



Proposed Waverley Wind Farm

Landscape and Visual Assessment

Prepared for Chancery Green on behalf of Trustpower Limited

Client Trustpower Limited
 Project Proposed Waverley Wind Farm
 Document Landscape and Visual Assessment
 Prepared for Chancery Green on behalf of Trustpower Limited
 Status Final C
 Date 11 March 2016
 Author Gavin Lister
 Address Isthmus
 PO Box 90 366
 Auckland 1140
 64 9 309 9442
 64 9 309 7281 DDI
 64 27 435 7844
gavin.lister@isthmus.co.nz

No.	Date	Details	Author	QA
1	07.09.12	Draft 1	Gavin Lister	Matthew Jones
2	22.09.12	Draft 2	Gavin Lister	GL
3	06.10.12	Draft 3	Gavin Lister	GL
4	12.10.12	Draft 4	Gavin Lister	Matthew Jones
5	26.10.12	Draft 5	Gavin Lister	Matthew Jones
6	20.12.12	Draft 6	Gavin Lister	Matthew Jones Alan England
7	05.05.13	Draft 7	Gavin Lister	GL
8	28.10.15	Draft 8	Gavin Lister	GL
9	19.11.15	Draft 9	Gavin Lister	GL
10	23.11.15	Draft 10	Gavin Lister	GL
11	21.01.16	Draft 11	Gavin Lister	GL
12	05.02.16	Final	Gavin Lister	GL
13	11.02.16	Final B	Gavin Lister	GL
14	11.03.16	Final C	Gavin Lister	GL

CONTENTS

EXECUTIVE SUMMARY	5
Potential Visual, Landscape and Natural Character Effects.....	5
Assessments Undertaken	5
Results of the Assessments	6
<i>Effects on the biophysical landscape</i>	<i>6</i>
<i>Effects on landscape and visual amenity</i>	<i>6</i>
<i>Natural character effects</i>	<i>6</i>
<i>Outstanding natural features (ONF) and outstanding natural landscapes (ONL)</i>	<i>7</i>
<i>Effects of the transmission infrastructure.....</i>	<i>7</i>
Recommended Mitigation.....	7
<i>Measures incorporated in design.....</i>	<i>7</i>
<i>Further recommended mitigation.....</i>	<i>7</i>
INTRODUCTION	9
DESCRIPTION OF EXISTING ENVIRONMENT	9
Physical Features.....	9
<i>Geomorphology</i>	<i>9</i>
<i>Ecology.....</i>	<i>10</i>
<i>Human modification (sand mining, vegetation)</i>	<i>10</i>
<i>Settlement and land-use pattern</i>	<i>10</i>
Associative Aspects	11
<i>Tangata whenua landscape associations</i>	<i>11</i>
<i>Historical associations.....</i>	<i>11</i>
<i>Recreational use of the landscape</i>	<i>12</i>
Perceptual (Visual) Aspects	12
<i>Aesthetics.....</i>	<i>12</i>
<i>Views and visibility.....</i>	<i>12</i>
Coastal Environment	13
<i>Extent of the coastal environment.....</i>	<i>13</i>
<i>Natural Character</i>	<i>13</i>
<i>Degree of natural character of coastal environment.....</i>	<i>14</i>
Outstanding Natural Features and Landscapes.....	16
<i>Assessment of potential ONF/ONLs</i>	<i>17</i>
<i>Proposed District Plan</i>	<i>18</i>
<i>The 'Raised Marine Terraces of South Taranaki'</i>	<i>18</i>
DESCRIPTION OF THE PROPOSAL.....	19
<i>Main elements relevant to landscape assessment</i>	<i>19</i>
<i>Design process</i>	<i>19</i>
STATUTORY PROVISIONS AND NON-STATUTORY MATTERS	20
Resource Management Act 1991.....	20
New Zealand Coastal Policy Statement ('NZCPS')	20
National Policy Statement on Renewable Electricity Generation (2011) (NPS REG).....	21
Regional Policy Statement ('RPS').....	21
Operative South Taranaki District Plan.....	22
Proposed South Taranaki District Plan.....	22

LANDSCAPE, VISUAL AND NATURAL CHARACTER EFFECTS OF THE WIND FARM.....	23
Potential Effects	23
Effects on Biophysical Landscape	23
Effects on Landscape and Visual Amenity.....	24
<i>General perceptions of wind farms</i>	<i>24</i>
<i>Relationship to landscape character.....</i>	<i>24</i>
<i>Scale relationship of turbines and landscape.....</i>	<i>24</i>
<i>Effects on public views</i>	<i>25</i>
<i>Visual effects from private properties.....</i>	<i>27</i>
Construction Effects	31
Effects on the Natural Character of the Coastal Environment.....	31
Effects on Outstanding Natural Features and Landscapes	33
TRANSMISSION INFRASTRUCTURE	34
Description.....	34
Relevant Provisions	34
Effects of the Transmission Infrastructure.....	34
<i>Effects on the biophysical landscape</i>	<i>34</i>
<i>Visual amenity effects.....</i>	<i>34</i>
<i>Effects on natural character.....</i>	<i>36</i>
<i>Visual ‘baseline’</i>	<i>36</i>
Summary of Effects of the Proposed Transmission Line.....	36
MEASURES TO AVOID, REMEDY AND MITIGATE EFFECTS	37
<i>Measures incorporated in the design.....</i>	<i>37</i>
<i>Other recommended mitigation measures.....</i>	<i>37</i>
CONCLUSIONS	38
APPENDIX A: FIGURES AND PHOTOSIMULATIONS.....	39
APPENDIX B: COMMENTARY ON PHOTOSIMULATIONS.....	40
APPENDIX C: HOUSE INVENTORY -VISUAL EFFECTS OF WIND FARM.....	55
APPENDIX D: HOUSE INVENTORY - VISUAL EFFECTS OF TRANSMISSION LINE.....	67

EXECUTIVE SUMMARY

Potential Visual, Landscape and Natural Character Effects

- 1 Potential visual, landscape and natural character effects of the proposed Waverley Wind Farm include the following:
 - i) Effects on the biophysical landscape;
 - ii) Effects on landscape amenity including:
 - landscape character;
 - public views; and
 - outlook from private property.
 - iii) Temporary construction effects;
 - iv) Effects on the natural character of the coastal environment;
 - v) Effects on outstanding natural features or landscapes; and
 - vi) The associated effects (natural character, landscape and visual amenity) of the switching station and transmission line.

Assessments Undertaken

- 2 Isthmus was commissioned initially to undertake a 'Baseline Landscape Assessment' and provide input to project design. The 'Baseline Landscape Assessment' described the existing landscape values, scoped potential landscape effects, and made recommendations for the project design. Once constraints were mapped for landscape and other disciplines, the wind farm 'project envelope' was developed to avoid such constraints, which were collectively mapped as an 'environmental buffer zone' ('EBZ').
- 3 This subsequent 'Landscape and Visual Assessment' addresses the following matters:
 - i) A description and appraisal of the existing landscape including:
 - Its physical, perceptual and associative factors;
 - The extent of the coastal environment and its natural character; and
 - Identification of any outstanding natural features and landscapes in the vicinity.
 - ii) Assessment of effects of the wind farm on the biophysical landscape such as effects on landforms, water-bodies and natural vegetation;
 - iii) An assessment of the effects of the wind farm on landscape amenity taking into account the following:
 - General perceptions of wind farms;
 - The relationship of the wind farm to the landscape in terms of character and scale;
 - An analysis of visibility and audience, and assessments from representative public views including photosimulations; and
 - An assessment of effects from private property.
 - iv) An assessment of temporary construction effects;
 - v) An assessment of the effects of the wind farm on natural character of the coastal environment;
 - vi) An assessment of the effects on any outstanding natural features and landscapes, including the cliffs at Waverley Beach; and
 - vii) An assessment of the effects of the transmission infrastructure including biophysical effects, visual effects and effects on natural character.

Results of the Assessments

Effects on the biophysical landscape

- 4 Effects on the biophysical landscape will be minimal compared to other wind farms because of the flat topography, the degree of existing modification, and the lack of natural vegetation. Effects on the features within the site (the dunes, coastal vegetation and wetlands) will be avoided because such areas have been included in the 'Environmental Buffer Zone' (EBZ) to be avoided by the project. The Waipipi Stream, which flows across the site, is also included in the EBZ other than provision for three culverts to enable access roads to bridge the stream. The stream is to be fenced to enable restoration of natural vegetation along the stream banks which will result in a positive effect on the biophysical landscape.
- 5 Similarly, temporary landscape and visual effects during construction will be minimal (in particular when compared to other wind farms) because of the flat topography, the modified nature of the ground and pasture land cover, and the low visibility of the ground area within the site.

Effects on landscape and visual amenity

- 6 The 'project site' and surrounding area is an appropriate location for a wind farm in landscape character terms: It is a 'working' productive rural landscape. The flat topography means the landscape has an expansive horizontal scale that can accommodate large structures such as wind turbines. The flat terrain also increases the potential for vegetation (such as shelter belts) to screen the wind farm from different places. Most public views will be at least 2-3km away, including views from Pātea, Waverley, Waipipi Beach, Waverley Beach and typical views from State Highway 3 (SH3). From such distances the wind farm will be a reasonably prominent feature, but it will not be dominant.
- 7 The wind farm will be prominent from a number of houses up to about 3km from the wind farm.¹ The nearest dwelling is approximately 1.0km from the wind farm envelope boundary. It is not possible to avoid all visual effects with any wind farm because wind turbines are necessarily large structures that require open landscapes. However, the settlement density is relatively low in proximity to the site. As discussed above, the flat terrain also increases the extent to which intervening shelter belts and other vegetation will screen the wind farm from particular dwellings, or will provide perspective depth by partially screening the wind farm.

Natural character effects

- 8 There will be some unavoidable effects on perceptions of natural character because the wind farm will be a prominent backdrop to the coast – as is the case with any wind farm utilising the coastal wind resource. However, such potential effects will be mitigated (reduced) because the turbines will be located inland of the coastal dunes in an area modified by previous sand mining where there is a significantly diminished coastal influence and natural character. Effects on natural features and processes will therefore be avoided. In terms of perceptual aspects the wind turbines do not domesticate the landscape but rather respond to the wind – a natural coastal process. Taken as whole, it is considered there will not be significant adverse effects on coastal natural character. The effects are also reversible.
- 9 A strip of dunes along the seaward part of the site is mapped in the notified version of the Proposed South Taranaki District Plan as possessing 'outstanding coastal natural character'. The classification is based on a 'Draft South Taranaki Landscape Assessment, 2014, Boffa Miskell. Such a classification is considered incorrect because of (i) the lack of an intact dune field, (ii) the extent of modification of dune vegetation (iii) the low natural character of the formerly mined backdrop area, and (iv) the truncated nature of the natural sequence from beach to back-of-dune area.

¹ All measurements to the 'wind farm' are to the project envelope. i.e. the measurement is to the closest point at which a wind turbine might be erected.

Outstanding natural features (ONF) and outstanding natural landscapes (ONL)

- 10 The nearest feature that might reasonably be considered an ONL or ONF is the cliffs at Waverley Beach, which is sufficiently separate and far enough away from the site (>4.5km) that the wind farm will not affect the values of that ONF.

Effects of the transmission infrastructure

- 11 Any effects of the transmission infrastructure on the biophysical landscape will be relatively low because of the subdued topography, modified pasture land cover, and ready construction access.
- 12 The transmission line will have some unavoidable visual effects by adding further infrastructure (or clutter) to the rural landscape. However, such effects will be minimised by the use of relatively unobtrusive poles (in most cases single ‘monopoles’), and an alignment that mostly follows minor local roads and the railway corridor. The main adverse visual effects will be from properties on the perimeter of Waverley – Swinburne and Fookes Streets – where the line will typically be a prominent feature on the opposite side of the street from some 37 properties. The main mitigating factor is the use of monopoles and that they will be seen in the context of existing overhead services in the road reserve.
- 13 While the switching yard and parts of the transmission line might be technically considered to fall within the coastal environment, any effects on natural character of the coastal environment will be negligible because of the distance inland (>1.3km) and location in a modified area with diminished coastal influence and natural character.

Recommended Mitigation

Measures incorporated in design

- 14 Measures that are already incorporated within the wind farm design to avoid or minimise potential adverse landscape effects include the exclusion of the wind farm from the EBZ (coastal dunes, the area adjacent to the estuary of the Whenuakura River, the Waipipi Stream and other minor features). The Waipipi Stream is also to be fenced to promote natural regeneration.
- 15 Likewise, such measures incorporated into the transmission line design include the location of the switchyard and the predominant use of monopoles.

Further recommended mitigation

- 16 Further recommended ‘best practice’ measures include requiring turbines of consistent design, dimension and colour; rehabilitating earthworks; contouring surplus spoil to resemble natural dune landforms; removing and rehabilitating construction facilities; and reducing road widths following construction.
- 17 Trustpower is also offering planting to be carried out on the properties of the 14 dwellings identified as having ‘high’ or greater visual effects. While it is not possible to avoid all visual effects with any wind farm, a practical measure is to offer such off-site mitigation subject to the wishes and agreement of affected property owners. Such mitigation would typically comprise shelter or amenity trees planted ‘behind’ a house in the direction of the wind farm. The offer would be given effect by a condition of consent.

Page left purposely blank to suit double-side format

INTRODUCTION

- 18 The proposed Waverley Wind Farm site is coastal farmland approximately 5km south-west of Waverley, South Taranaki District, on the site of the former Waipipi iron-sand mining operation (See Appendix A, Figure 1, Location Map).

DESCRIPTION OF EXISTING ENVIRONMENT

Physical Features

Geomorphology

- 19 The landscape in this part of South Taranaki District comprises former marine terraces that extend up to 20km inland and up to approximately 200m above sea level. (See Appendix A, Figure 2, South Taranaki Marine Terraces Plan). The terraces are an expression of tectonic uplift and fluctuating sea levels. From the air they are characterised as manicured flat to rolling pasture, dissected by deeply incised streams and rivers. The site is on the lowest and most recent terrace only a few metres above sea level.
- 20 The site was heavily modified by the iron-sand mining. The former dunes were removed, and the ground level lowered and reformed as a flat plain. The straight-edged 'step' near the inland edge of the site is apparently the result of the sand mining rather than a natural feature.
- 21 The coastline consists of a black-sand beach and a band of sand dunes vegetated in a mix of exotic and native species (such as marram grass, pingao, spinifex) with herbs and reeds (such as oioi) in the inter-dune hollows. There are substantial 'blow outs' where the sand is un-vegetated. An outcropping reef (Pids Point) adjacent to the site controls the shape of this section of the coastline. There are banks cut by waves into the underlying sedimentary rock at places along the coastline, mainly opposite the north-west and south-east ends of the site. The highest dunes in the site are located inland of Pids Point. An area of the dunes east of Pids Point is identified as a 'Significant Natural Area' (SNA/22) in the South Taranaki District Plan and is listed in the Taranaki Regional Policy Statement (RPS) as 'Waipipi Dunelands – a 'coastal area of regional or local significance'.
- 22 The other main natural feature in the vicinity is the Whenuakura River which runs adjacent to the north-west boundary of the site. The headwaters of the Whenuakura River are in the rugged bush-clad hill country of inland Taranaki, and its middle stretches are incised within the raised marine terraces of the dairy farming country. Its lower reaches (nearest the site) the river meander across a flood plain and enter the sea by way of a small estuary behind a shingle spit. The Whenuakura Estuary is listed as a 'coastal area of regional or local significance' in the RPS, and an 'area of outstanding coastal value' in the Taranaki Regional Coastal Plan described as having the following values:
- "Relatively unmodified estuary; Habitat of threatened Caspian tern and rare variable oyster catcher; Part of route for migratory birds; Whitebait spawning on northern bank"*
- 23 The coastline rises to cliffs in both directions further along the coast from the site. For instance, the Waverley Beach settlement approximately 5km south-east of the site is perched above picturesque sandstone cliffs approximately 10m-15m high. Similarly, the Pātea township, approximately 3km north-west of the site, is on a terrace bounded by cliffs of a similar height.
- 24 There are ancient sand dunes (distinct from the active coastal dunes) further inland. They tend to become less pronounced the further inland one goes, but there are some areas (such

as immediately south of Waverley) where there is a hummocky landscape of former dunes interspersed with small lakes² and wetlands.

- 25 The prevailing winds are from the north-west and south-east, with the former more dominant. To put it another way, the prevailing winds tend to be sub-parallel to the coast, rather than directly on-shore.

Ecology

- 26 Terrestrial and freshwater ecology is addressed in the separate report by Sanders Consulting (2015)³ which indicates that indigenous vegetation and ecological values are concentrated mainly in the band of unmodified dunes along the coast, around the mouth of the Whenuakura River, and in the lower reaches of the Waipipi Stream.

Human modification (sand mining, vegetation)

- 27 The wind farm site is the location of the former Waipipi iron-sand mining operation, which was carried out between 1971 and 1986. During this time approximately 16 million tons of iron sand concentrate was exported. The mining was undertaken by a floating dredge that reworked the coastal terrace. The land was subsequently levelled and rehabilitated into pasture. It is now relatively flat and featureless apart from the narrow remnant band of dunes immediately behind the coast. It has minimal soil, and is characterised by sparse pasture and underlying black sand. It is used for dry stock or 'run-off' grazing rather than the typical dairy pasture elsewhere in the region. There are shelter-belt pine plantations near the inland edge of the site, some of which were recently harvested, and others cleared following storm damage in early 2012.
- 28 A small stream ('Waipipi Stream') traverses the middle of the site, rising a short distance inland of the site. It appears that the lowest reaches of the stream were not modified by the sand mining operations, although the upper reaches were modified. Stock has access to the stream and its banks are open pasture.
- 29 There are also a handful of artificial ponds and wetlands remaining from the mining. These waterbodies are fringed with sedges, and some contain mai mais.

Settlement and land-use pattern

- 30 The landscape around Waverley is mostly used for dairy farming, with some horse breeding and training, and cropping on the alluvial river flats.
- 31 The rural settlement density is reasonably sparse in the more exposed land near the coast (although the wind farm extends for a distance of some 6km along the coast, there are only 15 houses within 2km of the wind farm envelope).
- 32 The main road is SH3 which runs parallel with the coast but several kilometres inland. The local road pattern runs off the state highway, with a typical pattern of no-exit roads on the coastal side of the highway.
- 33 The nearest settlements are:
- i) Waverley: A rural service town, located on SH3 approximately 5 km inland of the site;
 - ii) Waverley Beach: A 'bach' settlement, located above the coastal cliffs and beach at the end of a no-exit road approximately 4km south-east of the site;
 - iii) Waipipi Beach: a recent coastal subdivision west of Waverley Beach, approximately 3km from the site; and

² For instance Lake Oturi.

³ Waverley Wind Farm, Terrestrial and freshwater ecology assessment, Sanders Consulting Ltd, 2015
160311_3605_GL_Waverley Wind Farm Landscape and Visual Assessment_Final C

- iv) Pātea: Based around a former river port near the mouth of the Pātea River. SH3 crosses the Pātea River opposite the town. The former freezing works at the port are prominent industrial ruins. Approximately 3.7km north-west of the site.

Associative Aspects

Tangata whenua landscape associations

- 34 It is understood the wind farm site falls within the Ngaa Rauru rohe, which has its focus in Whanganui. The RPS includes statutory acknowledgement⁴ of places of significance to Ngaa Rauru Kiiitahi, such places within the vicinity of the project site comprising the Coastal Marine Area (CMA) between Rangitaahi and Wai-o-Turi Marae (i.e. including the CMA opposite the project site) and the Whenuakura and Pātea Rivers.
- 35 The area on the opposite side of the Whenuakura River is within the rohe of Ngāti Ruanui, although it is understood there is some overlap in interest between Ngāti Ruanui and Ngaa Rauru in the area between the Whenuakura and Pātea Rivers. The Wai-O-Turi Marae is approximately 3km from the wind farm site, on a terrace above the Pātea River. Pātea is a focal area for the Aotea confederation, being the final settlement place of Turi, the ariki of the Aotea waka. Places in the vicinity of the wind farm that have statutory acknowledgement in the RPS⁵ of significance to Ngāti Ruanui include Te Moananui A Kupe O Ngāti Ruanui (the coastal area between Rangatapu and Whenuakura) and the Whenuakura and Pātea Rivers.

