Our Ref: 53/4/117

CENTRAL OTAGO DISTRICT COUNCIL
CENTRAL OTAGO DISTRICT PLAN – MANIOTOTO & SILVERPEAKS SECTIONS
CENTRAL OTAGO PROPOSED DISTRICT PLAN
REPORT OF PLANNING CONSULTANTS

1.0 APPLICANT: Meridian Energy Limited, Lammermoor Range, RC 060222.

2.0 APPLICATION: The above has made application for land use consent to establish, operate and maintain a wind farm on the Lammermoor Range generally to the west of the Old Dunstan Road. The activities associated with the construction and development of the wind farm are listed below:

- The erection of up to 176 wind turbine generators (turbines) within the site for the generation of electricity. The turbine layout has been configured around an envelope that is designed for a rotor diameter up to 120m and a rotor hub height up to 100m resulting in a maximum total height to the tip of the blade when vertical of 160m.
- Site mobilisation and establishment.
- Land disturbance including cut and fill volumes of between 1.3 and 1.8 million cubic metres (m^3) within the areas shown on the maps attached to the assessment of environmental effects (AEE) that accompanies the application as Appendix B. These areas comprise civil works –
    - Road and turbine platform formations
    - Turbine foundation formation
    - Substation and maintenance facility construction
    - Cable trenching
- Internal network connection of 33kV underground or overhead cables generally along internal access tracks between the turbines and substations.
- Construction of five 33/220kV substations and associated switchyards for connections linking four of the substations to the Sluicing substation.
- Erection of an overhead 220kV transmission line between the Sluicing substation and the Roxburgh – Three Mile Hill 220kV transmission line.
- The construction of an operations and maintenance facility. The building would contain general maintenance equipment and materials associated with the site.
- Establishment of a number of temporary concrete batching plants on site.
- The erection of three wind meteorological monitoring masts to monitor on site operating conditions.
- Aviation obstacle lighting may also be required on up to a maximum of 36 wind turbine generators and on up to three of the permanent meteorological monitoring masts.
- Site reinstatement.
- External road rehabilitation.
- Project de-mobilisation.

A lapsing period of 10 years from the "date of issue" [commencement of the consent] is sought.

The sites subject to the application are described as Sections 17-34 SO 301750; Sections 35-41 SO 301750; Section 3 and Part Section 5 Block V Serpentine Survey District (SD); Sections 1-2 Block VI Serpentine SD; Section 3 Block IV Serpentine SD; Lot 1 DP 21554; Sections 8-9 Block IV Serpentine SD; Section 3 Block VI Loganburn SD; Sections 1, 2, 3 and 4 Block IV Loganburn SD, Sections 9 and 10 Block I Loganburn SD and Sections 10, 11, 12, 13 and 14 Serpentine SD and legal road (Old Dunstan Road). This land is held in Certificates of Title 47421; 47422; OT 8D/18 (Part Cancelled); OT 13A/1391 (Part Cancelled); OT 14C/20; OT 13B/421; OT 14B/195; OT 14C/1012; and OT 14C/688 respectively that are all fee simple freehold titles. Legal road is vested in the local authority and not held in a certificate of title. The project site involves activity on an area of 92 square kilometres of the land identified above.

3.0 ZONING: The project site is zoned Rural A in the Maniototo Section of the Proposed Central Otago Transitional District Plan. No provision is made for the proposed activity in this zone. Part of the project site is zoned Rural B in the Silverpeaks Section of the Central Otago Transitional District Plan. No provision is made in this zone for the proposed activity.

The project site is located within the Rural Resource Area in the Proposed Central Otago District Plan (as amended by Council decisions). Section 13 of the Proposed Central Otago District Plan relates to Infrastructure, Energy and Utilities. Rule 13.7.1 states as follows:

> ***"13.7.1 SECTION 13.7 TO BE A COMPLETE CODE***
>
> *The rules in this section of the Plan provide a complete code for those activities to which Section 13 applies. Other than in relation to Financial Contributions (Section 15) and Subdivision (Section 16) and the Definitions in Section 18, no rule in any other part of this plan shall apply to any activity dealt with by this section, unless the application of that rule is directly referred to in this section of the Plan."*

Rule 13.7.4 relates to Power Generation Facilities and Rule 13.7.4(iii) states as follows:

> **"(iii) Discretionary Activities - Development of New Power Generation Facilities**
>
> Except as provided for by (iv) below, any activity that:
>
> **(a)** Involves or is associated with the construction and commissioning of a power generation facility,
>
> OR
>
> **(b)** Results in an increase in the height of a dam that comprises part of any power generation facility that has status as a scheduled activity in Clause 19.3.5 of Schedule 19.3.
>
> is a discretionary activity.
>
> For the purposes of this rule "construction and commissioning" activities includes those activities directly involved with the building and operation of a new energy production facility. This includes site preparation, earthworks, quarrying, concrete batching, plant construction, road construction and widening, traffic generation, reservoir formation, clearance or inundation of vegetation, but specifically excludes investigative activities such as geological sampling and surveys.

Activities associated with "construction and commissioning" include rapid and temporary population increases and the associated effects on infrastructure and community facilities and the need to reroute or relocate network utilities and community facilities."

Rules 13.7.6, 13.7.10, 13.7.12, 13.7.14, 13.7.15 and 13.7.16 are also relevant to activities proposed on the site. These rules provide for certain activities as follows:

"**13.7.6 BUILDINGS ANCILLARY TO OR ASSOCIATED WITH UTILITIES**

Except as provided for in Rule 13.7.14, buildings used for or in association with network utility activities are permitted activities throughout the District provided that:

(a) The building does not exceed 20m² in gross floor area and/or 4m in height.

(b) The finish of the building shall be consistent with the surrounding environment.

(c) This rule does not apply to heritage precincts, areas of outstanding landscapes, land over 900 metres and land in the Upper Manorburn/Lake Onslow Management Area or areas of significant indigenous vegetation and habitats of indigenous fauna as identified in Schedule 19.6.1 and on the planning maps.

13.7.10 ELECTRICITY RETICULATION

Note: This rule does not apply to activities provided for in Rule 13.7.7 (maintenance, upgrading).

(i) Electricity Lines

New overhead lines for the conveyance of electricity, and new support structures not exceeding 15 metres in height are;

(a) Permitted activities in the Rural and Industrial Resource Areas, and

(b) Discretionary (restricted) activities in all other Resource Areas of the District,

provided that this does not apply to overhead lines and support structures reticulating land within new subdivisions and,

1. Areas of outstanding landscape, land over 900 metres and land in the Upper Manorburn/Lake Onslow Management Area as identified on the planning maps, and
2. Areas of significant indigenous vegetation, habitats of indigenous fauna and wetlands identified in Schedule 19:6.1 and the planning maps, and
3. Heritage precincts as identified on the planning maps, and
4. High voltage transmission lines designed to operate at or over 110kv that are to be located within 20 metres of a building or structure (excluding fences) occupied by people or animals. The 20 metre distance shall be calculated horizontally each side of the outside line of the proposed high voltage transmission line,

and that all possum guards are of non-reflective colours and/or material.

With respect to Rule 13.7.10(i)(b) Council shall restrict the exercise of its discretion to the visual impact of the new lines and/or new support structures and methods to avoid, remedy or mitigate adverse effects having regard to the operational efficiency of the network concerned.

Any application made under this rule will generally not be notified or require the written approval of affected persons.

(ii) Support Structures Exceeding 15 Metres in Height

New pylons, poles and other support structures exceeding 15 metres in height together with associated lines, ancillary structures and telecommunication facilities for the purpose of transmitting electricity are discretionary activities.

13.7.12 METEOROLOGICAL ACTIVITIES

Meteorological activities are permitted activities provided that:

(a) This does not apply to areas identified as
1. Outstanding landscapes, land over 900 metres and land in the Upper Manorburn/Lake Onslow Management Area identified on the planning maps,
2. Areas of significant indigenous vegetation, habitats of indigenous fauna and wetlands identified in Schedule 19.6.1 and on the planning maps.
3. Heritage precincts identified on the planning maps or the site of any heritage item listed in Schedule 19.4.

(b) The maximum height of all structures including masts shall not exceed 7 metres in Residential, Business and Rural Settlements Resource Areas and 20 metres elsewhere.

(c) No building or structure shall be sited closer than 3 metres to the boundary of a site used for a residential activity.

(d) Maximum site area shall not exceed 500m^2.

(e) Maximum floor area of any structure shall not exceed 50m^2.

(f) All relevant standards set out in Rule 13.7.15 are complied with.

