locations, and the landscape and visual effects of each option at each location.

### Manakau Interchange

4.3 The 'Manakau' interchange entails a choice between Manakau South and Kuku South locations, and between grade separation and roundabout at each location. A fifth option is not to provide a Manakau interchange at all.

### Manakau South

#### *Location*

4.4 Manakau South is the more sensitive of the two locations:

- The area is classified as a 'special amenity landscape' in the Horowhenua District Plan. Its landscape amenity derives from such characteristics as the enclosed amphitheatre of hills which in turn creates an intimate scale, the natural features within the valley (meandering stream, knolls, terraces), and stands of bush and trees.
- It is overlooked by rural residential properties on terraces in the Manakau Heights and Mountain View Drive, in addition to scattered properties within the valley floor and on the rolling land to the south.

#### *Interchange types*

4.5 The **grade-separation** interchange would have markedly greater adverse effects of the two options at this location.

- Its large footprint and overpass would dominant the valley floor area, and visually overpower the Waiauti Stream meanders.
- It would exacerbate visual effects from houses on South Manakau Road, Mountain View Drive, and Manakau Heights
- The ramps would cut through the Mountain View Drive spur.
- As drawn, the interchange also necessitates the least favourable main alignment (*Green*) that bisects the Manakau Heights area.

4.6 The **roundabout** would have the lesser adverse effects:

- Its lower profile and smaller footprint would be less prominent, and visually anchored by the existing alignment of South Manakau Road
- It is confined to the less obtrusive valley floor

- 4.7 As drawn, the roundabout offers the possibility of a *Cyan* alignment that would avoid the worst effects on Manakau Heights.

### South Kuku ('North Manakau')

#### *Location*

- 4.8 South Kuku (cf 'North Manakau')<sup>1</sup> is more able of the two locations to accommodate an interchange. Its main drawback is that it is a *Greenfields* location, not anchored by an existing road. Otherwise:

- It is flat, open farmland, backdropped by adjacent hills.
- It is relatively separated from existing houses.

- 4.9 Characteristics that warrant consideration include:

- The rectilinear pattern of cropping land use.
- A small tributary of the Kuku Stream.

#### *Interchange type*

- 4.10 A roundabout option would have fewer adverse effects in this location:

- Its low profile and much smaller footprint would be unobtrusive.
- Its cruciform shape means the existing cropping character could be maintained into the angles of the interchange.
- The fit with landscape patterns may be further improved by squaring the local road with the cadastral grain.

- 4.11 The location is also able to accommodate a grade separated interchange with reasonably few adverse effects:

- The area has a broad scale, a strong hill backdrop, and is separated from houses.
- However, the large footprint would disrupt the characteristic cropping pattern of the area and would require more crossings of the Kuku Stream tributary (three bridges/culverts rather than one) and possibly the Waikawa Stream (three bridges rather than one).

<i>Option</i>	<i>Score</i>
Roundabout South Manakau	3
Grade separation South Manakau	5
Roundabout South Kuku	2
Grade separation South Kuku	3
No interchange at Manakau	3

- 4.12 Overall:

- Grade separation at Manakau South is assigned a '5': It would have greatest adverse effects in the more sensitive location. It is possible that a compact diamond located on an optimised alignment (e.g. *White*) could be designed in a way that would reduce this score.

<sup>1</sup> The location was identified as North Manakau in the workshop material (on the basis of alternatives north and south of Manakau) but it is understood the area north of the Waikawa Stream is part of Kuku.

- A roundabout is scored '3' because it would have markedly fewer adverse effects in this location.
- The roundabout at Kuku South is assigned a '2' because it would have the fewest effects in the better location. Squaring the local road with the cadastral pattern (and avoiding the stand of bush) could reduce the score to '1'.
- The grade separation option could also be readily accommodated at this location with relatively few adverse effects. As above, squaring the local road to the cadastral pattern, and refining to a compact form, could reduce the score to '2'.

4.13 The 'no interchange' option would have no adverse effects on the existing landscape, which would result in a '1' score. However, it would mean people in the area would suffer the adverse effects of the highway yet not enjoy its benefits. For that reason, the option is assigned a '3' which can be interpreted as a neutral score.

### **South of Levin**

4.14 A 'South of Levin' interchange entails a choice between Kimberley Road and Tararua Roads, and between grade separation and roundabout at each location.

### **Kimberley Road**

#### *Location*

4.15 Kimberley is the more sensitive of the two locations:

- The area has a relatively close pattern of rural residential properties extending from the intersection of Kimberley and Arapaepae Roads.
- The highway alignment is oblique to the landscape 'grain' (local road and cadastral pattern) at this location.

#### *Interchange type*

4.16 A roundabout will be less prominent, but will still have relatively high adverse effects:

- The footprint is relatively large given the land captured in the curving approach arms. It is estimated some 7 houses would be untenable and would need to be removed, and there would be visual effects on a relatively high number of houses
- It would have awkward connections with the local road pattern. Reconnecting east and west sections of Kimberley Road (not depicted in drawings) would further expand the footprint and effects.
- The interchange's awkward shape will reinforce perceptions of its poor fit to the underlying landscape patterns.

4.17 The grade separation interchange would have even greater adverse effects.

- It will have a larger footprint with effects on more houses. It is estimated some 22 houses would be untenable and would need to be removed. There would be visual effects on further houses around the interchange, including those affected by roundabouts connecting the ramps with local roads.

- The overpass will be more prominent although it will be buffered within the centre of a large footprint.

## Tararua Road

### *Location*

4.18 Tararua Road is more able of the two locations to accommodate an interchange:

- It has a markedly lower density of houses.
- It is flat farmland with no natural features.
- The interchange is square with local roads and cadastral pattern.
- It is anchored by a local road with relatively deep connectivity.
- It will have a legible connection with Levin, especially given the urban expansion proposed north of Tararua Road: Levin will be visible approaching the interchange from the south and also, obviously, from the north.
- It has sufficient flexibility to adjust to whichever highway alignment is preferred.

### *Interchange types*

4.19 A roundabout would have fewer adverse effects:

- Its low profile and relatively small footprint would reduce visual effects on the small number of affected properties
- Its cruciform shape and square alignment would fit more closely with the existing landuse pattern and the urban development planned north of Tararua Road

4.20 The location would also readily accommodate a grade separation option with few adverse landscape effects. While it will be more prominent and have a larger footprint:

- The form is nevertheless relatively compact
- There are few houses affected
- The compact form and square alignment would fit with existing and planned land use.

4.21 Overall,

- Grade separation at Kimberley Road is scored '5': It would have greatest adverse effects in the more sensitive location.
- A roundabout at Kimberley Road is scored '4'. It is in a sensitive location, exacerbated by the awkward fit of the roundabout to location. It will have greater adverse effects than one might otherwise expect of a roundabout.
- A roundabout at Tararua Road, on the other hand, is scored a '1' because of its simple form in a non-sensitive location.
- A grade separated interchange is scored a '2' because of its compact form and its fit with a setting that lends itself to an interchange.

<i>Option</i>	<i>Score</i>
Roundabout Kimberley	4
Grade separation Kimberley	5
Roundabout Tararua	2
Grade separation Tararua	3

## SH1 and SH57

4.22 The location is established by where the new alignment intersects with SH57. Relevant characteristics of the landscape at this location include:

- Flat to undulating terrain
- Tributary watercourses of Koputaroa Stream
- Reasonably close pattern of settlement including rural-residential properties and relatively intensive rural production (mix of cropping, glasshouses, chicken farm, intensive grazing, etc).

4.23 Each of the three options will have a somewhat awkward fit with landscape patterns because the proposed highway will be on an oblique and curving alignment relative to existing SH57 and underlying landscape grain.

### *Interchange types*

4.24 The **roundabout** option has low profile but:

- It will deviate SH57 considerably from its natural straight alignment. The interchange's awkward shape will reinforce perceptions of its poor fit to the underlying landscape patterns.
- It will have a relatively large footprint taking into account the land captured within the curving arms and by the deviation of SH57. The footprint extent would be reinforced if further slip lanes were to be included (e.g. southbound SH57 to SH1).
- It will have direct impacts on two additional houses compared to other options.

4.25 The effects could be reduced by pulling the roundabout close to the SH57 alignment. However, it is understood that sightline requirements militate against this.

4.26 The **grade separation** option will have a more prominent profile, but:

- The form of the interchange is straightforward, and the ramp alignments reasonably tight to the highways. SH57's straight alignment will be more-or-less retained. The interchange will have a better fit with the underlying landscape patterns than the roundabout option
- Its footprint is similar to that of the roundabout.
- The SH57 overbridge will be more prominent but also buffered in centre of interchange.

4.27 The **bifurcation** option will have a similar prominent profile to the grade separation option but:

- The footprint is smaller and contained to the east side of SH57, although the SH1 to SH57 ramp adds another structure and affects additional properties.
- The form is a straightforward expression of a Y junction. It has a reasonable fit with the underlying landscape patterns.

4.28 In summary:

- All options have been scored '4' because they will each have a similar level of adverse effects.
- The roundabout option is slightly less preferred because of its larger footprint and awkward fit with landscape patterns, which outweighs its lower profile.

- By comparison, the grade separation option has a similar footprint and a more straightforward fit with the landscape.
- The bifurcation option is slightly preferred because of its more compact footprint compared to the other options.

<i>Option</i>	<i>Score</i>
Roundabout SH1-SH57	4
Grade separation SH1-SH57	4
Bifurcation SH1-SH57	4

### **North Levin**

4.29 The location of the tie-in with SH1 at the north end of Levin is a given. It is contained within a triangular area between the NIMT railway line, Heatherlea East Road and 'The Avenue' (existing SH1). Relevant characteristics of the area include:

- A relatively close pattern of rural settlement compartmentalised by shelter belts and trees, and including a mix of horticulture and rural residential properties.
- The convergence of local roads and resultant collage of cadastral patterns.
- The presence of the NIMT railway line which means the highway alignment must be on an embankment to cross the line.

#### *Interchange types*

4.30 The roundabout option will have few adverse effects:

- It has a reasonably compact footprint that is contained within the triangle between the railway and converging roads. It is contained by the underlying landscape patterns.
- Adverse visual effects will be confined to properties already affected by the main alignment.
- It readily accommodates connections to local roads: The Avenue, Heatherlee East Road and Koputaroa Road.

4.31 The grade separation 'half diamond' option (north facing ramps) will likewise have few adverse effects:

- It has a reasonably compact footprint and is contained in the triangle discussed above. The current SH1 (The Avenue) will be retained on its existing alignment as north-bound entry ramp and the south-bound exit ramp is tight to the main alignment and utilises an underpass within the embankment already required to cross the NIMT.
- While one house would be required to be removed, the property would already be affected by the main alignment
- It is noted that the drawings do not depict a connection to Heatherlea East Road and Koputaroa Road. This could be addressed by a roundabout on the exit ramp in the vicinity of Heatherlea East Road.

4.32 In summary:

- Both options are scored '1' because both will have a similar level of effects.
- Both options will have a good fit with the landscape patterns and effects will be confined.

- The roundabout option is slightly preferred because it appears to better provide for local road connections.

<i>Option</i>	<i>Score</i>
Roundabout North Levin	1
Grade separation North Levin	1

## 5 RECONFIGURATION OF LOCAL ROADS

5.1 The following section compares options for reconfiguration of local roads in response to the highway. Landscape and visual matters consider:

- Visual and physical effects each option on its immediate surroundings.
- Broader effects on connectivity of the landscape.

5.2 The initial preference is to maintain local roads as close to existing grade as possible to maximise connectivity: A bridge is obviously preferred if the highway is in cut and an underpass if the highway is on fill. In other situations, consideration is given to the visual effects of elevating either the highway or the local road. Local bridges are lighter structures and typically have less visual effects, but it depends on configuration and proximity of houses.

5.3 Considerations for broader landscape connectivity include:

- Between settlements and their obvious hinterland.
- Along natural lines of movement (e.g. along rivers and ridges).
- Along roads with the deepest connectivity, and those that link roads to a network.

5.4 The options are rated according to a 'traffic light' system:

- *Green* is favoured because of (i) few adverse effects and/or (ii) its greater importance to landscape connectivity.
- *Orange* options have some issues because of (i) potential moderate effects and/or (ii) only moderate importance of the connection.
- Red options are least favoured because of (i) significant adverse effect and/or (ii) low importance of the connection.

### Existing SH1/Taylor's Road

5.5 Taylor's Road is a minor winding no-exit rural road, that includes a sharp bend where the road crosses the NIMT.

5.6 Option A1 is acceptable from a landscape perspective but it is acknowledged it would have traffic safety issues, and it is understood there may be flooding issues at the underpass beside the Waitohu Stream.

5.7 Option A3 is slightly preferred ahead of A2 because it has a more straightforward intersection with the realigned main road and the new section of Taylor's Road would be consistent with the current character of Taylor's Road. It is understood that it may not be feasible because of flooding at Waitohu Stream.

5.8 A2 is acceptable, but the double-back section adjacent to the intersection with the main road will have a slightly more cluttered appearance and affect adjacent properties.

Option		
A1		Acceptable
A2		Acceptable
A3		Preferred



### South Manakau Road

- 5.9 South Manakau Road is a reasonably important local road that serves Manakau Heights and connects with Waitohu Valley Road as part of a wider rural network.
- 5.10 Option B1 (underpass) is the preferred option if South Manakau Road is considered in isolation: The proposed highway will necessarily be on embankment in the floodplain to raise it above flood levels, and both the Waiauti Stream and South Manakau Road could be spanned with a single bridge. It would maintain the road on its current grade and alignment. The option would minimise visual effects and retain current landscape patterns and connectivity. However, a connection at Honi Taipua Street is more important if there is a choice between South Manakau Road and Honi Taipua Street (see below).
- 5.11 Option B2 (bridge) is not favoured at all. The bridge would need to be very high to cross the proposed highway embankment: It would appear prominent and ungainly in the centre of the valley and would discourage pedestrians and cyclists.
- 5.12 Option B3 is preferred if a choice is made between South Manakau Road or Honi Taipua Street. The latter provides a local connection between Manakau Heights (including Mountain View Drive) and the Manakau village, while still maintaining connection to the Waitohu Valley. If Option B3 is selected, a pedestrian and cycle underpass could still be maintained between the South Manakau Road stubs by passing beneath the highway adjacent to the Waiauti Stream.
- 5.13 The best option would be to combine the Option B1 underpass and the C2 bridge.