Historical associations

- 36 The separate archaeological report (Mary O’Keefe, Heritage Solutions, 2015) includes historical background which has been referred to for this landscape assessment.
- 37 The coastal areas of Taranaki and Wanganui were closely settled prior to European settlement.⁶ It is understood settlement was typically focused near gardens or along rivers, with periodic trips to the coast for fishing with associated fishing camps.⁷ For instance, in the vicinity of the project site there is a concentration of archaeological sites along the Whenuakura River with some sites also along the coast.⁸
- 38 The broad historical context includes the early Pākehā settlement of the region, the nineteenth-century Taranaki Wars (in particular ‘Titiokowaru’s war’ which took place along the south Taranaki coast), the confiscation of land, and the subsequent Pākehā and Māori re-settlement with associated development of a farming economy. The ‘West Coast Commission of Inquiry’ was set up in the early 1880s to return certain areas of land to iwi following confiscation. The reserves set aside included the ‘Waipipi Fishing Village’ block adjacent to the project site.⁹ Similarly the townships of Pātea and Waverley have their own specific local histories which are alluded to above.
- 39 There are historical associations specific to the project site relating to the Waipipi iron-sand mining operation. There are some industrial ruins on the site and along the coast toward Waipipi Beach that include remnant pipelines and tunnel, the remnants of a large framed building, the stockpile area, and remnants of a water storage dam. Until recently the former office building stood on the neighbouring property in the location now occupied by a farm workers house. Street names in the recent subdivision at Waipipi Beach and an information board recall the operation.

⁴ Regional Policy Statement for Taranaki, Appendix IVC Ngaa Rauru Kiiitahi statutory acknowledgements, <http://www.trc.govt.nz/appendix-ivc/> (retrieved 22 September 2012).

⁵ Regional Policy Statement for Taranaki, Appendix IVA Ngāti Ruanui statutory acknowledgements, <http://www.trc.govt.nz/appendix-iva/> (retrieved 22 September 2012).

⁶ O’Keefe, ‘Waverley wind farm: Archaeological assessment of proposed project’, July 2012, page 6.

⁷ O’Keefe, page 7.

⁸ O’Keefe, Figure 4.

⁹ O’Keefe, page 8.

Recreational use of the landscape

- 40 This report relies on the specialist recreation report prepared by Tourism and Recreation Consultants (TRC). TRC concludes that recreational use of the site and surrounds is low. While there are unformed legal roads ('paper roads') over the site, there is no practical public access to the beach other than a long walk along the beach from Waipipi. However, locals who are allowed access across the site to the beach through the owners' goodwill for activities such as shellfish gathering (i.e. at the 'mussel reefs') and fishing. Similarly access to the Whenuakura River estuary requires walking along the beach or access over private land. While there is white-baiting on the Whenuakura River it is understood this is mainly upriver in the vicinity of the SH3 bridge.¹⁰ The main landscape-based recreation in the surrounding area is at Waverley Beach, where there is public beach access, and at the mouth of the Pātea River. There is some off-shore fishing in the South Taranaki Bight (including around the North and South Traps some 4km – 5km offshore), although it is an exposed coast.

Perceptual (Visual) Aspects

Aesthetics

- 41 The coastline and coastal dunes is the only area in the immediate vicinity of the site that could be described as having high landscape amenity. While it has a low level of use, it is nevertheless visited by locals and has an air of quiet solitude.
- 42 The rest of the site comprising the 'project envelope' area has a rural character, but is relatively featureless.

Views and visibility

- 43 Visibility of the site itself is restricted, although of course the wind turbines will be visible over a much wider area because of their height. The nearest formed public roads are no-exit roads that stop short of the site. Settlement density on the surrounding farmland is low – compared for instance to the higher quality farmland further inland. The flat topography increases the extent to which trees in the intervening landscape are able to screen the site.
- 44 The main potential views ('viewing audiences') of the wind farm will be from the following places:
- Surrounding farms;
 - Waverley Beach settlement (approximately 5km south-east of the project envelope). The clearest and most significant views from this area are likely to be those from small promontories such as the headland at the south-west end of Waverley Beach.
 - The new Waipipi Beach subdivision and its nearby beach (approximately 3km SE);
 - Pātea township (approximately 3.7km north-west). Similarly, the clearest and most significant views from this area are likely to be those along the coast from the promontory above the river mouth (approximately 2.8km north-west of the project envelope);
 - Wai-o-Turi Marae on Pilot Station Road (approximately 3km north-west);
 - Passers-by on SH3 and to a much lesser extent on local roads;
 - Waverley (approximately 5.8km north-east). Most views from the township are likely to be screened by intervening vegetation and buildings, but there will be views from some locations such as the cemetery which is located on a sand dune hill, from parts of the golf course, and from the race course which is in an open setting on the outskirts of Waverley nearest the site (approximately 3.3km); and
 - From boats offshore.

¹⁰ TRC Report, page 10.

Coastal Environment

Extent of the coastal environment

- 45 Policy 1 of the New Zealand Coastal Policy Statement (2010) (NZCPS) addresses the extent and characteristics of the coastal environment. The policy acknowledges that the extent and characteristics vary from area to area, and lists elements that are included within the coastal environment including:

(c) areas where coastal processes, influences or qualities are significant, including coastal lakes, lagoons, tidal estuaries, saltmarshes, coastal wetlands, and the margins of these;

(f) elements and features that contribute to the natural character, landscape, visual qualities or amenity values;

- 46 In relatively flat areas, such as that surrounding the wind farm site, there is often no sharp and obvious boundary. Rather the coastal influences and qualities gradually diminish inland. However, in this case the area of significant coastal qualities and features is confined to the band of dunes immediately behind the coast which are relatively sharply defined by the edge of the former sand mining.
- 47 The Operative South Taranaki District Plan maps a 'Coastal Protection Area' which includes the entire wind farm site. The District Plan notes that the 'Coastal Protection Area' reflects the extent of the coastal environment. However, the inland boundary does not appear to be based on the degree of coastal influence or coastal qualities as described in the NZCPS. For instance, in some places (such as the wind farm site) it extends some distance inland where the coastal qualities are low but in other places (such as at Waverley Beach) the line is drawn much closer to the coast.¹¹
- 48 The Proposed District Plan, in contrast, delineates the 'Coastal Protection Area' in a way that roughly approximates the inland edge of the dunes, and equates this (by Policy 2.15.7) with the extent of the coastal environment. I agree, in this context, with delineating the coastal environment with the inland edge of the dunes. However, the mapping does not precisely follow the actual features on the ground. Rather, it is offset into the former sand mining area by distances typically in the order of 100m – 300m.

Natural Character

- 49 The NZCPS (Policy 13(2)) lists a range of biophysical and perceptual aspects that are encompassed in the concept of natural character:
2. *Recognise that natural character is not the same as natural features and landscapes or amenity values and may include matters such as:*
- (a) natural elements, processes and patterns;*
- (b) biophysical, ecological, geological and geomorphological aspects;*
- (c) natural landforms such as headlands, peninsulas, cliffs, dunes, wetlands, reefs, freshwater springs and surf breaks;*
- (d) the natural movement of water and sediment;*
- (e) the natural darkness of the night sky;*
- (f) places or areas that are wild or scenic;*

¹¹ The 'Coastal Protection Area' in the South Taranaki District Plan was mapped prior to the current version of the NZCPS. 160311_3605_GL_Waverley Wind Farm Landscape and Visual Assessment_Final C

- (g) *a range of natural character from pristine to modified; and*
- (h) *experiential attributes, including the sounds and smell of the sea; and their context or setting.*

50 The RPS (CNC Policy 1) also lists factors to be considered in determining natural character:

- (a) *the degree of modification from a natural state;*
- (b) *the amenity values of the environment, which collectively give the coastal environment its natural character including rural amenity value;*
- (c) *the importance of landscapes, seascapes and landforms, including visually or scientifically significant geological features and wild and scenic areas;*
- (d) *the contribution of Taranaki's historic heritage to the natural character of the coastal environment;*
- (e) *the degree to which the coastal environment provides for the continued functioning of ecological and physical processes including consideration of the diversity, productivity, variability and importance of marine ecosystems and marine ecosystems typical or representative of the region, and links between marine and terrestrial ecosystems;*
- (f) *the natural quality of water and air; indigenous biodiversity values; the characteristics of special spiritual, historical or cultural significance to tangata whenua; and*
- (g) *the degree of integration of human use, development and subdivision with the above components.*

51 In summary, natural character is a composite of biophysical and experiential aspects, and the context is a relevant consideration.¹²

Degree of natural character of coastal environment

52 Neither the RPS nor the Operative District Plan identifies areas of outstanding coastal natural character. The RPS, however, includes an inventory of 'high quality or high value areas of the coastal environment' including the 'Whenuakura Estuary' and the 'Waipipi Dunelands' which are adjacent to the project site.¹³ The inventory derives from a 2004 report¹⁴ which describes the values associated with these areas:

52.1 'Whenuakura Estuary' is described as having high values for cultural/historical and ecological reasons. The cultural values relate to an island pa in the estuary, a kainga on the left bank dunes, and as a site of spiritual significance. The ecological/scientific values relate to the fact it is a relatively unmodified estuary, is habitat for royal spoonbill and threatened Caspian tern and rare variable pied oyster-catcher, that it is on the route of migratory birds, whitebait spawning on the north bank, and that it has a large area of dunes with frogs. The estuary is described as having moderate amenity and recreation values. The Regional Coastal Plan, which applies to areas within the CMA, describes the estuary as an area of 'outstanding coastal value' (Coastal Management Area A).

¹² See also Final Report and Decision of the Board of Inquiry into the Hauāuru mā Raki Wind Farm and Infrastructure Connection to Grid, [2011] paragraph 627.

¹³ The 2004 Inventory report describes the 'Whenuakura Estuary' as estuary itself, foreshore and Foreshore Reserve, and describes the 'Waipipi Dunes' as marginal strip and foreshore reserve.

¹⁴ Taranaki Regional Council, January 2004, 'Inventory of coastal areas of regional or local significance in the Taranaki Region'. 160311_3605_GL_Waverley Wind Farm Landscape and Visual Assessment_Final C

- 52.2 The 'Waipipi Dunelands' is described as having high values for amenity and ecological/scientific reasons. The amenity values relate to the dunes as being 'a significant natural area'. The ecological/scientific values relate to the area containing 'one of the best remaining examples of spinifex and pingao dune vegetation in South Taranaki, vulnerable flora species, and a regionally significant wetland'. The area is described as having moderate recreational and cultural/historical value.
- 53 A '**draft regional landscape study of the Taranaki coastal environment**' was published in 2015 by the Taranaki Regional Council. It identifies 'Whenuakura to Waipipi' as having 'outstanding coastal natural character'. It assesses the area as having 'very high' biophysical (abiotic and biotic) and perceptual/experiential attributes.
- 54 The **Proposed District Plan** similarly delineates an area (Pātea to Waverley Beach) across the coastal part of the site as an area of 'outstanding natural character'. This classification was based on the 'draft South Taranaki Landscape Assessment, Boffa Miskell, 2015. Trustpower have lodged a submission opposing such a classification.
- 55 I consider the classification in each case is incorrect for the following reasons:
- 55.1 In biophysical terms, the dune field is not intact but is a remnant of a once extensive dune field that was mostly removed by mining. Likewise, the dune vegetation also is modified: while it contains indigenous plant assemblages in places they are within extensive areas of rough grazing and weeds. Similarly, the coast-to-inland sequence (which one would expect to see in an area of outstanding natural character) is abruptly truncated by the former mine area.
- 55.2 In experiential terms, while the beach appears natural from places where views are restricted by the backdrop dunes, the modified context is clearly evident from the dunes themselves and to anybody accessing the beach across the adjoining land. Some of the observations made in the 'draft regional landscape study' are at odds with the actual environment. For instance the description '*expansive open coastline with minimal modification to retain wild scenic associations*'¹⁵ does not accurately reflect the site. It does not mention the modification from the former mining or accurately assess the modified vegetation cover.
- 56 'Outstanding' by definition means near the top of the scale between 'modified' and 'pristine'. Taking the factors described above, the degree of natural character is clearly not of that category. At most, the degree of natural character on the dunes might be sufficient to warrant being classified as 'high'. Dr Sanders, approaching the exercise from a biophysical perspective, considers the dunes have only 'moderate' natural character. A review of the Boffa Miskell report by landscape architect Mr Stephen Brown on behalf of Trustpower concluded that the dunes did not possess 'outstanding' natural character and only a part of the dunes warranted a 'high' classification – the balance of the dunes comprising only 'moderate' natural character.¹⁶
- 57 Likewise, the mapping delineation in the Boffa Miskell study does not accurately reflect actual physical features. There is in fact a sharp boundary between the dunes and the inland plain levelled by mining. While the boundary has been softened in some places by recent sand encroachment, it is still clear on the ground and can be readily seen in aerial photos. The line in the study (and as notified in the Proposed District Plan) is offset into the formerly mined areas and also deviates inland for no apparent reason in a few locations (for instance near turbines 23, 34 and 47). Also, while the intent of the line mapping the natural character area in the Boffa Miskell study and that of the line mapping the 'coastal protection area' in the Proposed District Plan appear similar, the lines themselves appear arbitrarily different. Both lines are imprecise with respect to actual features.

¹⁵ Draft regional landscape study of Taranaki coastal environment, 2015, Taranaki Regional Council, page 51

¹⁶ Natural Character Values Waverley Coastline, Brown NZ Ltd (October 2015)
160311_3605_GL_Waverley Wind Farm Landscape and Visual Assessment_Final C

- 58 The Boffa Miskell study acknowledges it was a district-wide assessment that was necessarily undertaken at a high-level with a heavy reliance on desk-top analysis. The work for the wind farm project, on the other hand, has the benefit of more detailed field work.
- 59 In my opinion, the vicinity of the project site falls into two zones in terms of natural character:
- 59.1 The coastal margin (including the beach, low cliffs, sand dunes and Whenuakura River estuary and mouth) has distinctly greater coastal influence and a higher degree of natural character. The coastal influences include physical processes (wave action, exposure to salt and wind, coastal habitat and vegetation) and also perception (views, sound of the waves, landforms whose appearance reflects coastal processes). The area has natural landforms, reasonably natural vegetation cover, is uncluttered by human structures, and the sea has a defining presence. However, while the natural character is reasonably high, it is clearly not 'outstanding' for reasons given above in paragraph 53.
- 59.2 The farmland of the former sand mining area inland of the dunes has distinctly lower coastal influence and natural character. Although exposed and windy, the farmland is substantially influenced by human management rather than coastal processes. And, while there are glimpses of the sea, the coast is much less visually and aurally prominent. The landform itself is substantially modified by the former sand mining, the vegetation cover is dominated by pasture and exotic shelter belts, and there are built features such as the farm roads, races and transient features such as long lines of haylage bales. It has moderate-low natural character.
- 60 In summary, while the areas of duneland across the front of the site and nearest the Whenuakura Estuary have reasonably high natural character, they are clearly not outstanding. They fall within the Environmental Buffer Zone and are therefore outside the wind farm envelope. I agree that the coastal environment should be delineated at the inland edge of the coastal dunes, similar to the mapping in the Proposed District Plan. However, I consider the mapping in the Proposed Plan requires fine-tuning so that it more precisely follows physical features on the ground.

Outstanding Natural Features and Landscapes

- 61 The Operative District Plan does not identify outstanding natural features or landscapes (ONF/ONLs). Isthmus therefore undertook an assessment to consider whether there might be potential ONF/ONLs in the vicinity of the project. This assessment was undertaken prior to the 'Draft South Taranaki Landscape Assessment' carried out by Boffa Miskell in 2015.
- 62 The two criteria for ONF/ONLs are that they should be both 'natural' and 'outstanding'. An appraisal typically comprises two stages:
- An analysis of the qualities of the feature or landscape. Current best practice is to consider landscape attributes under three categories (biophysical, perceptual and associative¹⁷) although there are other lists of attributes (such as the 'Pigeon Bay Factors'¹⁸ and the 'Lammermoor Factors'¹⁹) which also fall into these three categories; and
 - An overall assessment, taking the attributes collectively, as to whether the feature or landscape is 'outstanding' and (sufficiently) 'natural'.²⁰ Case law has defined 'outstanding' as the ordinary dictionary meaning such as "conspicuous, eminent,

¹⁷ See for instance *Upper Clutha Tracks Trust v Queenstown Lakes District Council*, NZEnvC [2010] 432, paragraph 51. Also 'Best Practice Note 10.1: Landscape Assessment and Sustainable Management', 2 November 2010, published by the New Zealand Institute of Landscape Architects (NZILA).

¹⁸ See for instance *Wakatipu Environmental Society Inc v Queenstown-Lakes District Council*, C180/99, paragraph 80

¹⁹ See *Upper Clutha Tracks Trust* op cit, paragraphs 50 and 51.

²⁰ See for instance, *Unison Networks v Hastings District Council*, W 11/2009, paragraphs 95 & 96. 160311_3605_GL_Waverley Wind Farm Landscape and Visual Assessment_Final C

especially because of excellence, remarkable in.”²¹ This is consistent with the RPS which defines ‘outstanding’ as referring to “*those natural features or landscapes of exceptional value or eminence or distinction on a national, regional or district level*”.²²

Assessment of potential ONF/ONLs

63 The **coastal parts of the site** (coastline, beach and the coastal dunes) have the following value in terms of its main landscape attributes:

- High value for its biophysical attributes, largely for the ecological significance of the dunes and Whenuakura Estuary;
- Moderately high values for its aesthetic attributes: The beach has solitude and naturalness, and the low cliffs, dunes and reefs are picturesque features, but the section of coast is not conspicuous or aesthetically ‘eminent’; and
- Moderately high value for its associative attributes: Such value is mainly related to the significance of the coast and Whenuakura River to tangata whenua and to a lesser extent the use of the beach by those locals who are allowed access.

Taken as a whole, while the coast adjacent to the project site has reasonably high naturalness and landscape value, it is not sufficiently eminent or exceptional to be an ONL.

64 The **inland parts of the project site** have low landscape values:

- Low value for biophysical attributes because of the former sand mining and modified pastoral vegetation cover;
- Low values for aesthetic attributes, because it is modified and relatively featureless;
- Moderate values (at best) for its associative attributes: There are historical associations with the sand mining, although the result of the mining was to compromise the natural landscape.

Taken as a whole, the site of the proposed wind farm itself, inland of the dunes, is (self-evidently) not outstanding in any way.

65 The most obvious potential ONF or ONL within the vicinity are the sandstone cliffs at **Waverley Beach**. The cliffs are relatively bold, in the order of 10m-15m high, and contain erosion sculpted features such as caves, stacks, blowholes and a ‘hole-in-the-rock’ arch. They are a dramatic expression of coastal processes cutting into the uplifted marine terraces. The operative Taranaki Regional Coastal Plan classifies the area at Waverley Beach south-east of the headland as an area of ‘outstanding coastal value’ with the following values:

“Outstanding natural landscape; Eroding stacks, caverns, and tunnels produce unique landforms at the land/sea interface; Blowholes”.

66 The cliffs themselves have sufficient naturalness, notwithstanding the presence of the adjacent settlement and the boat ramp access from the top of the cliffs to the beach, and have the following value in terms of landscape attributes:

- High value for biophysical attributes, because of the cliffs are a distinctive geomorphic feature, and an example of the erosion by the sea of elevated marine terraces;
- High value for aesthetic attributes, because of the dramatic nature of the cliffs and the picturesque features around the headland including the arch and stack;
- High value for associative attributes, because the area is a well-used recreation and scenic destination. Images of the features are used to promote the District, such as on the entry signs to the District.

²¹ *Wakatipu Environmental Society Inc v Queenstown-Lakes District Council*, op cit, paragraph 82.

²² Regional Policy Statement for Taranaki, 2009, ‘10.1 Protecting our Outstanding and Important Natural Features and Landscapes’.

- 67 Overall, the Waverley Beach cliffs are sufficiently eminent and exceptional to be 'outstanding'. Their spatial extent means that they are a **feature** rather than a landscape (i.e. they are a potential 'outstanding natural feature).

Proposed District Plan

- 68 The Proposed District Plan identifies ONF/ONLs on the basis of the district wide assessment by Boffa Miskell discussed earlier²³. The nearest ONF/ONL in the Proposed Plan is the Waverley Beach Cliffs, approximately 4.5km from the wind farm. Identification of this feature as an ONF/ONL is consistent with the earlier assessment undertaken for this project.

The 'Raised Marine Terraces of South Taranaki'

- 69 The operative RPS includes the following reference to outstanding natural features and landscapes under NFL Policy 1:

Outstanding natural features and landscapes are to be protected from inappropriate subdivision, use and development, including protection of:

*(e) the rural features and landscapes of regional significance, including the scenic and landscape qualities of the **raised marine terraces of south Taranaki** and inland Taranaki hill country; (emphasis added).*

- 70 Previously it was suggested that this policy inferred the site was an ONL on the grounds it was a raised marine terrace. However, the policy lists **types of landscapes** characteristic of the region and appears to indicate that ONF/ONLs would constitute examples of such features or landscapes that had scenic and landscape qualities. This interpretation is reinforced by the introduction to the relevant section of the RPS²⁴ which refers to "**parts** of the coastline and cliffs of north and south Taranaki..." (emphasis added). In my opinion it would not be sensible to interpret NFL Policy 1(e) as including *all* the raised marine terraces of South Taranaki, given that these terraces comprise a significant proportion of the district²⁵. Rather, a sensible interpretation would be that *outstanding examples* of such terraces would be identified as ONF/ONLs. Of all the terraces in South Taranaki, the project site would rank near the most modified and least outstanding end of the spectrum. I note that the Proposed District Plan does not identify such marine terraces as ONLs.