13.7.14 SUBSTATIONS

(i) Distribution substations up to 36kV are permitted activities provided that:
(a) This does not apply to areas identified as heritage precincts, identified on the planning maps or the site of any heritage item listed in Schedule 19.4, outstanding landscapes, land over 900 metres and land in the Upper Manorburn/Lake Onslow Management Area, and areas of significant indigenous vegetation, habitats of significant indigenous vegetation and wetlands identified in Schedule 19.6.1 and on the planning maps.
(b) The relevant standards set out in Rule 13.7.15 are complied with.

(ii) Substations not provided for in (i) above are discretionary activities provided that in the Industrial Resource Area substations of any size are permitted activities except where the substation adjoins or faces across a road a Residential, Business or Rural Settlement Resource Area in which case substations are discretionary activities.

13.7.15 STANDARDS FOR UTILITIES

The following standards shall apply to all utilities except those provided for by Rule 13.7.5.

(a) Ground Disturbance

(i) Where the construction, maintenance, relocation or removal of a utility involves disturbance to the ground, at the completion of the work the ground shall be reinstated to a condition of a similar or improved standard to that which existed prior to commencement of the work. Reinstatement shall ensure any slumped areas are restored to the ground level that existed before the ground was disturbed.

Note: see also Rule 14.7.4 Archaeological Sites and Waahi Tapu (Sacred Sites).

(ii) Where removal is proposed in accordance with Rule 13.7.7(iv), all storage areas for goods, materials, plant machinery or equipment, and solid waste associated with the utility shall be stacked in a tidy manner and all waste material shall be disposed of off the site.

(b) Parking

Parking shall be provided on the following basis:

1 Where sites are unstaffed no parking shall be required.

2 Where sites are staffed, parking, (in accordance with the standards set out in Rule 12.7.2 (page 12:16), shall be provided on the basis of one space per person normally working at the site.

(c) Radio Frequency Radiation

All facilities and utilities shall comply with the relevant provisions of New Zealand Standard NZS 2772.1 (1999) (Radio Frequency Fields) Part 1 : Maximum Exposure Levels 3kHz – 30 GHz as measured in accordance with the applicable Interim Australia New Zealand Standard principles and methods of measurement at points where the public has access and NZS 6609 : Part 2 : 1990 (Radio Frequency radiation Part II : Principles and Methods of Measurement 100kHz – 300 GHz).

(d) Stormwater Control

All drainage from substation sites, (other than roof water) shall be directed through a staged interceptor or other system designed to remove as far as practicable petroleum products, dirt and grit from the stormwater.

(e) Noise

Rule 12.7.4 and the standards of the relevant Resource Areas shall apply to noise.

(f) As Built Plans

Four copies of "As Built" plans of all infrastructure in the urban area are to be supplied to Council.

(g) General Standards

No building shall be constructed, and/or left unfinished and/or clad in any protective material or cover which could reflect sufficient light to detract from the amenities of the neighbourhood, cause significant discomfort to residents in the locality or detract from traffic safety. Rule 12.7.6 Lightspill (page 12:23) and Rules 14.7.1 to 14.7.4 Heritage shall apply.

(h) Construction Standards

Public and private drains, pumping stations and all connections thereto shall be constructed in accordance with the standards specified in New Zealand Standard NZS 4404:1981 Code of Practice for Urban Land Subdivision unless determined otherwise as part of a subdivision consent process.

(i) Separation Distances

Oxidation ponds or sewerage treatment facilities with the capacity of serving the equivalent of 100 or more people shall locate no closer than 150m from any residential building or 300m from any urban area.

Reason

These standards will enable any adverse effects of activities to be avoided, remedied or mitigated.

13.7.16 BREACH OF STANDARDS AND RULES AND UTILITIES NOT REFERRED TO

Unless otherwise stated, any activity that fails to comply with the standards set out in Rule 13.7.15, and any utility activity not specifically referred to in Section 13 of this Plan shall be a discretionary activity."

We note that much of the land comprising the project site is over 900 metres in elevation and that that part of the project site from north of the Pylon Road to the Taieri River gorge (south-west of Spillers Hill) is located in the Upper Manorburn/Lake Onslow Landscape Management Area which was inserted into the Proposed District Plan by a consent order of the Environment Court dated 28 February 2007 (Dec C22/2007).

As a consequence of Rules 13.7.1 and 13.7.4(iii) the proposal to establish, operate and maintain a wind farm on the Lammermoor Range is a discretionary activity. Ancillary activities which breach Rules 13.7.6, 13.7.10, 13.7.12, 13.7.14 and/or 13.7.15 are a discretionary activity in terms of Rule 13.7.6. Rules which would otherwise apply in the context of the Rural Resource Area are not applicable, as a consequence of Rule 13.7.1.

4.0 SUBMISSIONS: The application has been publicly notified and 958 formal submissions in response to the proposal were received by the closing date of 24 November 2006. We note that a total of 87 submissions were received subsequent to this date, many of which were received on Monday, 27 November 2006. Four submissions were received in early December 2006 (from CJ Staynes and R, VG & W Turner); and a submission by JA Young was received on 11 January 2007. The consent authority has the discretion whether to extend the time period for the late submissions and we anticipate that the applicant will address this at the hearing. Our initial view is that such an extension is appropriate in terms of section 37 of the Resource Management Act 1991 ("the Act") and we **recommend** accordingly, having regard to the matters for consideration in terms of section 37A particularly the interest of the community in achieving adequate assessment of the effects of the proposal. Notice of such extension is to be conveyed to every person directly affected in terms of section 37A(3) of the Act.

A summary of the submissions received and decisions sought is presented in Annexures 1, 2 and 3 which summarise the 1045 submissions received in response to the proposal, including late submissions. Annexure 1 summarises the 516 submissions received in support of the application. Annexure 2 summarises the 524 submissions received in opposition to the application; and Annexure 3 contains a summary of the submissions received which neither

support or oppose the application. In some instances judgement has been exercised in the categorisation of submissions, as determining whether a submission is actually in support or opposition can only be gauged by reading the submission in full, if support or opposition is not clearly stated in the submission. We also emphasise that we have only presented a summary of the contents of each submission at Annexures 1-3 and acknowledge that further details are contained in the full text of the submissions. The quantity of submissions has necessitated the use of a coded summary format, and we also acknowledge that such a format has constraints when summarising substantial submissions which run to several pages of text.

5.0 STATUS OF THIS REPORT: The attention of the applicant and submitters is drawn to the fact that the purpose of this report is to bring to the attention of the consent authority all relevant factual information or issues which should be considered in deliberating on the proposal. It must be emphasised that any conclusions reached or recommendations made in this report are not binding on the consent authority, and it should not be assumed that the consent authority will reach the same conclusion or decision having considered all the evidence.

6.0 STATUS OF PROPOSAL: We have noted above that the Maniototo and Silverpeaks Sections of the Central Otago Transitional District Plan make no provision for the proposed wind farm in the Rural A and Rural B Zones. We have also noted that the proposal has status as a discretionary activity in the Rural Resource Area of the amended Proposed Central Otago District Plan and have noted in particular that Rule 13.7.4(iii) confirms that the development of new power generation facilities has status as a discretionary activity. It is therefore appropriate that the proposal be considered as an application for land use consent to a discretionary activity pursuant to sections 104 and 104B of the Act.

Section 19(1) of the Act confirms that a rule in a proposed plan that is beyond challenge (by submission or appeal) is to be treated as if it is operative. Any previous rule (of a transitional plan) is inoperative. It is therefore appropriate that the proposal be considered as an application for land use consent to a discretionary activity in terms of the amended Proposed District Plan.

7.0 STATUTORY CONSIDERATIONS

Section 104B enables the Council to grant or refuse consent to a discretionary activity and if granted, to impose conditions of consent.

The matters to be considered when considering an application for a resource consent are stated in section 104. This states as follows:

> *"**104. Consideration of applications** – (1) When considering an application for a resource consent and any submissions received, the consent authority must, subject to Part 2, have regard to-*
> *(a) any actual and potential effects on the environment of allowing the activity; and*
> *(b) any relevant provisions of-*
> *...*
> *(iii) a regional policy statement or proposed regional policy statement:*
> *(iv) a plan or proposed plan; and*
> *(c) any other matter the consent authority considers relevant and reasonably necessary to determine the application."*

Section 104(2) confirms that when forming an opinion for the purposes of subsection (1)(a), a consent authority may disregard an adverse effect of the activity on the environment if the plan permits an activity with that effect. Section 104(3)(b) confirms that when considering an application, a consent authority must not have regard to any effect on a person who has given written approval to the application. In this instance it appears that at least some of the owners of the land to be occupied by the proposed wind farm have given written approval to the application through supporting submissions.