Option		
B1		Preferred but not at expense of C2
B2		Not favoured at all
B3		Preferred if at the expense of C2

### Honi Taipua Street

- 5.14 As discussed above, Honi Taipua Street is the more important of the two connections because it connects the Manakau village centre with the Manakau Heights and Mountain View Drive area. It also provides access to the main road (existing SH1) by way of an underpass of the NIMT (South Manakau Road has a level crossing).
- 5.15 Option C2 (bridge) is preferred because the highway will be slightly in cut. This could be optimised at detail design by realigning Honi Taipua Street to the south to cross the highway at right angles where it is deeper in cut.
- 5.16 Option C1 (cul de sac – access via Manakau South Road) is not favoured because it would disconnect Manakau Heights from the Manakau village. This could be partly mitigated, though, by the footbridge Options C3 and C4.
- 5.17 Both footbridge options are appropriate. Option C4 better picks up properties east of Manakau (e.g. on Eastern Rise). Other options (e.g. opposite Witako Street or Tame Porati Street) may also optimise this connection.

Option		
C1		Not favoured
C2		Preferred
C3		

C4	
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### North Manakau Road

- 5.18 North Manakau Road is a no exit local road that provides access to rural properties and the Tararua foothills at the end of the road. The road runs straight across the plain, then turns to follow the toe of the hills and the Waikawa Stream valley.
- 5.19 The preferred option will depend on the highway long section: The indicative plans depict the highway in cut at this point, in which case Option D1 (bridge) would be preferred to keep the road closer to grade and minimise adverse visual effects.
- 5.20 However, Option D2 (underpass) would be preferred if the highway was on embankment (for example on approaches to Waikawa Stream). In that case, a bridge would appear prominent and awkward, especially given the sharp bend in the local road immediately to the east.
- 5.21 An alternative connection could be made along Martins Road from an interchange north of the Waikawa Stream.

Option		
D1		Preferred if highway in cut
D2		Preferred if highway on fill

### Kuku East Road

- 5.22 Kuku East Road is a no-exit local road. It runs in a straight line across the plains, and then follows the Kuku Stream valley through the foothills. It provides access to rural properties, including a cluster of houses in the vicinity of the highway corridor.
- 5.23 As above, the preferred option will depend on the highway long section. If the main alignment is on embankment as depicted (i.e. on the approaches to Kuku Stream), Option E2 (underpass) is likely to be preferred to maintain the local road at grade.
- 5.24 If the highway is at grade, a local road bridge is likely to be preferred.
- 5.25 As mentioned earlier in the report, an alternative alignment might be investigated further east than the 'Blue' option passing behind the cluster of houses on Kuku East Road. It may be possible to combine a road underpass with the highway bridge over the Kuku Stream with such an option – although it is acknowledged such an option would fall outside the corridor.

Option		
E1		Preferred if highway in cut
E2		Preferred if highway on fill

### Ohau River Quarry Access

- 5.26 There are no landscape issues with the proposed access under the Ohau River bridge.

Option	

### Overview north of Ōhau River

- 5.27 The area north of the Ōhau River comprises a network that should be considered as a whole rather than road by road.
- 5.28 The area falls into two landscapes:
- The Ōhau River valley which includes Ōhau, Muhunua and Muhunua East (and which includes Riveredge Terrace, and southern end of Arapaepae Road up to McLeavey Road)
  - The higher plains around Levin which include Tararua and Kimberley Roads, and the northern end of Arapaepae Road.
- 5.29 The two strategic east-west roads with deepest connectivity are Muhunua East Road and Tararua Road, which are central to these two areas respectively.
- 5.30 The following combination of options would have the best landscape outcomes by (i) maintaining a network across the highway, (ii) recognising the connections along the Ōhau River to the south, and the focus on Levin to the north.
- Underpass on Muhunua East Road (F2)
  - Interchange at Tararua Road
  - New 'mid-block' road from Kimberley Road to Tararua Road (J4)
  - Link between Kimberley Road and southern section of Arapaepae (J3)

Option		
F1		Preferred
F2		
F3		Not favoured
G1		Not favoured
G2		Not favoured
G3		Preferred
H1		Preferred
H2		Not favoured
H3		Not favoured
I1		
J1		
J2		
J3		Appropriate if a complement to J4
J4		Preferred
Tararua Rd		Underpass preferred
K1		
K2		Preferred

- 5.31 Each of these options is elaborated below:

### Muhunua East Road

- 5.32 Muhunua East Road runs parallel with the northern bank of the Ōhau River. It forms cross-roads with the main road (existing SH1) at Ōhau, connecting that settlement with communities east

(Muhunoa East) and west (Muhunoa). It has deeper connectivity than McLeavey Road and Kimberley Road to the north and is a more natural route along the Ōhau River.

- 5.33 As above, the preference for an underpass or bridge depends on the highway long section. An underpass (Option F2) is better if the main alignment is on embankment as depicted (especially the *Green* option).
- 5.34 Option F1 overbridge would be acceptable if the main alignment was at grade, although an overbridge would have visual effects for properties either side of the crossing point, bearing in mind the close pattern of settlement along Muhunoa East Road.
- 5.35 Option F3 (cul de sac) is not favoured at all because it would sever an important east-west connection that connects the area with its local centre, Ōhau, and extends west of Ōhau on the opposite side of the main road (existing SH1). The detour via McLeavey Road is indirect and less legible.

Option		
F1		Preferred
F2		
F3		Not favoured

### McLeavey Road

- 5.36 McLeavey Road is a minor local rural road running between SH1 and Arapaepae Road, providing access to rural properties. It is much less strategic in landscape terms than Muhunoa East Road.
- 5.37 Option G3 (cul de sac) is favoured on the basis that a McLeavey Road connection would be at the expense of the more important connection on Muhunoa East Road. There is access from the other end of McLeavey Road to both Ōhau and Levin via the main road (existing SH1) which provides direct access to the heart of both centres, although it is acknowledged that the intersection at the west end of the road is constrained by the railway underpass.
- 5.38 Option G1 (bridge) is not favoured because it would preclude what are the better alignment options for the main highway on the eastern side of the corridor due to the proximity of the intersection with Arapaepae Road. While a bridge would be appropriate if the highway were in a deep enough cut to retain the local road at grade, it is understood this is not the case.
- 5.39 Option G2 (underpass) is not favoured because it would require lifting the highway onto an embankment at a sensitive location close to clusters of rural-residential properties, and where the topography would naturally lean toward a cutting and/or realignment of McLeavey Road. As above, it would preclude the better alignment options for the main highway.

Option		
G1		Not favoured
G2		Not favoured
G3		Preferred

### Arapaepae Road

- 5.40 Option H1 (cul de sac, access from Muhunoa East Road) is preferred because it is consistent with an Ōhau oriented community along the Ōhau River valley, and a Levin facing community on the plains from Kimberley Road North. The Ōhau oriented area includes areas with outlook

over the Ōhau valley (i.e. Riveredge Terrace, the section of Arapaepae Road sloping toward the river, and Muhunua East).

- 5.41 Option H2 is not favoured at all as McLeavey Road is not as strongly connected with Ōhau and for the issues discussed above with G1-G3.
- 5.42 Option H3 maintains current connections to Levin and would be fine as a complement to Muhunua East Road. It will have some visual effects on houses in Riveredge Terrace area. However, taken in isolation it would sever the natural connection between this area on the northern banks of the Ōhau River and Ōhau.

Option		
H1		Preferred
H2		Not favoured
H3		Not favoured

### Muhunua East McLeavey Kimberley combination

- 5.43 Option I1 is not preferred because:
- It removes the natural connection between the Muhunua East area and Ōhau as discussed above.
  - The parallel local road west of the new highway serves little purpose: Connections from properties on Muhunua East Road and McLeavey are firstly with Ōhau, and secondly with Levin via the existing SH1 which will become a local road leading to the heart of the town centre. A parallel local road connecting to Arapaepae Road is unnecessary and would affect additional properties.

Option		
I1		

### Kimberley Road

- 5.44 The eastern portion of Kimberley Road is a reasonably short no-exit rural road that serves rural properties and provides access to Kimberley Reserve. In landscape terms this area orients toward Levin.
- 5.45 Of the two options that would maintain the existing connection between Kimberley Road and Arapaepae Road:
- Option J2 (underpass) would be in keeping with the principle of maintaining local roads at grade but would increase visual effects from the clusters of nearby properties.
  - Option J1 (overbridge) would be acceptable, although the local bridge would similarly have adverse visual effects taking into account the close pattern of settlement at this corner of Kimberley Road. A bridge might also necessitate realignment of Arapaepae Road which would have further flow-on adverse visual effects on properties.
- 5.46 The preferred option is J4 (local connection to Tararua Road). It would comprise a local rural road across farmland (which might potentially be urbanised in the future), square with the landscape 'grain'. It would fit the landscape, provide equally good connectivity with Levin and the new highway, and avoid the adverse visual effects of an overbridge or flyover on Kimberley

Road. It would also provide access between Levin (especially the proposed urban development at 'Gladstone Green') and Kimberley Reserve. However, it would require land from properties that would otherwise be unaffected by the project.

- 5.47 Option J3 is also an appropriate option as a complement to J4. It is not preferred as an either/or option because the more natural connection between the Kimberley Road area is with Levin. However, combination of Options J3, J4 and F1 would be the best of all options by creating a network that maintains the key east-west links, and also provides north-south connections on both sides of the highway. While it may increase effects on one or two properties at Riveredge Terrace, it would also provide the opportunity of using the local road as a buffer to the highway to mitigate effects.

Option		
J1		
J2		
J3		Appropriate if a complement to J4
J4		Preferred

### Tararua Road

- 5.48 Tararua Road is relatively important because it has deeper connectivity than Kimberley Road, which will be amplified by the urban development planned to the north.
- 5.49 The preferable option is that which is nearest existing grade. The main alignment is depicted on an embankment; therefore, an underpass is likely to be preferred.
- 5.50 An overbridge would be less preferable, especially given the higher numbers of cyclists and pedestrians that will follow urbanisation.

Option		
Underpass		Preferred

### Liverpool Street Extension

- 5.51 Liverpool Street Extension options were added during the workshops because the 'Gladstone Green' masterplan depicts an extension of Liverpool Street as a main axis of the planned urban development east of Levin. The extension does not currently exist, and it is understood the masterplan has no statutory planning status. The following comments therefore are based on the value of such a bridge to future urban development (a connection would be no value to the existing situation) or, to put it another way, the comments are predicted on an assumption that the street and urban development already exist.
- 5.52 The preferable option is that which is nearest existing grade to facilitate local connections between Levin and the new Gladstone Green area. The main alignment is depicted on an embankment; therefore, an underpass (J6) is likely to be preferred. An overbridge (J5) would be slightly less preferred because ramp gradients would be less amenable to connectivity, especially for cyclists and pedestrians. Questions of whether local roads go over or under the expressway involve balancing connectivity and visual effects. In this case the masterplan depicts a wide corridor which would enable the visual effects of an elevated expressway to be mitigated while retaining the local connection at grade. Other options include half-elevated and half-excavated approaches.

- 5.53 The no connection option (J7) would be least preferred because it would substantially weaken potential connectivity between Levin and the new Gladstone Green area.

Option		
J5		
J6		Slightly preferred
J7		Not favoured

### Queen Street East

- 5.54 Queen Street East is important because it is Levin's principal east-west axis and will connect the planned urban development to the heart of the town centre. Both options would keep Queen Street East at existing grade which is preferable, especially given the higher numbers of cyclists and pedestrians that will follow urbanisation.
- 5.55 Option K2 is preferable of the two options because it would minimise the visual effects of the main alignment on adjacent properties, and because an open route along Queen Street is more pleasant than an underpass.
- 5.56 Option K1 (underpass) would be acceptable, but the highway flyover would have some adverse visual effects. Mitigation would include solid barriers to reduce noise, and planting the embankments to reduce visual impacts (the planting could tie in with adjacent stands of bush and the treed landscape of the Prouse homestead).

Option		
K1		
K2		Preferred

### Waihou Road Loop

- 5.57 The loop provides only local access, the severed section of Waiohu Road providing access to only about ten rural or rural-residential properties. Both options reconnecting it to local rural roads (Wakefield Road or McDonald Road) would be appropriate. While both options are scored 'Green', Option L1 (McDonald Road) appears to offer slightly better opportunities to fit landscape patterns and to use the local road as a buffer to mitigate visual effects of the main alignment. Wakefield Road would provide more direct access to Levin. Access via McDonald Road would maintain a more rural flavour.

Option		
L1		Slightly preferred
L2		

### McDonald Road

- 5.58 McDonald Road is a short winding no-exit rural road served by an intersection with Arapaepae Road. The intersection could be shifted north without affecting the nature of the road. There are opportunities to use tree planting along the realigned section as a buffer to mitigate visual effects of the interchange.

Option		

### Sorenson Road

- 5.59 The first preference (Option N3) is aligning the highway south of the properties at the end of Sorenson Road (e.g. *Orange* and *Black*) to avoid severance.
- 5.60 In the event the selected main alignment severs the cluster of rural residential properties at the end of Sorenson Road, Option N1 underpass is preferred given the main alignment options will necessarily be on fill embankments to cross the NIMT. Option N2 is least preferred: It would require a very high bridge over an embankment which would appear ungainly, unnecessarily prominent, and increase the visual separation of the severed properties from the balance of Sorenson Road.

Option		
N1		
N2		
N3		Preferred

### Heatherlea East Road and Koputaroa Road

- 5.61 Both are rural roads that are important because they serve a wide area and connect communities with Levin. They have typically winding alignments in response to the area's undulating topography. Reconnection options depend on the selected interchange option.
- 5.62 Option P1 (which relies on a roundabout interchange) is preferred. The short connection is consistent with the grain (cadastral and road pattern), would restrict effects to properties already affected by the project, and would offer the opportunity to use the local road as a buffer to the main highway.
- 5.63 Option P2 is acceptable but less preferred because it cuts across the landscape grain and would affect properties on Koputaroa Road that would otherwise be unaffected by the highway.

Option		
P1		Preferred
P2		

### Avenue North Road

- 5.64 There are no landscape and visual issues associated with closing the northern intersection of the Avenue North Road loop with SH1. The resulting short no-exit road would retain its intersection nearest Levin. Direct pedestrian and cycle access would be retained.

Option		



## APPENDIX ONE: VISUAL EFFECTS INVENTORY

The following tables are a desk-top estimate of visual effects from houses identified on aerial photos. It is not a definitive assessment of effects such as would entail field work and more details of highway design. It does not take account of houses built since the aerial photos were taken. Rather, its purpose is to provide an aggregate estimate of visual effects to help compare route options. Distances in the table are approximate measurements to the edge of the carriageway – regard has also been given to the earthworks which increase the footprint of the expressway and have different visual effects depending on whether the expressway will be in cut or on fill.