²³ South Taranaki Landscape Assessment, Boffa Miskell (2014)

²⁴ Section 10, Natural features and landscapes, historic heritage and amenity value.

²⁵ Such terraces extend for more than 100km along the coast and up to 20km inland, encompassing a modified farming landscape and several towns. This area as a whole is neither natural nor outstanding enough to be an ONL.
160311_3605_GL_Waverley Wind Farm Landscape and Visual Assessment_Final C

DESCRIPTION OF THE PROPOSAL

Main elements relevant to landscape assessment

- 71 The proposed wind farm is described in the 'Project Description' in the AEE. Components relevant to landscape matters include the following:
- 71.1 There will be up to 48 wind turbines, with a maximum height to blade tip of 160m. The model of wind turbine and the actual rotor diameter and tower height is not fixed.
 - 71.2 The turbine layout is subject to a 'project envelope' approach. The application allows flexibility for locating up to the maximum number of turbines within the project site so long as turbines have a minimum spacing of 2.5 x the rotor diameter and that the turbines and other infrastructure avoid the mapped 'environmental buffer zone' (except for provision for three culvert crossings over Waipipi Stream). (See Appendix A, Figure 3, Environmental Buffer Zone).
 - 71.3 Civil engineering includes turbine foundations and platforms up to 82m x 30m, connected by access roads up to 10m wide. The main entrance to the site will be from the end of Peat Road.
 - 71.4 Associated transmission infrastructure includes a switchyard and single-circuit 110kV transmission line connecting the wind farm with the national grid at the Waverley Substation in Mangatangi Road. The line will be carried mainly on 'monopoles'²⁶ up to 22m high. The transmission infrastructure and alignment is described in more detail under a separate heading below.
 - 71.5 Ancillary elements on the wind farm site will include an operations and maintenance building, and up to four anemometer masts (to a height of up to 110m).
 - 71.6 Construction works will include a concrete batching plant, lay-down areas, and a construction yard.

Design process

- 72 Isthmus was engaged as part of the design team for the wind farm, and provided inputs as follows.
- 72.1 A 'baseline landscape assessment' was initially prepared which assessed the existing landscape values, scoped the potential landscape effects and issues, and recommended design measures to avoid, remedy or mitigate potential adverse effects.
 - 72.2 A series of landscape constraints were identified, in parallel with constraints identified by other disciplines, in particular ecology. Site visits were made in the company of other disciplines to 'ground-truth' the constraints in key areas, mainly the boundary between the coastal dune constraint area and the rest of the site. A "project envelope" was subsequently developed.
 - 72.3 The landscape and visual assessment has been carried out on the 'project envelope'. To assist in understanding the potential visual effects, photosimulations were prepared from representative public viewpoints based on an indicative 'non fanciful' layout. However, assessments made in relation to dwellings presumed a 'worst case' layout in which turbines would be 'bunched' on the part of the wind farm site nearest the dwelling, and distances were taken from the nearest part of the 'project envelope'.

²⁶ Double 'pi poles' may be used for long spans, such as across gullies.
160311_3605_GL_Waverley Wind Farm Landscape and Visual Assessment_Final C

STATUTORY PROVISIONS AND NON-STATUTORY MATTERS

- 73 The following provisions are considered most relevant to the landscape and visual assessment. This section of the report is not intended to appraise the project against such provisions (which are addressed in the AEE), nor to exhaustively cover all the relevant provisions. Rather, it identifies the most pertinent provisions to help frame the assessment of landscape and visual effects.

Resource Management Act 1991

- 74 Part 2 matters most pertinent to landscape matters are sections 5, 6(a), 6(b), 7(c) and 7(f).
- 75 Section 5 sets out the purpose of the RMA which is to promote sustainable management, and defines sustainable management to mean “managing the use and development of natural and physical resources in a way which enables people and communities to provide for their social, economic and cultural wellbeing and for their health and safety while sustaining the potential of natural and physical resources to meet the reasonably foreseeable needs of future generations; and safeguarding the life-supporting capacity of air, water, soil and ecosystems; and avoiding, remedying, or mitigating any adverse effects of activities on the environment.”
- 76 Section 6 sets out matters of national importance. Those most relevant to the landscape and visual assessment include s6(a) which requires the “preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins and the protection of them from inappropriate subdivision, use and development”, and s6(b) which requires the “protection of outstanding natural features and landscape from inappropriate subdivision, use and development”.
- 77 Section 7 sets out other matters to which particular regard should be had. Those relevant to landscape matters are s7(c) “the maintenance and enhancement of amenity values”, and s7(f) “the maintenance and enhancement of the quality of the environment”.

New Zealand Coastal Policy Statement (‘NZCPS’)

- 78 The purpose of the NZCPS is to state policies in order to achieve the purpose of the RMA in relation to the coastal environment. The NZCPS contains seven Objectives and 29 Policies. Objectives most relevant to landscape and natural character matters in respect of the present application include:
- 78.1 Objective 1, which is to “*safeguard the integrity, form, functioning and resilience of the coastal environment and sustain its ecosystems, including marine and intertidal areas, estuaries, dunes and land...*”
- 78.2 Objective 2, which is to “*preserve the natural character of the coastal environment and protect natural features and landscape values...*”
- 78.3 Objective 3, which is to “*take account of the principles of the Treaty of Waitangi, recognise the role of tangata whenua as kaitiaki and provide for tangata whenua involvement in management of the coastal environment...*”
- 78.4 Objective 4, which is to “*maintain and enhance the public open space qualities and recreation opportunities of the coastal environment...*”
- 78.5 Objective 6, which is to “*enable people and communities to provide for their social, economic, and cultural wellbeing...through subdivision, use, and development*”. Objective 6 goes on to recognise that protection of the values of the coastal environment does not preclude use and development in appropriate places and forms, and specifically that the coastal environment contains renewable energy resources of significant value.

- 79 The objectives therefore seek to preserve both biophysical and visual aspects of natural character, but also to provide for appropriate activities, with specific mention of renewable energy resources such as wind. These matters are further detailed in Policies 6(1)(a), 6(1)(g), 6(1)(h), 6(1)(i); Policies 13(1)(a)-(d), 13(2)(a)-(h); and Policies 15(a)-(e)

National Policy Statement on Renewable Electricity Generation (2011) (NPS REG)

- 80 The NPS REG sets out an objective and policies to enable the sustainable management of renewable electricity generation under the RMA. Provisions particularly relevant to an assessment of landscape, visual and natural character effects include:

80.1 Policy A(d) which identifies that reversibility of adverse effects from some renewable electricity generation technologies is a benefit to be recognised and provided for by decision makers – (relevant because visual effects of wind turbines are reversible); and

80.2 Policies C1(a)-(c) which require decision makers to have regard to the need to locate renewable electricity generation activity where the renewable energy resource is available, the practicalities of developing such generation, and the location of existing infrastructure such as the National Grid.

Regional Policy Statement ('RPS')

- 81 The sections of the RPS most relevant to landscape matters are Section 8 (Coastal environment) and Section 10 (Natural features and landscapes, historic heritage and amenity values).

- 82 Section 8 of the RPS (in a similar manner to the NZCPS) includes objectives to protect the natural character of the coastal environment, while also providing for appropriate subdivision, use and development.

82.1 CNC Policy 1 lists factors to be considered in determining the natural character of the coastal environment, as discussed above.

82.2 CNC Policy 2 sets out criteria for determining appropriate activities. In summary, those criteria most relevant to the assessment of natural character, landscape and visual effects of the Waverley Wind Farm include CNC Policy 2(a) - the degree and significance of effects on natural character and the measures to avoid, remedy or mitigate such effects; 2(b) - providing for the relationship of tangata whenua with the land; 2(c) – effects on heritage values; 2(g) – the degree of existing modification of the coastal environment from its natural character; 2(h) – the degree of disruption of natural processes or threat from natural processes and CNC Policy 2(n) – the benefits to be derived from the use and development of renewable energy sources.

82.3 CNC Policy 4 notes that areas in the coastal environment of importance to the region will be identified and priority given to protecting these areas. Appendix II lists 'high quality or high value areas of the coastal environment' based on an earlier report "*Inventory of coastal areas of local or regional significance in the Taranaki Region (2004)*". As discussed above, areas identified in the vicinity of the application site include the 'Whenuakura Estuary' and the 'Waipipi Dunelands'.

- 83 Section 10 of the RPS includes an objective to protect the outstanding natural features and landscapes of the Taranaki Region from inappropriate subdivision, use and development, and to appropriately manage other natural areas, features and landscapes of value to the region.

83.1 NFL Policy 1 is that "Outstanding natural features and landscapes are to be protected from inappropriate subdivision, use and development". The policy lists a number of generic types of landscape or feature to be protected without identifying specific landscapes or features. The list includes (e) - "the rural features and landscapes of

regional significance, including the scenic and landscape qualities of the raised marine terraces of south Taranaki and inland Taranaki hill country". As discussed above, in my opinion it would not be sensible to interpret this policy to include (and require protection of) *all* the raised marine terraces in south Taranaki, such as the project site. Nevertheless, the following section of this report (which covers the landscape, visual and natural character effects of the wind farm) addresses this matter to the extent necessary.

- 83.2 NFL Policy 3 lists criteria for determining appropriate activities. In summary, those relevant to the assessment of landscape, visual and natural character effects of the Waverley Wind Farm include NFL Policy 3(a) - significance of the landscape, 3(b) - the degree of effects, 3(c) - the benefits to be derived from the use and development, 3(f) - the sensitivity of the landscape to change, and 3(g) - the degree of existing modification.

Operative South Taranaki District Plan

- 84 The Operative District Plan does not contain any specific recognition of wind farms or wind energy generation. General Objectives and Policies are set out in Section 2. The most relevant to landscape, visual and natural character matters are Objectives 4 and 9.

84.1 Objective 4 relates to natural character of the coastal environment, and echoes similar provisions of Part 2 of the RMA, the NZCPS, and the RPS. It is to *"preserve the natural character, ecosystems habitats and historic values of the coastal environment while recognising that influences of coastal processes in continuing to shape this environment and avoid inappropriate subdivision, use and development."* Policy 4(g) is to recognise and provide for other activities in the coastal environment as appropriate and in a manner which does not adversely affect the coastal environment. Policy 4(b) is to provide a *"Coastal Protection Management Area at the coastal edge to establish environmental standards and a level of certainty..."* As discussed earlier, the application site falls within this area.

84.2 Objective 9 is to protect outstanding natural features and landscapes and therefore it echoes s6(b) of the RMA. The text goes on to explain that the Council has yet to prepare a District-wide Landscape Assessment to identify ONF and ONLs.

84.3 Also relevant is that the District Plan schedules 'Waipipi Dunes' as a Significant Natural Area (SNA22) in 'Schedule II: Significant Natural Areas'.

- 85 Provisions relevant to the transmission line are addressed separately below.

Proposed South Taranaki District Plan

- 86 The most relevant matter in the Proposed District Plan is the identification of an area of 'outstanding coastal natural character' across part of the site, addressed above in paragraphs 53 to 60, and the identification of the cliffs at Waverley Beach as an ONF/ONL.

LANDSCAPE, VISUAL AND NATURAL CHARACTER EFFECTS OF THE WIND FARM

Potential Effects

- 87 Potential natural character, landscape, and visual effects of the wind farm include the following:
- i) Effects on the biophysical landscape;
 - ii) Effects on landscape aspects of amenity values, taking into account;
 - Community perceptions;
 - Relationship with landscape character and scale;
 - Public views; and
 - Outlook from private property.
 - iii) Construction effects.
 - iv) Effects on natural character of the coastal environment;
 - v) Effects on outstanding natural features and landscapes;

Effects on Biophysical Landscape

- 88 Wind farms typically involve extensive civil engineering in order to construct the access roads and turbine foundations, often with the potential for significant adverse effects. In this instance, however, the effects on biophysical aspects of the wind farm will be minimised for the following reasons:
- 88.1 The site's flat terrain means that cut and fill batters will be small;
 - 88.2 The reduced earthworks requirements also reduce the surplus spoil for disposal. The sandy terrain means such spoil that is generated can be readily contoured to forms that will not look out of place compared with the hummocky dunes characteristic of such areas; and
 - 88.3 The previous sand mining means there are few natural features that might otherwise be susceptible to modification. Those features that do remain, such as the coastal dunes and the Waipipi Stream, are contained within the EBZ which is to be avoided by works.²⁷
- 89 Access road culverts will be required across the upper reaches of the Waipipi Stream. Such works will have only a small adverse effect on this landscape feature taking into account that the stream was already modified by the sand mining, stock have access to the stream, the banks are pasture, and the stream is already crossed by an existing farm culvert. Rather, it is proposed to fence the stream to enable natural regeneration which will result in net positive effects on this feature.
- 90 The sandy nature of the site also reduces the potential for sediment run-off. The main issue in this regard will be re-establishing a grass surface on earth-worked areas to prevent wind erosion, which is addressed in relation to soil erosion and sediment matters.
- 91 In summary, while sound practice is still warranted during construction, it is hard to imagine a less contentious site in terms of biophysical landscape effects.

²⁷ With the exception of necessary stream crossings

Effects on Landscape and Visual Amenity

General perceptions of wind farms

92 Landscape and visual effects are influenced by the different perceptions and dispositions of individuals, often characterised by the phrase ‘beauty is in the eye of the beholder’. This report is an expert assessment, and does not presume to represent the opinions of individuals. Rather, it is anticipated such individual opinions will be elicited during the consultation and submissions phases. However, the following general points can be made regarding perceptions of wind farms:

92.1 Surveys of attitudes to wind farms in New Zealand and overseas suggests that communities hold a range of views, from people who are strongly polarised for or against wind farms, to those who hold more neutral positions.²⁸

92.2 Attitudes may vary depending on whether one is a casual passer-by or a resident in the vicinity of a wind farm, and the proximity of a residence to such a wind farm.

92.3 Use of wind farm images in advertising and popular media suggests that, at least in a generic sense, wind farms have positive associations with green technology.

92.4 In some instances, such as the Manawatu, Woodville, and Brooklyn Wellington, wind turbines are used as an aspect of local identity.

Relationship to landscape character

93 The site is an appropriate one for a wind farm in terms of landscape character for the following reasons:

93.1 It is a ‘working’ landscape characterised by productive rural activities. For instance there is extensive dairying including the use of pivot irrigators. The existing farming activities will continue on the site, maintaining the underlying rural character;

93.2 The site itself is modified by the former sand mining; and

93.3 While it is a settled landscape, at the same time there is a relatively low density of nearby dwellings. Rather, settlement tends to be concentrated inland towards SH3, or some distance along the coast to the south-east or north-west. For example, settlement is limited to 15 dwellings within 2km of the project envelope, despite the fact the site extends some 6km parallel to the coast.

Scale relationship of turbines and landscape

94 The ‘project envelope’ provides for wind turbines up to a maximum height (blade tip) of 160m. By way of comparison, there are wind turbines 130m high at Te Uku Wind Farm, and 125m high at Mahinerangi Wind Farm. The Hauāuru mā Raki (HMR) and Waitahora Wind Farms have consented (but not constructed) turbines up to 150m high, and the Castle Hill Wind Farm has consented turbines up to 155m. In addition to observations of the wind turbines at Te Uku and other existing wind farms, I also carried out observations of 150m and 120m turbines in proximity to each other in Sicily for the purpose of understanding the extent to which differences in height can be perceived and the influence of height on actual effect.

²⁸ For instance:

Energy Efficiency and Conservation Authority, ‘Public perceptions of renewable energy’, May 2008

Shape N.Z., ‘New Zealanders’ Choice of Future Energy Sources, March 2008

Mori (Scotland), ‘Public Attitudes to Wind Farms, 2003

Jiří Stiborek, ‘The influence of wind turbines on landscape scenery: opinion poll’, *Journal of Landscape Studies* 1 (2008), 137 – 143.

160311_3605_GL_Waverley Wind Farm Landscape and Visual Assessment_Final C

- 95 Wind turbines of the dimensions discussed above are a different order of height to most other vertical elements in the landscape. For instance, their scale relationship is not with such features as trees or buildings, but with the landscape as a whole. As such it entails a figure-ground relationship²⁹ between the vertical turbines and the horizontal landscape mass.
- 96 Because of the lack of vertical references, and also because wind turbines have a generic scalable form, it is relatively difficult to perceive differences in turbine height unless turbines of different size are seen side-by-side. Likewise, the degree of prominence or visual effect is not a linear function of height. Other factors, such as the proportion of rotor diameter to height, influence appearance. Likewise, when considering a wind farm, any visual benefit that might arise because of reduced wind turbine height might also have to consider the counter effects of greater turbine numbers (or density) and faster rotation speeds (all other things being equal).
- 97 In this case the relatively flat topography in the vicinity of the Waverley 'project site' has a broad horizontal scale that can accommodate the proposed maximum 160m wind turbines. To put it another way, the turbines will appear in scale with the landscape as a whole. They will be 'visually anchored' by the horizontal scale of the landscape.
- 98 It is noted that the 'project envelope' would allow for external transformers which are common for some wind turbine models. Such transformers are mounted on the ground near the base of the turbine, and typically fenced or contained within an enclosure. While they contribute to ground level visual clutter, such structures appear insignificant and incidental to the wind turbines. On this site they would have very low visibility. The only likely views would be from near the boundaries of adjacent farms or from such rare locations as the intersection of Peat Road and Stewart Road (which has a very small viewing audience).

Effects on public views

- 99 The wind farm will have a wide 'theoretical' visibility because of the relatively low relief in coastal South Taranaki. In high relief landscapes, such as often encountered with wind farms in hilly terrain, visibility can be governed to a greater extent by topography. However, in relatively flat country, such as this, visibility is governed to a greater extent by vegetation such as shelter belts because of the leverage provided by a low view angle. For example, in a flat landscape a 16m high tree at 100m would potentially screen a 160m turbine that was 1km away. Similar principles apply to small scale landforms such as that found in the hummocky area south of Waverley township, and terraces such as where SH3 drops to the Whenuakura River. Observations that vegetation will be the main factor governing visibility³⁰ of the wind farm are reflected in the detailed observations in the housing inventory. The extent of vegetation is also indicated by the photosimulations although it is noted that such viewpoints were specifically selected to provide clear foregrounds (in other words to avoid vegetation). In addition to full screening, vegetation can also increase a sense of perspective where it provides partial screening.
- 100 Given this potential visibility, viewing audiences will include:
- **Residents** (and their visitors) of Waverley, Pātea, the Waverley Beach and Waipipi Beach settlements, the marae and farmland in the vicinity;
 - **Passers-by** on the roads (principally SH3); and
 - **Recreational users** of the racecourse and beaches in the area (including those who access the coast adjacent coast to the project site, and the area in the vicinity of the Whenuakura River and estuary), and those on boats off the coast.

²⁹ It is acknowledged that wind farms also include a network of roads and other earthworks on the land surface. The figure-ground relationship is strongest where the roads and earthworks are least prominent or visible, as at Waverley because of the relatively flat topography.

³⁰ In other words, whether there will be clear views, partial views, or whether views will be screened.