Consideration in terms of section 104 is subject to Part 2. Within Part 2 is the single purpose of the Act as stated in section 5:

> *"**5. Purpose**– (1) The purpose of this Act is to promote the sustainable management of natural and physical resources.*
> *(2) In this Act, "sustainable management" means managing the use, development, and protection of natural and physical resources in a way, or at a rate, which enables people and communities to provide for their social, economic, and cultural wellbeing and for their health and safety while-*
> *(a) Sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations; and*
> *(b) Safeguarding the life-supporting capacity of air, water, soil, and ecosystems; and*
> *(c) Avoiding, remedying, or mitigating any adverse effects of activities on the environment."*

The Environment Court in Genesis Power Limited and The Energy Efficiency and Conservation Authority v Franklin District Council Dec A148/2005 ("the Genesis decision") confirmed that the Act's single purpose as set out in section 5 is the "cardinal and pivotal matter" to be borne in mind in weighing and evaluating evidence and exercising [the Court's] discretion.

The Genesis decision also confirms that the remaining sections in Part 2 inform and assist the purpose of the Act. Sections 6, 7 and 8 in Part 2 state as follows:

> *"**6. Matters of national importance** – In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall recognise and provide for the following matters of national importance:*
> *(a) The preservation of the natural character of ... wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development.*
> *(b) The protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development:*
> *(c) The protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna:*
> *(d) The maintenance and enhancement of public access to and along ... lakes, and rivers:*
> *(e) The relationship of Maori and their culture and traditions with their ancestral lands, water, sites, waahi tapu, and other taonga."*
>
> *"**7. Other matters** – In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall have particular regard to-*
> *(a) Kaitiakitanga:*
> *(aa) The ethic of stewardship:*

(b) The efficient use and development of natural and physical resources:
(ba) the efficiency of the end use of energy:
(c) The maintenance and enhancement of amenity values:
(d) Intrinsic values of ecosystems:
(e) Repealed
(f) Maintenance and enhancement of the quality of the environment:
(g) Any finite characteristics of natural and physical resources:
(h) The protection of the habitat of trout and salmon.
(i) the effects of climate change:
(j) the benefits to be derived from the use and development of renewable energy."

*"**8. Treaty of Waitangi** – In achieving the purpose of this Act, all persons exercising functions and powers under it, in relation to managing the use, development, and protection of natural and physical resources, shall take into account the principles of the Treaty of Waitangi (Te Tiriti o Waitangi)."*

8.0 DESCRIPTION OF ACTIVITY

8.1 Project Site

The project site consists of several sites, being land held in nine separate certificates of title as listed above. The overall project site consists of five land holdings, the owners of which collectively manage over 300 square kilometres of land. The area of the site that is proposed to be developed for the wind farm is approximately 92 square kilometres (9,200 hectares), and this land is located entirely within the Central Otago District. The project site measures approximately 20 kilometres in length extending from west of the Old Dunstan Road to east of the Taieri River Gorge, to the south of Spillers Hill as shown on NZMS 260-H43 and much of the project site exceeds 900 metres in elevation. The project site has a depth of up to 7 kilometres, extending from the face above the Paerau Valley (also known as the Styx Valley, the Upper Taieri Valley and Serpentine Flat) to above the Logan Burn Reservoir and the Great Moss Swamp.

The applicant advises that given the lack of shelter in winter and the topography of the site, that the area is very exposed to the elements, including wind, rain and snow. The landowners currently use the area to graze cattle, sheep and deer. Due to the extreme winter weather conditions the higher portions of the site are only used in summer for grazing relief and to allow the lower land to recover from the winter stock loadings.

8.2 Application Documents

The proposal is described in the application and the Assessment of Environmental Effects dated July 2006 which also contains supporting documents and reports in Appendices A-L. Additional information is also contained in Meridian's responses to the Central Otago District Council's section 92 requests for further information, such responses dated 15 August 2006 and 19 September 2006. Additional information from Traffic Design Group (dated 9 November 2006) was received subsequent to the notification of the application. This information is attached to this report as Annexure 4.

8.3 Overview of Proposal

The proposed wind farm, to be known as Project Hayes, will have up to 176 wind turbines and will have a generation capacity up to 630 MW. Each turbine is up to 160 metres in height to the tip of the rotor blade when vertical. The Parliamentary Commissioner for the Environment in a report entitled "Wind power, people and place" has advised that if built, the proposed wind farm will be the biggest wind farm in the world.

Land disturbance, including cut and fill volume of up to 1.8 million m^3 is proposed to create turbine platforms, access tracks, substation and maintenance facility construction and cable trenching.

It is proposed to have internal electricity network connection via 33kV underground or overhead cables generally along internal access tracks between the turbines and the substations. The applicant proposes to construct 5 substations and associated switchyard buildings on the project site. The applicant also proposes to erect an overhead 220kV transmission line between the substation known as the "Sluicing" substation and the Three Mile Hill 220kV transmission line. This is estimated to include in the order of 100 poles (or towers where large spans are required to cross creeks).

The applicant proposes to construct an operations and maintenance facility. The applicant also proposes the establishment of a number of temporary concrete batching plants on site and to establish lay down areas for the storage of turbine components prior to assembly.

8.4 Construction Time Frame & Sequence

The construction time frame is likely to be in the order of 5 years from site mobilisation to completion of the last turbine foundation. The applicant advises that this is because the site will be inaccessible during winter due to extreme weather conditions and assumes a 3-5 month winter break in construction activity each year. The applicant also advises that the development of the wind farm to its ultimate size will also be dependent upon future demand for electricity.

The likely sequence of construction work for the project site is:

- Site Mobilisation – Establishment of temporary site offices, workshops, stores and other facilities.
- Installation of erosion and sediment control measures.
- Upgrade key access routes to the core site.
- Preparation of initial disposal sites and haulage routes. Haulage routes will typically follow the proposed access routes and existing tracks as appropriate.
- Access road excavation and formation with any surplus cut material transported, placed and compacted at disposal sites.
- Upgrading of existing culverts.
- Preparation of lay down areas and substation platforms.
- Incremental construction of substations.
- Construction of overhead connections to existing transmission lines.
- Turbine platform construction.
- Progressive excavation and construction of reinforced concrete turbine foundations, as platforms become available.
- Cut/fill slope and disposal site rehabilitation.
- Progressive installation of internal transmission network.
- Progressive delivery of turbine towers and generators.
- Progressive installation and commissioning of turbines and substations.
- Removal of temporary services and site offices, lay down area rehabilitation and general site reinstatement.

The applicant has noted that some of these construction activities will be carried out concurrently.

8.5 Wind Turbines

The turbine layout has been configured based on a maximum rotor diameter of up to 120 metres and a rotor hub height up to 100 metres, resulting in a maximum total vertical height to the tip of the blade of 160 metres. The turbine envelope and a maximum vertical height of up to 160 metres will enable flexibility in turbine selection. The applicant also confirms that irrespective of which turbine is selected, all turbines will be the same size at Project Hayes.

Consent is sought to construct turbines with a location tolerance of plus or minus 150 metres. The applicant has advised that this is necessary due to the fact that the final access, layout and position of the turbines will be subject to survey, detailed design and geotechnical/foundation conditions as encountered at each turbine position.

The turbines being assessed include, but are not limited to, a generation capacity of 1.8 MW to 3.6 MW. The generation capacity for the wind farm is therefore assessed as being up to 630 MW. The actual capacity of the site could be more than this, depending on turbine selection. The applicant advises that the annual electricity production from Project Hayes will generate enough energy to supply the annual energy requirements of up to 263,000 homes (2,050 GWh).

The Roxburgh-Three Mile Hill 220kV transmission line is located to the south of Spillers Hill within the project site. The applicant advises that Transpower's Annual Planning Report for 2006 indicates that the existing electricity network has capacity for up to 300 MW with upgrading works on the 220kV Roxburgh to Livingston transmission line. The applicant advises that that report also states that if generation in excess of 300 MW is developed south of the Waitaki Valley, a new transmission line will be required between Roxburgh and Twizel. This is consistent with a statement to this effect made in the submission by the Minister for the Environment on behalf of the Crown.

The applicant has explained that as the prevailing wind at the site was observed to be blowing from a 90 degree quadrant (centred on the west), that a 600 metre separation in all directions for turbines (based on the 120 metre rotor envelope) was derived. This clearance is necessary to avoid turbulence effects and to ensure a smooth laminar airflow, and when combined with the terrain/layout of the ridges on the project site, places a constraint on turbine placement. The 600 metre separation has been extended in some instances, following a desktop review and micro siting process which is described in Clauses 5.2.2 and 5.2.3 of the AEE. Plans attached in Appendix B to the AEE illustrate the proposed turbine locations and derived access road layout. The applicant advises that approximately 67% of the proposed access roads comprise upgraded existing tracks. Additional access roads will be required over land not previously disturbed.

