

NZ Windfarms Ltd

**Mt Stuart Wind farm Proposal
Landscape and Visual Impact
Assessment**

October 2008



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Quality Assurance Statement	
MWH New Zealand Limited Tower 2, Deans Park 7 Deans Avenue Addington P O Box 13-249 Christchurch 8141 New Zealand Phone : 64-3-366 7449 Fax : 64-3-366 7780	Project Manager: Tom Burkitt
	Prepared by: David Compton-Moen
	Reviewed by: Michael Steven
	Approved for issue by:

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Contents

1	Introduction	4
1.1	The Project	4
1.2	Receiving Environment.....	4
1.3	Scope of Landscape and Visual Impact Assessment	5
1.3.1	Landscape Assessment Methodology.....	5
1.3.2	Visual Assessment Methodology	6
1.4	Relevant Statutory Documents	7
1.4.1	Resource Management Act 1991	7
1.4.2	Regional Policy Statement Policy Statement for Otago	8
1.4.3	Clutha District Plan.....	8
1.5	Technical Publications.....	10
2	The Existing Landscape: Assessment & Evaluation	10
2.1	Landscape Character (including Natural Character) Assessment	11
2.1.1	Stewardship	12
2.1.2	Coherence	12
2.1.3	Disturbance.....	12
2.1.4	Historicity	13
2.1.5	Visual Scale	13
2.1.6	Imageability.....	13
2.1.7	Complexity	13
2.1.8	Naturalness (Natural Character)	13
2.1.9	Ephemera	15
2.2	Landscape Evaluation	15
2.2.1	Factors for evaluation.....	15
2.3	Landscape Amenity.....	17
3	Effects of the proposal on landscape character, natural character and landscape values	17
3.1	Effects on Landscape Character (including Natural Character)	17
3.1.1	Stewardship	17
3.1.2	Coherence	18
3.1.3	Disturbance.....	18
3.1.4	Historicity	18
3.1.5	Visual Scale	18
3.1.6	Imageability.....	18
3.1.7	Complexity	18
3.1.8	Naturalness.....	18
3.1.9	Emphera	19
3.2	Potential effects on landscape values and landscape amenity	19
4	Visual assessment: effects and impacts of the proposal.....	19

4.1	Existing Visual Character	19
4.2	Potential Sources of Visual Impacts	20
4.3	Zone of Visual Influence	20
4.4	Visually Sensitive Receivers (VSRs) and Visual Sensitivity, and Potential Impacts	21
4.4.1	Residential VSRs	Error! Bookmark not defined.
4.4.2	Recreational VSRs	Error! Bookmark not defined.
4.4.3	Travelling VSRs	Error! Bookmark not defined.
5	Cummulative Effects	22
6	Mitigation Measures	22
7	Conclusions	22

List of Tables

Table 1 : Key concepts and indicators for assessing landscape character	11
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1 Introduction

1.1 The Project

NZ Windfarms Ltd are proposing to construct and operate up to 9 wind turbines on Mount Stuart, at Manuka Creek, Clutha District. The turbines together will generate nominally up to 6MW of electricity. The project site is positioned approximately 7km from the settlement of Waitahuna and 16km from Milton. The wind turbines will not exceed 75m in height, with a hub height of approximately 50m and a rotor dimension not exceeding 60m in diameter. The towers will be positioned in a single line formation, following the north-south orientation of the ridgeline, over a total distance of approximately 1km. Concrete foundations and hard-stand platforms will be constructed for each of the turbines, an internal road will be constructed linking each of the 9 turbines and access to the site will be via Mt Stuart Road which is immediately adjacent to the site on its western side. No other substantial earthworks are required for the installation of the turbines. The turbines will be connected to the main electricity network by way of a 33kV line on power poles, of which the alignment is yet to be determined.

1.2 Receiving Environment

The receiving environment, given the nature of the project, is separated into two distinct types, one for landscape character (including natural character) and values and the other for the zone of visual influence.

The receiving environment for landscape character is shown in Figure 2.2 attached to this report. Given the elevated nature of the site and open character of the area the landscape receiving environment is extended out 3km from the edge of the site. Mt Stuart is the highest point in the immediate vicinity, with an elevation not exceeding 432m above sea level. However, the summit is relatively flat, and as such is indistinguishable from a number of viewpoints from the surrounding land. In the immediate area there are a number of similar elevated points (refer to Figure 2.1) which are separated by steeply incised gullies (elevation of 200-240m) providing the rolling character to the area. While the majority of this area will not be affected by the proposal, the scale and nature of the wind farm means that it is necessary to assess a larger area in terms of landscape character, natural character and landscape values.

For visual effects, the receiving environment is shown in the Zone of Visual Influence, which is shown in Figure 3.1 attached to this report. Given past experience with wind farms, and its elevated position, it is highly likely that the proposal will be visible from up to 30km in clear conditions. However, at distances over 15km the proposal is unlikely to be viewed as a prominent feature in the landscape with it tending to blend into the background.