- 101 Photosimulations were prepared from a number of representative locations, including those listed above, in order to illustrate the appearance of the wind farm. (See Appendix A, Figure 4, 'Non-fanciful' Wind Turbine Layout and Photosimulation Viewpoint Locations, and Photosimulations from Viewpoints 1 – 12). The photosimulations are designed to be printed across two A3 pages in order to represent correct scale from a reading distance of 400mm. The photosimulations illustrate a horizontal field of view of 110° which is slightly less than the typical 124° width of human binocular vision.
- 102 As discussed earlier, the landscape and visual effects were assessed on the basis of the 'project envelope'. The photosimulations were prepared from each viewpoint on the basis of a 'non fanciful' (i.e. 'realistic') layout optimised for maximum size turbines. Additional photosimulations were also prepared from each viewpoint to illustrate three alternative 'worst case' layouts in which the wind turbines were bunched alternately at the west and east end of the site and along the northern boundary of the site. The 'non-fanciful' and three 'worst case' layouts are illustrated in Appendix A, Figures 4 – 7. (Note: The same 'worst case' layouts were also used to assess noise effects (Hegley Acoustics 2015)).
- 103 A detailed assessment of each viewpoint is attached as Appendix B. In summary the following points can be made:
- 103.1 Most public views with reasonably large viewing audiences will be from several kilometres away: The closest point of SH3 to the site is approximately 1.8km away, while the highway is more typically 2.6-3km away as it passes the wind farm site. The grandstand at the Waverley Race Course is approximately 3.6km away. The lookout and carpark above the mouth of the Pātea River is approximately 2.7km away, and the lookout and car park at Waverley Beach is approximately 5km away.
- 103.2 In contrast to other constructed wind farms in New Zealand, the project site is roughly at a similar elevation to public viewpoints rather than being elevated on a range of hills or mountains. This reduces potential dominance, and increases the screening potential of vegetation and other elements in the intervening landscape.
- 103.3 There is shelter vegetation in the intervening landscape from many viewpoints (bearing in mind that photosimulation viewpoints were selected to provide clear foregrounds). Even where such vegetation does not screen the wind farm, it creates perspective depth and helps create a sense of separation between the viewer and the wind farm.
- 103.4 While the settlements and such places as Wai-O-Turi Marae are fixed viewpoints, others such as SH3, the racecourse, and the beaches or lookouts will be short term or transitory views.
- 103.5 The most sensitive readily accessible public viewpoints are considered to be the coastal viewpoints: For instance from Pātea Beach, Waverley Beach and Waipipi Beach. The views along the coast from these locations are relatively open and there is typically a heightened sensitivity to natural character from such locations. Even so, it is considered that there will be only a 'moderate' degree of effect from these locations. As indicated in Appendix B, the wind farm will be reasonably distant from such locations, it will appear as a background feature separated by different intervening landforms (for instance it will appear in the background past intervening headlands from both Waverley Beach and Pātea Beach), it will occupy a small proportion of the field of view from such angles, it will be visually anchored by the horizontal scale of the landscape, and it will be to one side of the main focus of the coastal outlook from such places.
- 103.6 There will also be adverse visual effects from the beach immediately adjacent to the wind farm. Practical access to this area is limited to either access granted by the

landowner across the wind farm site itself or alternatively by a 2.5km walk along the coast.³¹ The wind turbines will be very prominent (or dominant) structures as a backdrop to views from the beach adjacent to the site and from the margins of the Whenuakura estuary. As discussed before, however, the base of the turbines will be inland of the dune landforms which will help create perspective depth and a degree of separation. To illustrate this point, there are some places on the beach in front of the steeper dunes and wave-cut cliffs from where the turbines would not be visible.

103.7 The wind farm will be a landmark from SH3 for travellers between Waverley and Pātea. There will be distant glimpses from locations east of Waverley and west of Pātea, but the main views will be revealed between the Waverley Race Course and the Pātea River crossing. While it will be prominent, the wind farm will nevertheless be reasonably distant (the closest point is 1.8km but most views as one passes the site will be from around 2.6km-3km away), and there will be perspective depth because of shelter belts, rolling topography and houses in the intervening landscape.

104 The following points are made with regards the differences in visual effects that might arise as a consequence of the flexibility within the 'project envelope'.

104.1 As indicated by the commentaries in Appendix B (which compare the 'worst case alternatives' with a non-fanciful 'realistic' layout) bunching the turbines at one end or other of the site would typically increase the turbine density, the degree of "stacking" (turbines located one behind the other) and would result in a more visually cluttered appearance from the nearest viewpoints. This is generally offset by the fact that in such cases the wind farm occupies a smaller proportion of the field of view, the effect of which is more pronounced from viewpoints to the north of the wind farm compared to those from the east and west.

104.2 From each viewpoint, one or two of the worst case options would typically have slightly greater adverse visual effects, and one would typically have slightly or moderately less visual effects, as indicated by the summary table in Appendix B. In other words, a 'worst case' layout is likely to slightly increase adverse visual effects near one end of the wind farm site, and slightly reduce adverse visual effects near the opposite end (compared to the 'non-fanciful' option).

104.3 The exceptions are the viewpoints from the beach in close proximity to the wind farm. From such viewpoints:

- The north envelope option has 'significantly' or 'moderately' less effects compared to the 'non-fanciful' option; and
- The west envelope option has 'significantly less' effects from viewpoints near the eastern end of the wind farm, while conversely the east envelope option has 'significantly less' effects from viewpoints near the western end of the wind farm.

104.4 While the assessments from individual viewpoints assumes a 'worst case', it is reasonable to assume that in reality the wind turbines will likely be distributed more evenly across the site in order to maximise utilisation of the wind resource.

Visual effects from private properties

105 An inventory of dwellings within 5km was made and the degree of visual effect of the wind farm assessed for each dwelling (Appendix C). House locations³² within 5km (or so) are indicated in Appendix A, Figure 9.

105.1 The 5km radius was selected as a practical distance within which to assess the degree of effect for individual dwellings based on measured observations of existing wind

³¹ Pids Point from Waipipi Beach

³² Including representative locations for groups of houses where appropriate
160311_3605_GL_Waverley Wind Farm Landscape and Visual Assessment_Final C

farms. While there is always the potential for exceptions, it is likely that the degree of visual effect will be low beyond approximately 5km.

- 105.2 The assessment was based on desk-top analysis and road-side assessments. It is acknowledged that such assessments could only be confirmed by visiting each site, but the method adopted is a practical means of assessing the visual effect of a wind farm over a broad area.
- 105.3 It is also acknowledged that visual effects are not confined to dwellings, and will be experienced over other parts of properties. However the home is usually the most significant focus of a property and it provides a practical focus to assessing effects.
- 105.4 The assessments are of 'degree of visual effect' taking into account such factors as distance, the orientation of the dwelling, the extent of screening, and the features in the intervening landscape (sometimes referred to as 'complexity') that would increase perspective depth. The assessments of visual effect were made on a 7-point scale from very high to very low.
- 105.5 'Degree of visual effect' is a neutral term. The extent to which such an effect is adverse or not will depend to some extent on the disposition of individuals toward wind farms. However, a practical approach is to assume such effects are adverse.
- 105.6 The assessment of prominence from dwellings³³ detailed in Appendix C fell into the following categories.

degree of effect	very high	high	mod-high	mod	mod low	low	very low
no. of houses ³⁴	1	13 ³⁵	5	28	8	64	-

106 The results are further explained as follows:

- 106.1 The house that will be most affected (No. 110) is located on the neighbouring dairy farm south-east of the site³⁶. The prominence from this house will be 'very high' because of proximity (1.0km), orientation of outlook toward the project site, the open nature of the outlook, the slightly elevated location of the house, and the potential for 'stacking' to arise in this direction with the worst case scenario. Two other consented house sites on the farm (Nos. 57 and 109), at least one of which has been built, were assessed as likely to have 'high' visual effects. They are also relatively close (1.3km and 1.4km) and there is open outlook to the project site.
- 106.2 There are five houses, and some 40 vacant sites (as at January 2016) at Waipipi Beach subdivision further to the south-east, approximately 2.9 - 3.1km from the wind farm site. The degree of effect was assessed as 'moderate' on the existing houses (Nos. 111, 112, 113, 156, 160), potentially 'high' on the nearest two vacant lots, and potentially 'moderate' on the vacant sites. Such effects would depend on the orientation of future dwellings and the degree of screening/perspective depth that might be provided by other dwellings to be constructed. The existing houses appear to be oriented to take advantage of views to the south toward the sea, but there are also views to the west or north-west toward the wind farm site. As the subdivision is developed, those properties on the western perimeter are likely to retain open views

³³ Includes such places as the Wai-O-Turi and Whenuakura Maraes

³⁴ Numbers refer in most cases to individual dwellings, but in some instances they refer collectively to a group of houses, such as those at Waverley Beach settlement or the unbuilt lots at Waipipi Beach.

³⁵ Excluding one house (No. 61) for which written approval has been given.

³⁶ Distances are between the house and the project envelope: In other words the nearest location that a wind turbine might be installed.

(particularly 28 and 46 The Lookout), while future development of the subdivision would increase the perspective depth and potential screening for remaining properties. There are also existing foreground dune landforms which provide some screening and increase perspective.

- 106.3 The nearest house to the north (No. 61, 330 Peat Road) would similarly have 'high' effects. It is close to the site (1.0km), although oriented away from the site. Replacement shelter planting has recently been carried out on the south of the house in the direction of the wind farm. The owner has provided written approval so the effects on this property do not need to be taken into account.
- 106.4 The nearest house to the north-east is a new house on Stewart Road (No. 155) which would likewise have 'high' visual effects. It is close to the site (1.3km), although oriented to the north in the opposite direction. A pine plantation in the middle distance will provide some perspective depth.
- 106.5 Otherwise, there are eleven houses north-east of the wind farm site in the Peat Road, Rangikura Road, Ihupuku Road and SH3 area in the order of 2.3km – 3.3km from the site. The degree of visual effect was assessed as 'mod-high' from one of these houses (No. 62) and 'moderate' from seven houses (Nos. 20, 21, 25, 63, 83, 114, 115). There is a reasonable separation distance to these properties, the houses are mostly oriented in the opposite direction, and a number have screening vegetation. There are also a number of pine plantations or shelter belts and rolling topography in the intervening landscape which increases the perspective depth from this direction.
- 106.6 There are seven houses (and a house that appears abandoned) north of the wind farm site in the Elslea Road, Wybourne Road, Rangikura Road area. The degree of visual effect was assessed as 'high' from four of these houses (Nos. 53, 54, 55 and 56) and mod-high from one house (No. 51). These houses are reasonably close to the site (1.3 – 1.7km) and have views across an open intervening landscape, although the potential visual effects are reduced by the orientation of each house away from the wind farm, some partial screening vegetation in each case, and occasional shelter belts and rolling topography in the intervening landscape that provides some perspective depth. The degree of effect was assessed as 'moderate' from the remaining house. (No. 18). It is 2.0km from the site, is oriented away from the wind farm, and has screening vegetation.
- 106.7 The effects were also assessed as 'moderate' for a house (No. 52) 2.6km away on the opposite side of SH3. Although it is further away and appears oriented away from the site, it is in an elevated location with an open foreground in the direction of the wind farm site. Views will be across a complex intervening landscape (roads, houses, plantations, railway line) which will provide some perspective depth.
- 106.8 There are twelve houses and the Wai-o-Turi Marae on the terrace between the Whenuakura and Pātea Rivers to the north-west of the project site (Rākaupiko Rd, Lower Kaharoa Rd, Pilot Station Rd) at distances of between approximately 1.0 and 3.0km. The degree of effect was assessed as 'high' from five of these houses (Nos. 92, 93, 96, 97) and mod-high from two houses on one property (No. 98). The closest property (No.98) has tall shelter planting in the direction of the wind farm site. The remaining six houses are further away (2.2 – 3.6km) and are oriented away from the wind farm site, but all of them have open views to the south-east toward the wind farm site. The intervening landscape is relatively open, although there are some shelter belts and hedgerows that provide some perspective depth. The visual effects were assessed as 'mod-high' from one house (No, 91) and moderate or mod-low from the other four houses in this area (Nos. 94, 103, 105, 159). These dwellings are 2.2-3.5km from the wind farm site, are all oriented away from the site, and three of the four properties have partial screening. The effects were also assessed as 'mod-high' from the Wai-o-Turi Marae. The marae is oriented with clear views to the south-east

toward the wind farm site. It is reasonably distant (2.8km), and the intervening landscape is reasonably complex (foreground farm buildings on the adjacent farm, middle-ground shelter belts and rolling topography) which will provide perspective depth.

- 106.9 There is a cluster of houses on the western bank near the mouth of the Pātea River some 2.8km from the wind farm site. However, the houses are at low elevation so that views would be screened by the topography.
- 106.10 The Whenuakura Marae is located on the Whenuakura River north-west of the wind farm. The marae buildings are oriented north-west away from the wind farm. Most of the wind farm will be screened by topography because the marae is at a relatively low elevation, but the top parts of several turbines will be visible beyond river terraces at a distance of approximately 2.4km. The intervening landscape is reasonably complex (foreground State highway and bridge, middle-ground terraces and plantation). The effects on the marae were assessed as 'moderate'.
- 106.11 There are several houses on Waverley Beach Road east of the wind farm site. The effects from seven of these (Nos. 74, 75, 76, 77, 79, 153, 154) was assessed as 'moderate', although they are at distances of 3.7k–4.1km. (The effects on some these houses increased compared to earlier assessments as a result of clearance of shelter belts following storm damage).
- 106.12 The degree of prominence from all other houses was assessed as 'mod-low' or 'low'. All other houses are at least 3km from the wind farm site and many have shelter vegetation or trees in the intervening landscape, and/or are oriented in the opposite direction of the wind farm. As distance increases, the extent to which views are intercepted by shelter belts and other vegetation also increases, and the perspective depth increases.
- 107 To place this assessment in perspective, any wind farm will result in visual effects from some private properties given the nature of wind turbines. Such effects are one factor to be taken into account as part of an overall consideration of a proposed wind farm. In this instance, the following points are pertinent to such considerations:
- 107.1 The number of affected properties is limited by the reasonably sparse settlement density near the site, and the reasonable distance between the turbine envelope and the nearest settlements (Waverley (5.8km), Waverley Beach (4.7km), Pātea (3.6km), and Waipipi Beach (3.0km)).
- 107.2 The flat topography reduces the relative elevation compared to most wind farms (wind farms are typically located on windy hills) and increases the potential and actual extent to which vegetation such as shelter belts provides screening.
- 107.3 Most dwellings are north-west, north, or north-east of the project site. They are typically oriented north-west through north-east in the direction of the sun, rather than towards the wind farm site, as confirmed by the detailed assessments in Appendix C. A number also have shelter planting in the direction of the wind farm, for instance to the south or west of dwellings. Those properties at Waverley Beach are south-east of the project site and are typically oriented either to the north-east, or to the south-west from those properties that have a view of the sea.
- 107.4 In this case Trustpower is also offering planting to be carried out on the properties of the 14 dwellings identified as having 'high' or greater adverse visual effects. As discussed, it is not possible to avoid visual effects with a wind farm, or to mitigate such effects on site. While the RMA does not require all adverse effects to be avoided, a practical and good neighbourly measure is to offer such off-site mitigation subject to the wishes and agreement of affected property owners. Such mitigation would

typically comprise shelter or amenity trees planted 'behind' a house in the direction of the wind farm.

Construction Effects

- 108 In landscape terms potential construction effects fall into two categories:
- **Temporary visual effects** arising from the appearance of structures such as the construction yard and concrete batching plant, the appearance of raw earthworks, and the construction activity itself including traffic to and from the site and operation of cranes;
 - **Temporary biophysical effects** arising from such things as un-stabilised earthworks.
- 109 In this instance such effects will be minimised for the following reasons:
- 109.1 There will be very low visibility of earthworks and ground level construction. By way of comparison, earthworks on hilly wind farm sites can be obvious from some distance, whereas the flat nature of the Waverley site will restrict any views.
- 109.2 Similarly there will be low visibility of the construction yard and concrete batching plant: Views from the north are restricted by the pine plantation along the north boundary, the nearest public road is some distance from the site and there is a low viewing audience in this area. Views from the coast would also be distant and restricted by the coastal dunes (one would need to climb the dunes to gain a distant view).
- 109.3 Visual amenity effects arising from construction will therefore be mostly related to views of the turbines as they are erected.
- 109.4 With regards biophysical effects during construction, matters relating to stabilisation of earthworks and effects of the culvert construction on the Waipipi Stream are addressed in the Civil Engineering Report (Riley Consultants, 2012, Waverley Wind Farm – Indicative Civil Assessment of Access Tracks and Hardstands). There will be no vegetation clearance of any note because the site is essentially open pasture, and vegetation of any significance (such as the wetlands) is protected within the Environmental Buffer Zone.

Effects on the Natural Character of the Coastal Environment

- 110 As discussed in paragraph 51, natural character is a composite of biophysical and experiential (or perceptual) matters. While treating components separately in a reductionist manner is an important step in the analysis process, natural character needs to be considered as a whole.
- 110.1 With respect of **experiential matters**, there will be adverse visual effects on the perception of natural character because the wind turbines will be a prominent backdrop to the coast. Such effects are inevitable for any wind farm located near the coast. In this case they will be mitigated by the set-back of turbines inland of the coastal dunes. The effects will occur in the context of the modified former sand mining area behind the coast. Some consideration of the character of wind turbines is also warranted – wind turbines do not domesticate the landscape in the same way as buildings, rather they express a response to the wind – a natural coastal process.
- 110.2 With respect of **biophysical components** of natural character (natural features and processes), any effects will be largely avoided by the location of the wind farm on the former sand mining area which is modified to the extent there is little remaining natural topography. The main remaining natural feature, the Waipipi Stream, is to be fenced and rehabilitated, which will help remedy its diminished natural character. The

wind farm will avoid the dunes which have relatively high natural character and which comprise the area of significant coastal influence.³⁷ All natural coastal processes will continue to occur unhindered.

111 Taking the matters listed above it is considered that the adverse effects on overall natural character of the coastal character will not be significant.

112 By way of further explanation, the following table responds to the eight natural character matters listed under NZCPS Policy 13 (2)

	<i>Matter</i>	<i>Comments</i>
(a)	natural elements, processes and patterns;	Minimal adverse effects on such biophysical aspects
(b)	biophysical, ecological, geological and geomorphological aspects;	Minimal adverse effects
(c)	natural landforms such as headlands, peninsulas, cliffs, dunes, wetlands, reefs, freshwater springs and surf breaks;	No adverse effects
(d)	the natural movement of water and sediment;	No adverse effects
(e)	the natural darkness of the night sky;	Minimal effects - while there will likely be aviation navigation lights on the top of some of the perimeter turbines, such lights can be ground shielded
(f)	places or areas that are wild or scenic;	The area is only moderately scenic and wild
(g)	a range of natural character from pristine to modified;	The area is not pristine. The wind farm site itself is heavily modified, and the wind farm footprint will avoid the dune area where there is comparatively greater natural character
(h)	experiential attributes, including the sounds and smell of the sea; and their context or setting.	There will be adverse effects on visual aspects of natural character because the turbines will be a prominent backdrop to the coast – although they will be located inland of the backdrop dunes. Other experiential aspects will remain strong, such as views out to sea, the sound of the waves, and the smell of the sea

113 The effects on natural character are also reversible. The wind turbines could be removed in the future and the site readily rehabilitated with no lasting effects on natural character. Policy A of the NPS REG requires decision makers to have particular regard (amongst other matters) to the reversibility of adverse environmental effects.

114 As discussed above, I consider the area of significant coastal influence and qualities is confined to the area of dunes. If this is accepted as an accurate delineation, the wind farm

³⁷ i.e. The definition of the extent of the coastal environment in NZCPS Policy 1
160311_3605_GL_Waverley Wind Farm Landscape and Visual Assessment_Final C

itself would fall outside the coastal environment although it would still form a prominent backdrop.³⁸

115 The question of ‘**appropriateness**’ of the development also arises in response to s.6(a) of the RMA. While this test requires a broad consideration, I consider the wind farm will be appropriate with respect of landscape matters for the following reasons:

115.1 The wind farm will avoid the dunes which have higher natural character and more significant coastal influence;

115.2 The site is extensively modified by former sand mining;

115.3 The site has an expansive scale that can accommodate large wind turbines;

115.4 The wind farm will not be out-of-place with the area’s productive farmland character; and

115.5 Wind turbines do not domesticate the landscape; rather they are structures that engage with the natural process of the wind.

Effects on Outstanding Natural Features and Landscapes

116 As discussed above, neither the RPS nor the Operative District Plan identify specific outstanding natural features and landscapes. In my opinion, the only potential ONF within the vicinity of the project site are the cliffs at Waverley Beach. This is consistent with the ONF/ONLs identified in the Proposed District Plan. While the wind farm will be a clearly visible feature and landmark from locations in this area, it will not compromise the landscape values of the cliffs. The wind farm will not be visible from most places on the beach in the vicinity of the most picturesque features which are in the Cave Beach area south-east of the headland on which the car park is located. From places in the vicinity of the cliffs with line-of-sight to the wind farm (such as from the car park area above the cliffs) the wind farm will be reasonably distant and past an intervening middle-ground headland. It will therefore appear quite separate and part of the background landscape. The wind farm will occupy a small proportion of the field of view of the panorama from such viewpoints. It will not be out-of-place with the character of the inland landscape which comprises productive farming and the Waverley Beach settlement itself. (Refer to the photosimulation from viewpoint 2, and the associated commentary in Appendix A).