Each wind turbine consists of the following:

- A tapered tubular steel tower;
- A nacelle which sits on top of the tower and houses the control gear, generator and the main rotor shaft that transmits the rotating energy from the turbine rotor to the main gearbox; and
- A three bladed turbine rotor.

The applicant advises that the turbines will be coated with a low reflectivity coating. The colour of the coating will be a light grey colour. The applicant advise that light grey is a colour which has been found to be the most generally suitable, in a range of daily light conditions, various climatic conditions, seasonality, and against a range of backdrops.

8.6 Meteorological Masts

Three wind meteorological monitoring masts of up to approximately 100 metres in height will be installed on the site to provide wind data for operational purposes. The wind towers are likely to comprise of a guyed steel lattice structure on a concrete foundation pad. The wind meteorological monitoring mast sites are near Spillers Hill, Soutra Hill and at a site in the north-west corner of the project site (between the Logan Burn Gully and Old Dunstan Road). The applicant has provided a indicative plan of a wind meteorological monitoring mast at Drawing SK 6 in Attachment 3(c) provided with further information dated 15 August 2006. The position of the wind meteorological monitoring mast will be determined by the final location of the wind turbines, and it may therefore be necessary to reposition the masts within a 150 metre radius of the indicated placement area.

8.7 Transportation of Components/Road Upgrading

The components of the turbines will be transported to the project site from Dunedin. The components will be transported from the Leith Wharf in the lower Otago Harbour on transporters which will use various streets in Dunedin to access the Caversham bypass motorway (State Highway 1). Once on the motorway the transporters will travel in the direction of Mosgiel. It is proposed that the transporters will continue along State Highway 1 and through East Taieri, before turning northwards onto Riccarton Road, and then west onto State Highway 87 towards Outram. The transporters would then pass through Outram before turning north-west, reaching Clarks Junction where the transporters would turn west onto Old Dunstan Road which leads directly to the project site.

The preferred access route from Clarks Junction is Old Dunstan Road/Pylon Road. Upgrading works are required as summarised in Clause 5.4.2 of the AEE. Substantial works are proposed at Sutton Stream (in the Dunedin City) where the existing bridge is to be replaced with appropriate culverts. The approach and exit to the bridge is to be improved, with box cuts 100 metres in length with an average cut height of approximately 5 metres at the eastern approach, and a box cut of approximately 400 metres in length with an average cut of 5.5 metres at the western approach.

The applicant proposes to upgrade a 4 kilometre section of the Old Dunstan Road from Road U down the face of the Lammermoors to the Upper Taieri-Paerau Road in the Paerau Valley. This section of road may be upgraded to permit the haulage of aggregate material for concrete batching in the event that some aggregate material is sourced from areas outside Dunedin (for example Oamaru and Cromwell). Upgrading this section to permit the haulage of aggregate material would involve localised easing of grades and corners and widening some narrow sections. This portion of the Old Dunstan Road is not to be used for the haulage of turbine components (which come from Dunedin).

8.8 Earthworks and Construction

The applicant proposes to undertake earthworks on the site for various purposes including:

- Provision of access roads to turbine locations;
- Creation of flat working platform areas at each turbine location;
- Disposal of surplus cut material at identified disposal areas;
- Creation of temporary platforms for lay down areas for equipment and materials during construction;
- Creation of platform for substations, an operations/maintenance building, temporary site office and lay down area;
- Construction of substations and an operations/maintenance buildings;

- Installation of an internal transmission network between the turbines and substations, as well as an overhead transmission line between the substation and the Sluicing substation and the external electricity grid;
- Turbine foundation concreting works;
- Turbine erection and commissioning;
- Construction of meteorological mast foundations;
- Rehabilitation of constructed bare land areas such as turbine platforms and disposal areas.

The applicant advises that preliminary investigations have assessed the most likely earthwork cut volumes for access roads and turbine platforms to be 1,100,000m^3 and 220,000m^3 respectively (total 1,320,000m^3); and that a pessimistic (upper) estimate for such earthworks is 1,270,000m^3 and 260,000m^3 respectively (total 1,530,000m^3).

The wind farm will involve the construction of approximately 150 kilometres of access tracks, including approximately 100 kilometres of existing farm tracks that are to be upgraded. The access tracks to the turbines will typically be formed to a width of up to 11.5 metres, comprising a 10 metre trafficable width, tapers and a 0.5 metre wide unlined drainage channel located adjacent to the track. Following installation of the turbines a 5 metre pavement width will be retained for maintenance purposes and the remainder of the formation revegetated. The tracks will be surfaced in crushed rock. The applicant has noted that if a smaller crane is available (to assemble the turbines) and is suitable for the proposed purpose then road widening can be reduced on some portions of the roading.

The maximum foundation base of the turbine platforms is expected to be approximately 16 metres to 20 metres in diameter. In addition a larger flat area is required to accommodate the main tower and turbine erection cranes. The applicant has advised that turbine platforms will, therefore, need to be created at each turbine location that are approximately 50 metres by 25 metres (1250m^2) for mid ridge platforms, and 50 metres by 20 metres (1000m^2) for the end of the ridge. The applicant advises that in some instances a separate smaller platform of up to 10 metres by 10 metres (100m^2) may also be required for the purposes of assembly of the rotor and blades.

Platforms will be created by first stripping and stockpiling any topsoil, followed by excavation to create the platform area. Once formed a basecourse/hardcore layer is laid to provide a working surface. Concrete will be necessary to construct the turbine foundations. The applicant advises that two foundation types may be utilised within the project site depending on bed rock competency and the depth of the overburden. These are defined as a standard gravity pad or a rock anchor solution. The applicant has conservatively estimated that for each turbine base approximately 105 to 110 concrete trucks will be required to deliver 650m^3 of concrete. Steel reinforcing is also used in the turbine base (approximately 34 tonnes of steel reinforcing was used per turbine base at the White Hill wind farm near Mossburn). Following completion of the works the platform area will be backfilled and revegetated up to the turbine tower to reduce any erosion potential and to re-establish the natural vegetation cover.

The 650m^3 of concrete per turbine base equates to approximately 115,000m^3 of concrete over the total project site, or approximately 18,500 to 19,500 concrete truck deliveries within the site. The applicant envisages that the contractor will establish an on-site concrete batching plant to minimise the number of ready mix concrete truck trips on the public road network and to increase efficiency by batching the concrete on site. Concrete batching plants may be established at several locations throughout the site and we note that at White Hill two batching plants were required as a contingency, in the event that one plant has a technical fault during a concrete pour.

In the event that batching plants are established, it is likely that aggregates for the concrete works will be sought from local suppliers. The applicant advises that such aggregate supplies could be drawn from the Central Otago and Dunedin regions and that quarry sites have been identified in Dunedin, Oamaru and near Cromwell which can supply sufficient aggregate supplies. The applicant estimates that approximately 114,000 litres of water will be required for each 650m^3 foundation. The total estimated demand for the project is therefore approximately 20 million litres. The applicant estimates that on average 50,000 litres (5 tankers) of water per day will be required during the construction of the foundations (turbine base) phase. The applicant has identified potential water supply sources for the batching plant as follows:

- Abstracted from Logan Burn Reservoir.
- Abstracted from streams or ponds within the site.
- Abstracting from the Taieri River and delivering to the site by tankers.
- Purchasing water from elsewhere and delivery to site by tankers.

The applicant considers that in all probability the water will be sourced from within the site.

Temporary lay down or stock pile areas are required within the site for storage of wind turbine components prior to assembly as well as other materials such as electrical cables. The lay down areas will provide space for portable site offices, workshops, stores and other construction crew facilities. Based on a component stockpile area of 2000m^2 per turbine (including allowances for access and cranes) and assuming turbines are shipped in batches of 15, the applicant estimates that the lay down and temporary office area may require a cumulative platform area of approximately 50,000m^2 (5 hectares). The applicant advises that while the temporary offices and workshop may be placed in the same area, it is likely that stockpiling of materials will be at strategic locations throughout the site. Several lay down areas will therefore be prepared. The optimum locations for lay down areas and storage capacity will be dependent on a more detailed study of the construction and installation sequences.

The applicant envisages that the necessary excavation can be achieved by mechanical means through a combination of hydraulic excavators, large bulldozers with ripping attachments and motor scrapers. In the event that harder material is encountered at depth, it may be necessary to use limited controlled blasting operations to achieve economic working rates. If blasting is required the applicant will adopt industry best practice and standards to manage and perform any blasting activities.