1.3 Scope of Landscape and Visual Impact Assessment

The landscape and visual impact assessment considers the likely effects and impacts of the proposal in a holistic sense. There are two broad components to the assessment:

1. The landscape assessment addresses whole-of-landscape issues, particularly those identified by sections 6 and 7 of the Resource Management Act 1991. The landscape assessment consists of two components: a descriptive component that describes landscape character, natural character (s 6a) and landscape amenity (s 7c), and an evaluative component that addresses landscape values in terms of the requirements of s 6b.
2. The visual impact assessment is primarily concerned with the effects and impacts of the proposal on the visual experience of the landscape by the principal groups of landscape users: residents, workers, travellers and recreationists.

1.3.1 Landscape Assessment Methodology

The landscape assessment described in this document draws upon landscape assessment theory, professional best practice, the requirements of the Resource Management Act 1991 (particularly with regard to matters of national importance identified in Part II Section 6), and procedures and principles established through case law in the Environment Court. The general methodology applied is that described by Peart (2005)¹, whereby the landscape unit of analysis is first *described* in terms of its landscape character. The framework for the assessment of landscape character is drawn from the work of Tveit, Ode & Fry (2006)² and is described in later sections of this report. The principles applied to the analysis of natural character have emerged from Environment Court case law, as informed by professional practice.

Following the descriptive phase of landscape assessment, an evaluative phase was undertaken whereby values or significance is ascribed to the landscape. The area is currently not listed as an Outstanding Natural Landscape under the District Plan. The accepted approach is to use criteria identified in *Wakatipu Environmental Society Inc & Ors v QLDC* [2000] NZRMA 59 (generally referred to as the modified Pigeon Bay criteria). The Pigeon Bay criteria includes aesthetic value, an aspect of landscape values over which there is considerable debate regarding the theoretical basis for assessing visual or scenic quality, and the methods and techniques to be used. A professionally-based evaluation has been applied to the task of assessing aesthetic value, drawing upon the theoretical work of Kaplan and Kaplan (1989)³. The technique used to assess aesthetic quality includes reference to several of the factors which form the framework for the assessment of landscape character. Further details of the assessment and evaluation methods used are provided in later sections of this report.

¹ Peart, R. (2005). Landscape planning guide for peri-urban and rural areas. Environmental Defence Society, Auckland

² Tveit, Ode & Fry (2006). Key Concepts in a Framework for Analysing Visual Landscape Character. *Landscape Research* Vol.31, No..3. pp 229-255

³ Kaplan, R., & Kaplan, S. (1989). *The Experience of Nature: A Psychological Perspective*. Cambridge: Cambridge University Press

In response to Section 7c of the RMA, a further evaluation was undertaken to define and describe amenity values. As with aesthetic values, with which amenity values share considerable overlap, this evaluation was professionally-based rather than community-based.

1.3.2 Visual Assessment Methodology

The visual assessment looks at the visual sensitivity of the landscape and its ability to absorb the proposal. It identifies the potential sources for visual impact resulting from the project and describes the existing visual character of the area in terms of openness, prominence, compatibility of the project with the existing visual context, viewing distances and the potential for obstruction of views.

The visual impact assessment involves the following procedures:

- Identification of the Zone of Theoretical Visual Influence (ZTVI), i.e. the area where the proposal maybe visible from. This is done using a combination of topographic data, site visits, photographs and GIS (Geographic Information System) to determine visibility of the proposal from various locations. While the ZVI provides a useful tool, it must be recognised that there are limitations to its accuracy as it does not account for existing groundcover or buildings and it is based on 20m contour intervals.
- Identification of Visually Sensitive Receivers (VSR's) within the ZVI. These are the people who live, work, play or travel through the area (ZVI) potentially affected by the project.
- Assessment of the degree of sensitivity of VSR's to the proposal. Factors affecting the sensitivity of receivers for evaluation of visual impacts include the value and quality of existing views, the type of receiver, duration or frequency of view, distance from the proposal and the degree of visibility. For example, those who view the impact from their homes are considered to be highly sensitive as the outlook from their home will have undergone substantial change, which in turn may have an effect on their perception of the quality and acceptability of their home environment.
- Identification of potential mitigation measures. These may take the form of revisions/refinements to the engineering and architectural design to minimise potential impacts, and/or the implementation of landscape design measures (e.g. screen tree planting, colour design of hard landscape features etc.) to alleviate adverse visual impacts and generate potentially beneficial long term visual impacts.
- Prediction of the visual impacts after the implementation of the mitigation measures.

Photo-simulations are prepared for key Visually Sensitive Receivers as a tool for impact assessment, providing photorealistic impressions of the proposal.

1.3.2.1 Visual Assessment of Windfarms

Specific to the visual assessment of wind farms, particular reference is given to work published by Scottish Natural Heritage, *Visual Assessment of Windfarms Best Practice (2002)*. The matrix developed by Sinclair-Thomas Matrix has been used, along with photo simulations prepared, as a guide to determine the potential visual impact of the wind turbines:

BAND		DISTANCE (KM)	MAGNITUDE	SIGNIFICANCE
A	Dominant impact due to large scale, movement, proximity and number (of turbines)	0 - 3	High	Potential for independent significant impact
B	Major impact due to proximity: capable of dominating landscape	3 - 6	Medium / High	
C	Clearly visible with moderate impact: potentially intrusive	6 - 10	Medium	Potential for contributory significant impact
D	Clearly visible with moderate impact: becoming less distinct	10 - 14	Medium	
E	Less distinct: size much reduced but movement still discernible	14 - 18	Low / medium	Potential for ancillary non-significant impact: only becoming significant if numerous or cumulative with other installations
F	Low impact, movement noticeable in good light: becoming components in overall landscape	18 – 23	Low	
Approximate recommended threshold for ZVI analysis				
G	Becoming indistinct with negligible impact on the wider landscape	23 - 30	Negligible	
H	Noticeable in good light but negligible impact			
I	Negligible or no impact	35+		

1.4 Relevant Statutory Documents

Relevant statutory documents referred to include (1) the Resource Management Act 1991 ('the Act'), (2) Regional Policy Statement for Otago, and (3) the Clutha District Council District Plan.