117 As discussed earlier, the RPS refers to the “*scenic and landscape qualities of the raised marine terraces of South Taranaki and inland Taranaki*” in NFL Policy 1 dealing with outstanding natural features or landscapes. In my opinion a sensible interpretation is that this policy refers to outstanding examples of such terraces (which have yet to be identified) and could not be interpreted to apply to the project site. However, to avoid any doubt, the wind farm will not in any event compromise the ‘scenic and landscape qualities of the raised marine terraces’ because the extensive modification by sand mining means any natural features or surfaces related to marine terraces are already modified. I note that wind turbines themselves are slender vertical structures that do not diminish the legibility of the underlying land surface.

.....

³⁸ Paragraphs 53 - 60 above address the area of ‘outstanding natural character’ identified in the notified version of the Proposed District Plan. It is considered that both the mapped delineation and the ‘outstanding’ classification are incorrect.

TRANSMISSION INFRASTRUCTURE

Description

- 118 A new transmission line is to be constructed between the Waverley Wind Farm switchyard and the Waverley Substation to connect the wind farm with the national grid. The substation is on the north-east outskirts of Waverley in Mangatangi Road.
- 119 The transmission line will be a single-circuit 110kV line comprising three main wires (i.e. 'conductors') plus an additional aerial earth wire for approximately 1km of the line nearest the Waverley Substation. The line will be supported on poles up to 22m tall and generally around 200m apart. In most case single poles ('monopoles') will be used but double poles ('pi poles') may be used in some instances such as for longer spans (e.g. across gullies). Variations of configuration of monopole may also be used: For instance 'armless angle' poles will be used for tight turns, 'E arms' may be used where it is necessary to limit the side swing of conductors (such as adjacent to the rail corridor), and guy wires may be used for some angles. Appendix A, Figure 11, Typical Transmission Pole Arrangements illustrates drawings and photographs of pole types that will be used for the line.
- 120 The proposed location for the wind farm switchyard is 'behind' an existing pine shelter plantation near the northern boundary of the project site.
- 121 The transmission line alignment is illustrated on Figure 10, (Appendix A). From the project site it follows Dryden Road (partly unformed and partly a local road) to the railway line which it then follows eastward toward Waverley. The line is then aligned along Swinbourne Street and Fookes Street on Waverley's north and west perimeter respectively. The total length of the corridor is approximately 14km.

Relevant Provisions

- 122 The rules of the Operative South Taranaki District Plan provide for transmission lines as a permitted activity in the rural zone up to 110kV and 100MVA per circuit. The proposed line falls outside the rule because it is to be 110kV and have only one circuit of 130MVA. It is therefore a restricted discretionary activity. The relevant matters to which Council has restricted its discretion are 'landscaping' and 'visual impact amenity'.
- 123 While the rules in the proposed District Plan do not have legal effect, I note that they provide for lines up to 110kV (no MVA limit) and 25m in height (the proposed poles are to be up to 22m) as a permitted activity in the rural zone.

Effects of the Transmission Infrastructure

Effects on the biophysical landscape

- 124 The transmission line will have insignificant effects on the physical landscape. The terrain is mostly flat to gently rolling, and most of the route follows either existing roads or the railway, thereby minimising the earthworks required to provide access. The line will traverse a modified productive landscape with no natural features of any note that would be affected.

Visual amenity effects

- 125 In terms of overall landscape character, the proposed line will not look out-of-place in the rural landscape. Infrastructure such as local power lines are a regular feature of such landscapes, and the proposed monopoles are unremarkable and relatively unobtrusive. While the proposed transmission line will be taller than local distribution lines they will nevertheless be of a similar order of scale to such features as trees.
- 126 The main potential effects of the transmission infrastructure will therefore be visual amenity on individual properties. An inventory was compiled of potentially affected houses – or

groups of houses in the Waverley urban area³⁹ - and an assessment was made of the likely visual effect on the houses. (Appendix D. House locations are indicated on Appendix A, Figure 10). Assessments were made from desk-top analysis and road-side observation. The following paragraphs summarises the landscape and visual amenity effects for each section of the route:

- 126.1 The first section of the route is within the wind farm site itself, following the existing farm road. The site has a very low viewing audience, and the appearance of the transmission line would be subsumed by that of the wind turbines. Visual effects will be low.
- 126.2 North of the project site, the line will follow Dryden Road which is a no-exit, unsealed local road with a very small viewing audience – part of which is unformed legal road. It will have low visibility. At the angle where the corridor turns to follow the railway line to the east, the line will be visible from the house at 169 Rangikura Road, although it will be 270m away and south of the house (which is oriented away from the line). The effects were assessed as moderate-low.
- 126.3 The line will then be aligned parallel with the Marton - New Plymouth railway for approximately 5.4km towards Waverley. The landscape in this section is open so the line will be reasonably visible, including from SH3. However, the area has a ‘working’ rural character and the transmission line would be associated with the existing railway line infrastructure. The line will pass 120m behind the house at 1484 SH3, but that house is oriented in the opposite direction. Visual effects will be moderate-low.
- 126.4 Near the outskirts of Waverley the line will turn through 90° between two properties, 1506 and 1524 SH3 and cross SH3 a short distance west of from 145 Weraroa Road (being the local name for SH3 at this location). A double angle is required where the line crosses SH3. The effects on these three properties is assessed as high to very high taking into account proximity, open views, and the angles in the line.
- 126.5 The line will then trace the perimeter of Waverley following Swinburne and Fookes Streets. Houses are located on the inside only of these streets so that they enjoy open outlook over the surrounding rural landscape. The new line will be typically 20m-50m from houses (depending on setback). Some 36 affected houses were identified on the perimeter of the township (there are also empty lots). The effects were assessed as falling between moderate and high depending on factors individual to each property. Such individual factors include the setback of house from street boundary, the extent of landscaping (that will potentially either screen the line and/or increase perspective depth), and whether monopoles will be located opposite the property. Views tend to be more constrained in such suburban areas (by neighbouring buildings and landscaping) and there is a different expectation of structures compared with rural landscapes. The proposed transmission line will also be seen in context with the existing overhead services on the near side of both Swinburne and Fookes Streets. The line will, however, conflict with a row of recently planted trees in the outside berm of Swinburne and Fookes Streets. These amenity trees are approximately 1- 2m high. A number appear to have suffered frost damage.
- 126.6 The alignment will cross in front of the offices of Te Kaahu o Rauru (on the grounds of the former Waverley High School). The line will be adjacent to the property boundary. Views further along the line will be screened by planting on side boundaries. The effects were assessed as ‘high’, although it will depend on whether a pole is located in front of the property or not.

³⁹ The inventory covers properties with houses up to approximately 500m away in open rural areas, and the ‘front row’ of houses within Waverley
160311_3605_GL_Waverley Wind Farm Landscape and Visual Assessment_Final C

126.7 The final leg of the proposed line will traverse the Hāwera District Council Domain to access the existing substation. In this section the line will be visually back-dropped by the tall trees on the eastern side of the domain. While it will be in the vicinity of four houses (Nos.125, 133, 134, 158), the effects on each were assessed as low given the degree of screening.

Effects on natural character

127 While the switchyard and part of the transmission corridor fall within the 'Coastal Protection Zone', which is deemed to be the coastal environment, any effects on natural character will be negligible for the following reasons:

127.1 The area in which the switchyard and line will be located has a low degree of coastal influence and low natural character. The switchyard and proposed corridor are approximately 1.3km from the coast. It is within the area modified by former sand mining, and its character is dominated by open pasture and pine plantation.

127.2 The effects on biophysical aspects of natural character will be minimal because of the flat terrain and open pasture land cover.

127.3 The effects on perceptual (or visual) aspects of natural character will be low because the switchyard and proposed alignment will be screened from the north by the pine plantation, and will mostly be seen against a backdrop of pines from the south.

Visual 'baseline'

128 The assessment above is made against the existing environment. I understand that 110kV lines up to 100 MVA⁴⁰ per circuit are permitted activities in the rural zone. In this instance the proposal is a 110kV single-circuit line up to 130 MVA. I note that any differences between a permitted 100 MVA and the proposed 130 MVA would be indistinguishable in this situation: The only difference might be wires ('conductors') of slightly greater diameter. To put it another way, the proposed line would not have any adverse visual amenity effects if compared against such a 'baseline'.

Summary of Effects of the Proposed Transmission Line

129 Effects of the transmission infrastructure on the biophysical landscape will be insignificant taking into account the modified existing landscape, the flat to gently rolling topography, and the ready construction access.

130 Effects on rural character will be minimised by the use of relatively unobtrusive monopoles, and an alignment that mostly follows either minor local roads or the railway corridor.

131 The main effects will be on visual amenity from individual dwellings around the outskirts of Waverley. The main mitigating factor in this regard will be the use of monopoles, and that the line will be seen in the context of existing overhead services in the road reserve.

132 Any effects of the transmission infrastructure on natural character of the coastal environment will be negligible.

⁴⁰ MVA is a measure of current. Higher currents tend to require greater diameter wires ('conductors') but it is not directly proportional – other factors also influence the choice of conductor.
160311_3605_GL_Waverley Wind Farm Landscape and Visual Assessment_Final C

MEASURES TO AVOID, REMEDY AND MITIGATE EFFECTS

Measures incorporated in the design

- 133 As discussed above, measures to avoid, remedy and mitigate adverse effects are incorporated into the wind farm design by means of the design process which included landscape input. Such measures that are already part of the design include the following:
- Avoidance of the band of unmodified coastal dunes (i.e. avoidance of the area where coastal influences are most dominant and the degree of natural character highest);
 - Avoidance of that part of the project site closest to the mouth of the Whenuakura River;
 - Avoidance of the Waipipi Stream (apart from culvert crossings), and fencing of the stream to promote natural regeneration of its banks;
 - Avoidance of the wetlands and ponds within the site, and also in transmission corridor; and
 - Location of the base of turbines behind coastal dunes in order to increase perspective depth and sense of distance between turbines and the coast.

Other recommended mitigation measures

- 134 Additional mitigation measures are recommended for the detail design of the wind farm. In essence these are fine-tuning matters to minimise adverse landscape and visual effects.
- 134.1 Require all turbines to be the same design and dimensions, and painted the off-white colour which is standard for most wind turbines;
- 134.2 Contour spoil disposal sites to reflect typical dune landforms: Such landforms could be located on the seaward side of turbines to help increase perspective depth as discussed above;
- 134.3 Contour any cut batters to merge with surrounding landform and recreate a natural profile;
- 134.4 Remove the construction facilities such as the concrete batching plant, and any construction yard facilities not required for on-going maintenance; and
- 134.5 Reduce the width of the construction roads to a sensible width for on-going maintenance (5m) and rehabilitate any earth-worked areas.
- 134.6 Offer off-site planting for the 14 dwellings identified in Appendix C as having 'high' or greater adverse visual effects from views of the wind turbines. Such planting would be subject to the wishes and agreement of affected property owners, and would typically entail shelter or amenity trees planted 'behind' a house in the direction of the wind farm. The offer to provide such mitigation would be given effect to by a condition of consent.

CONCLUSIONS

- 135 The main landscape issue is the potential effects on natural character of the coastal environment. While it is impossible to avoid all effects on perceptions of natural character with wind farms located near the coast, the 'project envelope' avoids the band of coastal dunes where the coastal influences and natural character are highest. The natural features and processes will therefore be preserved. Rather, the wind farm will be located inland of the dunes on those parts of the site already modified by former sand mining. While the wind turbines will form a prominent backdrop from places on the coast, they will nevertheless not domesticate the landscape but rather will express the wind – a natural coastal process. The overall effects on natural character are therefore not considered significant. The effects on perceptions of natural character are also reversible – the wind turbines could be readily removed in the future with no on-going change to natural character.
- 136 The proposed wind farm is an appropriate development in this location for the following landscape reasons:
- 136.1 The landscape has an expansive scale that can accommodate large wind turbines.
- 136.2 The wind farm will not be out-of-place with the area's productive farmland character.
- 136.3 The site itself is extensively modified by the former sand mining, comprises open pasture (which will be maintained beneath the wind turbines), and can readily accommodate the civil engineering (access roads, foundations etc.) associated with wind farms.
- 136.4 Although it is a settled and modified landscape, there is a low density of dwellings in the area immediately surrounding the project site, and it is well separated in distance from townships, the highway and the most frequented parts of the coastline. While any wind farm will have some visual effect on nearby properties, the number of dwellings assessed as having adverse visual effects is relatively low. Such effects would be mitigated through the offer of off-site planting – particularly given the relatively flat nature of the surrounding area.
- 137 The site is relatively close to the national grid and is able to connect to an existing substation, thereby avoiding the effects that would result from a new substation. The monopoles proposed for the 110kV transmission line connection are relatively unobtrusive elements in a rural landscape, and the proposed alignment is acceptable in landscape and visual terms, mostly following local roads, the railway line, and the outskirts of Waverley.

Gavin Lister
Isthmus
11 March 2016

APPENDIX A: FIGURES AND PHOTOSIMULATIONS

(See separate A3 document)

APPENDIX B: COMMENTARY ON PHOTOSIMULATIONS

<i>Viewpoint</i>	<i>Commentary</i>	<i>Comparative effect⁴¹</i>
01	Waverley Cemetery looking south-west	
	<p><i>(distance to 'project site' approximately 5.8km; degree of prominence = mod-low)</i></p> <p>The viewpoint was selected to illustrate one of the clearest views from Waverley itself, because it is elevated on a small knoll on the southern edge of the township.</p>	
	<p>'Non-fanciful' example</p> <ul style="list-style-type: none"> • The intervening landscape is very complex, providing strong perspective depth: The foreground comprises the railway and a variety of industrial and residential buildings, and the middle-ground comprises hummocky dune landforms, trees and pine shelter belts. The wind turbines are background elements with only the tops of the turbines visible beyond middle-ground features. • The wind farm occupies a moderate proportion of the field of view from this viewpoint. • The landscape generally has a broad horizontal scale and the turbines are relatively low on the horizon. • Overall, the wind turbines will be a background feature from this viewpoint. It will not be out of character with the productive rural character of the landscape. 	
	<p>'East envelope'</p> <ul style="list-style-type: none"> • Compared with the 'non-fanciful' example, the 'south-east envelope' example will be a similar distance and prominence. • The wind farm would occupy a smaller field of view: (The turbines would be confined to a smaller part of the background skyline). • The wind turbines have a slightly more cluttered appearance but it would not be obvious because of distance and the partial screening by middle-ground elements. • Overall, the 'south-east envelope' would have slightly less effects. 	slightly less
	<p>'North envelope'</p> <ul style="list-style-type: none"> • The 'north envelope' example is a similar distance and prominence. • The wind farm would occupy a similar field of view. • The wind turbines would have a slightly more cluttered appearance but it would not be obvious because of distance and the partial screening by middle-ground elements, so that any differences would not be noticeable. • Overall, the effects are similar to that of the 'non-fanciful' example. 	similar
	<p>'West envelope'</p> <ul style="list-style-type: none"> • The 'west envelope' example is more distant and slightly less prominent. 	slightly less

⁴¹ Compared to the 'non-fanciful, realistic' example.

Viewpoint	Commentary	Comparative effect ⁴¹
	<ul style="list-style-type: none"> The wind farm would occupy a smaller field of view. Differences in density are not readily apparent from this viewpoint because of distance and intervening elements in the landscape. Overall the effects would be slightly less from this viewpoint compared to the 'non-fanciful' example. 	
02	Waverley Beach lookout, looking west	
	<p><i>(distance to 'project envelope' approximately 5.2km; degree of prominence = mod)</i></p> <p>The viewpoint was selected to illustrate the view from a popular viewpoint, and to represent the view from the settlement of Waverley Beach.</p>	
	<p>'Non-fanciful' example</p> <ul style="list-style-type: none"> The wind farm will appear reasonably distant, and the intervening landscape provides perspective depth: The foreground includes the cliffs, beach and houses of Waverley Beach, and the middle-ground comprises and intervening point (headland). The wind farm will appear in the background, (the bases of the turbines are behind the middle-ground headland)⁴². The wind farm occupies a small proportion of the field of view. From this angle the wind turbines will also be set back inland from Pids Point which extends beyond the middle-ground headland. The landscape generally has a broad horizontal scale which will visually anchor the turbines. While there are strong natural features (sea and cliffs) the landscape also has a human presence including the settlement itself and the backdrop (inland) productive farming character. Overall, the wind farm will be a landmark feature from this viewpoint, but it will be a reasonably distant background feature, in scale and balance with the rest of the panorama. 	
	<p>'East envelope'</p> <ul style="list-style-type: none"> The 'east envelope' example is a similar distance to the nearest turbines The wind farm occupies a similar field of view. The wind turbines have a denser and more cluttered appearance with a greater degree of 'stacking' (turbines located one behind the other). Overall, the 'east envelope' would have slightly greater effects because of the greater degree of stacking. 	slightly greater
	<p>'North envelope'</p> <ul style="list-style-type: none"> The 'north envelope' example is a similar distance and prominence. The wind farm occupies a narrower field of view, and is located further inland from the coast. The wind turbines would have greater density, a greater degree of 'stacking', and they appear more visually cluttered. However the 	similar

⁴² This would be more apparent in reality than in the photosimulation because photos flatten perspective.

Viewpoint	Commentary	Comparative effect ⁴¹
	<p>greater density would be offset by the narrower field of view.</p> <ul style="list-style-type: none"> Overall, the 'north' envelope would have similar degree of effects (balancing slightly greater density with narrower field of view and increased set back from coast). 	
	<p>'West envelope'</p> <ul style="list-style-type: none"> The 'west envelope' example is more distant and less prominent. The wind farm is confined to a narrower field of view. The wind turbines are denser, with a greater degree of 'stacking', but such factors are outweighed by the benefit of distance and narrower field of view. Overall, there would be moderately less visual effects. 	moderately less
03	Waipipi Beach subdivision looking west	
	<p><i>(distance to 'project site' approximately 2.9km; degree of prominence = mod-high)</i></p> <p>The viewpoint was selected to illustrate a clear view from the nearest corner of Waipipi Beach subdivision to the project site.</p>	
	<p>'Non-fanciful' example</p> <ul style="list-style-type: none"> The view across flat and open dairy paddocks has few intervening features, which reduces the perspective depth: Apart from the gateway fence the foreground is open and flat dairy pasture, and the middle-ground farm buildings, hummocky dunes and pine shelter belt are not very prominent. The bases of the turbines are, however, beyond the middle-ground features which provide some perspective. The landscape has an expansive scale which helps visually anchor the turbines. The wind farm also occupies a relatively narrow portion of the field of view from this direction. Views from the subdivision tend to oriented towards the sea to the south, away from the wind farm. It is noted that foreground planting could potentially screen the wind farm from such a viewpoint. 	
	<p>'East envelope'</p> <ul style="list-style-type: none"> The 'east envelope' example is a similar distance to the nearest turbines. The wind farm occupies a similar field of view. The wind turbines have a denser and more cluttered appearance with a greater degree of 'stacking'. Overall, the 'east envelope' would have slightly greater effects. 	slightly greater
	<p>'North envelope'</p> <ul style="list-style-type: none"> The 'north envelope' example is a similar distance to the nearest turbine. The wind farm is confined to a significantly narrower field of view. The wind turbines are denser and more visually cluttered, with a greater degree of 'stacking'. 	slightly greater

Viewpoint	Commentary	Comparative effect ⁴¹
	<ul style="list-style-type: none"> Overall, there would be slightly greater visual effects: The benefits of the narrower field of view would be outweighed by the greater density, 'stacking' and visual clutter. 	
	<p>'West envelope'</p> <ul style="list-style-type: none"> The 'west envelope' example is more distant to the nearest turbine. The wind farm is confined to a slightly narrower field of view. The wind turbines are denser, with a greater degree of 'stacking', but such factors are outweighed by the benefit of distance in this instance. Overall, there would be moderately less visual effects. 	moderately less
04	Junction of Peat Road and Stewart Road looking south	
	<p>(distance to 'project site' approximately 1.3km; degree of prominence = 'high')</p> <p>The viewpoint was selected to illustrate one of the clearest and closest views from a public road north of the wind farm. There are no glimpses of the sea from this location.</p>	
	<p>'Non-fanciful' example</p> <ul style="list-style-type: none"> The wind farm appears close, and with little perspective depth: The road is slightly elevated affording clear views and the foreground is flat, open paddocks. While the bases of most turbines are behind the middle-ground pine plantation (or the small hummocky dune landforms on the right of the photo) which does increase perspective depth, two of the turbines are located in front of this plantation. The wind farm occupies a relatively wide portion of the field of view. The flat, open terrain has an expansive scale which helps to visually anchor the wind turbines. Overall, the wind farm will dominate what is otherwise a relatively featureless view, but it will not be out of place with the productive rural character. 	
	<p>'East Envelope'</p> <ul style="list-style-type: none"> The 'east envelope' is a similar distance away to the nearest turbines. The wind farm occupies a narrower field of view. The wind turbines are denser and have a more cluttered appearance, with a greater degree of 'stacking' (turbines located one behind the other). Overall, the effects would be similar to the 'non-fanciful' example. Any slight increase in stacking and density are offset by the slightly reduced field of view. 	similar
	<p>'North Envelope'</p> <ul style="list-style-type: none"> The 'north envelope' example is a similar distance away to the nearest turbine. 	similar