During the earthmoving operation excess excavated material will be disposed of at approved disposal site locations. In suitable locations material will be utilised for shaping of the adjacent ground to blend in the construction works. The applicant advises that the majority of disposal sites will occupy areas of tussock, pasture or bare land.

The applicant advises that if it is considered necessary, borrow areas will be established at suitable locations within the site to extract materials for basecourse and pavement construction. Fill material may also be extracted where there is a shortfall of suitable material excavated during road construction. The applicant advises that once the construction phase is complete the sites will be rehabilitated with topsoil and vegetation as appropriate.

The applicant has confirmed that as part of the detailed design investigations there will be a need to undertake more comprehensive site investigations and testing. Types of intrusive testing that are likely to be employed include:

- Trial pits and borehole investigations in the vicinity of potential borrow areas, large cuts, embankments, and at turbine sites.
- Borehole and rock anchor pullout tests to confirm detail design assumptions for turbine foundations.

The applicant advises that one of its prime objectives for the construction of the wind farm is to ensure that adverse effects on the environment from any erosion, or sediment and dust discharges are minimised. To achieve this the applicant proposes to:

- Ensure environmental management is a core consideration in the management process,
- Take a partnership approach between Meridian and the contractor(s),
- Ensure adequate resourcing of environmental management activities,
- Engage environmental management specialists to assist the contractor,
- Undertake monitoring and auditing of the project works to determine the effectiveness of the environmental management activities being undertaken.

The applicant advises that the construction contract will require the contractor to, amongst other things, comply with a Supplementary Environmental Management Plan (SEMP), which is the main tool for the avoidance of mitigation effects from erosion, sediment and dust discharges for each major component of the work. The SEMP is to include the following:

- A method statement covering:
    - health and safety matters
    - construction method
    - monitoring
    - contingencies
- A plan or series of plans showing:
    - spoil areas to be used
    - cut off drains
    - culverts
        - surface water control works
        - silt ponds
        - any other sediment control measures
- Inspection and reporting schedule particularly in response to adverse weather conditions
- A list of maintenance activities

The SEMP will also cover revegetation requirements, storage and handling of fuel and management of waste.

Once construction begins, it is expected that the on-site personnel numbers will range from 60 to 150 people, depending on the specific activities that are being undertaken. Vans are likely to be used by contractors to transport the majority of the workforce to the site each day. The applicant expects that many of the workers will be sourced from within the region. The exception to this will be specialised activities (skills) associated with constructing wind farm or if the local resources are committed to other activities. An example of a specialised discipline would be the turbine erection and commissioning teams.

8.9 Substations

Five 220kV substations will be required to connect the wind turbines to the transmission grid. The substation names and the indicative platform footprints for each substation are as follows:

Substation Name	Indicative Footprint	Indicative Area
Spillers	76m x 85m	6,460m^2
Airstrip	105m x 155m	1.6275 ha
Yards	105m x 155m	1.6275 ha
Styx	120m x 160m	1.9200 ha
Sluicings	270m x 110m	2.9700 ha

An indicative location for each substation is illustrated in drawing numbers 599 and 501 – 516 in Appendix B to the AEE. The applicant seeks consent to the location of the substations "within a 150 metre envelope" for the Spillers/Styx substations (as listed above). For Sluicings consent is required to build this substation within a polygon area of approximately 360,000m^2 (3.6 hectares).

Once the substation sites are established, the surrounding area that has been disturbed will be revegetated as appropriate. The applicant advises that the proposed substation locations have been determined with the visual effect from Old Dunstan Road being a consideration. The applicant advises that the following activities will be required at each substation site:

- Construction, maintenance and use of a switchyard building for housing indoor switchgear, control panels, electricity supplies, battery chargers and other equipment. Approximate switchyard building dimensions have been provided for Spillers and Yards substations being 500m^2 and 900m^2 respectively. The switchyard building will be located within the substation perimeter fence.

- Construction, maintenance and operation of a switchyard located within the climb-proof fenced substation area. The dimensions of the switchyard for each substation will vary between substations. The approximately switchyard dimensions have been provided for Yards substation being 6,250m^2.

- Substation switchyards will typically include transmission line switchgear, circuit breakers, disconnectors, bus work (being electrical hardware which concentrates and distributes power from incoming transmission lines) and at least one transformer. The transformers will be oil filled, and the switchyard will be designed to retain any oil leakage and avoid any contamination of the stormwater runoff in the event of an oil spillage. As such, it is envisaged that a low concrete bund will be provided around the transformer together with a concrete ground slab. Oil-water interceptor tanks will be constructed below the bunded area to separate and collect any spilt oil from rainwater. Switchyard equipment, transformers and switchgear will be mounted on concrete bases. Drawing No. SK4 in Appendix A of the *Construction Effects and Management Report* (attached as Appendix B to this AEE) shows an indicative layout of a switchyard.

- Construction of a services building primarily for maintenance activities to house a workshop, control room (for managing turbines) and amenities. The services building will be located outside the substation perimeter fence.

- Construction of a boundary fence (approximately 1.2m high wire mesh) around the perimeter of the substation site and an internal 2m high wire mesh security fence at a distance of 10m within the boundary fence.

Switchyard building dimensions will vary. In additional information provided on 15 August 2006 the applicant has advised that for smaller substations the switchyard building could be up to 200m^2 and for larger substations the building could be up to 320m^2, and that the size of such buildings will be confirmed at the detailed design stage.

The applicant advises that substations buildings will be no more than 5.5 – 6.0 metres in height; that transformers will be about 6.0 metres in height; and that gantry structures at the substations will be approximately 8-10 metres in height. Switchyard buildings will be up to 5.5 metres and services buildings will be up to 6.0 metres in height. The applicant envisages that the switchyard buildings will be serviced with a rainwater collection water supply system, and septic tank disposal for foul sewerage. The applicant anticipates that stormwater runoff will be minimal given the intention to collect rain for water supply.

A 33kV internal cable reticulation system is required between the turbines and the site substations. The applicant advises that generally the cables will be placed underground in trenches running along the formed access roads. In some circumstances cables will be run across country or above ground to avoid hard rock or to achieve a more direct route to the substation. The applicant advises that generally overhead routes will only be adopted where the transmission line can be hidden from public viewpoints such as Old Dunstan Road and the Taieri River Valley (Paerau Valley). The 220kV overhead transmission line easement corridor between substations is shown on Drawing 550 in Appendix A to Appendix B to the AEE. The transmission line easement corridor is approximately 680 metres in width and the applicant advises that it follows a route designed to reduce the visual effects of the transmission line while maintaining a safe working distance from the turbine positions. A minimum distance of 190 metres from wind turbine generators is to be maintained for the 220kV overhead line.

The construction of the overhead transmission lines will involve excavation, concrete foundation works, backfill with soil or concrete to ground level and the installation of poles (or lattice towers) and subsequent backfilling of the excavation with soil or concrete as appropriate. The applicant envisages that the height of poles (or lattice towers) will be in the range of approximately 36 metres to 45 metres high.

8.10 Hours of Work

The applicant advises that given that the site is generally inaccessible during winter, that it may be necessary to continue construction work after sunset during warmer times of the year so that progress is not impeded. This will involve lighting at night and in such circumstances portable lighting rigs will be employed.

The applicant envisages that work may progress on a 24 hour basis for turbine sites and access roads remote from any dwellings while complying with the recommended noise limits in NZS 6803 : 1999 Acoustics – Construction Noise. The applicant also advises that there are critical construction activities that once iniated cannot be halted until completed, such as turbine foundation concrete pours and the erection of the turbine towers and nacelles. The applicant advises that once the top sections of the turbine tower have been erected the nacelle must be installed in order to provide structural integrity in adverse wind conditions.

8.11 Obstacle Lighting

The applicant advises that in May 2006 the Civil Aviation Authority released a new policy for lighting and marking of wind turbines. The policy states that any structure 120 metres or higher is a hazard in navigable airspace. As a result selected turbines (and possibly the three permanent metrological monitoring masts) will be required to have aviation obstacle lighting. The highest turbines, those at the extremities of the site and other turbines around the perimeter of the site will be lit with a medium intensity red light that will flash between 20 and 60 times per minute. The applicant advises that the minimum conditions require that obstacle lighting be installed on up to 36 of the wind turbines, including the meteorological monitoring masts. Such lighting will be on or above the top of the nacelle on turbines. The final location and number of turbines and/or meteorological masts which require obstacle lighting will not be determined until the micrositing is complete and a determination is made by the Director of the Civil Aviation Authority.

8.12 Reinstatement

Site reinstatement at the conclusion of the construction period will include:

- Regrading some areas disturbed by heavy machinery;
- Backfilling of local topsoil over tower foundations;
- Revegetating exposed areas of cut and fill; and
- Removal of all temporary stockpiles of materials and equipment.