1.4.1 Resource Management Act 1991

Part II of the RMA identifies as matters of national importance:

s.6(b) The protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development:

Section 7(c) of the Act requires “the maintenance and enhancement of amenity values” Amenity values are defined in the Act as “those natural or physical qualities and characteristics of an area that contribute to people’s appreciation of its pleasantness, aesthetic coherence, and cultural and recreational attributes.” In a rural context, amenity values can be understood as including such aspects as:

- a sense of spaciousness (wide open spaces)
- privacy, quietness and absence of traffic and bustle
- an environment relatively uncluttered by structures and artificial features

- a clean environment, characterised by fresh air, clean water, etc.⁴

A consideration of amenity values may give rise to a second tier of valued landscapes, beneath outstanding natural landscapes identified in accordance with s.6(b) of the Act. These are termed *visual amenity landscapes* (VAL). Consideration is given in this report to the matter of whether the site can be considered a Visual Amenity landscape.

1.4.2 Regional Policy Statement for Otago

Chapter 5 Land

Policy 5.5.6 To recognise and provide for the protection of Otago's outstanding natural features and landscapes which:

- (a) Are unique to or characteristic of the region; or*
- (b) Are representative of a particular landform or land cover occurring in the Otago region or of the collective characteristics which give Otago its particular character; or*
- (c) Represent areas of cultural or historic significance in Otago; or*
- (d) Contain visually or scientifically significant geological features; or*
- (e) Have characteristics of cultural, historical and spiritual value that are regionally significant for Tangata Whenua and have been identified in accordance with Tikanga Maori.*

Method 5.6.17 Prepare, in conjunction with relevant agencies and in consultation with the community and affected landowners, an inventory of outstanding natural features and landscape that are regionally significant.

Methods which may be used by Otago's territorial local authorities include the following:

Method 5.6.20 Develop policies and other means, including rules where appropriate, to ensure that Otago's outstanding natural features and landscapes are protected from inappropriate subdivision, use and development.

1.4.3 Clutha District Plan

The site is located within the Rural Resource Area in the Clutha District Plan. Table 13.3 of the District Plan lists "Potentially Outstanding Landscapes" and Rule RRA.15 restricts the location of buildings and the above ground construction of transmission lines and the excavation of tracks in the listed areas. However, the proposed site is not listed and there are no particular landscape values associated with the site or area

⁴ Goodman, de Lambert, Dawson, McMahon & Rackham (2000). *Impact of development on rural landscape values*. Ministry for the Environment . Available at <http://www.qualityplanning.org.nz/pubs/3991.pdf> Accessed 26 March 2007

identified in the District Plan. There are a number of areas of ecological significance nearby, the closest being approximately 3km away, but none of these areas will be affected by the proposal.

Under the Issues, Objectives, Policies and Rules of the Clutha District Plan, the following is of relevance to this proposal:

Buildings and structures can compromise the natural, open-space character of the rural environment.

Explanation

In terms of visual amenity, buildings can have an adverse effect on two levels. Firstly, the building itself can have an adverse visual effect resulting from inappropriate design, location or colour in the rural landscape. Secondly, the cumulative effect of buildings in the rural environment can greatly reduce rural character by cluttering the landscape and detracting from the open-space character of the countryside.

Objective RRA.5 To maintain the amenity values of the rural environment.

Policy RRA.7 To manage the effects of activities and buildings to ensure that any adverse effects on the open-space and natural character amenity values of the rural environment are avoided, remedied or mitigated.

Explanation

The relatively quiet, open-space amenity values of the rural environment can be significantly affected by some effects of activities.

With the market influencing the location of activities, adverse effects of activities will be addressed in the Plan by the use of performance standards

Method RRA. 2 Visual Amenity

Council encourages resource users to recognise the benefits of the District's rural and open character amenity values, and to consider the following guidelines when carrying out activities in the District's rural areas;

(i) Buildings and Structures

- The siting of buildings near a change in landform and/or with a backdrop of trees blends the building into the landscape.*
- Buildings sited on ridgelines or skylines tend to dominate the landscape thereby spoiling the overall rural quality of the District. This is obviously more significant when the site is visible from a major road or an area of high public usage.*

1.5 Technical Publications

Technical publications consulted in undertaking this study include; (1) University of Newcastle (2002), Visual Assessment of Windfarms Best Practice, Scottish Natural Heritage Commission Report F01AA303A.

2 The Existing Landscape: Assessment & Evaluation

The assessment of the existing landscape in the locality of the proposed wind farm incorporates a descriptive phase and an evaluative phase. The descriptive phase – or *landscape assessment* – provides an objective description of landscape character. There are many aspects to landscape character, but it is generally understood as the visual manifestation of the complex interrelationships between landform, vegetative cover and land use, especially as these are organised by the mind into coherent, distinctive and consistent patterns. Landscape character assessment focuses upon the aspects of landscape that makes one landscape different from another, rather than better or worse.