Viewpoint	Commentary	Comparative effect ⁴¹
	<ul style="list-style-type: none"> The wind farm occupies a similar field of view. The wind turbines appear similar in density. Overall, the north envelope would have similar degree of effects from this viewpoint. 	
	<p><i>'West Envelope'</i></p> <ul style="list-style-type: none"> The 'west envelope' example is somewhat further to the nearest turbine. The wind farm occupies a narrower field of view. The wind turbines appear denser and more cluttered, but this is outweighed by the greater distance and narrower field of view. Overall, the effects would be moderately less from this viewpoint. 	moderately less
05	State Highway 3 opposite the Waverley Racecourse looking south-west	
	<p><i>(distance to 'project site' approximately 4km; degree of prominence = 'moderate')</i></p> <p>The viewpoint was selected to illustrate a clear view from near the western outskirts of Waverley.</p>	
	<p><i>'Non-fanciful' example</i></p> <ul style="list-style-type: none"> The wind farm is in centre view for west bound travellers on SH3, and it occupies a wide portion of the field of view. There would be a view from a similar direction and distance from the grandstand at the racecourse. The wind farm will gradually come into view as one travels west of Waverley, and will be further revealed around the following bend from this viewpoint. The wind farm appears reasonably distant from this viewpoint, and the intervening landscape provides perspective depth: There is a foreground comprising the racecourse and such road-side features as the hedge and overhead power line. The middle-ground comprises a pine plantation and hummocky terrain. The bases of the turbines are behind the middle-ground features so that the wind farm is in the background. As in other viewpoints, the landscape has a broad horizontal scale which visually anchors the wind farm. Overall, the wind farm will be moderately prominent from this viewpoint, but it will not be out of place with the productive rural character. 	
	<p><i>'East Envelope'</i></p> <ul style="list-style-type: none"> The 'east envelope' is a similar distance to the nearest turbines The wind farm occupies a narrower field of view. The wind turbines appear more cluttered, with significant stacking from this angle. Overall, there would be moderately greater visual effects because the stacking is particularly accentuated with the particular layout from this viewpoint. 	moderately greater
	<p><i>'North Envelope'</i></p> <ul style="list-style-type: none"> The 'north envelope' is a similar distance to the nearest turbine 	similar

Viewpoint	Commentary	Comparative effect ⁴¹
	<ul style="list-style-type: none"> The wind farm occupies a similar field of view The wind turbines appear similar in density from this view, with no noticeable difference in stacking Overall, there would be a similar degree of visual effects compared to the 'non-fanciful' example. 	
	<p>'West Envelope'</p> <ul style="list-style-type: none"> The 'west envelope' is a similar distance to the nearest turbines The wind farm occupies a significantly narrower proportion of the field of view. The wind farm appears denser, with slightly more stacking, but this is outweighed by the narrower field of view. Overall, there would be a slightly less degree of visual effects compared to the 'non-fanciful' example. 	slightly less
06	State Highway (opposite #897) looking south-west	
	<p><i>(distance to project site approximately 3.2km; degree of prominence = high)</i></p> <p>The viewpoint was selected to illustrate one of the clearest views from SH3 west of Waverley. The view is across open fields, with one of the few views of the sea from this part of the highway.</p>	
	<p>'Non-fanciful' example</p> <ul style="list-style-type: none"> The wind farm is in side view for travellers in either direction along SH3. It occupies a wide portion of the field of view, and is in the direction of the sea towards one's eyes would naturally be drawn. The wind farm will appear relatively close from this viewpoint, because the intervening landscape has weak perspective depth: The foreground is featureless open grassland, and the middle-ground of farm buildings, hummocky dune landforms and pine shelter belts is not visually distinctive. However, the bases of the turbines are behind the middle-ground features which do provide some perspective. The expansive horizontal scale of the landscape visually anchors the wind turbines. Overall, the wind farm will be a prominent landmark from this location, but it will appear in scale with the landscape and will not be out of place with its productive rural character. 	
	<p>'East Envelope'</p> <ul style="list-style-type: none"> The 'east envelope' is a similar distance to the nearest turbines. The wind farm occupies a significantly smaller field of view from this angle. The wind turbines appear denser, although there is no significant increase in stacking. Overall, this example would have moderately less visual effects because the greater density of turbines is outweighed by the reduced field of view. 	moderately less
	<p>'North envelope'</p> <ul style="list-style-type: none"> The 'north envelope' example is a similar distance to the nearest turbines. 	similar

Viewpoint	Commentary	Comparative effect ⁴¹
	<ul style="list-style-type: none"> The wind farm occupies a slightly field of view. The turbines appear to have a similar density, although slightly less depth. Overall, it would have a similar degree of visual effects compared to the 'non-fanciful' example. 	
	<p>'West envelope'</p> <ul style="list-style-type: none"> The 'west envelope' example is a similar distance to the nearest turbines. The wind farm occupies a significantly narrower field of view from this angle. The turbines appear a little denser, with slightly greater 'stacking', although this is offset by the narrower field of view. Overall, it would have a slightly less visual effects compared to the 'non-fanciful' example. 	slightly less
07	State Highway 3 opposite #857, looking south	
	<p><i>(distance to project site approximately 2.1km; degree of prominence = high)</i></p> <p>The viewpoint was chosen to illustrate the closest clear view from SH3. The view is across a gully and open fields.</p>	
	<p>'Non-fanciful' example</p> <ul style="list-style-type: none"> There is a sweeping bend in SH3 west of this viewpoint, so that the wind farm will be in side view and central view for east bound travellers. The wind farm will appear reasonably close from this viewpoint, although the intervening landscape is reasonably complex and provides good perspective depth: The foreground is a prominent gully and terrace paddocks with hedges, and the middle-ground includes hummock dune landforms, farm buildings, and shelter trees. The bases of the turbines are clearly beyond the middle-ground features so that the wind farm is in the background. Although it is not as expansive as viewpoint 6, the broad scale of the landscape helps to visually anchor the wind turbines. Overall, the wind farm will be a prominent landmark from this section of SH3 (as illustrated by viewpoints 06 and 07), but it will appear in scale with the landscape, and will not be out of place with its productive rural character. 	
	<p>'East Envelope'</p> <ul style="list-style-type: none"> The 'east envelope' example is more distant to the nearest turbines. The wind farm occupies a significantly smaller proportion of the field of view. The wind turbines appear significantly denser and more visually cluttered. On balance, the 'east envelope' would have a similar degree of visual effects: The more cluttered appearance would be offset by the narrower field of view compared to the 'non-fanciful' example. 	similar
	<p>'North Envelope'</p> <ul style="list-style-type: none"> The 'north envelope' example is a similar distance to the nearest turbines The wind farm occupies a similar field of view. 	similar

Viewpoint	Commentary	Comparative effect ⁴¹
	<ul style="list-style-type: none"> The wind turbines have a similar apparent density -although there is less depth to the layout Overall, the visual effects will be similar compared to the 'non-fanciful option': 	
	<p>'West Envelope'</p> <ul style="list-style-type: none"> The 'west envelope' ('worst case') is a similar distance away to the nearest turbines. The wind farm occupies a narrower field of view from this angle, although it makes only a slight difference to appearance of the wind farm The wind turbines appear denser and more visually cluttered, and with a greater degree of 'stacking' (turbines one behind the other), particularly amongst the nearest and most prominent turbines. Overall, the visual effects would be moderately greater compared to the non-fanciful option because the stacking and more cluttered appearance is particularly accentuated from this viewpoint 	moderately greater
08	State Highway 3 at intersection with O'Reilly Road, looking south-east	
	<p><i>(distance to project site approximately 3.5km; degree of prominence = moderate)</i></p> <p>The viewpoint was chosen to illustrate a clear view from that section of SH3 traversing the terrace west of the Whenuakura River.</p>	
	<p>'Non-fanciful' example</p> <ul style="list-style-type: none"> The intervening landscape is reasonably complex, so that there is good perspective depth: While the foreground is flat and open grassland, the middle-ground contains distinctive features including several farm buildings, stock yards, and shelter-belt trees. The bases of the turbines are clearly behind the middle-ground features so that wind farm appears part of the background. The wind farm will be in side to quarter view for travellers on SH3, and will occupy a moderate part of the field of view from this direction. For east-bound travellers, the first clear views of the wind farm will come from this section of the road, although there will be some earlier long range glimpses. The landscape's expansive horizontal scale helps to visually anchor the wind turbines. Overall, the wind farm will be a reasonably prominent feature, but will appear in scale with the landscape, and will not be out of place with its productive rural character. 	
	<p>'East Envelope'</p> <ul style="list-style-type: none"> The 'east envelope' example is more distant to the nearest turbines –the wind farm appears more distant. The wind farm occupies a significantly narrower field of view from this angle. The wind turbines appear more dense and cluttered, with more 'stacking'. Overall, the visual effects would be similar: While the wind farm will be more cluttered, the effects will be offset by its narrower extent and greater distance. 	similar –on balance
	'North envelope'	similar

Viewpoint	Commentary	Comparative effect ⁴¹
	<ul style="list-style-type: none"> The 'north envelope' example is a similar distance to the nearest turbines. The wind farm occupies a narrower field of view The wind turbines have a slightly greater apparent density, with slightly greater stacking, but this is offset by the narrow field of view. Overall, the degree of visual effects will be similar to the 'non-fanciful' example: 	
	<p>'West envelope'</p> <ul style="list-style-type: none"> The 'west envelope' example is a similar distance to the nearest turbines. The wind farm occupies a slightly narrower field of view The wind turbines appear slightly denser, more visually cluttered with a greater degree of 'stacking'. Overall, the degree of visual effects will be moderately greater compared to the 'non-fanciful' example: 	slightly greater
09	From Pātea main street (Egmont Street) looking south-east	
	<p><i>(distance to project site approximately 4.5km; degree of prominence = mod-low)</i></p> <p>The viewpoint was chosen to illustrate the clearest view from the main street of Pātea.</p>	
	<p>'Non-fanciful' example</p> <ul style="list-style-type: none"> The wind farm is off-centre from the axis of the main street, so it will be visible from eastern end of the main street where SH3 turns into Bedford Street and descends toward the Pātea River bridge. The intervening landscape is complex: The wind turbines are in the background. While there are no middle-ground features (which reduces perspective to some extent) the foreground is complex and includes the main street buildings, a sculpture at the gateway to the main street, suburban housing, and tall parkland trees. The wind farm will occupy only a small proportion of the field of view from this angle, and only the tops of the turbines will be visible. Overall, the wind farm will be a noticeable feature from this viewpoint and from other places within Pātea, but it will be a relatively incidental and distant feature. 	
	<p>'East Envelope'</p> <ul style="list-style-type: none"> The 'east envelope' example is barely perceptible from this viewpoint: Only a few blade tips would be visible above the complex roofline of the township. Overall, the visual effects would be less compared to the 'non-fanciful' example, although the effects from this viewpoint would be low in any event. 	slightly less
	<p>'North envelope'</p> <ul style="list-style-type: none"> Only a small part of the wind farm and a few blade tips would be visible, from this particular viewpoint turbines are screened 	slightly less

Viewpoint	Commentary	Comparative effect ⁴¹
	<p>behind houses.</p> <ul style="list-style-type: none"> Overall, the visual effects would be less compared to the 'non-fanciful' example, although the effects from this viewpoint would be low in any event. 	
	<p>'West envelope'</p> <ul style="list-style-type: none"> The west envelope example is a similar distance to the nearest turbines. The turbines are spaced more densely, although the difference is not noticeable given the small proportion that is visible. Overall, the degree of visual effect will be similar to the 'non-fanciful' example. 	similar
10	Pātea Beach lookout, looking south-east	
	<p><i>(distance to 'project envelope' approximately 2.7km; degree of prominence = mod-high)</i></p> <p>The viewpoint was selected to illustrate a clear view from the lookout at the closest part of Pātea to the wind farm. The view is across the headland on the opposite side of the Pātea River mouth.</p>	
	<p>'Non-fanciful' example</p> <ul style="list-style-type: none"> The intervening landscape has moderate perspective depth: There is a strong foreground comprising the mouth of the Pātea River (including the groynes within which the river is channelled), and a middle-ground comprising the reasonably distinctive headland and railway on the opposite side of the river. The wind farm is part of the background with the base of the turbines well behind the middle-ground hummock skyline. The wind farm will occupy only a small proportion of the field of view. One's eye is naturally drawn toward the coast and river mouth, so that the wind farm will form a backdrop on one side of the view. There is a strong horizontal scale, including the mass of the terrace, which helps visually anchor the wind farm. While there are strong natural features (sea, river, headland) the landscape also has a strong human presence including the engineering works at the river mouth, the railway on the opposite bank, and the productive farmland character. Overall, the wind farm will be a landmark feature from this viewpoint, but it will be in scale and balance with the rest of the panorama, and there will be a comfortable degree of separation. 	
	<p>'East Envelope'</p> <ul style="list-style-type: none"> The 'east envelope' example is significantly more distant compared to the 'non-fanciful' example. The wind farm occupies a somewhat narrower field of view. The wind turbines appear denser and visually cluttered, but the effect of this is outweighed by the greater distance. Overall, there would be a moderately less degree of visual effect. 	moderately less
	<p>'North envelope'</p> <ul style="list-style-type: none"> The 'north envelope' example is somewhat more distant to the nearest turbines. 	slightly less

Viewpoint	Commentary	Comparative effect ⁴¹
	<ul style="list-style-type: none"> The wind farm example also occupies a narrower field of view (although all options occupy a relatively narrow field of view from this angle), and is set back further inland from the coast. The turbines have a somewhat greater density, a more cluttered appearance, and a greater degree of ‘stacking’. Overall, the degree of visual effects would be slightly less compared to the ‘non-fanciful’ example: The adverse effect of the stacking and greater density would be outweighed by the greater distance and narrower field of view. 	
	<p>‘West envelope’</p> <ul style="list-style-type: none"> The ‘west envelope’ example is a similar distance to the nearest turbines. The wind farm example occupies a similar field of view. The wind farm example has a more cluttered appearance and the degree of ‘stacking’ is accentuated by the shallower depth. Overall, the ‘west envelope’ would have slightly greater visual effects compared to the ‘non fanciful’ example. 	slightly greater
11	<p>Whenuakura River mouth looking east</p>	
	<p><i>(distance to ‘project envelope’ approximately 230m; degree of prominence = very high)</i></p> <p>The viewpoint was selected to illustrate one of the closest views to the wind farm from the coast, adjacent to the mouth of the Whenuakura River). The foreground is a secondary channel – the photo is taken from a spit between the secondary channel and the main river mouth.</p>	
	<p>‘Non-fanciful’ example</p> <ul style="list-style-type: none"> The wind turbines will be very prominent given their proximity, and that they occupy a wide field of view from this location. The base of the turbines will be located inland of the coastal dunes and low cliffs, which provides some perspective depth. There is a strong horizontal scale, which helps visually anchor the wind farm. <p>Overall, the wind farm will be a dominant feature from this viewpoint. The view will be defined by the combination of the wind turbines in counterpoint to the natural beach and dune landscape.</p>	
	<p>‘East Envelope’</p> <ul style="list-style-type: none"> The ‘east envelope’ example is significantly more distant from this viewpoint compared to the ‘non-fanciful’ example. Most of the wind farm would be screened by the foreground dunes. <p>Overall, there would be a significantly less degree of visual effect.</p>	significantly less
	<p>‘North envelope’</p> <ul style="list-style-type: none"> The ‘north envelope’ example is somewhat more distant to the nearest turbines compared to the ‘non-fanciful’ example. Most of the wind farm would be screened by the foreground dunes. Of those turbines that are visible, the lower parts are beyond the foreground dunes which provides significant perspective depth. <p>Overall, there would be a significantly less degree of visual effect compared to the ‘non-fanciful’ option</p>	significantly less

Viewpoint	Commentary	Comparative effect ⁴¹
	<p>'West envelope'</p> <ul style="list-style-type: none"> The nearest turbine is a little closer to the viewpoint compared with the 'non-fanciful' layout, and there is slightly greater density of turbines which adds slightly to visual clutter of the layout. In other respects it is similar to the 'non-fanciful' layout. The wind turbines will be very prominent given their proximity, and that they occupy a wide field of view from this location. The base of the turbines will be located inland of the coastal dunes and low cliffs, which provides some perspective depth. There is a strong horizontal scale, which helps visually anchor the wind farm. Overall, the wind farm will be a dominant feature from this viewpoint. The view will be defined by the combination of the wind turbines in counterpoint to the natural beach and dune landscape 	slightly greater
12	<p>Pids Point looking north (distance to 'project envelope' approximately 400m; degree of prominence = very high)</p> <p>The viewpoint was selected to illustrate the view from the beach at the end of the access track across the site, and a site visited because of the mussel reefs.</p>	
	<p>'Non-fanciful' example</p> <ul style="list-style-type: none"> The wind turbines will be very prominent given their proximity, and that they occupy a wide field of view from this location (i.e. there are turbines in both direction along the coast) The base of the turbines will be located inland of the coastal dunes which provides some perspective depth. There is a strong horizontal scale, which helps visually anchor the wind farm. <p>Overall, the wind farm will be a dominant feature from this viewpoint. The view will be defined by the combination of the wind turbines and the natural beach and dune landscape.</p>	
	<p>'East Envelope'</p> <ul style="list-style-type: none"> The 'east envelope' example is similar in proximity to the 'non fanciful' layout, and there is slightly greater density of turbines which adds slightly to visual clutter of the layout. However, it is similar to the 'non-fanciful' layout. The base of the turbines will be located inland of the coastal dunes which provides some perspective depth. There is a strong horizontal scale, which helps visually anchor the wind farm. <p>Overall, there would be a similar degree of visual effect.</p>	similar
	<p>'North envelope'</p> <ul style="list-style-type: none"> The 'north envelope' example is somewhat more distant to the nearest turbines compared to the 'non-fanciful' example. The wind farm would occupy a slightly smaller field of view (fewer turbines at the east and west extremities) The base of the turbines would be screened beyond the foreground dunes to a greater extent, which provides greater perspective depth. 	moderately less

<i>Viewpoint</i>	<i>Commentary</i>	<i>Comparative effect⁴¹</i>
	Overall, there would be a moderately less degree of visual effect compared to the 'non-fanciful' option	
	<p><i>'West envelope'</i></p> <ul style="list-style-type: none"> • The 'west envelope' example is significantly more distant from this viewpoint compared to the 'non-fanciful' example, the turbines significantly less dominant, and restricted to a smaller field of view. • A greater proportion of the wind farm would be screened by the foreground dunes which would increase the perspective depth. • There is a greater density of turbines which increases the 'visual clutter' and 'stacking', but this is more than offset by other factors. • Overall, the west envelope would have a significantly less degree of visual effect from this viewpoint compared with the 'non-fanciful' layout. 	significantly less

SUMMARY OF EFFECTS OF WORST CASE OPTIONS FROM EACH VIEWPOINT COMPARED TO 'NON-FANCIFUL' LAYOUT

	significantly less	moderately less	slightly less	similar	slightly greater	moderately greater
Vpt 1 'East'			✓			
Vpt 1 'North'				✓		
Vpt 1 'West'			✓			
Vpt 2 'East'					✓	
Vpt 2 'North'				✓		
Vpt 2 'West'		✓				
Vpt 3 'East'					✓	
Vpt 3 'North'					✓	
Vpt 3 'West'		✓				
Vpt 4 'East'				✓		
Vpt 4 'North'				✓		
Vpt 4 'West'		✓				
Vpt 5 'East'						✓
Vpt 5 'North'				✓		
Vpt 5 'West'			✓			
Vpt 6 'East'		✓				
Vpt 6 'North'				✓		
Vpt 6 'West'			✓			
Vpt 7 'East'				✓		
Vpt 7 'North'				✓		
Vpt 7 'West'						✓
Vpt 8 'East'				✓		
Vpt 8 'North'				✓		
Vpt 8 'West'					✓	
Vpt 9 'East'			✓			
Vpt 9 'North'			✓			
Vpt 9 'West'				✓		
Vpt 10 'East'		✓				
Vpt 10 'North'			✓			
Vpt 10 'West'					✓	

Vpt 11 'East'	✓					
Vpt 11 'North'	✓					
Vpt 11 'West'					✓	
Vpt 12 'East'			✓			
Vpt 12 'North'		✓				
Vpt 12 'West'	✓					