Topsoil, where it exists, will be removed and stockpiled (generally at disposal sites or lay down areas) prior to track and platform excavation. This material will be reused to rehabilitate disposal sites, lay down areas and access track berms. The applicant advises that rehabilitation (as appropriate) of exposed access track slopes will be undertaken as soon as is reasonably practicable. Where cuts occur in tussock land, the seed of locally growing tussock species will be used to encourage revegetation.

Following completion of the works, the turbine platform areas will be backfilled and vegetated up to the turbine tower to reduce any erosion potential and to re-establish vegetation around each turbine tower.

Following installation of the turbines the 10 metre wide access tracks will be reduced to a 5 metre pavement width for maintenance purposes, with the remainder of the formation regrassed to enable stock grazing, or revegetated to match the existing vegetation cover. On steeper sections of track, and for roads in larger box cuts, such an approach may not be practicable and a wider access track will be maintained.

The surface of the fill at the disposal sites will be formed to an even surface with adequate fall to provide surface drainage and minimise erosion. The surface of the fill will generally be revegetated with suitable and appropriate ground cover. Following construction the lay down areas will be stripped of any basecourse, and ground cover replanted as appropriate.

The applicant advises that further site reinstatement will be “a relatively simple process” if the wind farm were ever decommissioned. The applicant states that those parts of the foundations that extend above ground level could be removed, filled over and grassed, and that buried foundations will not be removed. Apart from the access tracks, all other disturbed ground will be reinstated, and turbines and ancillary electrical equipment removed.

8.13 Wind Farm Operation

All operational control for the turbines will be either automatic, or carried out via telecommunications links with monitoring equipment. The applicant proposes to manage the wind farm using best practice maintenance and operational processes. The applicant advises that as a general guide, each turbine will require 3, 6 and 12 month maintenance checks in its first year of operation, and 6-12 monthly service intervals after the first year. The applicant advises that 18 full time staff will be employed to service the 176 turbines, and that the maintenance team will commute daily to the site. Additional staff will be required to service and maintain the internal electrical networks and substations, the roading and drainage networks.

9.0 ASSESSMENT OF EFFECTS

Section 3 of the Act confirms that unless the context otherwise requires, the term "effect" includes:-

> *"(a) Any positive or adverse effect; and*
> *(b) Any temporary or permanent effect; and*
> *(c) Any past, present, or future effect; and*
> *(d) Any cumulative effect which arises over time or in combination with other effects-*
> *regardless of the scale, intensity, duration, or frequency of the effect, and also includes-*
> *(e) Any potential effect of high probability; and*
> *(f) Any potential effect of low probability which has a high potential impact."*

Any positive or adverse effects are therefore to be considered when having regard to the actual and potential effects on the environment of allowing the activity in terms of section 104(1).

9.1 Positive Effects

Positive effects are summarised in Clause 9.1 of the AEE, and have been identified in submissions lodged in response to the application, particularly the submission lodged by the Minister for the Environment on behalf of the Crown. That submission sets out the Crown's views on the national impacts of the proposal, and confirms that the Crown's submission does not consider the actual and potential effects on the local environment.

The Crown considers that wind power is a viable energy source; that its development will help ensure security of supply through providing additional generation capacity and diversification in electricity production methods; and that wind power is an environmentally responsible alternative to using fossil fuels for generation. The Minister considers that the proposed Project Hayes wind farm is well aligned with the Government's energy objectives to deliver security of supply with an increasing focus on renewable energy sources. The proposal also aligns with the Government's commitment to action on climate change.

In the Genesis decision the Court observed that the positive effects of that proposal (for a 18 turbine wind farm on the Awhitu Peninsula in Franklin District) are not site-specific but have to be seen in the wider context of Part 2 of the Act and in a national context.

In paragraph 64 of the Genesis decision the Court identified the positive effects of the wind farm proposal as follows:-

> *"(i) Electricity is a vital resource for New Zealand. There can be no sustainable management of natural and physical resources without energy, of which electricity is a major component.*

(ii) New Zealand needs a more diverse electricity generation base, to avoid for example over-reliance on hydro which is susceptible to dry years, in any event new large hydro options are limited.

(iii) More thermal generation will have adverse effects, including contributing to climate change and depleting fossil fuels.

(iv) As a matter of national energy policy set in accordance with relevant legislation, New Zealand is pursuing options for renewable energy.

(v) Wind is a source of renewable energy which is plentiful but which is best able to be utilised only in certain locations.

(vi) Benefits of renewable energy include:

(a) ***Security of Supply****. This is achieved through adding to and diversifying New Zealand's generating base….* [The annual production from the proposed Meridian wind farm subject to application will generate enough energy to supply the annual energy requirements of up to 263,000 homes (2,050GWh)]

(b) ***Reduction in greenhouse gas emissions.*** *This is achieved though meeting New Zealand's need for electricity without emitting greenhouse gases during operation, that would otherwise be emitted through coal or gas generation, and thus directly assisting New Zealand's obligations under the Kyoto Protocol…*

…

(e) ***Reliability.*** *Wind is a relatively reliable resource, with a typical annual wind variation of 10%, compared to double that for rainfall, and a relatively reliable economic resource. Once a wind farm is built, it has no ongoing fuel price issues, and the cost of producing electricity from the wind depends primarily on the average, annual wind speed.*

(f) ***Development benefits.*** *Wind energy initiatives result in industry development, profitable business opportunities and regional development. These include research, manufacturing, installation and distribution, and maintenance of facilities.*

(g) ***Contribution to the renewable energy target.*** ….[The Minister for the Environment has estimated that the proposed Meridian wind farm subject to application could provide between one thousand million kilowatt hours and seventeen hundred million kilowatt hours of electricity a year, or 3.6 – 6.12 petajoules (PJ), which is approximately 12-20% of the renewable energy target in the National Energy Efficiency and Conservation Strategy (NEECS)].

Paragraph 64(vi)(c) and (d) of the Genesis decision identifies benefits of renewable energy as including reduction of dependence on the national grid and reduction of transmission losses. These two "benefits" do not appear to apply in this instance for reasons which we discuss later in this report.

The Court in paragraphs 65 and 66 of the Genesis decision summarised the positive effects at a national level as follows:

> *"(65) In summary, climate change and renewable electricity generation are key issues for New Zealand. This project, if approved, would provide clean and renewable energy to provide essential electricity and to prevent CO^2 emissions that would have been created by generating electricity through the burning of coal or gas.*
>
> *(66) These are all matters which need to be considered and put into the crucible containing the evidential material to be weighed against the alleged and more site-specific potential effects…."*

We also note that the Court in Unison Networks Limited and Hawkes Bay Wind Farm Limited and Others v Hastings District Council W058/2006 (the Unison decision) at paragraph 74 described the possible effects of climate change as summarised in the Agreed Statement of Facts (in those proceedings) in this way:

> *"…the world is likely to experience a rise in temperature, resulting in increasing sea levels, more frequent extreme weather events and a change in rainfall patterns. These climatic changes will potentially impact on New Zealand native ecosystems, industries, infrastructure, health, biosecurity and economy. In the long term, if unchecked, climate change increases the risk of major and irreversible changes to the earth. For example, even for relatively moderate warming, the Greenland ice sheet is expected to melt completely over the next several thousand years which would lead to a sea-level rise of as much as 6-7 metres. The cost of doing nothing about climate change could be severe and the impacts on our environment, economy and society are likely to get steadily worse if greenhouse gas emissions are not reduced significantly over the coming decades."*

The description of positive effects in the Genesis decision (and the Unison decision) provides a useful summary of such positive effects at a national level, which are expanded upon in Section 9 of the AEE, in the Minister for the Environment's submission and in other supporting submissions summarised at Annexure 1, including those of The Energy Efficiency and Conservation Authority (EECA), the New Zealand Wind Energy Association and Rio Tinto Aluminium New Zealand Ltd.

The applicant has advised that the development of the wind farm will benefit the local economy during the construction period, with salary and wage payments being made to between 60 and 150 people (depending on the specific activities that are being undertaken), use of local materials and plant and machinery sourced locally. It appears likely that many of these persons may reside to the east of the site, and such benefits may be experienced in the Dunedin City. The potential exists for at least some of the construction workforce to reside in the Central Otago District. The applicant has also advised that the operation of the wind farm will benefit the local economy by providing 18 new jobs associated with turbine operation and maintenance.

Other positive benefits identified by the applicant include a potential increase in the number of visits by tourists to the district who may regard the wind farm as a tourist destination. As noted above the proposal will be the largest wind farm in the world, and this may add to its tourist and visitor appeal. Benefits may also result from upgrading of local roads which are used by the local community such as the Old Dunstan Road, and by enhanced access on farm properties.