The evaluative phase seeks to ascribe values to the landscape. While the focus of much landscape evaluation has been on aesthetic values or scenic quality, RMA case law has widened the scope of landscape values to admit a range of other values to the process of landscape evaluation. These values, commonly referred to as the *Revised Pigeon Bay Criteria*, are discussed in Section 2.4.1. In RMA terms, landscapes displaying exceptional or outstanding values according to these criteria may be deemed to be Outstanding Natural Landscapes.

A further category of values, defined in Section 7(c) of the RMA, are amenity values. They are those qualities or characteristics of a place that make it attractive to be in or to visit, and as in rural areas these may be understood as including:

- a sense of spaciousness (wide open spaces);
- privacy, quietness and absence of traffic and bustle’;
- an environment relatively uncluttered by structures and artificial features;
- a clean environment, characterised by fresh air, clean water, etc.

Where landscapes fall short of displaying exceptional or outstanding values in terms of the Pigeon Bay Criteria, but are still held by the community and landscape professionals to be significant in terms of the provision of visual amenity, the classification *Visual Amenity Landscape* may be used.

The assessment and evaluation of the existing landscape will be discussed from the following perspectives:

1. Landscape Character (including Natural Character)
2. Landscape Evaluation
3. Amenity Values

2.1 Landscape Character (including Natural Character) Assessment

The landscape character assessment methodology draws upon the work of Tveit, Ode & Fry (2006)⁵. Tveit et al present a schema of nine, key visual concepts that are considered to represent the range of factors relevant to the assessment of visual landscape character, together with potential indicators. The concepts and the indicators by which they may be assessed are presented in Table 1.

Table 1 : Key concepts and indicators for assessing landscape character

KEY CONCEPT	INDICATOR
Stewardship - the presence of sense of order or care; in accordance with an 'ideal' situation	stage of succession; presence of litter; presence of weeds; maintenance of structures
Coherence - the structure, inherent order or patterning of visual information; the unity of a scene, enhanced through repeating patterns	water presence and its spatial location; repeating patterns of colour & texture.
Disturbance - lack of contextual 'fit' and coherence	number of disturbing elements; extent of area impacted by disturbance; number of disturbing elements
Historicity – historical continuity and historical richness	presence of cultural elements; age of historic elements; number of time layers; historic continuity; presence of traditional landuse and pattern.
Visual Scale – visibility; openness; enclosure	viewshed size; viewshed form; depth of view; degree of openness; grain size; number of obstructing elements
Imageability (inc. Vividness, Memorability) – the characteristics or aspects of the landscape that create a strong visual image in the viewer	presence of viewpoints; presence of spectacular, unique, iconic elements and landmarks; presence of moving water; presence of historic elements and patterns
Complexity – the diversity and richness of landscape elements & features; the grain size of the landscape	number and size of landscape objects and elements; diversity of landscape elements
Naturalness (including Natural Character) – closeness to a preconceived natural state	fractal dimension; vegetation intactness; presence of water, natural features; lack of management and ecosystem subsidies; degree of wildness; patch and edge shapes.

⁵ Tveit, Ode & Fry (2006). Key Concepts in a Framework for Analysing Visual Landscape Character. *Landscape Research* Vol.31, No..3. pp 229-255

Ephemera – landscape elements changing with seasons and weather	extent of landcover with seasonal; change; extent of water; presence of animals/wildlife; weather characteristics
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While these concepts are applied to the descriptive assessment of landscape character, several of these factors are common to evaluations of visual quality, value and significance. Accordingly, they will be discussed further in subsequent sections.

2.1.1 Stewardship

The local landscape is characterised by rural farming practices, generally sheep or cattle farming with open grass fields, creating a moderate to high degree of stewardship. The sense of order and care is high as can be seen by the maintained shelter belts, trimmed hedges in the case of gorse or mono-culture planting of flax along property boundaries and fencelines. Stewardship is lower on steeper slopes where remnant or regenerating native vegetation is present but the edges of these escarpments are generally well maintained or fenced preventing successional or weed species from establishing on arable land. Also reducing the level of stewardship to small degree is the presence of abandoned buildings, such as the old farm house near the Burma Road and Mt Stuart Road intersection (to the left of viewpoint 1).

2.1.2 Coherence

Coherence in the local landscape is **high** with a strong unity of elements due to the predominance of agricultural farming practices and a limited palette of land cover repeating patterns of colour and texture. Active farm land is generally in grass with open fence lines or shelterbelts. Land which is not actively farmed, usually steeper escarpments and valleys, has been allowed to regenerate with native vegetation or exotic weed species further emphasising changes in gradient. Built structures are few but are present in the landscape, the most notable being the existing utility mast (approximately 30m high) on Mt Stuart on the subject site and transmitter masts at the intersection of Burma and Mt Stuart roads.

2.1.3 Disturbance

The existing level of disturbance is generally low in the local area with the exception of the substantial earthworks and slope cuttings that are being undertaken as part of road improvement works on the state highway. Landcover has been modified greatly from its natural state with the exception of steeper escarpments where there is regenerating vegetation. The existing utility structures on Mt Stuart could be considered disturbing elements, contrasting with the high level of coherence described above and the predominance of the natural elements forming the skyline.