APPENDIX C: HOUSE INVENTORY -VISUAL EFFECTS OF WIND FARM

<i>House⁴³</i>	<i>X</i>	<i>Y</i>	<i>Address</i>	<i>Distance⁴⁴</i>	<i>Comments</i>	<i>Visual Effect⁴⁵</i>
1	1727602	5599428	174 Pātea Road (SH3)	4.5km	Oriented southeast across lawn in direction of wind farm, however vegetation on property will partially screen views. Rolling topography and shelterbelt planting in intervening landscape will provide some screening and also perspective depth.	Low
2	1727778	5599457	192 Pātea Road (SH3)	4.5km	House set back from road oriented north and west in opposite direction of wind farm. Mature shelter vegetation adjacent to the house will screen views of the wind farm to the southeast. Rolling topography and vegetation in middle-ground will provide perspective depth.	Low
3	1727689	5599568	191B Pātea Road (SH3)	4.6km	House oriented southeast toward wind farm. Complex intervening landscape. Vegetation and rolling topography will create perspective depth and partially screen the wind farm.	Low
4	1727648	5599833	191A Pātea Road (SH3)	4.9km	House set back from road oriented north and west in opposite direction to wind farm. Mature vegetation around the house will screen views of the wind farm to the south and south west. Intervening landscape of shelterbelt trees and buildings.	Low
5	1728041	5599601	219 Pātea Road (SH3)	4.5km	House set back from road oriented west away from wind farm. House enveloped by mature vegetation that will screen views of the wind farm to the south and south west. However, glimpses SW across driveway. Shelterbelt planting and pine plantations will add perspective depth	Low
6	1728530	5599279	275 Pātea Road (SH3)	4.0km	House demolished.	
7	1728705	5599339	275 Pātea Road (SH3)	4.0km	Former barn. Demolished.	
8	1729284	5599317	10 Kaharoa Road	3.9km	Appears abandoned. Oriented southwest. House is surrounded by mature shelterbelt vegetation that will screen some views of the wind farm to the southwest. Glimpses offered through trees to south.	Low
9	1729515	5599152	374 Pātea Road (SH3)	3.7km	House oriented both west and south toward wind farm. House set within an open landscape, however farm buildings, vegetation and rolling topography form part of the intervening landscape and will partially screen the wind farm and add perspective depth.	Mod-low
10	1729761	5599090	398 Pātea Road (SH3)	3.6km	House oriented west away from, and south toward wind farm. Vegetation surrounds the house and will partially screen the wind farm to the south. Intervening vegetation and rolling topography will also partially screen the wind farm and provide perspective depth.	Mod-low

⁴³ Identification number on project GIS

⁴⁴ Between house and 'project envelope'

⁴⁵ Degree of prominence based on desk-top analysis and road-side observation

<i>House⁴³</i>	<i>X</i>	<i>Y</i>	<i>Address</i>	<i>Distance⁴⁴</i>	<i>Comments</i>	<i>Visual Effect⁴⁵</i>
11	1730083	5599136	424 Pātea Road (SH3)	3.7km	House oriented east away from wind farm. Views toward wind farm to south through trees adjacent to house across complex intervening landscape of rolling topography and vegetation. These elements will provide perspective depth.	Mod
12	1730767	5598976	504 Pātea Road (SH3)	3.5km	House located in elevated location with orientation to north in opposite direction to wind farm. Large mature trees within gully to the south of the house will screen the wind farm.	Low
13	1731973	5600300	44 Nicholson Road	5.0km	House in elevated location oriented northeast in opposite direction to wind farm. Surrounded by large shelter belt planting that will screen the wind farm to the south. Pine plantations beyond shelterbelts will also provide screening.	Low
14	1732030	5600393	25 Nicholson Road	5.1km	Oriented to northwest in opposite direction to wind farm. Large mature trees and shelterbelt planting will screen the wind farm to the south.	Low
15	1730970	5599254	517 Pātea Road (SH3)	3.9km	House oriented north in opposite direction to wind farm. Vegetation surrounding the house will screen the wind farm to the south. From driveway, across SH3, affords open views to the wind farm. Rolling topography and vegetation in the intervening landscape will add perspective depth.	Low
16	1732292	5598088	Access of Nicholson Road	2.9km	House oriented to north east away from wind farm. Sheds associated with the farm production adjacent to house. House set within an open landscape of the Whenuakura River gully. Limited visibility of the wind farm due to impeding topography to the south.	Low
17	1732472	5597108	857 SH3	2.1km	Farm shed.	
18	1731579	5597341	38 Wybourne Road	2.0km	Appears oriented east in opposite direction to wind farm. Surrounded by mature vegetation that will screen views of wind farm to south and southwest. Open landscape beyond shelter planting although topography will provide perspective depth. Views of wind farm from entrance to property.	Mod
19	1733669	5598008	199 Kokako Road	3.5km	Oriented north in opposite direction to wind farm in open landscape. Lawn to south. Limited vegetation adjacent to house that will provide any screening. Variations in topography and small pine plantations will add perspective depth and partial screening.	Mod-low
20	1734233	5596635	1010 SH3	2.7km	House oriented north in opposite direction. Shelter planting on south and west side in direction of wind farm. Views offered across open landscape beyond shelter vegetation. Foreground farm buildings and middle-ground pine plantation will provide perspective depth.	Mod
21	1734352	5596862	1007 SH3	3.0km	House oriented north or east in opposite direction to wind farm. Felled shelter trees recently replanted but currently open outlook to south toward wind farm. Middle-ground hedgerow and buildings provide some perspective depth.	Mod
22	1734986	5596549	897 SH3	3.0km	House oriented north and west, but also with lawn area on south. Amenity and shelter planting to south of house recently felled. Some shelter planting on road boundary in direction of wind farm. Beyond the shelter planting and SH3 there is an open landscape toward wind farm.	Mod-low

<i>House⁴³</i>	<i>X</i>	<i>Y</i>	<i>Address</i>	<i>Distance⁴⁴</i>	<i>Comments</i>	<i>Visual Effect⁴⁵</i>
23	1736424	5596341	1241 SH3	3.5km	House orient NW in opposite direction. Hedging on SW and SE sides in direction of wind farm. Glimpses through driveway toward wind farm. Foreground incl. SH3 and railway line. Buildings and shelter belts in intervening landscape will provide strong perspective depth.	Low
24	1736291	5596125	15 Peat Road	3.2km	House oriented north in opposite direction, although garden also on south-western side. Amenity trees and shrub planting on south-western side in direction of wind farm. Houses, vegetation and variable topography will provide some perspective depth.	Low
25	1736173	5595896	34 Peat Road	3.0km	House oriented in opposite direction toward north with open rear views to south toward wind farm. Foreground farm buildings and trees and distant pine plantations in intervening landscape will provide some perspective depth.	Mod
26	1736353	5595725	39 Peat Road	2.9km	Barn	
27	1736463	5595681	39 Peat Road (accessed from Ihupuku Road)	3.0km	House oriented to north in opposite direction, with dense shelter vegetation on south side in direction of wind farm. Pine plantation in middle-ground intervening landscape will provide further screening and perspective depth.	Low
28	1736508	5596775	1295 SH3 ('Awatea Farms')	3.9km	House setback from road oriented north in opposite direction. Garden (including amenity planting and tall shelter trees) on south side. Middle-ground includes SH3, railway line and race-course. Buildings and trees and variable topography intervening landscape will provide perspective depth.	Low
29	1737887	5596741	1404 SH3	4.7km	House (double-storey villa) oriented north in opposite direction from wind farm. Stand of large existing trees adjacent to house will partially screen or filter views toward wind farm. Outlook may be clearer from upper floor. However, shelter belts in intervening landscape will further filter views and provide perspective depth. There is a cottage to the east of main house that will have similar outlook.	Low (x2)
30	1738746	5596806	1484 SH3	5.3km	House set back from road in elevated location and oriented north away from wind farm. Views offered to south and southwest toward wind farm. Pine plantations in middle-ground will provide partial screening and perspective depth.	Low
31	1738055	5597200	1413 SH3	5.2km	Oriented north in opposite direction to wind farm. However, located in open landscape with views south toward the wind farm. Shelter vegetation across SH3 will partially screen the wind farm to the south.	Low
32	1738930	5596902	1506 SH3	5.5km	Shed.	
33	1738935	5596937	1506 SH3	5.6km	House oriented south and surrounded by existing mature trees that will screen views toward the proposal. Existing shelterbelt hedge of large trees spans the western boundary in a north-south direction and will screen views of the proposal.	Low
34	1739114	5597101	Representation of properties within south-western portion of Waverley township	5.8km	The majority of properties in the southern portion of Waverley will have no view or only glimpses of wind farm to the southwest. Topography, vegetation and buildings in the intervening landscape will screen the majority views of the wind farm.	Low

<i>House⁴³</i>	<i>X</i>	<i>Y</i>	<i>Address</i>	<i>Distance⁴⁴</i>	<i>Comments</i>	<i>Visual Effect⁴⁵</i>
35	1739092	5597684	Representation of properties within north-western portion of Waverley township	6.2km	The majority of properties in the north of the Waverley township will have no view or only glimpses of wind farm. Topography, vegetation and buildings in the intervening landscape will screen some views of the wind farm.	Low
36	1738895	5598180	218 Parahaki Road	6.5km	House located northwest of Waverley township adjacent to road. Oriented north away from wind farm. Side views through large trees to the south. However shelterbelt trees will screen some views of the wind farm and add perspective depth.	Low
37	1738595	5598639	71 Paerewa Road	6.6km	Located in open landscape oriented north and east away from wind farm. Views of the wind farm to the south will be screened by sheds, topography and stands of vegetation in the intervening landscape.	Low
38	1737977	5598772	136 Paerewa Road	6.4km	Appears oriented north and west away from wind farm. Small hillock and pine plantations in the intervening landscape to the south will screen views of the wind farm.	Low
39	1737815	5598728	149 Paerewa Road	6.2km	Located in open landscape oriented north in opposite direction of wind farm. Hillocks to the south of the house will screen the majority of views of the wind farm. Pine plantations form part of the intervening landscape (in adjacent gully) and will screen views south toward wind farm.	Low
40	1729588	5599573	52 Kaharoa Road	4.1km	Whenukura School. Paved play area to north with playing fields to south in direction of wind farm. Houses, farm buildings, vegetation and rolling topography form part of the intervening landscape and will screen wind farm.	Low
41	1729150	5599548	23 Kaharoa Road	4.1km	House set back from road in cluster with farm sheds. Appears oriented north in opposite direction to wind farm. Shelter planting to south will screen views of wind farm. Beyond this shelter planting SH3, buildings, trees and the variable topography form the intervening landscape.	Low
42	1729408	5599423	28 Kaharoa Road	4.0km	House located adjacent to road. Oriented to west. Lawn to east. Shelterbelt vegetation will partially screen views to south with likely views between vegetation toward wind farm. Buildings and shelter belts in intervening landscape will provide perspective depth.	Low
43	1730122	5600213	135 Kaharoa Road	4.7km	House in elevated location oriented north in opposite direction of wind farm. Surrounded by existing mature trees that will partially screen wind farm. Rolling topography, buildings and vegetation in the intervening landscape will screen the wind farm and add perspective depth.	Low
44	1730249	5600147	138 Kaharoa Road	4.7km	House oriented north and west in opposite direction of wind farm, however stand of large existing trees will partially screen views toward the proposal. Side views will be offered south toward wind farm. Rolling topography and shelterbelts in the intervening landscape will add perspective depth.	Low
45	1729869	5599945	101 Kaharoa Road	4.5km	Oriented north in opposite direction to proposal in an elevated location. Open outlook to south in direction of wind farm, however the variations in topography and pine plantations will screen parts of the wind farm.	Low

<i>House⁴³</i>	<i>X</i>	<i>Y</i>	<i>Address</i>	<i>Distance⁴⁴</i>	<i>Comments</i>	<i>Visual Effect⁴⁵</i>
46	1730112	5600080	122 Kaharoa Road	4.6km	Whenuakura Playgroup'. Oriented north away from wind farm. Trees, the neighbouring house and sheds form the immediate intervening landscape will screen the wind farm to the south. Beyond these elements rolling topography and vegetation will also screen the wind farm.	Low
47	1730108	5600040	124A Kaharoa Road	4.6km	Oriented west with side views south in direction of wind farm. However, rolling topography in intervening landscape will screen views of proposal from this location.	Low
48	1730283	5599651	473 Pātea Road (SH3)	4.2km	House located in open landscape in elevated location. Oriented to northwest in opposite direction to wind farm. However, views to south and southeast. Middle-ground pine plantations, shelterbelt planting and rolling topography in the intervening landscape will provide perspective depth.	Low
49	1730617	5600406	15 Hukatere Road	5.0km	Oriented south toward wind farm. Boundary planting along road to south of house will screen views. Beyond this planting, topography and vegetation in the middle-ground intervening landscape will partially screen views toward the proposal.	Low
50	1731092	5596927	69 Elslea Road	1.5km	Former house site –house now removed.	
51	1731279	5596960	92 Elslea Road	1.6km	House oriented north in opposite direction. Outlook also to garden on south side toward wind farm. Some shelter planting on south side, but likely to be views between vegetation. Relatively open landscape (with pivot irrigators), although scattered middle-ground trees and shelter belts will provide some perspective depth.	Mod-high
52	1732890	5597450	857 SH3	2.6km	House not visible from road. Appears from aerial to be oriented north-east and north-west away from site. Elevated location within an open landscape with limited foreground elements. Middle-ground landscape is reasonably complex (including roads, houses, shelter belts, railway line) which will provide perspective depth.	Mod
53	1731806	5596878	64 Rangikura Road	1.6km	House oriented west but with windows and open outlook to south in direction of wind farm (former shelter planting on south side recently cleared). Occasional middle-ground shelter trees will provide some perspective depth.	High
54	1731832	5596745	77 Rangikura Road (cnr Rangikura Road and Elslea Road)	1.5km	House oriented north and west, but side/rear views to south in direction of wind farm. Open landscape, although foreground sheds and middle-ground shelter belts will provide some perspective depth.	High
55	1732159	5596467	120 Rangikura Road	1.3km	House oriented north in opposite direction, with tall shelter planting to south and south-west in direction of wind farm. Some glimpses through trees. Relatively open landscape beyond shelter planting. Middle-ground rolling topography and occasional trees will provide some perspective depth.	High
56	1732659	5596454	169 Rangikura Road	1.7km	House oriented north and west in opposite direction, but with open rear views to south in direction of wind farm. Foreground sheds and water-tanks in view to south. Trees and rolling dunes in intervening landscape also provide some perspective depth.	High

<i>House⁴³</i>	<i>X</i>	<i>Y</i>	<i>Address</i>	<i>Distance⁴⁴</i>	<i>Comments</i>	<i>Visual Effect⁴⁵</i>
57	1736442	5591396	Proposed residence on Waipipi Road	1.3km	Open landscape with limited undulation and unimpeded views of the wind farm to the west.	High
58	1738002	5590633	Undeveloped lots in new Waipipi Beach subdivision	3.0km	New subdivision of some 45 lots located overlooking Waipipi Beach but with outlook to the west toward wind farm site. Houses have been built on five lots (assessed separately below Nos. 111-113, 156, 160), and promotional material on site indicates five additional lots have been sold (as at January 2016). It is reasonable to anticipate future new houses would be oriented to the sea away from the wind farm site. Properties on the western periphery may retain open views to the west toward the wind farm, - particularly lot 46 'The Lookout' (which is elevated on dune at western end) and lot 28 'The Lookout'. The potential effects from these sites is 'high'. It is likely other houses would have views partially restricted by neighbouring houses and dune landforms, and perspective depth because of foreground houses and topography in such views. The potential effects from these properties is 'moderate'.	
59	1739513	5589831	Properties within Waverley Beach settlement.	4.7km	Mix of one and two storey residences oriented north and south away from wind farm. Side views will be offered west toward wind farm, however adjacent buildings will screen views from the majority of houses. Changes in topography will provide perspective depth.	Mod-low
60	1734738	5598064	151 Karahaki Road	4.3km	House not visible from road. Oriented north in opposite direction to wind farm. House located within a stand of large mature trees that will screen the wind farm.	Low
61	1734851	5594329	330 Peat Road	1.0km	House oriented north in opposite direction to wind farm. Hedge on south and west side will provide screening. Some views through gaps and over hedge. New pine shelter belt recently planted to replace previous shelter belt. At present, open outlook toward wind farm site. Pine shelter belts in intervening landscape will provide further some perspective depth.	High
62	1735620	5595402	'Clairmont' 500 Rangikura Road	2.3km	House oriented north in opposite direction to wind farm. Mature shelter trees to south and west will provide partial screening although will be some views through gaps in trees. Small pine plantations in intervening landscape will provide some perspective depth	Mod-high
63	1736000	5595242	104 Peat Road	2.3km	House appears oriented north and east in opposite direction. Side and rear views to south toward wind farm. Pine plantations and topography in middle-ground will provide significant degree of screening and perspective depth.	Mod
64	1736090	5595180	103 Peat Road	2.4km	House oriented north in opposite direction to wind farm. Pine shelter belt recently replanted on south side in direction of wind farm, to replace shelter belt previously removed (replacements are approximately 1.5m-2m tall). In meantime there is an open outlook toward wind farm site. Foreground rolling dune topography provides partial screening and perspective depth.	Mod
65	1735388	5598114	150 Karahaki Road	4.6km	House oriented west away from wind farm. Topography and vegetation to the south form the intervening landscape and will screen the wind farm.	Low

<i>House⁴³</i>	<i>X</i>	<i>Y</i>	<i>Address</i>	<i>Distance⁴⁴</i>	<i>Comments</i>	<i>Visual Effect⁴⁵</i>
66	1735184	5598581	204 Karahaki Road	4.9km	House oriented to north and west away from wind farm. Set within large mature trees. Topography and vegetation in intervening landscape will screen the wind farm.	Low
67	1736384	5599272	337 Kohi Road	6.1km	House in elevated location oriented north (and west across lawn) in opposite direction of wind farm. Views to the south will be offered through amenity vegetation and sheds adjacent to the house, however shelterbelt of large pine trees will screen the wind farm.	Low
68	1736722	5599584	374 Kohi Road	6.5km	Located in open landscape with amenity vegetation adjacent to house. Appears oriented north and east in opposite direction to wind farm. Large pine plantations and rolling topography in intervening landscape will partially screen the wind farm and add perspective depth.	Low
69	1736278	5599824	377 - 431 Kohi Road	6.5km	Oriented north and east away from wind farm. Side views will be offered toward the south, however the rolling landscape and pine plantations will partially screen the wind farm from this location and provide perspective depth.	Low
70	1739432	5596578	13 Waverley Beach Road	5.6km	House adjacent to road, neighbouring abandoned house, former dairy factory, and railway station. Oriented north and west in opposite direction from wind farm. Pine plantations in middle-ground intervening landscape will provide partial screening and perspective depth. Other buildings adjacent to the house will form a focal point to the southwest.	Low
71	1739275	5595764	139 Waverley Beach Road	5.0km	House appears oriented west in direction of wind farm. Shed across road, topography and vegetation in intervening landscape will filter views of the wind farm.	Low
72	1739173	5595399	171 Waverley Beach Road	4.7km	House in elevated location oriented north away from wind farm. Views through trees to southwest across varied topography. Pine plantations and topography will partially screen wind farm and provide perspective depth.	Low
73	1739017	5595303	194 Waverley Beach Road	4.4km	Oriented north away from wind farm. Elevated location with views across Lake Oturi. House bounded by trees, however views through trees to west/southwest across varied topography. Pine plantations and topography will filter views of wind farm and provide perspective depth.	Low
74	1739012	5594725	249 Waverley Beach Road	4.1km	House oriented west toward wind farm. Recently replanted shelter belt to west to replace previously felled plantation. Rolling foreground dune topography will partially screen wind farm and provide perspective depth.	Mod
75	1739193	5593928	336 Waverley Beach Road	3.9km	House oriented west, with views to south-west toward wind farm. Pine plantations and rolling topography in intervening landscape beyond shelter planting will provide some perspective depth.	Mod
76	1739395	5593101	431 Waverley Beach Road	3.9km	House oriented west toward wind farm. Topography and vegetation in middle-ground will add perspective depth.	Mod
77	1738877	5592715	482 Waverley Beach Road	3.4km	House oriented north. Formerly surrounded by mature vegetation and shelterbelt trees, although storm damage has opened some gaps to west and south-west in direction of wind farm. Foreground trees, middleground plantation, and rolling topography will add perspective depth.	Mod