An economic benefit of the proposal would also be a new revenue stream for landowners of the project site. It is also noted in this context that most of the land subject to application will be used for farming purposes upon completion of the construction phase.

The applicant identifies a positive effect of the proposal as being the implementation of a community fund which will pay for various infrastructure upgrades in the region once the fund is established and the wind farm is operational. The quantum of such fund is not disclosed in the application, but reference is made to communities associated with the Te Apiti, White Hill, Waitaki and Manapouri Power Stations (who also have the benefit of such a community fund) receiving funding of $1.6 million in total over 3 years starting in 2006.

It appears that the positive effects of the proposal are primarily those which result at a national level, as summarised above, and as described more fully in Section 9 of the AEE and supporting submissions.

We note that several supporting submitters have drawn attention to the potential for wind farm generation to supplement hydro power generation in the lower South Island. This benefit is explained in the Rio Tinto Aluminium New Zealand Limited submission.

9.2 Adverse Effects

9.2.1 Landscape and Visual Effects

An Assessment of Landscape and Visual Effects prepared by Peter Rough Landscape Architects (the Rough report) is attached to the AEE as Appendix D. Appendix 8 to the Assessment of Landscape and Visual Effects (at Appendix D to the AEE) are a series of photosimulations prepared by Truescape Limited. Additional photosimulations were provided with additional information on 19 September 2006.

In the Unison decision at paragraph 47 the Court confirmed that resolving whether a landscape is outstanding may be determined either by recognition as such in the Plan, or by the application of now well accepted assessment criteria.

The project site is not identified as an "Area of Outstanding Landscape Value" in the proposed Central Otago District Plan albeit that parts of the site are subject to protection through rules as the land is over 900 metres in elevation or is part of the Upper Manorburn/Lake Onslow Landscape Management Area. Adjacent land located in the Dunedin City is identified in the Dunedin City District Plan as an Outstanding Landscape Area (OLA) and is identified on Map 78 as "High Country OLA". We also note that many opposing submitters have referred to this area as an "iconic" landscape. The Parliamentary Commissioner for the Environment in his report "Wind power, people, and place" has noted that the applicant (and TrustPower) have proposed large wind farms on high-country tussockland in Central Otago, in the South Island; and that high-country tussockland has been expressed as iconic South Island landscape. This supports the view that the use of the term "iconic" is apt.

The Rough report has found that the northern part of the Lammermoor Range, on which the Project Hayes site is located, is not an outstanding natural feature or landscape. That report therefore finds in Clause 4.4.2 that the proposed wind farm does not trigger section 6(b) of the Act regarding the protection of outstanding natural features and landscapes.

To assist us in considering the contents of the Rough report, and to provide guidance to the consent authority, Mr Ben Espie of Vivian & Espie Limited has been requested to prepare a report which assesses the effects of the proposal on the landscape and to provide an opinion whether the landscape that includes the site of the proposed wind farm is considered to be an outstanding natural landscape for the purposes of section 6(b) of the Act. A copy of the Espie report is attached to this report as Annexure 5. Mr Espie's conclusion on the matter of outstanding landscape is presented in paragraph 4.12 of his report as follows-

> *"4.12 I consider that the landscape of the Rock and Pillar/Lammermoor/Lammerlaw mountains is both outstanding and natural when it is assessed as a whole. Its physical landform is unmodified, highly legible and includes many features of geomorphological interest. The clutter of human influence is very limited compared* [to] *most landscapes. There is a very significant degree of indigenous vegetation and ecological patterns as well as remarkable water courses and lakes. It is eminent on a district-wide and national scale due to its dramatic aesthetic qualities, its sense of remoteness and naturalness, its transient values (due to remarkable light and weather conditions) and its memorability."*

Mr Espie continues in paragraph 4.13 –

> *"4.13 I believe that this finding is supported by the landscape provisions of the Dunedin City District Plan. That plan categorises all of the Rock and Pillar/Lammermoor/Lammerlaw mountains that are within the bounds of the Dunedin City District as being "Outstanding Landscape Areas". When thinking about our landscapes at a regional or national level, obviously it is nonsense to suggest that the south-eastern half of the Rock and Pillar/Lammermoor/Lammerlaw mountains is an outstanding natural landscape, while the north-western half is not."*

Having regard to the contents of Mr Espie's report, we report on the application on the basis that the project site is located within an outstanding natural landscape for the purposes of section 6(b) of the Act.

Visual amenity is also an important consideration. Amenity values are defined in section 2 of the Act as follows:

> "*"**Amenity Values"** means 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:"*

The Rough report at paragraph 4.4.3 confirms that the wind farm site lies within a landscape having generally high visual amenity value. That report states:

> *"...Its* [the wind farm site's] *somewhat typical high country character, given by coherent natural landform, a reasonably good cover of (albeit modified) tussock grassland, a lack of buildings and in an open, expansive and large scale setting, mean that the proposed wind farm will trigger some visual amenity issues. These issues will relate to Sections 7(c) and 7(f) of the RMA which are concerned with the maintenance and enhancement of amenity values and of the quality of the environment respectively.*

- *It will be important to determine the visibility of the wind farm from surrounding areas and assess its prominence and scale from salient viewpoints and effect on visual amenity values and the general quality of the environment."*

Effects on landscape and visual amenity values will be experienced from a much greater area of land than the 92km^2 occupied by the wind farm. The wind farm will be visible from the Old Dunstan Road, the Paerau Valley, from various vantage points within the Dunedin City and the High Country OLA from the Te Papanui Conservation Park from the Rock and Pillar Conservation Area and from elevated areas generally to the west of the Paerau Valley including land in the Upper Manorburn/Lake Onslow Landscape Management Area. The wind farm will also be visible from vantage points further a field given the elevation of the wind farm and the scale (and movement) of the turbines.

9.2.1.1 <u>Views From Old Dunstan Road</u>

The Old Dunstan Road provides a link between State Highway 87 and the roading system in the Maniototo, including the Upper Taieri – Paerau Road. The road is open for most of the year (except winter months) and is recommended to be used by four wheel drive vehicles. The Old Dunstan Road passes adjacent to the project site.

The Rough report in Clause 5.1 presents a table with respect to visual impacts in relation to viewing distance. This table is reproduced below:

Table : Visual Impacts in Relation to Viewing Distance

Less than 1 km turbines tend to dominate the landscape and the potential for visual effects is substantial.
At 1-3 km turbines are highly prominent and the potential for visual effects is substantial.
At 3-6 km while still prominent and a distinctive feature in the landscape, the potential for visual effects is moderate.
At 10 km while turbines are distinguishable the wind farm becomes a minor feature in the wider landscape and the potential for visual effects is negligible.
At 25 km+ turbines and an entire wind farm become difficult to distinguish and a minor feature in the wider landscape so visual effects are not an issue.

The Rough report confirms that while such tables are a useful guide for assessing the potential effects of a proposed wind farm, they are only of partial assistance in regard to Project Hayes. This is because the turbines proposed will be up to 160 metres high, and 160 metre high turbines are much taller than any turbines used to date in any existing wind farms in New Zealand, and have therefore not been able to be the subject of an assessment. The Rough report also confirms that the turbines proposed to be used in Project Hayes are also taller than those used in most wind farms overseas (on land).

The plans attached to the application confirm that several turbines are to be located within a kilometre of Old Dunstan Road. The AEE at Clause 9.11.2 confirms that the closest turbine to Old Dunstan Road is approximately 60 metres from the road (with a location tolerance of 150 metres).

Each turbine will have a maximum height of 160 metres which exceeds the height of a 50 storey building (allowing 3 metres per storey). In our view turbines close to Old Dunstan Road will dominate the landscape and will have a significant adverse effect. This is consistent with Mr Espie's belief (as stated in paragraph 5.8) that the landscape experience of travelling on Old Dunstan Road will "change dramatically" if the proposal is granted consent.

Turbines close to Old Dunstan Road do not appear to be shown on the Truescape photosimulations. In paragraph 6.3 of his report, Mr Espie comments that photosimulations are only a tool, and only represent views from certain selected viewpoints in a two dimensional way. In essence there are a host of other viewpoints which are not portrayed in the Truescape simulations, including locations (close to turbines) where the visual effect of 160 metre high turbines in close proximity to the road is likely to be more dramatic than shown on the photo-simulations provided to date.