### Zone A

ID	Address	Distance	Comment	White	Green
2612597	82 SH1	White 100m Green 100m	House appears oriented north. Avenue and specimen trees to W in direction of alignment. Shelter belt to north would help screen views along the alignment. New alignment is in location of existing SH1	mod	mod
2581936	87? SH1	White 70m Green 75m	House orientation not clear. Trees to east and NE towards alignment, which will be in location of existing SH1. Works will encroach into property, requiring removal of roughly half the trees.	high	high
2581939	115 SH1	White 70m Green 90m	House appears oriented N, and E towards alignment. Foreground trees in direction of alignment.  <i>White</i> will be closer and removal of some trees in SE corner of garden.  <i>Green</i> will be further away than the existing SH1 and will not encroach.	high	mod
2581941	139? SH1	White 145m Green 170m	House appears oriented NW, and SE toward alignment. Foreground trees to SE. Both alignments reasonably distant, further away than existing SH1 which fronts this property.	mod	mod
2581966	141 SH1	White 150m Green 175m	House appears oriented NW, and SE toward alignment. Foreground trees to SE. Both alignments reasonably distant, further away than existing SH1 which fronts this property.	mod	mod
2581945	143 SH1	White 160m Green 180m	House appears oriented N and W away from alignment. Foreground fence and vegetation. Both alignments reasonably distant, further away than existing SH1 which fronts this property.	mod	mod
2581967	114 SH1	White 165m Green 140m	House appears oriented north toward alignment. Open foreground. Will sever existing access from SH1. <i>White</i> slightly more prominent	high	high
2581951	170 SH1	White 80m Green 85m	House appears oriented NE parallel to alignment. Foreground garden.	high	high
2581947	134? SH1	Green 85m White 60m	House appears oriented E and W. Open outlook to E toward alignments.	high	high
2581955	178 SH1	Green 65m White 85m	House appears oriented to NE and NW. Trees to south in direction of alignment. Fill embankment will encroach into gully behind house.	high	high
2581914	190 SH1	Green 150m White 180m	House appears oriented NE and NW. Alignment is behind house. Foreground trees. Sheds in intervening area.	mod-high	mod-high
2617003	200 SH1	Green 180m White 240m	House appears oriented NE. Foreground trees to S in direction of alignment. Sheds in intervening area. Both alignments partly in cut. <i>Green</i> in gully. <i>White</i> partly in	mod-high	mod-high

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>White</i>	<i>Green</i>
			box cut on opposite side of gully. <i>White</i> better separated and less prominent		
2616997	222 SH1	<i>Green</i> 80m <i>White</i> 150m	House appears oriented N and W with shelter trees to E and S in direction of alignments.  <i>Green</i> would be close, impinging on grounds, and requiring removal of shelter trees.  <i>White</i> would be more comfortable distance, beyond shelter trees.	mod-high	very high
2616998	224 SH1	<i>Green</i> 200m <i>White</i> 270m	House appears oriented N. Shelter trees on adjoining property to E and NE in direction of alignment.  <i>Green</i> would require removal of some shelter trees.  <i>White</i> would be comfortable distance away, beyond shelter trees	mod	mod-high
2616993	264 SH1	<i>Green</i> 170m <i>White</i> 230m	House appears oriented NW, and NE parallel with alignment. Open farmland to NE. Stand of trees on knoll to SE in direction of alignment. Highway will be in box cut.	mod	mod-low
2616994	264B? SH1	<i>Green</i> <i>White</i> 55m	House orientation unclear.  <i>Green</i> would require removal of house.  <i>White</i> would be very close, but in box cut behind house.	high	removal

## Zone B

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>White</i>	<i>Green</i>	<i>Cyan</i>
2730282	415? SH1	<i>White</i> 160m <i>Green</i> 165m <i>Cyan</i>	House appears oriented N and E in opposite direction. Foreground trees to S in direction of alignments. Both alignments are beyond existing SH1, and largely in box cutting, although will cross gully opposite house on embankment.	mod-low	mod-low	mod-low
2711540		<i>White</i> 90m <i>Green</i> 80m <i>Cyan</i>	House appears oriented N toward alignment. Open foreground. Alignments are in cut below house which would reduce effects for <i>White</i> and <i>Green</i> options. Top of <i>Cyan</i> cut is immediately in front of house – likely to be untenable	high	high	removal
3779581	424 SH1 (near front of property)	<i>White</i> 80m <i>Green</i> 95m <i>Cyan</i> 120m	House appears oriented W and E. Alignment is to S behind house. Foreground buildings and trees in intervening area. <i>White</i> and <i>Green</i> alignments will be in cut below house which will reduce effects, <i>Cyan</i> will be more elevated.	mod-high	mod-high	mod-high
3779581	424 SH1	<i>White</i> <i>Green</i> <i>Cyan</i> 40m	House appears oriented N opposite to alignment. However <i>Cyan</i> option is on fill embankment immediately behind house, and house falls within earthworks footprint for <i>White</i> and <i>Green</i> options.	removal	removal	very high
3796325	426 SH1	<i>White</i> 60m <i>Green</i> 80m <i>Cyan</i> 80m	House appears oriented N. Alignments are to S behind house. Foreground trees will reduce views E and W along alignment. <i>White</i> and <i>Green</i> options are in cut below house, <i>Cyan</i> is more	high	mod-high	high

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>White</i>	<i>Green</i>	<i>Cyan</i>
			elevated. <i>White</i> and <i>Cyan</i> options would require part removal of stand of trees E of house.			
3780907	450 SH1	<i>White</i> 180m <i>Green</i> 200m <i>Cyan</i> 200m	House appears oriented N and W. Alignments are to S behind house. Substantial foreground trees and buildings in intervening area. <i>White</i> and <i>Green</i> options are in cut below house, <i>Cyan</i> is more elevated.	mod-low	mod-low	mod-low
4002204	10 South Manakau Road	<i>White</i> 240m <i>Green</i> 250m <i>Cyan</i> 190m	House appears oriented N. Alignments are to S behind house and in oblique views to E and NE. House is slightly elevated with outlook over open farmland. Highway will be on embankment with bridges over Waiauti Stream and South Manakau Road. <i>White</i> option appears to have smaller embankment footprint.	mod	mod	mod-high
3854887	36 South Manakau Road	<i>White</i> <i>Green</i> 30m <i>Cyan</i>	House appears oriented to N and W. House falls within earthworks footprint of <i>White</i> and <i>Cyan</i> alignments. <i>Green</i> alignment is to S behind house but earthworks footprint is adjacent to house so it may need to be removed anyway.	removal	very high	removal
7012917	14C Mountain View Drive	<i>White</i> 30m <i>Green</i> <i>Cyan</i> 40m	New house. Assume oriented north toward <i>White</i> and <i>Cyan</i> alignments. Elevated on terrace with outlook over farmland to N. House is within earthworks footprint of <i>Green</i> alignment. <i>White</i> and <i>Cyan</i> alignments are in cut below house, but earthworks close to house.	very high	removal	very high
7012921	5 Mountain View Drive	<i>White</i> 160m <i>Green</i> 110m <i>Cyan</i> 170m	New house. Assume oriented north toward alignments. Elevated on terrace with outlook over farmland to N.	mod-high	high	mod-high
7012922	6 Mountain View Drive	<i>White</i> 180m <i>Green</i> 140m <i>Cyan</i> 200m	Similar to 5 Mountain View Drive above.	mod-high	high	mod-high
7012927	Mountain View Drive	<i>White</i> 310m <i>Green</i> 300m <i>Cyan</i> 360m	House appears oriented to N and W toward alignments. Elevated on terrace with outlook over open farmland. Alignments are on embankment across valley below house. <i>White</i> option has smaller embankment	mod-low	mod-low	mod-low
7012934	18 Mountain View Drive	<i>White</i> 340m <i>Green</i> 310m <i>Cyan</i> 360m	House appears oriented to NW and NE. Alignments are to NW. House is on opposite side of Mountain View Drive, with foreground houses in intervening area.	low	low	low
3859863	49 South Manakau Road	<i>White</i> 15m <i>Green</i> 40m <i>Cyan</i>	House appears oriented N and E to garden setting. <i>White</i> option is NW but footprint encroaches across garden immediately adjacent to house. <i>Green</i> is to E but on embankment - footprint encroaches across garden immediately adjacent to house. Likely to be untenable for any option	very high	very high	removal
6856768		<i>White</i> <i>Green</i> <i>Cyan</i>	NZTA owned			

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>White</i>	<i>Green</i>	<i>Cyan</i>
6856767	45B South Manakau Road	<i>White</i> 120m <i>Green</i> 245m <i>Cyan</i> 200m	House appears oriented NW. Alignments are to E slightly behind house. Foreground trees intercept views to NE along alignments. Foreground house and trees in intervening area.	mod-high	moderate	mod-low
6856766	45 South Manakau Road	<i>White</i> 110m <i>Green</i> 260m <i>Cyan</i> 210	House appears oriented N and W in well treed garden. Alignments are across open farmland to E and NE. Trees intercept views along alignment to SE.	mod-high	moderate	mod-low
3888216	63 South Manakau Road	<i>White</i> 180m <i>Green</i> 45m <i>Cyan</i> 95m	House appears oriented NE and NW. Alignments are to NW, and views to NE are parallel along alignments. Some foreground trees. Some trees in intervening area between house and <i>White</i> alignment.	mod	very high	high
3963441	69 South Manakau Road	<i>White</i> 240m <i>Green</i> 130m <i>Cyan</i> 180m	House appears oriented N and W. Alignments are to N and W in direction of outlook. House is on the opposite side of Manakau Heights Drive, neighbouring house and trees in intervening area.	mod-low	mod-high	high
6750506	21 Manakau Heights Drive	<i>White</i> 185m <i>Green</i> <i>Cyan</i> 65m	New house. Assume oriented NW in direction of alignments. Outlook across open farmland.	mod-high	removal	very high
7134372	32 Manakau Heights Drive	<i>White</i> 420m <i>Green</i> 210m <i>Cyan</i> 290m	House appears oriented E, and NW. Alignments are on lower land to NW. House is elevated on terrace with outlook over open farmland.	mod-low	mod-high	mod
6621573	40 Manakau Heights Drive	<i>White</i> 365m <i>Green</i> 140m <i>Cyan</i> 230m	House appears oriented NW. Alignments are on lower land to NW. House is elevated on terrace with outlook over open farmland.	mod-low	high	mod
6621572	42 Manakau Heights Drive	<i>White</i> 310m <i>Green</i> 80m <i>Cyan</i> 175m	House appears oriented N, E and W to garden setting. Alignments are on lower open land to W and NW. House is elevated on terrace. Foreground trees.	mod-low	high	mod
6621571	52 Manakau Heights Drive	<i>White</i> 280m <i>Green</i> 45m <i>Cyan</i> 45m	House appears oriented NW in direction of alignments. House is elevated on terrace. <i>Green</i> alignment is cut into terrace scarp immediately in front of house. <i>White</i> and <i>Cyan</i> alignments are on lower open ground further to NW.	mod	very high	high
6621570	4 Hanawera Ridge Road	<i>White</i> 245m <i>Green</i> 30m <i>Cyan</i> 140m	House appears oriented NW in direction of alignments. House is elevated on terrace. <i>Green</i> alignment is cut into terrace scarp into garden immediately in front of house probably requiring removal. <i>White</i> and <i>Cyan</i> alignments are on lower open ground further to NW, on opposite side of road. Foreground trees.	mod	removal	mod-high
6621569	8 Hanawera Ridge Road	<i>White</i> 330m <i>Green</i> 110m <i>Cyan</i> 230m	House appears oriented NW in direction of alignments. <i>Green</i> alignment is cut into terrace in front of house. <i>White</i> and <i>Cyan</i> alignments are on open ground beyond terrace scarp. Roads, houses, trees in intervening area.	mod-low	high	mod-low

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>White</i>	<i>Green</i>	<i>Cyan</i>
6621568	10 Nikau Lane	<i>White</i> 385 <i>Green</i> 160m <i>Cyan</i> 265m	House appears oriented NW in direction of alignments. Trees and other houses restrict outlook but view to NW over pond. <i>Green</i> alignment is cut into terrace and pond. <i>White</i> and <i>Cyan</i> alignments are on open ground beyond.	mod-low	mod	mod-low
6621559	63 Manakau Heights Drive	<i>White</i> 150m <i>Green</i> <i>Cyan</i> 50m	House appears oriented NW. Elevated on terrace with open outlook. <i>White</i> and <i>Cyan</i> alignments are on lower farmland below terrace to NW. <i>Cyan</i> alignment is hard against toe of terrace scarp immediately below house, <i>White</i> alignment is in open land. <i>Green</i> alignment is cut into terrace behind house – earthworks footprint would require removal of house.	mod-high	removal	very high
6751737	75? Manakau Heights Drive	<i>White</i> 60m <i>Green</i> 75m <i>Cyan</i>	House appears oriented E, N and W. Elevated on terrace with open outlook. <i>Green</i> alignment is on terrace to E of house. <i>White</i> alignment is on open farmland below terrace to W, and a box cutting across the terrace scarp to NW. <i>Cyan</i> alignment is through the property and would require removal of house.	high	high	removal
6751741	82 Manakau Heights Drive	<i>White</i> 180m <i>Green</i> 50m <i>Cyan</i> 150m	House appears oriented N and W. Open outlook. <i>Green</i> alignment is cut into terrace encroaching into garden in front of house. <i>White</i> and <i>Cyan</i> alignments are cut into terrace further to NW on opposite side of road.	mod	mod-high	very high
6751740	90 Manakau Heights Drive	<i>White</i> 175m <i>Green</i> 175m <i>Cyan</i> 80m	House appears oriented NW towards alignment. Some foreground vegetation along watercourse. <i>Green</i> alignment is cut into terrace encroaching into garden in front of house. <i>White</i> and <i>Cyan</i> alignments are cut across terrace scarp further to NW on opposite side of road.	mod	mod-high	high
6751736	96 Manakau Heights Drive	<i>White</i> 50m <i>Green</i> 165m <i>Cyan</i> 70m	House orientation not clear. Elevated on terrace at toe of distinctive hill (approximately 25m high, steep sides, symmetrical). Alignments are SE and E of house.	very high	high	mod-high