2.1.4 Historicity

Historic elements in the wider area are present with the strong gold mining history in and around Waitahuna and Waitahuna Gully, and the disused rail line connecting to Lawrence. In the immediate area surrounding the proposed site, no historic elements have been identified.

2.1.5 Visual Scale

Due to the site's prominence on the highest point in the immediate area, visual scale is high with open views of the site possible from all directions. It is only within the surrounding steeper gullies that views are contained by either topography or existing vegetation, both exotic and native. The state highway is located within Manuka Gorge where views of the site are generally restricted with the exception of a few vantage points where breaks in topography or vegetation occur. However, the surrounding area is very open with most development tending to be in more open area either outside or above the gully areas.

2.1.6 Imageability

The immediate area where the proposal is located is distinguishable for its lack of memorable landscape features or spectacular features. Farming practices dominate the landscape character with open grass fields, typical of many rural areas in the Clutha District.

2.1.7 Complexity

Complexity of the local landscape is low with little diversity in landscape elements. Groundcover is predominantly grass on the higher, more open slopes with vegetation restricted to shelterbelts or on steeper escarpments. While these elements and patterns lead to a high level of coherence, the almost mono-culture of land uses and covers leads to a low level of complexity, especially given the open and broad character of the area.

2.1.8 Naturalness (Natural Character)

While Naturalness is one of the nine visual concepts used to define Landscape character, additional emphasis is given to natural character due to its importance under Section 6 of the RMA.

2.1.8.1 Assessment of natural character

Natural landscape character is a narrowly defined aspect of landscape character. In simple terms it is an assessment of the degree to which a given landscape is the product of nature, as opposed to cultural intervention. It can be assessed along a continuum of states from pristine wilderness, where no evidence of human intervention is apparent, to wholly developed, where scant evidence of natural elements, patterns, and processes remains. It is important to emphasise that natural character is not an absolute quality that either exists or doesn't, but rather occurs across a continuum in matters of degree. Human interventions may diminish natural character, but do not necessarily eliminate it altogether. Natural character is generally understood to be determined by the extent to which the natural elements, patterns and processes occur in the

landscape, and the extent to which they are modified by human interventions. The highest degree of natural character (greatest naturalness) occurs where there is least modification.

- Natural elements: these are the products of ecological, erosional and depositional processes; the biophysical characteristics of the landscape, such as landforms, rock outcrops, hydrological features and vegetation communities.
- Natural patterns: patterns are formed through the interactions between landscape elements and the processes operating on them. Patterns are apparent through the interactions of plants, soils, aspect and slope, or through the erosion of the coastline through wave action. The regimented character of a forestry plantation or apple orchard compared with the apparently random patterns of trees in an indigenous forest, illustrates how natural and unnatural patterns might be understood.
- Natural processes: Natural processes are the dynamic processes at work on the biophysical landscape, shaping landform and vegetation communities through processes of erosion and deposition, soil forming processes, colonisation and succession, regeneration and energy and nutrient flows.

2.1.8.2 *Natural elements of the receiving environment*

The immediate site affected by the proposal is a heavily modified working rural landscape where the natural elements in the receiving environment are generally limited to the underlying topography. Vegetation communities are predominantly introduced pasture species or species such as macrocarpa or radiata pine which are used in plantations or for linear shelter belts. Native species such as *Phormium tenax* were present but again planted in a linear belt reducing their overall natural character.

The steep gullies running through the landscape retain a high level of natural character, emphasising erosional processes which have occurred over time to create the rolling hill country visible today. Natural vegetation communities further emphasise these processes as these areas have largely been left unfarmed creating a distinct change in character between farmed and non-farmed areas. Natural regeneration is occurring of native and exotic plant communities in these gullies. Large scale earthworks are currently being undertaken as part of highway realignment works which are having a significant effect on natural character in the gullies by affecting the underlying topography and reducing the sense of containment experienced through the road corridor by opening up views.

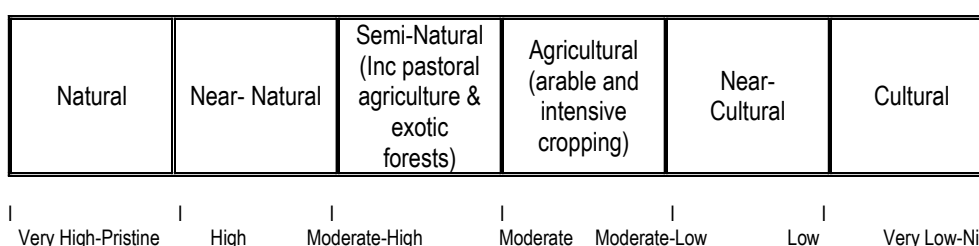
2.1.8.3 *Natural patterns of the receiving environment*

Natural patterns are clearly evident in the area with the gullies which contain either remnant vegetation or regenerating plant communities as well as waterways. The change in vegetation types highlights changes in gradient providing a strong natural pattern to the area. Natural patterns in the rural working areas are less evident with plantings (shelter belts and hedge rows) tending to follow property or paddock boundaries as opposed to contours.

2.1.8.4 Natural processes of the receiving environment

Natural processes are evident with the successional processes which are occurring in the gullies with the regeneration native vegetation. Erosion processes are also evident in the gullies where the waterways are continually eroding away escarpments and causing slips during extreme weather events or where vegetation clearance has occurred.