<i>House⁴³</i>	<i>X</i>	<i>Y</i>	<i>Address</i>	<i>Distance⁴⁴</i>	<i>Comments</i>	<i>Visual Effect⁴⁵</i>
78	1738496	5592122	564 Waverley Beach Road	3.0km	House adjacent to the road oriented east in opposite direction to wind farm. Rolling dune hill topography and shelter belt remnants in intervening landscape will filter views and provide some perspective depth.	Mod-Low
79	1738627	5591642	595 Waverley Beach Road	3.2km	House set back from road and oriented north in opposite direction to wind farm. Amenity trees in vicinity. Side view toward the west. Rolling dune hill topography and shelter belt remnants in intervening landscape will filter views and provide some perspective depth.	Mod
80	1737473	5595543	135 Ihupuku Road	3.6km	House set back from road and oriented north. Small embankment will partially screen wind farm to south. Shed adjacent to house to southwest and middle-ground pine plantations and variable topography in the intervening landscape will provide perspective depth.	Low
81	1737648	5595220	155 Ihupuku Road	3.4km	Clubhouse (Waverley Golf Course). Elevated on sand dune. Appears oriented east over golf course in opposite direction from wind farm (entrance to west). Shelter vegetation will partially screen wind farm to south and southwest, particularly from the golf course itself. Pine plantations and shelter belt trees in intervening landscape will also partially screen wind farm and provide perspective depth.	Low
82	1738106	5595066	155 Ihupuku Road	3.6km	Maintenance Shed on Golf Course	
83	1737463	5594842	Ihupuku Road	3.0km	Not visible from road. Appears oriented north in opposite direction. Sheds associated with main building. Mature shelter trees to south will provide partial screening. Small pine plantations and rolling topography in intervening landscape will provide perspective depth.	Mod
84	1738107	5594555	35 Stewart Road	3.3km	House at low elevation surrounded by sand dune hills. Appears oriented north and west away in opposite direction to wind farm. Foreground dune landforms and pine plantations in the intervening landscape will partially screen views and provide perspective depth.	Low
85	1737149	5597100	28 Kohi Road	4.5km	House setback from road. Oriented southwest in direction of wind farm. Shelterbelt planting along southern boundary, stands of vegetation and rolling topography in intervening landscape will partially screen wind farm and provide perspective depth	Low
86	1738007	5597851	123 Parahaki Road	5.6km	Oriented north and west away from wind farm. Shelter hedge planting along roadside boundary of property will screen views of the wind farm to the south.	Low
87	1737785	5597737	89B Parahaki Road	5.4km	Located adjacent to road and oriented north away from wind farm. Lawn to south toward wind farm. Amenity vegetation on property will screen to the south. Gradual rise in topography to south and vegetation in middle-ground will partial screen the wind farm from this location.	Low
88	1737652	5597754	89A Parahaki Road	5.3km	Oriented north away from wind farm. Shelterbelt planting immediately adjacent to the house will screen views south. Glimpses may be possible through gaps in these trees. Rolling topography and vegetation in the intervening landscape will partially screen and provide perspective depth.	Low
89	1736354	5598082	185 Kohi Road	5.0km	House oriented north away from wind farm. Large pine shelterbelt trees and topography to the south of the house will provide screening of the wind farm.	Low

<i>House⁴³</i>	<i>X</i>	<i>Y</i>	<i>Address</i>	<i>Distance⁴⁴</i>	<i>Comments</i>	<i>Visual Effect⁴⁵</i>
90	1728452	5598066	Cnr of intersection Lower Kaharoa Rd and Rākaupiko Rd and Pilot Station Rd	3.0km	House oriented north away from wind farm. Some mature vegetation will partially screen wind farm. Views afforded through trees. Middle-ground rolling topography and shelter trees will provide some perspective depth.	Mod
91	1728703	5597947	204 Rākaupiko Road	2.8km	House adjacent to road and oriented north in opposite direction to wind farm. Located in open landscape. Sheds on the property form part of the intervening landscape that includes shelterbelt vegetation and undulating topography.	Mod-high
92	1729204	5597596	264 Rākaupiko Road	2.2km	House in elevated location and oriented north away from wind farm. Side views offered to the east. Middle-ground mature shelterbelt trees, buildings and rolling topography to the east will provide some perspective depth.	High
93	1729525	5597596	285A Rākaupiko Road	2.1km	Oriented south in direction of wind farm. Views to southeast toward wind farm across open landscape. Limited screening, however rolling topography in intervening landscape will provide perspective depth.	High
94	1729656	5597658	285B Rākaupiko Road	2.2km	House not visible from road. House oriented northeast away from wind farm. House surrounded by mature vegetation that will partially screen the wind farm to the south and southeast. Some glimpses through trees. Middle-ground rolling topography will provide some perspective depth.	Mod
95	1729806	5597536	285B Rākaupiko Road	2.1km	Farm shed	
96	1729659	5596833	371 Rākaupiko Road	1.4km	Oriented northeast and northwest in opposite direction, but open rear views to southeast toward wind farm. House is elevated on terrace and there is an open intervening landscape.	High
97	1729539	5596640	391 Rākaupiko Road	1.2km	Oriented north and west. Views over open landscape to SE in direction of wind farm. Some scattered tall trees will provide some perspective depth.	High
98	1729413	5596340	395 (A & B) Rākaupiko Road	1.0km	Oriented to garden areas to north and east. Tall shelter planting enclosing garden including on SE side in direction of wind farm. From paddocks beyond the shelter planting there are open views to wind farm site.	High
99	1727102	5599051	109 Pātea Road (SH3)	4.5km	Oriented north in opposite direction to wind farm. Elevated location with side views toward wind farm to the southeast. Variable topography and vegetation in the intervening landscape will partially screen the wind farm and also provide perspective depth.	Low
100	1726056	5598607	Beaconsfield' 12 Lincoln St, Pātea	4.9km	Unable to be seen from the road.	Low
101	1726867	5597504	Balance of properties within the southern region of Pātea.	3.6km (closest)	Majority of properties in Pātea will have no view of wind farm. Intervening buildings will screen views. Houses in southern reaches will have partial views. Topography and vegetation in intervening landscape will screen some views and provide perspective depth.	Low

<i>House⁴³</i>	<i>X</i>	<i>Y</i>	<i>Address</i>	<i>Distance⁴⁴</i>	<i>Comments</i>	<i>Visual Effect⁴⁵</i>
102	1727639	5597112	Wai-O-Turi Marae, 250 Pilot Station Rd	2.8km	Many buildings on single property associated with the Marae. Orientation to southeast toward wind farm. Farm buildings in adjacent property, shelterbelt vegetation and rolling topography form the intervening landscape and will provide perspective depth	Mod-high
103	1727872	5596779	284 Pilot Station Road	2.4km	House oriented north and west in opposite direction to wind farm although garden on south-eastern side. Tall trees within property will partially screen views of wind farm. Middle-ground rolling topography and shelter trees will provide perspective depth	Mod
104	1727432	5596732	Cluster of properties within Pātea Beach township	2.8km	Numerous properties located at the mouth of the Pātea River. Settlement positioned adjacent to the river at the base of the catchment. Topography on eastern side of river will screen the base of the turbines and provide some perspective depth	Mod-low
105	1728782	5598744	58 Lower Kaharoa Road	3.5km	Oriented north in opposite direction to wind farm. Side views will be offered past the hedge to the south and west of the house. Shelter belts and rolling topography form the intervening landscape offering partial screening and perspective.	Mod-low
106	1728171	5598641	134 Rākaupiko Road	3.6km	House oriented north and east in opposite direction of wind farm. However, large mature trees surrounding the house will screen the proposal.	Low
107	1727537	5599385	162 Pātea Road (SH3)	4.6km	Oriented north in opposite direction to wind farm. Sheds and trees adjacent to house will screen views to the south. Glimpses may be afforded past these trees across rolling topography where vegetation forms part of intervening landscape	Low
108	1727381	5599279	150 Pātea Road (SH3)	4.6km	Appears oriented west and south in the direction of the wind farm. Hedge (shelter) planting along the southern boundary will screen the wind farm. Complex intervening landscape. Rolling topography and vegetation will add perspective depth.	Low
109	1736378	5591260	Proposed residence on Waipipi Road	1.4km	Open landscape with limited undulation and unimpeded views of the wind farm to the west.	High
110	1735881	5591329	Private property on Waipipi Road	1.0km	Appears to be converted office from Waipipi Ironsands Project. Close proximity to wind farm. Oriented north. Open in character with limited boundary planting or variations in topography in intervening landscape.	Very High
111	1737882	5590608	Lupin Lane' (Part of new subdivision on Waverley Beach Road)	3.0km	'Lupin Lane'. Oriented south west toward the sea. Topography will partially screen views to the west toward wind farm. This house forms part of the new 'Waipipi Beach' subdivision development'.	Mod
112	1737993	5590562	Ironsands' (Part of new subdivision on Waverley Beach Road)	3.1km	Main focus of views is to the south toward the sea, but with outlook also to the west toward the wind farm site. The intervening landscape currently has rolling topography and a new house that provides perspective depth. It is anticipated that future development of the subdivision would increase the perspective depth and potential screening in the direction of the wind farm.	Mod
113	1738103	5590662	28 'Rosemount'	3.1km	Elevated location. Oriented south toward sea in opposite direction from wind farm. Rear views to north-west toward wind farm, but beyond dune in immediate foreground. . As above, it is anticipated that future development of the subdivision may increase the perspective depth and potential screening in the direction of the wind farm.	Mod

<i>House⁴³</i>	<i>X</i>	<i>Y</i>	<i>Address</i>	<i>Distance⁴⁴</i>	<i>Comments</i>	<i>Visual Effect⁴⁵</i>
114	1736807	5595475	84 Ihupuku Road	3.1km	'Clearview' property. Located upon a knoll with open views all around. Oriented north with open lawn in opposite direction to wind farm. Side views available to southwest toward wind farm. Pine plantations will provide perspective depth.	Mod
115	1736129	5595807	34 Peat Road	2.9km	Appears to be living quarters of farm staff set adjacent to farm sheds. Oriented south in direction of wind farm in open landscape. Pine plantations and rolling topography in intervening landscape will add perspective depth.	Mod
116	1735833	5597724	91 Karahaki Road	4.5km	Oriented north with lawn in opposite direction to wind farm. Hillock behind the house to the south and shelterbelt vegetation will screen views of the wind farm.	Low
117	1733579	5598202	216 Kokako Road	3.6km	Oriented east with side views to south in direction of wind farm. However, house is set down north facing slope where the topography will screen views of the wind farm to the south.	Low
118	1727409	5598462	7 Rākaupiko Road	3.9km	House oriented West and north in opposite direction to wind farm. Side views afforded to east in direction of wind farm. However, wind farm screened by topography and shelter belt planting along ridgeline.	Low
119	1727251	5598509	23 Railway Settlement Road	4.0km	Cottage oriented north away from wind farm. Topography and vegetation on the property (adjacent to house) and in intervening landscape will screen views of the wind farm to the east.	Low
150	1732377	5597547	Whenukura Marae, SH3	2.4km	Marae buildings oriented to north-west away from wind farm. Top parts of some turbines will be visible beyond middle-ground terrace landforms. Foreground highway bridge and middle-ground elements will provide perspective depth. (River-bank trees behind marae in direction of wind farm recently felled)	Mod
151	1738892	5596104	Waverley Beach Road	4.9km	New house opposite 171 Waverley Beach Road. Elevated location. Appears oriented NE in opposite direction from wind farm, but outlook to SW towards wind farm. Foreground outlook over Lake Oturi. Rolling sand dune topography and plantations will partially screen views and provide perspective depth to intervening landscape.	Low
152	1738949	5594346	293 Waverley Beach Road	3.9km	House at intersection of Waverley Beach Road and Ihupuku Road. Oriented NE in opposite direction to wind farm. Adjoining sheds and bamboo hedge on SW side will screen wind farm. Rolling dune topography and shelter belts/plantations in intervening landscape.	Very Low
153	1739031	5593748	366 Waverley Beach Road	3.7km	House on same farm as # 75. At relatively low elevation near farm buildings. Appears oriented NW, but with outlook over open farmland to SW in direction of wind farm. Rolling topography and pine shelter-belts, plantations will provide some perspective depth to intervening landscape.	Mod
154	1739035	5594044	366 Waverley Beach Road	3.8km	New house (same farm as #75). Elevated, oriented west, with outlook over open farmland to south-west in direction of wind farm. Rolling topography and pine shelter-belts, plantations will provide some perspective depth to intervening landscape.	Mod
155	1736592	5593381	(147) Stewart Road	1.3km	New house, elevated on dune above road. Oriented north in opposite direction from wind farm, but outlook to SW toward wind farm across open farmland. Pine plantation on north side of site will provide some perspective depth.	High

<i>House⁴³</i>	<i>X</i>	<i>Y</i>	<i>Address</i>	<i>Distance⁴⁴</i>	<i>Comments</i>	<i>Visual Effect⁴⁵</i>
156	1737962	5590591	25 Anchor Watch, Waipipi Beach	3.1km	House oriented SW to view of sea, but side deck and doors on NW side in direction of wind farm. House at 29 Rosemount and dune landform in NW foreground will provide partial screening and perspective depth.	Mod
159	1728743	5598630	76 Lower Kaharoa Road	3.3km	House elevated, adjacent to 58 Kaharoa Road. Oriented to NW and to views to SW, but open outlook to SE toward wind farm. Occasional trees and houses provide some perspective depth to intervening landscape.	Mod
160	1737985	5590668	24 Rosemount Road, Waipipi Beach	3.0km	Oriented south-west toward sea, in opposite direction from wind farm. Side views to north-west to wind farm, but with adjoining house and dune in immediate foreground. As above, it is anticipated that future development of the subdivision may increase the perspective depth and potential screening in the direction of the wind farm.	Mod

APPENDIX D: HOUSE INVENTORY - VISUAL EFFECTS OF TRANSMISSION LINE

House		Address		Distance ⁴⁶	Comment	Visual Effect
55	1732159	5596467	120 Rangikura Road	580m	House oriented north away from line. Amenity planting and shelter belt will screen most views to south-east in direction of line. Distant glimpses past trees.	Low
56	1732659	5596454	169 Rangikura Road	270m	House oriented north and west away from line. Open rear views to south in direction of line, but foreground sheds and water tank. View to angle and along line.	Low-Mod
20	1734233	5596635	1010 SH3	470m	House oriented north away from line. Shelter planting, farm sheds and utility areas to south in direction of line will screen some views. Beyond this planting open landscape toward line. But line will be distant, will be aligned with the existing railway line, and foreground farm sheds provide perspective depth.	Low
22	1734986	5596549	1097 SH3	370m	Houses appear oriented to north and west away from line, although with lawn area to south. Dense amenity and shelter planting to south and east in direction of line. Glimpses beyond the shelter planting will be across open landscape, but across foreground of SH3. Line will be reasonably distant and associated with the existing railway line.	Low
62	1735620	5595402	'Clairmont' Rangikura Road	660m	House oriented north toward line. Foreground amenity planting will provide limited screening. Beyond this planting there is an open landscape toward line. Line will appear quite distant and associated with the existing railway line.	Low
115	1736129	5595807	34 Peat Road	370m	Appears to be living quarters of farm staff set adjacent to farm sheds. No particular orientation. Otherwise views across open landscape to north-west. Reasonably distant and associated with the existing railway line.	Low
25	1736173	5595896	34 Peat Road	280m	House oriented toward north toward line. Foreground amenity vegetation in direction of line. Reasonably distant and associated with the existing railway line.	Mod
24	1736291	5596125	15 Peat Road	100m	House oriented NW & NE toward line. Amenity trees and shrub planting on north side in direction of line will partially screen and provide perspective depth. Line will be associated with existing railway line and (to a lesser extent) SH3.	Mod
23	1736424	5596341	1241 SH3	50m	House oriented NW in opposite direction. Hedging on SW and SE sides in direction of line. Glimpses through driveway toward line. Foreground includes SH3 and railway line.	Low-Mod
28	1736508	5596774	1295 SH3 ('Awatea Farms')	440m	House oriented north in opposite direction. Surrounded by trees and shelter vegetation to south in direction of line. Line will be beyond intervening highway and railway line, and seen against backdrop of racecourse.	Low
29	1737887	5596741	1404 SH3	200m	House oriented north in opposite direction from line. Stand of large existing trees adjacent to house will largely screen views. Line will be associated with existing railway line.	Low

⁴⁶ Between house and corridor

House		Address		Distance ⁴⁶	Comment	Visual Effect
27	1736463	5595681	39 Peat Road	570m	House oriented north toward line, and slightly elevated. Houses and racecourse in intervening landscape will provide perspective depth. Reasonably distant. Line will be associated with existing railway line.	Low
30	1738746	5596806	1484 SH3	120m	House slightly elevated, set back from road, appears oriented north away from line. Clear views to south toward line which will appear associated with existing railway line. Some middle-ground trees will filter views and provide perspective depth.	Low-Mod
151	1738936	5596938	1506 SH3	80m	House appears oriented to north but with side outlook toward line at reasonably close proximity. Some trees in direction of line will soften views and increase perspective depth.	High
152	1739069	5596958	1524 SH3	30m	House is elevated above basement level, and appears oriented to NW and SW toward line. Close to alignment.	Very High
153	1739136	5597037	145 Weraroa Road (SH3)	40m	House appears oriented in direction of line. Dense foreground vegetation in direction of line (to screen state highway). Glimpses will be close and to angle pole.	High
154	1739251	5596978	143 Weraroa Road (SH3)	150m	House oriented north at right angles to line. Dense screening foreground vegetation. Trees and neighbouring house in intervening landscape.	Low
155 (1-35)			Houses on perimeter of Waverley: 124 Weraroa Street (SH3) 2 Swinbourne Street 3 Swinbourne Street 4 Swinbourne Street 47 Brassey Street 10 Swinbourne Street 12 Swinbourne Street 14 Swinbourne Street 16 Swinbourne Street 18 Swinbourne Street 22 Swinbourne Street 37 Suther Street 41 Suther Street 32 Suther Street 51 Fookes Street 45 Fookes Street 43 Fookes Street 55 Wilson Street 41 Fookes Street 39 Fookes Street 31 Fookes Street	Typically 20m – 50m	The alignment traces the perimeter of Waverley following Swinburne and Fookes Streets. Houses are located on the inside only of Swinburne and Fookes Streets around the west and north perimeter respectively of Waverley, so that in most cases the properties enjoy outlook over the rural landscape on the opposite sides of these streets. The new line will be typically 20m-50m from houses (depending on setback). There are also some vacant lots in addition to the listed houses. Compared to rural areas, views from such suburban sections tend to be more constrained by neighbouring buildings and landscaping. There is also a greater expectation of structures and development compared to rural landscapes. The effects were assessed as falling between moderate and high depending on factors individual to each property. Such individual factors include the setback of house from street boundary, orientation of house with respect to the line, and the extent of landscaping (that will potentially either screen the line and/or increase perspective depth). Effects will also be influenced by the final location of monopoles (e.g. effects will be greater where poles are located opposite properties). The proposed transmission line will also be seen in context with the existing overhead services on the near side of both Swinburne and Fookes Streets	Mod to High

<i>House</i>			<i>Address</i>	<i>Distance</i> ⁴⁶	<i>Comment</i>	<i>Visual Effect</i>
			29 Fookes Street 43 Fookes Street 45 Fookes Street 48 Gloag Street 23 Fookes Street 19 Fookes Street 17 Fookes Street 15 Fookes Street 39 Bear Street 40 Bear Street 7 Fookes Street 5a Fookes Street 5 Fookes Street 1 Fookes Street			
127	1740000	5597861	43 Chester Street	30m	Corner of Fookes and Chester Streets. House oriented north and east toward line, including angle in line across domain. Line will be seen in context of existing overhead services on both Fookes Street (near side) and Chester Street (far side). Section of line across domain will be seen against backdrop of tall trees.	High
125	1739972	5598129	23 Mangatangi Road	110m	House is across the road from, and south of, the existing substation and close to the corridor. Includes 'Willowbank Farmstay' accommodation. It appears from aerial photo that house is oriented to the north and west away from the line. Enclosed by mature trees which will screen views to the east toward the line. Despite the proximity, the visual effects will be low because of the screening.	Low
134	1740272	5598464	50 Mangatangi Road	270m	House oriented northeast away from line. Tall screening vegetation in landscape to south in direction of line. Located on far side of substation from proposed line.	Low
133	1740271	5597986	23 Waitangi Road	180m	House appears oriented north away from line, but has garden to south. High shelter planting will also screen views of the line to the west.	Low
157	1739788	5597901	(14) Fookes Street	15m	Offices of Te Kaahu o Rauru opposite end of Bear Street. Previously was a house on grounds of former school. Proposed line will run across front of property. Views confined by high hedging on west and east sides of property, but open outlook to street. Degree of effects will depend whether a pole is located in front of property.	High
158	1739981	5598335	43 Mangatangi Road	140m	House (villa) across the road from, and north of, the existing substation. Oriented east toward substation, although intervening hedging trees. Line will be on opposite side of substation and will be subsumed by appearance of substation.	Low