### Zone C

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>White</i>	<i>Green</i>	<i>Purple</i>
7158255	97 Manakau Heights Drive	<i>White</i> <i>Green</i> <i>Cyan</i>	House appears oriented NE and NW. Open outlook. <i>Green</i> alignment is to E behind house – earthworks encroach on house. <i>Cyan</i> alignment is to W directly in front of house – earthworks encroach on house. <i>White</i> alignment passes through house. Each option would necessitate removal of house.	removal	removal	removal
7217185	107 Manakau Heights Drive	<i>White</i> <i>Green</i> 30m <i>Purple</i>	House appears oriented NE. Open outlook. <i>Green</i> alignment is to E and Ne in front of house. <i>White</i> and <i>Purple</i>	removal	very high	removal

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>White</i>	<i>Green</i>	<i>Purple</i>
			alignments would necessitate removal of house.			
7217187	108 Manakau Heights Drive	<i>White</i> 80m <i>Green</i> 50m <i>Purple</i> 110m	Appears temporary accommodation. Assume house to be oriented NW towards alignments. On rising ground at toe of hills. Open outlook. <i>Green</i> alignment is cut into toe slope within site. <i>White</i> and <i>Purple</i> alignments are cut further down slope.	high	very high	high
7116396	97 Manakau Heights Drive	<i>White</i> 160m <i>Green</i> 170m <i>Purple</i> 190m	House appears oriented NW towards alignments. Elevated high on toe of hill overlooking alignments below (elevated approximately 10m higher). Open outlook. All three options in similar location cut into lower slope.	mod-high	mod-high	mod-high
7116397	? Eastern Rise	<i>White</i> 130m <i>Green</i> 140m <i>Purple</i> 150m	House appears oriented W towards alignments. Elevated high on toe of hill overlooking alignments below (elevated approximately 10m higher). Open outlook – sheds in foreground. All three options in similar location side-cut into lower slope.	high	high	high
7116398	29B Eastern Rise	<i>White</i> 125m <i>Green</i> 140m <i>Purple</i> 140m	House appears oriented NW towards alignments. Elevated high on toe of hill overlooking alignments below (elevated approximately 15m higher). Open outlook. All three options in similar location side-cut into lower slope.	high	high	high
3748297	49 Tame Porati Street	<i>White</i> 215m <i>Green</i> 200m <i>Purple</i> 210m	Orientation unclear. House elevated on plateau. Alignments approximately 10m-lower in valley to E. Foreground trees.	mod	mod	mod
7044909	47 Tame Porati Street	<i>White</i> 230m <i>Green</i> 215m <i>Purple</i> 225m	House appears oriented N. Alignments approximately 10m lower in valley to E. Foreground trees.	mod	mod	mod
3770327	50 Wi Tako Street	<i>White</i> 155m <i>Green</i> 140m <i>Purple</i> 150m	Orientation unclear. House in valley at similar elevation to alignments. Alignments bisect property to E. Open outlook to adjacent section of alignment. Foreground trees limit some oblique views.	high	high	high
7618893	45 Wi Tako Street	<i>White</i> 235m <i>Green</i> 220m <i>Purple</i> 230m	House appears oriented W away from alignments. Alignments approximately 10m lower in valley to E. House has woodland setting with extensive trees in intervening landscape.	mod-low	mod-low	mod-low
7017224	47 Wi Tako Street	<i>White</i> 200m <i>Green</i> 180m <i>Purple</i> 195m	House appears oriented W, N and E to woodland garden setting. Located in valley. Alignments are at similar elevation to E. Trees in intervening area.	mod	mod	mod
7134218	43 Wi Tako Street	<i>White</i> 255m <i>Green</i> 240m <i>Purple</i> 250m	House appears oriented N and W. Alignments at lower elevation in valley to E. Trees in intervening landscape.	mod-low	mod-low	mod-low
7017223	55 Wi Tako Street	<i>White</i> <i>Green</i> <i>Purple</i>	House is near centre of valley. All alignments necessitate removal of house.	removal	removal	removal
7981821	63 Wi Tako Street	<i>White</i> 205m <i>Green</i> 220m <i>Purple</i> 201m	House appears oriented NW with outlook down hill toward alignments. House is elevated high on hillslope	mod	mod	mod

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>White</i>	<i>Green</i>	<i>Purple</i>
			approximately 30m above alignments. Foreground trees are likely to restrict views to short section of alignments.			
4010657	43 Mokena Kohere Street	<i>White</i> 325m <i>Green</i> 290m <i>Purple</i> 320m	House appears oriented N and E with direct views to alignments to E and longer oblique views to N. Some foreground trees. Outlook across open farmland. <i>Green</i> alignment moves closer into oblique views, but also takes a lower route that follows the topography.	mod-low	mod	mod-low
3886682	76 North Manakau Road	<i>White</i> <i>Green</i> 75m <i>Purple</i> 65m	House appears oriented to a garden setting to N and E. House set within trees, hedge on W side. <i>White</i> option passes through house. <i>Green</i> and <i>Purple</i> options pass to the W. The <i>Purple</i> option passes closer to the house but the alignment moves away in the northerly outlook.	removal	high	high
6522660	46 North Manakau Road	<i>White</i> 300m <i>Green</i> 220m <i>Purple</i> 230m	House appears oriented NE and NW to garden setting. Alignments are to the E in open cropping land.	mod-low	mod	mod
3939569	51 North Manakau Road	<i>White</i> 205m <i>Green</i> 175m <i>Purple</i> 155m	House appears oriented NW to garden setting. Alignments are in open cropping land to the E. Foreground trees and sheds to E of house.	mod	mod	mod-high
7313106	90 North Manakau Road	<i>White</i> 130m <i>Green</i> 170m <i>Purple</i> 190m	House appears oriented NE and NW. Alignments are in open cropping land to NW on opposite side of road. Views framed by foreground trees.	high	mod-high	mod

## Zone D

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>Blue</i>	<i>Cyan</i>
3824368	101 North Manakau Road	<i>Blue</i> 90m <i>Cyan</i> 70m	House appears oriented N and W in direction of alignments. Foreground garden with outlook over open farmland. Both alignments are in slight cut.	high	very high
7393332	119 North Manakau Road	<i>Blue</i> 240m <i>Cyan</i> 220m	House appears oriented NE and NW with outlook across open farmland to NW towards alignments. Trees and other houses will partly frame views.	mod	mod-high
7393333	121 North Manakau Road	<i>Blue</i> 150m <i>Cyan</i> 135m	House appears oriented NW with outlook across open farmland towards alignments.	high	high
7393334	121A North Manakau Road	<i>Blue</i> 40m <i>Cyan</i> 20m	House appears oriented E, N and W. Open outlook over farmland. Earthworks of <i>Cyan</i> option encroach across garden almost to house. Likely to require removal.	very high	very high
3981321	123 North Manakau Road	<i>Blue</i> 275m <i>Cyan</i> 255m	House appears oriented NW towards alignments. Outlook over open farmland. Some foreground hedgerow. House and trees in intervening area.	mod-low	mod
4061783	? North Manakau Road	<i>Blue</i> 280m <i>Cyan</i> 260m	Orientation unclear. House surrounded by trees. House and trees in intervening area.	mod-low	mod-low
4061783	? North Manakau Road	<i>Blue</i> 355m <i>Cyan</i> 335m	House appears oriented N. Alignments in side view to NW. Building and trees in intervening area.	low	low

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>Blue</i>	<i>Cyan</i>
3864377	25 Martins Road	<i>Blue</i> 520m <i>Cyan</i> 520m	House appears oriented NW toward alignments. Elevated on terrace with outlook down Waikawa Stream floodplain toward bridge alignment.	low	low
3777732	679A SH1	<i>Blue</i> 40m <i>Cyan</i> 90m	House appears oriented NW. Open setting. <i>Cyan</i> options to E behind house. <i>Blue</i> option to W in front of house – earthworks encroach almost to house	very high	high
3791026	679 SH1	<i>Blue</i> <i>Cyan</i> 175m	Orientation unclear. Open setting in paddock. <i>Blue</i> option would necessitate removal of house.	removal	mod-high
7753490	679C SH1	<i>Blue</i> 255m <i>Cyan</i> 65m	Appears to be shed		
2705244	? Kuku East Road	<i>Blue</i> <i>Cyan</i>	House appears to be oriented N and E. Both options will be on fill embankment across open farmland to E of house. <i>Cyan</i> option earthworks will remove trees to E and encroach close (20m) to house. <i>Blue</i> will be more distant beyond trees.	mod	very high
2693319	61 Kuku East Road	<i>Blue</i> 270m <i>Cyan</i> 80m	House appears oriented N to garden setting surrounded by trees. Both options will be on fill embankment across open farmland to E of house. <i>Cyan</i> option earthworks will encroach into trees on corner of site. <i>Blue</i> option will be further away beyond trees and buildings.	mod-low	high
2705248	63 Kuku East Road	<i>Blue</i> 180m <i>Cyan</i>	House appears oriented NW and NE. <i>Cyan</i> option will necessitate removal. <i>Blue</i> option will be on embankment to E, oblique views along alignment to NE. Some trees and building in intervening area.	high	removal
2705250	75 Kuku East Road	<i>Blue</i> 135m <i>Cyan</i>	House appears oriented N. <i>Cyan</i> option will necessitate removal. <i>Blue</i> option will be on embankment to E, oblique views along alignment to NE. Some trees and building in intervening area.	high	removal
2705255	83 Kuku East Road	<i>Blue</i> 45m <i>Cyan</i> 100m	House appears oriented N. Foreground hedgerow and tree. <i>Cyan</i> option will be on fill embankment W of house, and on large fill embankment across floodplain in N outlook. <i>Blue</i> option will be on fill embankment E of house, and on large fill embankment across floodplain in NE outlook. Earthworks will encroach into garden and close to house,	very high	high
2705253	83B Kuku East Road	<i>Blue</i> 75m <i>Cyan</i> 75m	House appears oriented N, E and W. Open outlook. <i>Cyan</i> option will be on fill embankment W of house, and on large fill embankment across floodplain in N outlook. <i>Blue</i> option will be on fill embankment E of house, and on large fill embankment across floodplain in NE outlook.	very high	very high
2705260	87 Kuku East Road	<i>Blue</i> <i>Cyan</i> 175m	House appears oriented N and E. Hedgerow to W. <i>Cyan</i> option will be on fill embankment W of house, and on large fill embankment across floodplain in NW oblique outlook. <i>Blue</i> option will necessitate removal.	removal	mod-high



## Zone E

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>Cyan</i>	<i>Green</i>
2716260	194 Muhunoa East Road	<i>Cyan</i> 150m <i>Green</i> 150m	House appears oriented NW. Alignments to SE behind house. Open outlook. Both alignments in same location, on embankment across open farmland.	mod-high	mod-high
2716264	195? Muhunoa East Road	<i>Cyan</i> 230m <i>Green</i> 230m	House appears oriented NW and NE. Alignments to E with oblique views along alignment to NE and SW. Both alignments in same location, on embankment across open farmland. Houses, trees, shelter belts in intervening area.	mod	mod
2716261	191? Muhunoa East Road	<i>Cyan</i> 220m <i>Green</i> 220m	House appears oriented NW and NE. Alignments to E with oblique views along alignment to NE and SW. Both alignments in same location, on embankment across open farmland. Houses, trees, shelter belts in intervening area.	mod	mod
	203 Muhunoa East Road	<i>Cyan</i> 160m <i>Green</i> 160m	House appears oriented NE. Alignments to E with oblique views along alignment to NE and SW. Both alignments in same location, on embankment across open farmland. Houses, trees, shelter belts in intervening area.	mod-high	mod-high
2672517	205 Muhunoa East Road	<i>Cyan</i> 100m <i>Green</i> 100m	House appears oriented NW and NE. Alignments to E with oblique views along alignment to NE and SW. Both alignments in same location, on embankment across open farmland. Foreground neighbouring house.	high	high
2672515	211 Muhunoa East Road	<i>Cyan</i> 50m <i>Green</i> 50m	House appears NE. Alignments to E with oblique views along alignment to NE and SW. Both alignments in same location, on embankment across open farmland. Earthworks extend to edge of garden.	very high	very high
2356573	213 Muhunoa East Road	<i>Cyan</i> 130m <i>Green</i> 140m	Orientation unclear. Garden setting surrounded by vegetation. Alignments to E with oblique views along alignment to NE. Both alignments in same location, on embankment across farmland and rural residential landscape.	high	high
	213C Muhunoa East Road	<i>Cyan</i> 190m <i>Green</i> 225m	House appears oriented NW, NE and SE. Open outlook. Alignments to E and SE. <i>Cyan</i> option partly in cutting and on low embankment to SE. <i>Green</i> option on higher embankment	mod	mod
2672533	211 Muhunoa East Road	<i>Cyan</i> 250m <i>Green</i> 300m	House appears oriented NW and NE to garden setting. Alignments to E in open farmland. <i>Cyan</i> option will be partly screened in cutting. <i>Green</i> option will be on low embankment, but beyond shelter belt.	mod-low	mod-low
2356615	223 Muhunoa East Road	<i>Cyan</i> <i>Green</i>	Both options necessitate removal of house	removal	removal
2672520	242 Muhunoa East Road	<i>Cyan</i> 185m <i>Green</i> 175m	Appears oriented NW. Alignments to NW on embankment across open farmland.	mod-high	mod-high
2672524	243 Muhunoa East Road	<i>Cyan</i> 165m <i>Green</i> 150m	House appears oriented N and W. Alignments to NW across open farmland. Foreground trees and shelter belt. Both alignments on embankment - <i>Green</i> on higher embankment.	mod-high	high