2.1.8.5 Summary of natural character



In summary, natural character in the locality is provided by the steeply incised gullies which run between open rural farmland. The gullies are generally covered with either native or exotic vegetation cover, highlighting the contrast between the gullies and the open farmland, and have a moderate to high level of natural character. The areas of open farmland generally have a moderate-low level of natural character with the presence of farm buildings, fences, shelter belts and linear hedgerows providing a high level of rural character but at the expense of natural character.

2.1.9 Ephemera

Ephemeral qualities from seasonal, weather or atmospheric conditions provide constant change in the character of the landscape. Snow, as shown in the photos, is present during winter months with exotic plantings providing strong autumnal reds, yellows and oranges to contrast with the dark greens and browns of native species. Many of these changes are concentrated in the gully areas and around waterways where the landscape is more enclosed and more complex. On the subject site, changes are less apparent in terms of changes in vegetation with changes provided through light and weather conditions.

2.2 Landscape Evaluation

2.2.1 Factors for evaluation

Under the Clutha District Plan, the area is not identified as an Outstanding Natural Landscape. However, for complete sake, the following evaluation has been undertaken to either confirm or challenge this assessment. To determine the significance of a landscape or landscape feature, the accepted approach is to use the criteria identified in *Wakatipu Environmental Society Inc & Ors v QLDC* [2000] NZRMA 59. These are:

1. Natural science factors — geological, topographical, ecological, and dynamic components of the landscape, including its expressiveness (how obviously the landscape demonstrates the formative processes),
2. Aesthetic values, including memorability and naturalness; including transient (or ephemeral) values — occasional presence of wildlife, or its values at certain times of the day or year;
3. Whether the values are shared and recognised;
4. Its value to tangata whenua;
5. Its historical associations.

While there is an apparent cross-over between these values, and the same (or similar) aspects discussed when addressing landscape character and natural character, the evaluation phase seeks to go beyond description, to determining significance, or value. Each of these values is dealt with in turn.

Natural science factors (inc. 'expressiveness'):

Natural science factors are evident in the underlying topography created by small waterways which are gradually eroding away the hill country to create steep gullies and escarpments. The majority of these areas have been retired from grazing and allowed to regenerate but areas of erosion are still evident within paddocks. Rural practices have heavily modified the existing landcover to its current state, with natural vegetation processes restricted to the gullies and marginal land. Natural science factors are considered to be moderate.

Aesthetic values:

Aesthetic values, including transient values, of the area are moderate, with a high level of openness and coherence but low levels of complexity or variety. The landscape is typical of a large number of working rural landscapes in the region where open pasture paddocks predominate and steeper escarpments/gullies have been allowed to regenerate, resulting in a low level of memorability. The aesthetic value is derived from the rural character of the area as opposed to the natural character.

Value to tangata whenua:

For values to Tangata whenua no sites of significance have been identified.

Historical associations:

No significant historical associations have been identified within the landscape area.

Whether the values are shared and recognised:

As stated in Section 1.4 .3 above, neither the site or any part of the receiving environment is recognised as an Outstanding Natural Landscape under Section 6(b) of the RMA, or a significant Landscape in terms of the District Plan. However, the District Plan does recognise the value of the existing rural amenity which is discussed further in Section 2.3 below.

In summary, due to the rural character of the area, the site falls well short of the significance required to be identified as an outstanding natural landscape, in agreement with the District Plan.

2.3 Landscape Amenity

As noted above landscape amenity within a rural area may be understood to include such factors as:

- a sense of spaciousness (wide open spaces)
- privacy, quietness and absence of traffic and bustle
- an environment relatively uncluttered by structures and artificial features
- a clean environment, characterised by fresh air, clean water, etc

In respect of the above factors, the site and receiving environment has a medium to high degree of landscape amenity as all of the above factors contribute strongly to the local character. While buildings are present in the area, and in some cases are located on ridgelines or prominent locations, their scale is such that they are subservient to the wider landscape. In most cases buildings are surrounded by substantial plantings of shelter trees lessening their visibility. Other built structures/elements such as farm fences, power poles and farm tracks are common in the landscape and contribute to its overall character as a working rural landscape. Overall, the amenity in the area is largely provided by this rural character.

3 Effects of the Proposal on Landscape Character, Natural Character and Landscape Values

3.1 Effects on Landscape Character (including Natural Character)

For the purpose of assessing effects on landscape character, including natural character, the project is assessed against each of the key visual concepts identified above to determine its overall effect on the landscape.

3.1.1 Stewardship

The presence of wind turbines on the top of Mt Stuart will have a moderate effect on stewardship during construction as a result of earthworks associated with construction of internal roading, the foundations, and the installation of power poles connecting the system to the main grid. However, with the re-grassing of disturbed areas, the level of stewardship during operation is unlikely to be affected by the turbines resulting in a minor residual effect.

3.1.2 Coherence

The residual effect on coherence will be minor as a result of the wind turbines. It is considered that the magnitude of impact will be small as the underlying landuse and landcover will be maintained while the installation of the towers will emphasise the area as the highest local point. The construction of up to 9 towers will in themselves provide a repeating pattern and form of a single element on the skyline to create unity to the scene.

3.1.3 Disturbance

The current level of disturbance is low. The installation of 9 wind turbines will increase the level of disturbance as the increase in structural elements will contrast against the rolling, open character of the existing rural landscape. However, the effect is considered no more than minor as the sculpture form of the towers is uniform, adding only a single additional element to the landscape. The turbines are evenly spaced, in a single row, allowing the view to be easily understood.

3.1.4 Historicity

The concept of historicity is unaffected by the proposal.

3.1.5 Visual Scale

The concept of visual scale will largely be unaffected by the proposal as the openness and sense of space will be retained. Expansive and open views are characteristic of the receiving environment with the exception of those vantage points within gullies. The photo simulations attached to this report show that the proposal will have a negligible to minor effect on visual scale.

3.1.6 Imageability

Currently the imageability of the local area is low with Mt Stuart only moderately higher than the surrounding hills resulting in a 'uniformity' in the local landscape. The installation of the wind farm will increase the imageability of the landscape in a positive aspect, resulting in a minor positive effect.

3.1.7 Complexity

Complexity will increase through the addition of new structural elements in the landscape. However, as the turbines are identical a high degree of unity will exist, and the increase in complexity will not be significant.

3.1.8 Naturalness

The residual effect on naturalness (including natural character) will be **moderate** due to the installation of structures into an environment which is largely free of structures of a similar scale. This will diminish the quality of natural patterns in the area. However, natural elements and processes currently visible in the landscape will be unaffected by the construction and operation of the wind farm.

3.1.9 Emphera

The expression of empheral factors is unaffected by the proposal.

3.2 Potential effects on landscape values and landscape amenity

While the site is not listed as an Outstanding Natural Landscape or significant landscape area, the receiving environment does exhibit a moderate degree of landscape amenity. This is largely due to the working rural character of the area and the sense of spaciousness and openness. The installation and operation of 9 turbines will have an effect on the values and amenity of the area, but the effect is considered to be minor. While the turbines will introduce structures of a scale not currently present in the area, the criteria used to value this landscape will largely be unaffected. The largest impact will occur in terms of aesthetic values and due to its subjectivity, whether the aesthetic qualities of the landscape will be diminished is arguable. It is possible that the turbines will make the landscape more memorable, and therefore have a positive influence on an otherwise typical working rural landscape.

Culturally, wind farms have not been typically part of a New Zealand rural landscape in contrast to many European areas where wind turbines are simply viewed as an extension of rural practices, utilising natural elements to provide a livelihood. While the turbines are of a scale which is not currently present in the area, the open and expansive character of the area means that they can be absorbed into the landscape without having a significant impact on landscape values and amenity. The landscape will still be viewed, and valued, as a working rural landscape with the implementation of the turbines.

4 Visual assessment: effects and impacts of the proposal

4.1 Existing Visual Character

The existing visual character, as outlined above under Visual Scale, is characterised by open views across the top of rolling hill country. Views of the site are possible from a large number of locations due to its elevated position on the skyline. However, in some locations views are generally well contained by the steeply incised and heavily vegetated gullies, screening views out and limiting views of the project site to a small number of vantage points. This is particularly true within 3km of the site and for the stretch of the main highway closest to the project site where the road runs through Manuka Gorge.

4.2 Potential Sources of Visual Impacts

The potential sources of visual impact from this project are as follows:

- A maximum of 9 wind turbines up to 75m tall (up to 50m tower with a rotor dimension not exceeding 60m in diameter)
- Power poles connecting the proposal to the main network which runs adjacent to the highway in Manuka Gorge.
- Construction of internal roading and foundations for each tower and localised earthworks.

4.3 Zone of Theoretical Visual Influence

A Zone of Theoretical Visual Influence (ZTVI) has been prepared showing where it is possible to view the proposal from and is attached in the accompanying figures. It must be noted that the ZTVI does not take account of existing vegetation or buildings as it only relates to topography and is used as a tool to assist with the visual assessment of the proposal. The topography is based on 20m contour lines so there will be some minor discrepancy with on-site conditions. In reality views would be further contained by existing vegetation as part of farm shelter belts and pine plantations.

Within the ZTVI, key viewpoints were identified during the site visit from where the proposal can be viewed, based on the natural of the landscape, viewing distance and size of viewing audience. Six of the viewpoints, considered to be most suitable given their prominence (those highlighted below in **bold**), have been utilised for the creation of visual simulations indicating the likely appearance of the turbines on site and their likely impact on the landscape, natural and visual character of the area. The visual simulations are considered representative of the various viewing audiences and distances, being taken from public locations where clear views of the proposal were possible, some of which would be very similar to views from nearby houses. The key views are as follows:

Viewpoint 1	Close to the intersection of Burma and Mt Stuart Roads
Viewpoint 2	239 Mt Stuart Road
Viewpoint 3	203 Roberts Road
Viewpoint 4	Intersection of Waitahuna Highway and Hylton Road
Viewpoint 5	Waitahuna Gully Road
Viewpoint 6	Intersection of Round Hill and Link Roads
Viewpoint 7	Manuka Gorge Road
Viewpoint 8	Intersection of Manuka Gorge Road and Manuka Creek
Viewpoint 9	Manuka Hill Road
Viewpoint 10	324 Round Hill Road
Viewpoint 11	Intersection of Round Hill and Waitahuna Gully Road
Viewpoint 12	Rhodes Road
Viewpoint 13	Clarksville
Viewpoint 14	Milton

4.4 Visually Sensitive Receivers (VSRs) and Visual Sensitivity, and Potential Impacts

Based on the ZTVI and a comprehensive field study, visually Sensitive Receivers (VSR's) have been identified within the ZVI and assessed. These are the people who live, work, play or travel through the area (ZTVI) potentially affected by the project. Factors affecting their sensitivity for evaluation of visual impacts include the value and quality of existing views, the type of receiver, duration or frequency of view, distance from the proposal and the degree of visibility. The assessment does not attempt to assess whether the effects from the proposal will be negative or positive as visibility does not necessarily equate to adverse visual effects.