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>Cyan</i>	<i>Green</i>
	243 Muhunoa East Road B	<i>Cyan</i> 60m <i>Green</i>	House appears oriented NE and NW. <i>Cyan</i> option on low embankment to NW. Foreground shelter belt. Earthworks of <i>Green</i> option encroaches on house location necessitating removal	high	removal
2672537	243 Muhunoa East Road C	<i>Cyan</i> 130m <i>Green</i> 80m	House appears oriented NE and SE. Alignments on embankment to W and oblique views along alignment to NE.	high	high
2356584	265 Muhunoa East Road	<i>Cyan</i> 310m <i>Green</i> 355m	House appears oriented E and W to garden setting. Surrounded by trees and shelter vegetation. Alignments to NW within farmland and rural-residential landscape.	mod-low	mod-low
2356591	530 Arapaepae Road	<i>Cyan</i> 375m <i>Green</i> 420m	House appears oriented NW and NE to garden setting. Surrounded by trees and shelter vegetation. Alignments to NW within farmland and rural-residential landscape.	low	mod-low
2356582	520? Arapaepae Road	<i>Cyan</i> 320m <i>Green</i> 380m	House appears oriented NW and NE to garden setting. Foreground trees and shelter vegetation. Alignments to NW within farmland and rural-residential landscape.	mod-low	mod-low
2356579	514 Arapaepae Road	<i>Cyan</i> 220m <i>Green</i> 285m	House appears oriented NW and NE. Open outlook. Alignments to NW within farmland. Both alignments on embankment.	mod	mod
2356606	496 Arapaepae Road	<i>Cyan</i> 230m <i>Green</i> 285m	House appears oriented NW and NE. Alignments to NW within farmland. Sheds and shelter belts in intervening area.	mod-low	mod-low
2356620	480 Arapaepae Road	<i>Cyan</i> 200m <i>Green</i> 260m	House appears oriented NE to garden setting. Alignments to W within farmland. Partly screened in cut. Foreground shed. Trees and shelter belts in intervening area.	mod-low	mod-low
2356604	476 Arapaepae Road	<i>Cyan</i> 130m <i>Green</i> 85m	House appears oriented NE and NW. Open outlook to W toward alignments. Both options in cutting within terrace. Oblique views along alignment to SW partly screened by shelterbelt trees. .	mod-high	high
2647583	465 Arapaepae Road	<i>Cyan</i> 310m <i>Green</i> 270m	House appears oriented NW. Open outlook across farmland on opposite side of foreground Arapaepae Road. Both options in cutting within terrace.	mod-low	mod-low
2590419	6 Riveredge Terrace	<i>Cyan</i> 290m <i>Green</i> 280m	Orientation unclear. Garden setting. Foreground trees. Alignments to W, largely screened in cutting.	low	low
2331859	437 Arapaepae Road	<i>Cyan</i> 265m <i>Green</i> 255m	House appears oriented W to garden setting. Foreground trees. Alignments to W, largely screened in cutting.	low	low
2331860	243 Mcleavey Road	<i>Cyan</i> 265m <i>Green</i> 255m	House appears oriented NE. Alignments to W in cutting. [see Zone F]	mod	mod
2581310	218? Mcleavey Road	<i>Cyan</i> 70m <i>Green</i> 80m	House appears oriented NE and SE. Alignments to E in cutting.	high	high
2581306	198 Mcleavey Road	<i>Cyan</i> 290m <i>Green</i> 300m	House appears oriented N and W to garden setting. Both alignments to E, largely screened in cutting. Stand of trees and neighbouring house in intervening area.	low	low

## Zone F

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>Orange</i>	<i>Purple</i>	<i>White</i>
2331857	435 Arapaepae Road	<i>Orange</i> 95m <i>Purple</i> 235m <i>White</i> 195	House appears oriented NE. Alignments to NW and in oblique views to N. House slightly elevated. All options largely in shallow cut in farmland and rural residential landscape. Some foreground trees.	high	mod	mod
2590423	31 Riveredge Terrace	<i>Orange</i> 220m <i>Purple</i> 375m <i>White</i> 320m	House orientation unclear. Well treed garden setting. Alignments to NW and in oblique views to N. House slightly elevated. All options largely in shallow cut in farmland and rural residential landscape. Foreground trees, and trees and hedgerows in intervening area.	mod-low	low	low
2590417	419 Arapaepae Road	<i>Orange</i> 25m <i>Purple</i> 130 <i>White</i> 180	House appears oriented to NE and NW garden setting. Alignments to NW and in oblique views to N. <i>Orange</i> option cuts through garden with earthworks a few metres of house, and across N outlook. Would likely require removal. Other options in shallow cut in farmland and rural residential landscape.	very high (removal)	high	mod-high
2331853	413 Arapaepae Road	<i>Orange</i> 80 <i>Purple</i> 205 <i>White</i> 270	House appears oriented NE. Alignments to W and in oblique views along alignment to N. All options largely in shallow cut in farmland and rural residential landscape. Some foreground planting. Some buildings and trees in intervening area for <i>White</i> and <i>Purple</i>	high	mod	mod-low
2590394	398 Arapaepae Road	<i>Orange</i> 140m <i>Purple</i> 30m <i>White</i>	House appears oriented N and E. <i>Orange</i> option in shallow cut E of house, on opposite side of Arapaepae Road, foreground vegetation, house and some trees in intervening area. <i>White</i> Option would require removal. <i>Purple</i> option in cut that encroaches into yard close to house, and cuts across outlook to N. Some foreground trees. May require removal.	mod	very high	removal
	401 Arapaepae Road	<i>Orange</i> 55m <i>Purple</i> 100m <i>White</i> 30m	House appears oriented W and E. <i>Orange</i> option in shallow cut across garden to E. <i>Purple</i> option in shallow cut to NW and cutting across outlook to N, with foreground trees, and trees and buildings in intervening area. <i>White</i> option would cut across garden with earthworks close to house – likely to necessitate removal.	very high	mod-high	very high
2590385	390 Arapaepae Road	<i>Orange</i> 175m <i>Purple</i> <i>White</i> 40m	House appear oriented NW, well-treed setting. Purpose would necessitate removal. <i>White</i> alignment cuts across yard behind house, earthworks close to house – likely to necessitate removal. <i>Orange</i> alignment in shallow cut behind house on opposite side of Arapaepae Road. Foreground trees and some trees in intervening area.	mod	removal	very high
2590384	380 Arapaepae Road	<i>Orange</i> 215m <i>Purple</i> <i>White</i> 80m	House orientation unclear – possibly E and W. Well treed setting. <i>Purple</i> option to immediate SE, earthworks	mod-low	removal	high

ID	Address	Distance	Comment	Orange	Purple	White
			would necessitate removal of house. <i>White</i> alignment in shallow cut SE of house, well treed foreground. <i>Orange</i> option in shallow cut SE of house on opposite side of Arapaepae Road. Well treed foreground, trees and buildings in intervening area.			
2590420	379 Arapaepae Road	<i>Orange</i> 90m <i>Purple</i> 50, <i>White</i>	House appears oriented N. <i>Purple</i> option in shallow cut and fill across outlook to W and N. Earthworks would cut across garden. <i>Orange</i> alignment in shallow cut 'behind' house to E. Some foreground trees and sheds. <i>White</i> option would require removal of house.	high	very high	removal
2590380	378 Arapaepae Road	<i>Orange</i> 210m <i>Purple</i> 30m <i>White</i> 95m	House appears oriented N and E. <i>Purple</i> option immediately to E, earthworks cut across corner of yard, likely to require removal. <i>White</i> and <i>Orange</i> options in shallow cuts in farmland on opposite side of Arapaepae Road – some trees and buildings in intervening landscape – more so for <i>Orange</i> .	mod	very high	high
2590337	372 Arapaepae Road	<i>Orange</i> 220m <i>Purple</i> 55m <i>White</i> 115m	House appears oriented E. <i>Purple</i> option to E immediately opposite side of Arapaepae Road, and on shallow fill embankment in outlook to NE. <i>White</i> and <i>Orange</i> alignments in shallow cuts across farmland on opposite side of road. Some trees and buildings in intervening area.	mod	very high	high
2590343	363A Arapaepae Road	<i>Orange</i> 170m <i>Purple</i> <i>White</i> 80m	House appears oriented to N and W. <i>Purple</i> option would necessitate removal of house. <i>White</i> and <i>Orange</i> alignments in shallow cuts across farmland 'behind' house. Foreground sheds.	mod	removal	high
2590347	363 Arapaepae Road	<i>Orange</i> 170m <i>Purple</i> 40m <i>White</i> 95m	House appears oriented E and W. <i>Purple</i> option immediately to E, earthworks would encroach across garden close to house. Likely to result in removal. <i>White</i> and <i>Orange</i> alignments in shallow cuts across farmland 'behind' house.	mod-high	very high	high
2590341	366 Arapaepae Road	<i>Orange</i> 230m <i>Purple</i> 80m <i>White</i> 135m	House appears oriented W, N and E. <i>Purple</i> option immediately on opposite side of Arapaepae Road, on shallow embankment. <i>White</i> and <i>Orange</i> alignments across farmland on opposite side of road. Trees and buildings in intervening area.	mod-low	high	mod-high
2590350	353 Arapaepae Road	<i>Orange</i> 165m <i>Purple</i> 55m <i>White</i> 110m	House appears oriented N and W – upstairs outlook. <i>Purple</i> option on shallow embankment across paddocks immediately to E 'behind' house. <i>White</i> and <i>Orange</i> alignments further away across farmland. Open outlook. <i>Orange</i> in shallow cut.	mod-high	very high	high
6971711	180 Kimberley Road	<i>Orange</i> 520m <i>Purple</i> 395m <i>White</i> 455m	House appears oriented N and W. Well-treed setting. All options to E on far side of Arapaepae Road. Dense	low	low	low

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>Orange</i>	<i>Purple</i>	<i>White</i>
			foreground stand of trees. Buildings and trees in intervening area.			
6971712	184 Kimberley Road	<i>Orange</i> 465m <i>Purple</i> 300m <i>White</i> 365m	House appears oriented W, N and E. All options to E on far side of Arapaepae Road. Buildings and trees in intervening area.	low	mod	mod-low
3823151	194 Kimberley Road	<i>Orange</i> 370m <i>Purple</i> 250m <i>White</i> 305m	House appears oriented N and W. All options to E on far side of Arapaepae Road. Foreground shed. Some buildings and trees in intervening area.	low	mod	mod-low
3802874	217 Kimberley Road	<i>Orange</i> 145m <i>Purple</i> 115m <i>White</i> 55m	House appears oriented W to well-treed garden setting. <i>Purple</i> option on shallow embankment immediately to E of house, earthworks encroach across garden. <i>White</i> and <i>Orange</i> options cross cropping land further E. Foreground trees.	mod	very high	mod-high
6605482	232 Kimberley Road	<i>Orange</i> <i>Purple</i> <i>White</i>	NZTA owned.			
3940891	237 Kimberley Road	<i>Orange</i> 45m <i>Purple</i> 70m <i>White</i>	House appears oriented N and W. <i>White</i> alignment would necessitate removal. <i>Orange</i> and <i>Purple</i> option on open cropping land a little further W.	very high	high	removal
6605483	248 Kimberley Road	<i>Orange</i> 165m <i>Purple</i> 255m <i>White</i> 200m	House appears oriented N and W. All alignments across farmland to W. <i>Orange</i> and <i>White</i> is shallow cut. Foreground shelter belt.	mod	mod-low	mod
3867636	264 Kimberley Road	<i>Orange</i> 280m <i>Purple</i> 370m <i>White</i> 315m	House appears oriented NW to garden setting. All alignments across farmland to W. and NW. <i>Orange</i> and <i>White</i> is shallow cut. Foreground trees. Dense shelter belts in intervening area.	low	low	low
3979375	259 Kimberley Road	<i>Orange</i> 270m <i>Purple</i> 320m <i>White</i> 265m	House appears oriented N and W to garden setting. All alignments across cropping land to W and NW. <i>Orange</i> and <i>White</i> is shallow cut. Open setting, some foreground trees.	mod-low	mod	mod
7928900	269 Kimberley Road	<i>Orange</i> 315m <i>Purple</i> 385m <i>White</i> 330m	House appears oriented NE. Alignment options cross open cropping land to W and NW. <i>Orange</i> and <i>White</i> are in shallow cut. Trees in foreground and intervening area.	low	low	low
6721354	273A Kimberley Road	<i>Orange</i> 400m <i>Purple</i> 425m <i>White</i> 355m	House appears oriented N and W. Alignment options cross open cropping land to W and NW. <i>Orange</i> and <i>White</i> are in shallow cut. Trees in foreground and trees and sheds in intervening area.	low	low	low
3802874	345 Arapaepae Road	<i>Orange</i> 200m <i>Purple</i> 120m <i>White</i> 180m	House appears oriented N in well-treed garden setting. Alignment options to E. <i>Purple</i> option on shallow embankment on eastern part of wider property. <i>White</i> and <i>Orange</i> options cross cropping land further E. Foreground trees. Trees and sheds in intervening area.	mod	mod-high	mod
3884839	334 Arapaepae Road	<i>Orange</i> 335m <i>Purple</i> 275m <i>White</i> 335m	House appears oriented NE and NW. Alignment options to E in open cropping land on opposite side of	mod-low	mod-low	mod-low

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>Orange</i>	<i>Purple</i>	<i>White</i>
			Arapaepae Road. Trees, shelter belts and sheds in intervening area.			
6612311	326 Arapaepae Road	<i>Orange</i> <i>Purple</i> <i>White</i>	NZTA owned			
6612312	324 Arapaepae Road	<i>Orange</i> <i>Purple</i> <i>White</i>	NZTA owned			
3861709	321 Arapaepae Road	<i>Orange</i> <i>Purple</i> <i>White</i>	NZTA owned			
3777495	315 Arapaepae Road	<i>Orange</i> <i>Purple</i> <i>White</i>	NZTA owned			
3882904	312 Arapaepae Road	<i>Orange</i> 330m <i>Purple</i> 310m <i>White</i> 375m	House appears oriented NW and W. Alignment options to E in open cropping land on opposite side of Arapaepae Road. Trees, shelter belts and sheds in intervening area.	low	low	low
3873393	313 Arapaepae Road	<i>Orange</i> 100m <i>Purple</i> 80m <i>White</i> 145m	House appears oriented NW. Alignment options to E in open cropping land on low embankment. Some foreground sheds.	high	high	high
4039038	307 Arapaepae Road	<i>Orange</i> 165m <i>Purple</i> 145m <i>White</i> 220m	House appears oriented N, W and E. Alignment options to E in open cropping land on low embankment. Some foreground sheds, and shelter belt to NE that would interrupt oblique views along the alignment in that direction.	mod-high	mod-high	mod
3771436	290 Arapaepae Road	<i>Orange</i> 375m <i>Purple</i> 345m <i>White</i> 430m	House orientation unclear. In heavily treed setting. Alignment options to E on opposite side of Arapaepae Road and beyond shelter belts in intervening area.	low	low	low
3978235	286 Arapaepae Road	<i>Orange</i> 385m <i>Purple</i> 340m <i>White</i> 430m	House appears oriented N. Alignment options to E on opposite side of Arapaepae Road and beyond shelter belts in intervening area. Foreground trees.	low	low	low
3798794	271 Arapaepae Road	<i>Orange</i> 210m <i>Purple</i> 165m <i>White</i> 255m	House appears oriented N and W. Alignment options in open land to E. Some foreground trees. Shelter belts S of house will screen oblique views along alignment in that direction.	mod	mod-high	mod
7207848	249 Arapaepae Road	<i>Orange</i> <i>Purple</i> <i>White</i>	NZTA owned			
3821328	247 Arapaepae Road	<i>Orange</i> 45m <i>Purple</i> <i>White</i> 80m	House appears oriented NW, but open outlook to NE and SE. <i>Purple</i> alignment necessitates removal. <i>Orange</i> option close to house, earthworks would encroach to edge of garden. <i>White</i> a little further away with oblique views to N along rising embankment.	very high	removal	high
4022991	29 Garth Road	<i>Orange</i> 375m <i>Purple</i> 330m <i>White</i> 410m	House appears oriented SE. Alignment options on embankments in open paddocks on opposite side of Arapaepae Road.	mod	mod-high	mod
3901766	174 Tararua Road	<i>Orange</i> 390m <i>Purple</i> 335m <i>White</i> 420m	House appears oriented NE and NW to garden setting. Alignment options on embankments in open paddocks on	mod	mod-high	mod

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>Orange</i>	<i>Purple</i>	<i>White</i>
			opposite side of Arapaepae Road. Foreground trees. Some trees, buildings and shelter belts in intervening area.			
4004768	198 Tararua Road	<i>Orange</i> 135m <i>Purple</i> 80m <i>White</i> 155m	House appears oriented NW. Alignment options immediately to E of house on embankments in open paddocks. Earthworks of <i>Purple</i> option will reach to about 20m of the garden boundary. The <i>Orange</i> and <i>White</i> options are a little more separated.	high	very high	high
3824629	248 Tararua Road	<i>Orange</i> 255m <i>Purple</i> 310m <i>White</i> 230m	House appears oriented N and W. Alignment options W of house on embankments in open paddocks. Foreground shelter belt.	mod	mod-low	mod

### Zone G

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>Cyan</i>	<i>Purple</i>	<i>White</i>
2687942	249 Tararua Road	<i>Cyan</i> 215m <i>Purple</i> 305m <i>White</i> 235m	House appears oriented NE and NW. Alignment options to W and NW in open paddocks, on flyover embankments. Some foreground trees, otherwise open outlook.	mod-high	mod	mod-high
2687945	257 Tararua Road	<i>Cyan</i> 355m <i>Purple</i> 445m <i>White</i> 375m	House appears oriented N and W. Alignment options to W and NW in open paddocks, on flyover embankments. Foreground shelter belt hedges. Trees, shelterbelts and buildings in intervening area.	low	low	low
	189 Tararua Road	<i>Cyan</i> 315m <i>Purple</i> 220m <i>White</i> 295m	House appears oriented N. House appears oriented NW. Alignment options to E and NE in open paddocks, on flyover embankments. Some foreground trees and shed.	mod	mod-high	mod
2586622	205 Arapaepae Road	<i>Cyan</i> 310m <i>Purple</i> 215m <i>White</i> 290m	House appears oriented NW. Alignment options to E and NE 'behind' house, in open paddocks, on flyover embankments. Open outlook	mod	mod-high	mod
2586618	185 Arapaepae Road	<i>Cyan</i> 270m <i>Purple</i> 180m <i>White</i> 250m	House appears oriented N and W. House appears oriented NW. Alignment options to E and NE 'behind' house, in open paddocks, on flyover embankments. Open outlook – some sheds in intervening area.	mod	mod-high	mod
4062669	172 Arapaepae Road	<i>Cyan</i> 370m <i>Purple</i> 285m <i>White</i> 350m	House appears oriented NW, NE and SE. Alignment options to E and SE on opposite side of Arapaepae Road in open paddocks, on flyover embankments. Foreground trees screening garden from existing highway.	low	mod-low	low
3800755	53A Strathmore Avenue (representative of 12 properties 33-53A)	<i>Cyan</i> 375m <i>Purple</i> 290m <i>White</i> 355m	House oriented NE (others typically oriented N, NE and NW). Alignment options to SE in open paddocks on opposite side of Arapaepae Road. Foreground planting and fencing to	low	mod-low	low

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>Cyan</i>	<i>Purple</i>	<i>White</i>
	Strathmore Avenue		buffer properties from existing highway.			
7021407	22 Fuller Close (representative of 16 properties between 22 Fuller Close and 31 Strathmore Avenue)	<i>Cyan</i> 310m <i>Purple</i> 285m <i>White</i> 340m	Houses appear typically oriented NE, N and NW. Alignment options to SE in open paddocks on opposite side of rear boundaries and Arapaepae Road. Foreground planting and fencing to buffer properties from existing highway. Sheds commonly adjacent to rear boundaries. Shelter hedging, buildings and trees in intervening area.	low	low	low
6939280	7 Fullers Close	<i>Cyan</i> 290m <i>Purple</i> 280m <i>White</i> 340m	Retirement Village. Units appear oriented NW. Alignments to SE in open paddocks on opposite side of Arapaepae Road. Buffer strip of planting between rear boundaries and existing SH57. Shelter belts parallel to views on opposite side of road restrict oblique views.	mod-low	mod-low	low
3974909	133 Arapaepae Road	<i>Cyan</i> 80m <i>Purple</i> <i>White</i> 80m	House appears oriented NW. Alignment options immediately to SE in open paddocks, on low embankment. Open outlook. Oblique views along alignment to NE and SW. Earthworks for <i>Purple</i> option encroach into house necessitating removal.	very high	removal	very high
3814078	131 Arapaepae Road	<i>Cyan</i> 65m <i>Purple</i> 105m <i>White</i> 50m	House appears oriented NE and NW to garden setting. Alignment options immediately to NW. Earthworks for <i>White</i> would encroach on edge of garden. Alignments would sever access from Arapaepae Road	very high	high	very high
3867259	105 Arapaepae Road	<i>Cyan</i> 245m <i>Purple</i> 220m <i>White</i> 275m	House appears oriented NE and NW to garden setting. Alignment options in open farmland to SE, oblique views along alignment to NE. Foreground sheds to E. Shelter belt limits oblique views to S.	mod	mod	mod
38002886	73 Arapaepae Road	<i>Cyan</i> 190m <i>Purple</i> 190m <i>White</i> 250m	House appears oriented Se, NE, NW. Alignment options in open paddocks to SE, oblique views along alignment to NE. Foreground trees and shelter belts restrict views.	mod	mod	mod-low
3964918	8 Kebbell Avenue  Representative of 9 properties between 10 Kebbell Ave and 6 Ngaio Street	<i>Cyan</i> 220m <i>Purple</i> 200m <i>White</i> 260m	Houses appear typically oriented NE and NW. Alignments to SE in open paddocks on opposite side of Arapaepae Road. Low embankment. Buffer strip of planting between rear boundaries and existing highway. Low hedge on opposite side of road.	mod	mod	mod-low
6835591	36 Weld Street  Representative of 7 properties between 688 Queen Street and 26 Weld Street	<i>Cyan</i> 180m <i>Purple</i> 140m <i>White</i> 165m	House appear typically oriented NE. Alignments to SE on opposite side of Arapaepae Road, in open paddocks, on flyover ramps. Buffer planting between rear boundary fences and existing SH57.	mod-high	mod-high	mod-high
3858261	1024 Queen Street East	<i>Cyan</i> 105m <i>Purple</i> 145m	House appears oriented NE and NW to garden setting. Alignments to NW in open paddocks, on flyover ramps.	high	mod-high	mod-high



<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>Cyan</i>	<i>Purple</i>	<i>White</i>
		<i>White</i> 120m	Well-treed foreground setting will restrict views.			
4020563	1046 Queen Street East  Representative of 5 properties from 1046 Queen Street East to 26 Redwood Grove	<i>Cyan</i> 265m <i>Purple</i> 310m <i>White</i> 290m	House appears oriented N and NW toward alignment. Alignment options to NW and oblique views along alignment to N. Option on flyover above Queen Street East. Foreground platning. Substantial trees and stand of bush in intervening property (Prouse homestead side)	mod-low	mod-low	mod-low
3799095	32 Redwood Grove	<i>Cyan</i> 280m <i>Purple</i> 300m <i>White</i> 250m	House appears oriented NW. Alignments in open paddocks to W. Stand of bush screens views of flyover to NW and N. Foreground shelter belt planting	mod-low	mod-low	mod-low
3921178	38 Redwood Grove	<i>Cyan</i> 310m <i>Purple</i> 325m <i>White</i> 265m	House appears oriented NE and NW. Alignment options in open paddocks to W. Stand of bush screens views of flyover to NW and N. Foreground shelter belt planting	mod-low	mod-low	mod-low

## Zone H

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>Purple</i>	<i>Cyan</i>
2718433	1009 Queen Street	<i>Purple</i> <i>Cyan</i>	<i>Cyan</i> option earthworks encroach on house	removal	removal
2718434	1015 Queen Street	<i>Purple</i> <i>Cyan</i>	<i>Purple</i> option earthworks encroach on house	removal	removal
2718426	1033 Queen Street	<i>Purple</i> 200m <i>Cyan</i> 140m	House appears oriented NE and NW. Both options on fill embankment to NW and oblique view along at-grade alignment to NE. Foreground vegetation and shed, but outlook over open farmland.	mod-high	high
2716578	1051 Queen Street	<i>Purple</i> 400m <i>Cyan</i> 330m	House appears oriented NW. Both options to NW. Foreground trees will frame and restrict some views, but outlook over open cropland. Some trees and buildings in intervening area.	low	mod-low
2716572	1063 Queen Street	<i>Purple</i> 510m <i>Cyan</i> 440m	House appears oriented NW. Both options to NW on shallow cuts and fills across cropping farmland. Foreground trees and buildings. Trees and buildings in intervening area.	low	low
2716539	1071 Queen Street	<i>Purple</i> 405m <i>Cyan</i> 335m	House appears oriented NE. Both options to NW on shallow cuts and fills across cropping farmland. Foreground shelter belt hedging. Trees in intervening area	low	low
2703073	73 Wakefield Street	<i>Purple</i> 360m <i>Cyan</i> 285m	House appears oriented NE. Both options to NW and in oblique views along alignment to N. At grade across cropping farmland. Open outlook. Some trees in intervening area to N and SW.	mod-low	mod
2716500	73B? Wakefield Street (south of drive to 73)	<i>Purple</i> 460m <i>Cyan</i> 390m	House appears oriented NE. Both options to NW and potentially in oblique views to N. Foreground vegetation. Trees and shelter belt hedging in intervening area	low	low
2718413	685 Queen Street	<i>Purple</i> 115m <i>Cyan</i> 170m	Villas appear oriented to N and W internally to retirement village. Both options on embankment to SE on opposite side of	high	mod-high

ID	Address	Distance	Comment	Purple	Cyan
	Representative of 7 villas in Masonic Village adjacent to SH57		Arapaepae Road. Fencing and planting behind villas adjacent to boundary with existing highway.		
2718414	20 Arapaepae Road	Purple 65m Cyan 130m	House appears oriented NW. Options on embankment to SE behind house. Open outlook.	very high	high
2718417	24 Arapaepae Road	Purple 65m Cyan 130m	House appears oriented NW and SE. Options on embankment to SE immediately behind house. Some foreground trees. Earthworks of Purple option will encroach close to garden	very high	high
2718407	25 Arapaepae Road	Purple 140m Cyan 205m	House appears oriented NE. Options cross open farmland to SE on opposite side of SH57, with oblique views along alignment to NE. Foreground vegetation SE of house. Some trees in intervening area.	mod high	mod
2653671	29 Arapaepae Road	Purple 160m Cyan 230m	House appears oriented NE. Options to SE on opposite side of SH57, with potential oblique views along alignment to NE. Tall hedging SE of house at boundary with SH.	mod	mod-low
2718421	48 Arapaepae Road	Purple 150m Cyan 45m	House appears oriented NE and NW. Both options in outlook to NW. Some foreground trees. Highway would sever access from Arapaepae Road	high	very high
2703021	74 Arapaepae Road	Purple Cyan 105m	House appears oriented NE. Alignment options immediately to E and NE. Purple option would encroach across garden. Cyan option would be a little further away in open outlook.	removal	high
2653598	73 Arapaepae Road	Purple 290m Cyan 360m	House appears oriented NW. Alignment options to E on opposite side of Arapaepae Road. Foreground commercial building. Trees and buildings in intervening area.	mod-low	low
2350497	83a? Arapaepae Road	Purple 220m Cyan 290m	House appears oriented NE. Alignment options to E on opposite side of Arapaepae Road. Foreground hedging. Trees and buildings in intervening area on opposite side of road.	mod-low	mod-low
2350496	83 Arapaepae Road	Purple 260m Cyan 335m	House appears oriented to garden setting, including to E in direction of alignment options. Foreground trees enclosing garden. Trees and buildings in intervening area on opposite side of Arapaepae Road.	low	low
2703065	86 Arapaepae Road	Purple 140m Cyan 220m	House appears oriented NE and SE. Alignment options to SE and oblique views to NE. Some foreground trees and sheds, but otherwise open outlook.	high	mod-high
2703067	86 Arapaepae Road	Purple 125m Cyan 200m	Appears to be secondary dwelling in garden. A little closer to alignments but appears to be oriented to NE and outlook screened to greater extent by boundary hedging.	high	mod-high
2703087	88 Arapaepae Road	Purple 150m Cyan 220m	Appears oriented NE and NW. Alignment options to E and oblique views to NE. Foreground shed and trees. Otherwise open outlook to E. Trees and buildings intercept oblique views to NE.	mod-high	mod
2703061	96A Arapaepae Road	Purple 120m Cyan 190m	House appears oriented NE. Alignment options to E and oblique views to NE. Open outlook to E. Trees and buildings intercept oblique views to NE.	high	mod-high

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>Purple</i>	<i>Cyan</i>
2703063	96A (2) Arapaepae Road	<i>Purple</i> <i>Cyan</i> 50m	House appears oriented NE and SE. <i>Purple</i> option would necessitate removal of house. <i>Cyan</i> option very close to SE of house and oblique views along alignment to NE and SW.	removal	very high
2703075	96A (3) Arapaepae Road	<i>Purple</i> <i>Cyan</i> 115m	House appears oriented NW, but with outlook also to SE. <i>Purple</i> option earthworks would encroach across garden, probably necessitating removal of house. <i>Cyan</i> option close to SE of house and with oblique views along alignment to NE and SW.	removal	high
2703056	105 Arapaepae Road	<i>Purple</i> 280m <i>Cyan</i> 350m	House appears oriented to garden setting. Alignment options to SE, with oblique views along alignment to NE. Foreground trees and garden vegetation. Trees and buildings in intervening area on opposite side of Arapaepae Road.	low	low
2703052	108 Arapaepae Road	<i>Purple</i> 145m <i>Cyan</i> 225m	House appears oriented NE to garden setting. Alignment options to SE, with oblique views along alignment to NE. Sheds and trees in intervening area.	mod-high	mod
2703051	108 Arapaepae Road	<i>Purple</i> 175m <i>Cyan</i> 255m	Visitor accommodation (Annandale Manor). Alignment options to SE, with oblique views along alignment to NE. Sheds and trees in intervening area.	mod	mod
2703044	42 Waihou Road	<i>Purple</i> 185m <i>Cyan</i> 95m	House orientation unclear. Alignment options to NE. Foreground trees and sheds. Otherwise open outlook.	mod-high	high
2703047	40 Waihou Road	<i>Purple</i> 185m <i>Cyan</i> 100m	House appears oriented W. Alignment options to W across open cropping land. Depicted in shallow cut. Open outlook. Trees reduce some oblique views to NE and SW.	mod-high	high