The determination of the magnitude or significance of visual effects is relative to the viewer, with their perception being either negative, neutral or positive. Scottish studies into public attributes of residents living close to wind farms (within 20km) have found a large majority (74%) considered the wind farm was either neutral in its impacts (51%) or had no opinion either way (23%)⁶. Surveys within New Zealand have also shown similar results with an overwhelming public support for wind energy which then declines in areas where respondents live close to proposed wind farms.

The assessment identified that from some viewpoints and locations, the proposal would be clearly visible with the potential for the turbines in some instances to be visually prominent. However, the number of potentially affected viewers is low especially within 2 km of the proposal where there are few inhabited houses. For those houses that are within this radius, views are often blocked either by intervening topography, vegetation or the dwellings are orientated away from the proposal reducing their residual visual effect.

More open views of the proposal are available for dwellings between 3-6km from the proposal. At this distance the proposal would still be prominent in the landscape, being clearly visible in the view and forming an important but not defining element. Again, the number of properties in the area is low with potential numbers affected by the proposal further reduced due to house orientation, intervening topography or vegetation.

With distance the effects would be lessen as the proposal becomes a minor element in the wider landscape. Out of the gully areas, open views are generally available.

For other sensitive receivers, other than residential, the visibility of the project is generally low and intermittent. Travelling receivers using Manuka Gorge Road will have intermittent full and partial views of the proposal, however in most cases views will be screened by either existing vegetation, topography or both with viewing time limited due to the windy nature of the road. At its closest point, the site is approximately 3km away to the west but is out of the normal line of sight.

⁶ Brumholtz, S. 2003, Public Attitudes to Windfarms: a survey of local residents in Scotland. MORI Scotland, Scottish Executive Social Research

5 Cumulative Effects

It is not envisaged that there are any cumulative effects from this proposal. The closest known proposal is at Maungatau, near Dunedin airport, which is approximately 30km away from Mt Stuart. It has been indicated that the Maungatau proposal will likely utilise wind turbines with a hub height of 30m minimising the potential for cumulative effects. Mahinerangi is also approximately 30km away, due north of Mt Stuart. At some locations it will be possible to see both proposals at one location. However, at this distance being approximately 15km, the Mt Stuart proposal is unlikely to be viewed as a dominant feature in the landscape, tending to blend into the background. Project Hayes is approximately 68km from Mt Stuart with the two proposals not visible from one location.

6 Mitigation Measures

1. Grassing of all areas disturbed during construction which do not contain permanent works.
2. Painting of blades in non-reflective colours to reduce potential glare from rotating blades.

7 Conclusions

In terms of landscape character, including natural character, and landscape values, the wind farm proposal will have minor effects. The receiving environment has the ability to absorb the scale of this project due to the openness and relatively small section of the view that will be affected. An assessment using the Pigeon Bay criteria reconfirmed the classification in the District Plan, that the site is not an Outstanding Natural Landscape, but could be considered to have high rural amenity. While the proposal will introduce large scale built elements to a rural landscape which is largely free of such structures at present, the structures are not out of scale with the surrounding open landscape. The impact will be mitigated by having low to negligible effects on the key concepts used to describe the existing landscape character, landform and openness of the landscape. The majority of these concepts will not change as a result of the construction and operation of the wind farm as the surrounding rural land uses on and around the site will be able to continue unaffected. The area is a working rural landscape and will continue to operate as one, with the wind farm viewed as an extension of rural practices to work with the land. The concept of distinctiveness will be enhanced as at present there is little to differentiate Mt Stuart from the surrounding rolling farmland. The most effected concept will be naturalness, where the imposition of large scale human elements will result in a minor change in apparent natural character. It is considered minor as the natural character of the area is already significantly modified through current farming practices and the underlying landform (biophysical elements) will not be altered.

In terms of landscape values and amenity, the residual effects of the wind farm will be **minor** as the effects are limited to the imposition of large scale artificial structures on the landscape. Other attributes of high

amenity rural landscapes, such as a sense of openness and spaciousness and absence of traffic will be unaffected by the proposal.

In terms of visual impact, the proposal will be clearly visible from a small number of residential properties, in a few cases appearing as a dominant feature on the landscape. No value is placed on the view, just that it will be visible. In general however, it is considered that the visual effects of the wind farm as a whole will be no more than minor. This is due to:

- Properties less than 2km from the proposal are generally screened by existing vegetation or topography.
- The number of properties within 3-6km of the site are few, and generally afford open and expansive views which the proposal will appear as a prominent, but not dominant, feature of the landscape.
- Effects will diminish with distance.