### Zone K

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>Blue</i>	<i>Yellow</i>	<i>Cyan</i>
2703083	45 Waihou Road	<i>Blue</i> 60m <i>Yellow</i> 60m <i>Cyan</i> 30m	House appears oriented N. Options to NW of house, with oblique views along alignments to NE. Open outlook. <i>Cyan</i> option may necessitate removal of house	very high	very high	very high
2703035	50 Waihou Road	<i>Blue</i> 115m <i>Yellow</i> 120m <i>Cyan</i> 100m	House appears oriented NE and NW. Options to NW of house on opposite side of road, with oblique views along alignments to NE. Open outlook.	high	high	high
2703089	63 Waihou Road	<i>Blue</i> <i>Yellow</i> <i>Cyan</i>	House appears oriented N and E. Alignment options to NW with oblique views along alignments to NE. Earthworks for all options encroach and would necessitate removal of house.	removal	removal	removal
2703079	70 Waihou Road	<i>Blue</i> 150m <i>Yellow</i> 160m <i>Cyan</i> 145m	House appears oriented to garden setting. Options to NW on opposite side of road, with potential oblique views along alignments to NE and SW. Foreground trees surrounding garden. Hedging on opposite side of road and trees and buildings will reduce oblique views.	mod-low	mod-low	mod-low
2703031	75 Waihou Road	<i>Blue</i> 35m <i>Yellow</i> 40m	House appears oriented NW. Alignment options to NW with oblique views along alignments to NE. Earthworks for <i>Cyan</i>	very high	very high	very high

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>Blue</i>	<i>Yellow</i>	<i>Cyan</i>
		<i>Cyan 25m</i>	and <i>Yellow</i> options encroach into garden and would likely necessitate removal of house. Outlook to <i>Orange</i> and Red alignments immediately to NW. Alignment depicted in shallow cut. Trees would reduce oblique views to N and SW.			
2703032	82 Waihou Road	<i>Blue 95m Yellow 110m Cyan 90m</i>	House appears oriented to NW. Alignment options to NW on opposite side of road, with potential oblique views along alignments to NE and SW. Open outlook to nearest part of options. Trees, hedging and buildings will reduce oblique views (will compartmentalise and frame view).	high	high	high
2703028	85 Waihou Road	<i>Blue Yellow Cyan</i>	House appears oriented NE and NW. Alignment options to NW with oblique views along alignments to NE. <i>Cyan</i> and <i>Blue</i> options would necessitate removal of house. Earthworks for <i>Yellow</i> option encroach on house and likely to require removal also.	removal	removal	removal
2333797	92 Waihou Road	<i>Blue 160m Yellow 185m Cyan 150m</i>	House appears oriented to NW. Alignment options to NW on opposite side of road, with potential oblique views along alignments to NE and SW. Open outlook to nearest part of options. Trees, hedging and buildings will reduce oblique views (will compartmentalise and frame view).	high	mod-high	high
2716928	101 Waihou Road	<i>Blue Yellow 45m Cyan</i>	House appears oriented NE, NW and SE to garden setting. <i>Cyan</i> and <i>Blue</i> options would necessitate removal of house. <i>Yellow</i> option immediately to NW with oblique views along alignment to NE and SW. Options would also require removal of chicken farm buildings although <i>Cyan</i> option would have direct impact on fewer sheds.	removal	very high	removal
2595968	100 Waihou Road	<i>Blue 235m Yellow 265m Cyan 225m</i>	House appears oriented N and E. Outlook to W towards alignment options on opposite side of road. Trees, hedging and buildings will reduce oblique views (will compartmentalise and frame view).	mod-high	mod	mod-high
2333799	106 Waihou Road	<i>Blue 245m Yellow 285m Cyan 230m</i>	House appears oriented NE and NW. Outlook to W towards alignment options on opposite side of road. Some foreground trees. Trees, hedging and buildings will reduce oblique views	mod	mod-low	mod
2716893	118 Waihou Road	<i>Blue 200m Yellow 255m Cyan 180m</i>	House appears oriented N, E and W to garden setting. Alignment options to W on opposite side of road, and oblique views along alignment to NW. Some foreground trees. Trees, hedging and buildings will reduce oblique views	mod-high	mod	mod-high
2716910	120 Waihou Road	<i>Blue 30m Yellow 85m Cyan</i>	House appears oriented NE. <i>Cyan</i> option earthworks encroach on house site and will necessitate its removal. Other alignment options to W, and oblique views along alignment to NW. Trees, hedging and buildings will reduce oblique views to NW and SW.	very high	high	removal

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>Blue</i>	<i>Yellow</i>	<i>Cyan</i>
2716913	132 Waihou Road	<i>Blue</i> <i>Yellow</i> <i>Cyan</i> 35m	<i>Blue</i> and <i>Yellow</i> options will all necessitate removal of house. <i>Cyan</i> option will be immediately to E of house and alignment will curve across N outlook. Earthworks will encroach onto edge of the garden. Very high adverse visual effects but likely to necessitate removal.	removal	removal	very high
No id	151 Waihou Road (new house)	<i>Blue</i> 140m <i>Yellow</i> 90m <i>Cyan</i> 155m	House appears oriented NW. Alignment options to E of house, and curving across NE outlook. Shelter belt hedge to E of house, otherwise open outlook to NE	mod-high	high	mod-high
2583780	153 Waihou Road	<i>Blue</i> 265 <i>Yellow</i> 210 <i>Cyan</i> 280m	House orientation unclear. Enclosed by trees and sheds. Alignment options to E of house, and curving across NE outlook. Shelter belt hedge to E of house. Trees and buildings in intervening area.	mod-low	mod	mod-low
2583777	152 Waihou Road	<i>Blue</i> <i>Yellow</i> <i>Cyan</i>	House appears to have been removed			
2703020	139 Arapaepae Road	<i>Blue</i> 340m <i>Yellow</i> 340m <i>Cyan</i> 375m	House appears oriented NE. Alignment options to SE in open cropland on opposite side of highway. Some foreground trees.	low	low	low
2703023	156 Arapaepae Road	<i>Blue</i> 300m <i>Yellow</i> 295m <i>Cyan</i> 310m	House appears oriented NE and NW. Alignment options to SE. Open outlook to SE and oblique views along alignment to S. Trees and buildings will reduced oblique views to NE.	mod-low	mod-low	mod-low
2703025	170 Arapaepae Road	<i>Blue</i> 220m <i>Yellow</i> 210m <i>Cyan</i> 230m	House appears oriented NE. Alignment options to SE. Some foreground trees and trees and buildings in intervening area. Open outlook in oblique views along alignment to S. Trees and buildings will reduced oblique views to NE (i.e. will compartmentalise views).	mod	mod	mod
2703027	174 Arapaepae Road	<i>Blue</i> 190m <i>Yellow</i> 175m <i>Cyan</i> 195m	House appears oriented NE and NW. Alignment options to SE. Some foreground trees and sheds. Open outlook in oblique views along alignment to S. Trees and buildings will reduced oblique views to NE (i.e. will compartmentalise views).	mod	mod	mod
2583804	176 Arapaepae Road	<i>Blue</i> 285m <i>Yellow</i> 275m <i>Cyan</i> 295	House orientation unclear. Outlook to alignment options to E and NE. Trees and buildings will reduce oblique views to N and S.	mod-low	mod	mod-low
2583802	187 Arapaepae Road	<i>Blue</i> 355m <i>Yellow</i> 330m <i>Cyan</i> 360m	House appears oriented NE and NW. Alignment options to E on opposite side of road. Foreground trees. Buildings and trees in intervening area and in oblique views.	low	low	low
2583799	186 Arapaepae Road	<i>Blue</i> 295m <i>Yellow</i> 270m <i>Cyan</i> 305m	House appears oriented NE and NW. Alignment options to E 'behind' house. Foreground trees and buildings. Trees and buildings in intervening area and in oblique views.	mod-low	mod	mod-low
2583795	188 Arapaepae Road	<i>Blue</i> 255m <i>Yellow</i> 220m <i>Cyan</i> 265m	Houses appears oriented NE and NW. Alignment options to E 'behind' house. Foreground sheds and glasshouses.	mod	mod-low	low

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>Blue</i>	<i>Yellow</i>	<i>Cyan</i>
			Trees and buildings in intervening area and in oblique views.			
2583771	197 Arapaepae Road	<i>Blue</i> 350m <i>Yellow</i> 300m <i>Cyan</i> 365m	House appears oriented NE. Alignment options in open farmland on opposite side of Arapaepae Road and intersection with Waihou Road. Some foreground trees. Buildings and trees in intervening area.	mod-low	mod-low	low
2583775	212 Arapaepae Road	<i>Blue</i> 250m <i>Yellow</i> 180m <i>Cyan</i> 265	House appears oriented NW. Alignment options to NE in open farmland. Open outlook.	mod	mod-high	mod
2583767	231 Roslyn Road	<i>Blue</i> 370m <i>Yellow</i> 300m <i>Cyan</i> 385m	House appears oriented NE and NW to garden setting. Alignment options to NE in open farmland on opposite side of SH57. Foreground trees and trees along highway.	mod	mod-low	low
2583749	229 Arapaepae Road	<i>Blue</i> 275m <i>Yellow</i> 195m <i>Cyan</i> 305m	House appears oriented NE and SE. Alignment options in open farmland to SE, curving around across SH57 into NE outlook. Open outlook.	mod	mod-high	mod
2716849	254 Arapaepae Road	<i>Blue</i> <i>Yellow</i> <i>Cyan</i>	House appears oriented NE. <i>Blue</i> alignment options would necessitate removal of house. <i>Yellow</i> alignment option is immediately to W and <i>Cyan</i> option is immediately to E. Earthworks of both options encroach on garden. Likely to necessitate removal of the house also.	removal	very high	very high
2716929	259 Arapaepae Road	<i>Blue</i> 105m <i>Yellow</i> <i>Cyan</i> 135m	House appears oriented NE and SE. <i>Yellow</i> option would necessitate removal of house. Other alignment options curve from SE to NE across open outlook from house	high	removal	high
2716848	293 Arapaepae Road	<i>Blue</i> 60m <i>Yellow</i> 140m <i>Cyan</i> 30m	House appears oriented NE and NW. Alignment options are to SW with oblique views along alignments curving away to NW and S. Open outlook.	very high	high	very high
2761585	317 Arapaepae Road	<i>Blue</i> 300m <i>Yellow</i> 375m <i>Cyan</i> 270m	House appears oriented NE and NW. Alignment options are to SW with oblique views along alignments curving away to NW and S. Open outlook.	mod-low	low	mod-low
2761636	315 Arapaepae Road	<i>Blue</i> 220m <i>Yellow</i> 290m <i>Cyan</i> 190m	House appears oriented NW. Alignment options are to SW with oblique views along alignments curving away to NW and S. Open outlook.	mod-high	mod	mod-high
2716852	9 McDonald Road	<i>Blue</i> 35m <i>Yellow</i> 120m <i>Cyan</i>	House appears oriented to garden setting surrounded by trees. Assume oriented NE and NW. <i>Cyan</i> option earthworks would necessitate removal of house. Other options to W with oblique views along alignments curving away to N and S.	very high	high	removal
2716854	15 McDonald Road	<i>Blue</i> 80m <i>Yellow</i> 160m <i>Cyan</i> 50m	House appears oriented N and W. Alignment options to W with oblique views along alignments curving away to N and S. Foreground hedging, trees and neighbouring building.	very high	high	very high
2716917	24 McDonald Road	<i>Blue</i> 25m <i>Yellow</i> 120m <i>Cyan</i>	House appears oriented NW and NE to garden setting. <i>Cyan</i> option earthworks would necessitate removal of house. Other alignment options in outlook to	very high	high	removal

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>Blue</i>	<i>Yellow</i>	<i>Cyan</i>
			NW with oblique views along alignments curving away to N and S.			
2716858	30 McDonald Road	<i>Blue</i> 130m <i>Yellow</i> 205m <i>Cyan</i> 105m	House appears oriented NE to garden setting surrounded by high hedging. Alignment options to W with oblique views along alignments curving away to NW and SW. Foreground shelter-belt hedging.	mod-high	mod	mod-high
2716862	32 McDonald Road	<i>Blue</i> 220m <i>Yellow</i> 300m <i>Cyan</i> 200m	House appears oriented NE to garden setting. Alignment options to W with oblique views along alignments curving away to NW and SW. Foreground trees. Shelterbelt hedging in intervening area.	mod	mod-low	mod
2716863	34? McDonald Road	<i>Blue</i> 330m <i>Yellow</i> 395m <i>Cyan</i> 305m	House appears oriented NW and NE. Alignment options to W. Foreground stand of trees. Shelterbelt hedging, trees and buildings in intervening area.	low	low	low
2716872	? McDonald Road	<i>Blue</i> 320m <i>Yellow</i> 410m <i>Cyan</i> 310m	House appears oriented NW and NE to garden setting surrounded by trees on bank of Koputaroa Stream. Alignment options to W. Foreground heavily trees. Shelterbelt hedging in intervening area on opposite side of McDonald Road	low	low	low
271639	168 Fairfield Road	<i>Blue</i> 375m <i>Yellow</i> 360m <i>Cyan</i> 405m	House orientation unclear. Surrounded by trees and sheds. Alignment options curve around from E to N in open farmland. Foreground trees, sheds and glasshouses.	low	low	low
2716343	168A Fairfield Road	<i>Blue</i> 330m <i>Yellow</i> 315m <i>Cyan</i> 365m	House orientation unclear. Surrounded by trees and sheds. Alignment options curve around from E to N in open farmland. Foreground trees, sheds and glasshouses.	mod-low	mod-low	mod-low
2716317	163 Fairfield Road	<i>Blue</i> 130m <i>Yellow</i> 130m <i>Cyan</i> 165m	House appears oriented NE and NE. Surrounded by trees but alignment options in farmland outlook to N and NE.	high	high	mod-high
2716347	165 Fairfield Road	<i>Blue</i> 360m <i>Yellow</i> 350m <i>Cyan</i> 390m	House appears oriented N and W. Alignment options curve around from E to N in open farmland. Foreground trees. Shelter belt hedges, trees, buildings, glasshouses in intervening area.	low	low	low
2716325	167 Fairfield Road	<i>Blue</i> 255m <i>Yellow</i> 245m <i>Cyan</i> 280m	House appears oriented N. Alignment options curve around from E to N in open farmland. Shelter belt hedges, trees, buildings, in intervening area.	mod-low	mod-low	mod-low
2716321	174 Fairfield Road	<i>Blue</i> 140m <i>Yellow</i> 120m <i>Cyan</i> 170m	House appears oriented NE, SE and NW. Alignment options curve around from E to N in open farmland. Open outlook to E and NE – shelterbelt will limit views to NW.	high	high	high
2716330	Fairfield Road	<i>Blue</i> 70m <i>Yellow</i> <i>Cyan</i> 100m	House appears oriented N (new house). <i>Yellow</i> alignment option earthworks would necessitate removal of house. Other options curve around from E to N in open farmland. Open outlook.	very high	removal	high

## Zone L

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>Black</i>	<i>Green</i>	<i>Orange</i>	<i>Purple</i>
2716315	157 Fairfield Road	<i>Black</i> 270m <i>Green</i> 200m <i>Orange</i> 115m <i>Purple</i> 290m	House appears oriented NE to garden setting. Alignment options in outlook to NE, with oblique views along alignments to E and W. Foreground garden trees and shelterbelt hedging.	mod-low	mod	high	mod-low
2716298	161 Fairfield Road	<i>Black</i> <i>Green</i> 30m <i>Orange</i> 120m <i>Purple</i>	House appears oriented NE and NW to open rural outlook. <i>Black</i> and <i>Purple</i> options would necessitate removal of house. <i>Green</i> and <i>Orange</i> options behind house to SW, with oblique views along alignment to NW ( <i>Green</i> ) and W ( <i>Orange</i> ). Trees and shelterbelt hedging SW of house in views to <i>Orange</i> . Highway would sever access from Fairfield Road	removal	very high	mod high	removal
2333293	82A? Sorenson Road	<i>Black</i> 60m <i>Green</i> <i>Orange</i> 165m <i>Purple</i> 120m	House appears oriented N and W. <i>Green</i> option would necessitate removal of house. <i>Purple</i> option is aligned through stand of trees to NE with oblique views along alignment to NW and SE. <i>Black</i> and <i>Orange</i> options to SW curving across outlook further to the NW. Some foreground planting.	very high	removal	mod high	high
2333294	82 Sorenson Road	<i>Black</i> 190m <i>Green</i> <i>Orange</i> 215m <i>Purple</i>	House appears oriented N. <i>Green</i> and <i>Purple</i> options would necessitate removal of house. <i>Black</i> and <i>Orange</i> options to S of house curving across more distant outlook to W. Some trees in intervening area.	mod-high	removal	mod-high	removal
2333292	72 Sorenson Road	<i>Black</i> 50m <i>Green</i> 110m <i>Orange</i> 60m <i>Purple</i> 180m	House appears oriented N, W and S. <i>Green</i> and <i>Purple</i> options would pass through stand of trees to N, with oblique views along alignment to NW and SE. <i>Black</i> and <i>Orange</i> options pass behind house and curve through outlook to W and NW.	very high	very high	very high	high
2594560	66 Sorenson Road	<i>Black</i> <i>Green</i> 160m <i>Orange</i> <i>Purple</i> 220m	House appears oriented NE, NW and SE. <i>Black</i> and <i>Orange</i> options would be on high embankment behind house and earthworks would necessitate removal. <i>Green</i> and <i>Purple</i> options cross outlook to NE with oblique views along alignment to NW and SE.	removal	high	removal	mod high
2333298	68 Sorenson Road	<i>Black</i> 235m <i>Green</i> <i>Orange</i> 180m <i>Purple</i>	House appears oriented NE and SW. <i>Green</i> and <i>Purple</i> options would necessitate removal. <i>Black</i> and <i>Orange</i> options on embankment behind house to SW. Occasional tree in intervening area.	mod	removal	mod high	removal
2333299	64 Sorenson Road	<i>Black</i> 230m <i>Green</i> <i>Orange</i> 155m <i>Purple</i>	House appears oriented to bush outlook to NE and NW. <i>Green</i> and <i>Purple</i> options would necessitate removal. <i>Black</i> and <i>Orange</i> options on embankment behind house to SW.	mod	removal	high	removal
2333301	56 Sorenson Road	<i>Black</i> 300m <i>Green</i> <i>Orange</i> 225m <i>Purple</i>	House appears oriented to garden setting to N, E and W. Surrounded by trees. <i>Green</i> and <i>Purple</i> options would necessitate removal. <i>Black</i> and <i>Orange</i> options on embankment behind house to SW and W.	mod low	removal	mod high	removal



<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>Black</i>	<i>Green</i>	<i>Orange</i>	<i>Purple</i>
2333303	60 Sorenson Road	<i>Black</i> 155m <i>Green</i> <i>Orange</i> 65m <i>Purple</i>	House appears oriented to NW. <i>Green</i> and <i>Purple</i> options would necessitate removal. <i>Black</i> and <i>Orange</i> options on embankment behind house to SW and W. Earthworks for <i>Orange</i> option encroach to house so likely to necessitate removal. <i>Black</i> option further away with high point of embankment 200m S, nearest sections of alignment on opposite side of NIMT.	mod high	removal	very high	removal
2333315	47 Sorenson Road	<i>Black</i> 430m <i>Green</i> 220m <i>Orange</i> 400m <i>Purple</i> 150m	Houses appears oriented NW. <i>Green</i> and <i>Purple</i> options on embankment to SW and oblique views along alignment to NW and SE. <i>Black</i> and <i>Orange</i> options further to SW with sections to NW on opposite side of NIMT. Foreground trees. Trees and buildings in intervening area.	low	high	low	high
2333308	46 Sorenson Road	<i>Black</i> 390m <i>Green</i> 170m <i>Orange</i> 305m <i>Purple</i> 110m	House appears oriented NW, NE and SE. <i>Green</i> and <i>Purple</i> options on embankment to SW and oblique views along alignment to W and SE. <i>Black</i> and <i>Orange</i> options further to SW with sections to W on opposite side of NIMT. Foreground trees. Trees in intervening area.	mod low	high	mod	high
2594542	44 Sorenson Road	<i>Black</i> 370m <i>Green</i> 165m <i>Orange</i> 280m <i>Purple</i> 115m	House appears oriented N. <i>Green</i> and <i>Purple</i> options on embankment to SW and oblique views along alignment to W and SE. <i>Black</i> and <i>Orange</i> options further to SW with sections to W on opposite side of NIMT. Foreground trees. Trees in intervening area.	mod low	high	mod	high
2594544	40 Sorenson Road	<i>Black</i> 340m <i>Green</i> 200m <i>Orange</i> 280m <i>Purple</i> 155m	House appears oriented NE and NW. <i>Green</i> and <i>Purple</i> options on embankment to SW and oblique views along alignment to W and SE. <i>Black</i> and <i>Orange</i> options further to SW. Nearest sections are on opposite side of NIMT. Foreground trees. Trees in intervening area.	low	high	mod	high
2333275	42 Sorenson Road	<i>Black</i> 275m <i>Green</i> 165m <i>Orange</i> 225m <i>Purple</i> 125m	House appears oriented N. <i>Green</i> and <i>Purple</i> options on embankment to SW and oblique views along alignment to W and SE. <i>Black</i> and <i>Orange</i> options further to SW. Nearest sections are on opposite side of NIMT, particularly <i>Black</i> option. Substantial foreground trees. Trees in intervening area.	low	high	mod	high
2333323	20 Sorenson Road	<i>Black</i> 600m <i>Green</i> 430m <i>Orange</i> 540m <i>Purple</i> 380m	Houses appears oriented NE and NW. <i>Green</i> and <i>Purple</i> options on embankment to SW and oblique views along alignment to W and SE. <i>Black</i> and <i>Orange</i> options further to SW. Nearest sections are on opposite side of NIMT, particularly <i>Black</i> option. Trees, buildings and NIMT in intervening area.	low	low	low	low
2594522	46 Sorenson Road	<i>Black</i> 250m <i>Green</i> 225m	House appears oriented N. Alignment options on embankments	mod low	mod low	mod low	mod low

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>Black</i>	<i>Green</i>	<i>Orange</i>	<i>Purple</i>
		<i>Orange</i> 230m <i>Purple</i> 200m	over NIMT to S. Nearest sections to SW on opposite side of NIMT. Foreground trees. Trees, buildings, NIMT in intervening landscape to S.				
2594520	32 Heatherlea East Road	<i>Black</i> 160m <i>Green</i> 170m <i>Orange</i> 155m <i>Purple</i> 150m	House appears oriented N. Alignment options on embankments to S and SW. Outlook across cropping paddocks. Foreground sheds, shelterbelt trees to SW.	mod	mod high	mod	mod high
2637603	25 Heatherlea East Road	<i>Black</i> 265m <i>Green</i> 265m <i>Orange</i> 265m <i>Purple</i> 265m	House appears oriented NE and NW in parkland setting. Alignment options to S and SW on opposite side of road. House surrounded by trees. Trees and buildings in intervening area.	low	low	low	low
2594514	21 Heatherlea East Road	<i>Black</i> 125m <i>Green</i> 125m <i>Orange</i> 125m <i>Purple</i> 125m	House appears oriented N. Alignment options in cropping land to S and SW on opposite side of road. Some foreground trees. Shelterbelt on opposite side of road will intercept oblique views to SE toward NIMT overpass. All options virtually the same.	mod-high	mod-high	mod-high	mod-high
2594515	16 Heatherlea East Road	<i>Black</i> <i>Green</i> <i>Orange</i> <i>Purple</i>	House appears oriented N. All alignment options immediately SW of house. Earthworks for 3 of the 4 options would necessitate removal. Remaining <i>Green</i> option earthworks encroach close to house and would require removal of shed.	removal	removal	removal	removal
2333360	6 Heatherlea East Road	<i>Black</i> <i>Green</i> <i>Orange</i> <i>Purple</i>	All options coincide at this location and would necessitate removal.	removal	removal	removal	removal
			No assessment made where all options have the same alignment west of intersection between Heatherlea East Road and SH1				
2333277	178 The Avenue	<i>Black</i> 130m <i>Green</i> 150m <i>Orange</i> 145m <i>Purple</i> 170m	House appears oriented N. All options cross open cropping land to NE with oblique views to NW and S. All options will be on embankment for NIMT overpass. <i>Black</i> and <i>Orange</i> options curve around the house to the E to a greater extent than the <i>Green</i> and <i>Purple</i> options. Open outlook with occasional tree.	high	high	high	high
2333281	178 The Avenue	<i>Black</i> 110m <i>Green</i> 165m <i>Orange</i> 145m <i>Purple</i> 190m	Accommodation units appear oriented NW. All options cross open cropping land to NE with oblique views to NW and S. All options will be on embankment for NIMT overpass. <i>Black</i> and <i>Orange</i> options curve around the house to the E to a greater extent than the <i>Green</i> and <i>Purple</i> options. Open outlook with occasional tree.	high	high	high	high
2333363	185 The Avenue	<i>Black</i> 260m <i>Green</i> 245m <i>Orange</i> 260m <i>Purple</i> 260m	House orientation unclear. All options cross open cropping land to NE. All options will be on embankment for NIMT overpass. <i>Black</i> and <i>Orange</i> options curve around to the E to a greater extent than the <i>Green</i> and <i>Purple</i> options.	mod	mod	mod	mod

<i>ID</i>	<i>Address</i>	<i>Distance</i>	<i>Comment</i>	<i>Black</i>	<i>Green</i>	<i>Orange</i>	<i>Purple</i>
			Some trees and buildings in intervening area.				
2333370	175 The Avenue	<i>Black</i> 235m <i>Green</i> 255m <i>Orange</i> 260m <i>Purple</i> 275m	House appears oriented NW. Alignment options will be on opposite side of road to NE and E, on embankment for NIMT overpass. <i>Black</i> and <i>Orange</i> options curve around to the E to a greater extent than the <i>Green</i> and <i>Purple</i> options. Foreground trees. Buildings and trees in intervening area.	mod	mod	mod	mod
233289	158 The Avenue	<i>Black</i> 100m <i>Green</i> 210m <i>Orange</i> 165m <i>Purple</i> 240m	House appears oriented E. All options will be on embankment for NIMT overpass. Open outlook with occasional trees.	high	mod high	high	mod high
2594578	157 The Avenue	<i>Black</i> 250m <i>Green</i> 365m <i>Orange</i> 320m <i>Purple</i> 400m	House appears oriented NE and NW. Alignment options will be on opposite side of road to NE and E, on embankment for NIMT overpass. <i>Black</i> and <i>Orange</i> options curve around to the E to a greater extent than the <i>Green</i> and <i>Purple</i> options. Foreground trees. Buildings and trees in intervening area.	mod	mod low	mod low	mod low
2333413	3 Avenue Road North	<i>Black</i> 300m <i>Green</i> 460m <i>Orange</i> 390m <i>Purple</i> 490m	House appears oriented NE. Alignment options will be on opposite side of road to NE and E, on embankment for NIMT overpass. <i>Black</i> and <i>Orange</i> options curve around to the E to a greater extent than the <i>Green</i> and <i>Purple</i> options. Foreground trees. Buildings and trees in intervening area.	low	low	low	low
2594550	140 The Avenue	<i>Black</i> 210m <i>Green</i> 385m <i>Orange</i> 300m <i>Purple</i> 420m	House orientation unclear. Alignment options will be on embankment for NIMT overpass to NE. Foreground shelter belts.	mod high	low	mod	low
2594516	118 The Avenue	<i>Black</i> 265m <i>Green</i> 480m <i>Orange</i> 350m <i>Purple</i> 530m	House appears oriented NW. Alignment options will be on embankment for NIMT overpass to NE. Open outlook across cropping paddocks.	mod	low	mod low	low
2652987	116 The Avenue	<i>Black</i> 370m <i>Green</i> 600m <i>Orange</i> 440m <i>Purple</i> 640m	House appears oriented NW. Alignment options will be on embankment for NIMT overpass to NE. Much of highway will be on opposite side of NIMT. Foreground shelter belts and sheds. Trees along NIMT in intervening area.	mod low	low	low	low