9.2.1.2 Paerau Valley

The wind farm will be located on the Lammermoor massif when viewed from the Paerau Valley, and the western side of the valley (at Linnburn Runs Road) in particular. The Truescape photo point 8 confirms that a large number of wind farm turbines will be seen on the skyline when viewed from this vantage point. Visibility will be increased as the turbine rotors move as the wind blows. In paragraph 7.3 of his report Mr Espie expresses the belief that the experience of being in the Paerau Valley will be significantly altered by the presence of the wind farm.

Within the Paerau Valley the Taieri River and its margins including wetlands that form a scroll plain are identified as an Area of Significant Natural Value and as an Area of Outstanding Landscape Value in the Proposed Central Otago District Plan. The wind farm will be visible to those persons visiting this locality, including persons engaged in fishing activity and other recreational pursuits.

Landscape and visual effects for those on the eastern side of the valley (adjacent to the Upper Taieri – Paerau Road) will be reduced as the rising land behind (being the lower portion of the Lammermoor massif) will provide some screening from the wind farm. At least some wind turbines will be visible when looking towards the south-west from the road, including the vicinity of the Paerau School.

The activity will have an adverse effect in terms of lighting at night when viewed from the west. During construction, parts of the project site may be lit at night and such lighting will be visible from the west. Following construction a minimum of 36 turbines including the meteorological masts will feature red aviation safety lighting. Such lighting will be clearly visible in the night sky above the Lammermoor massif and will result in an adverse visual effect for viewers to the west of the site.

Our conclusion is that the proposed activity will have a significant adverse effect in terms of the landscape and visual amenities enjoyed by persons in the Paerau Valley.

9.2.1.3 High Country OLA

The wind farm will be visible to users of the High Country OLA as identified in the Dunedin City District Plan. This includes persons viewing the landscape from the Old Dunstan Road and persons engaging in recreational activity at the Logan Burn Reservoir. Relevant viewpoints include the Truescape photo points 3 and 4. The wind farm will be very apparent in the landscape, and movement of the turbine rotors will draw the eye to the wind farm. We consider that the proposal will have an adverse visual effect in terms of users of the High Country OLA within Dunedin City.

9.2.1.4 Te Papanui Conservation Park

The Te Papanui Conservation Park which has an area of 3,518 hectares is located to the south of the wind farm site, with the closest turbine being located approximately 4 kilometres from the Conservation Park.

The wind farm will be clearly visible to users of the Te Papanui Conservation Park, and this vista is depicted in Truescape photo point 10. In essence the wind farm will be apparent in a relatively natural landscape which provides a visual backdrop for users of the Te Papanui Conservation Park. Such visual effects will be adverse, and may be greater than depicted in the Truescape photo-simulation. We come to this view having regard to the movement of turbines and to the fact that the photosimulation portrays the grey turbines against a grey/white background of cloud. Under different light and weather conditions (including blue skies) visual effects are likely to be exacerbated.

9.2.1.5 Rock and Pillar Conservation Area

The Rock and Pillar Conservation Area is located approximately 1.5 kilometres to the east of the project site, in the Dunedin City. Users of the conservation area (which is accessed by a walking track from Old Dunstan Road) will have views across the proposed wind farm. Again the wind farm will be very apparent in the landscape, and movement of the turbine rotors will draw the eye to the wind farm.

9.2.1.6 Views from other Elevated Areas

The wind farm will be visible from other elevated areas, including Deep Creek Road which provides access to Lake Onslow Road and to the Serpentine Diggings, to the west of the Paerau Valley, and from other parts of the Upper Manorburn/Lake Onslow Landscape Management Area.

In our experience it is not uncommon for intervisibility studies to be presented as part of the landscape and visual assessment in the context of major resource consent applications. It would be helpful if the applicant provided an intervisibility diagram at the hearing to show the extent to which the wind farm will be visible from land outside the project site.

We acknowledge that the applicant provided a Truescape photosimulation from Serpentine Diggings on 19 September 2006. That photosimulation is at a range of 13.8 kilometres and appears to us to have visual effects that are more than "negligible" having regard to the classification in the Table presented in Clause 5.1 of the Rough report (and reproduced by us in 9.2.1.1 above).

In our view the presence of the wind farm will have a significant adverse effect for those looking across the Paerau Valley from elevated land to the west. Such vantage points are becoming increasingly popular with the advent of four wheel drive visits to remote goldfield sites, including the Serpentine Diggings.

Our discussion of landscape and visual effects is focussed on the effects of the completed wind farm, particularly the turbines which will be the most visually prominent elements. Landscape modifications will also be associated with upgraded and new roads, areas disturbed by earthworks, substations and new overhead transmission lines. Such works will also have visual effects, and these are depicted on the Truescape simulations provided on 19 September 2006. Portions of the access road carriageways (and any associated cuts) will be visible from Old Dunstan Road in particular. It is unlikely that such works will have a significant adverse visual effect when viewed from beyond the immediate confines of the project site.

Our conclusion is that the proposed activity will have significant adverse effects in terms of landscape and visual amenities as described by Mr Espie in his paragraph 4.12. The very obvious, large, unnatural and sculptural structures of the turbines (with large moving blades) will be very obvious and will contrast with the naturalness of the surrounding scene.

9.2.2 Heritage/Tourism Effects

An Archaeological Assessment prepared by PG Petchey of Southern Archaeology Limited is presented at Appendix G to the AEE. The Petchey report comprehensively describes known archaeological sites within the project site, and in the general locality, including sites adjacent to roads which are to be upgraded as part of the proposed works.

The Petchey report identifies a number of prehistoric archaeological sites associated with early Maori activity in the area. Historic archaeological sites include pastoral sites such as stock yards and huts. The Petchey report confirms that sites associated with goldmining fall into two categories, being those associated with the two historic roads in the area being the Old Dunstan Road and Spiller's Track, and the actual goldmining sites themselves in the Lammermoor Range.

The Petchey report at Clause 7.2.3 confirms that the Old Dunstan Road itself is an important historic landscape feature, and is arguably the most significant historic site that will be affected by the proposed wind farm. The Old Dunstan Road coincides with the route followed by miners travelling on foot to the goldfields of Central Otago in 1862, by wagon drivers carting freight to the goldfields and by the government-run gold escort, that stopped overnight at Styx.

Spiller's Track is noted by Mr Petchey as being an alternative route to the northern section of the Old Dunstan Road down into the Serpentine Flat (Paerau Valley). The Pylon Road constructed to service the Roxburgh to Halfway Bush transmission line appears to have been an upgrade of much of the older Spiller's Track.

The Petchey report identifies various accommodation house sites adjacent to the Old Dunstan Road, and also identifies the sites of various goldmining and associated sites within the project site and environs.

In Clause 9.1 the Petchey report confirms that no currently known prehistoric sites will be directly affected by the proposed wind farm. In Clause 9.2 the Petchey report confirms that the proposed upgrading works will change the appearance and nature of the Old Dunstan Road considerably in some places, but he considers that over much of the length of the road the visual change will be relatively minor which we understand is a reference to the appearance of the road itself, rather than being a reference to the landscape experience for those travelling on the road, which Mr Espie advises "will change dramatically".

Mr Petchey confirms that the value of the Old Dunstan Road is its appearance and "atmosphere", as the last major remnant coach road of the Otago goldfields era that remains in use but largely original in route, scale and appearance. Mr Petchey also confirms that the upgrading of Old Dunstan Road may affect a number of road side features and sites, some of which have been identified, but others which that may yet exist. Mr Petchey considers that effects on Spiller's Track will be similar to that on the Old Dunstan Road.

In Clause 9.5 the Petchey report confirms that the main mining site in the proposed wind farm area is the Pettigrew's/Clunie's claim. The Petchey report confirms that the main area of the workings is protected by a covenant, but that associated hut sites, water races and enclosures are not within the covenant area. The Petchey report understands that Pettigrew's hut will be avoided by site works, but that if damage to the site is unavoidable, a full excavation should be carried out.

In Clause 9.6 Mr Petchey confirms that the sod stockyards are important remnants of the early pastoral era, which are historically important. He considers preservation of these sites is important. He notes that a proposed wind turbine (WTGj4p4) will be 50 metres from the western sod yards and the Petchey report considers that all associated construction activities should avoid the yards and associated hut site.

The Petchey report makes a number of specific recommendations, and notes that the applicant will be required to obtain an archaeological authority under the Historic Places Act 1993 prior to undertaking any earthmoving activity that might affect any archaeological sites.

The Old Dunstan Road is the only one of the three main routes to the old goldfields of Central Otago that survives generally unchanged, and because of this it has heritage value. This is acknowledged in the Rough report in Clause 4.2 on page 29.

Many opposing submitters have referred to the heritage values of the Old Dunstan Road, which provides an opportunity to, in some measure, share the experience of the early goldminers and others who travelled to and from the Central Otago goldfields. Upgrading of the Old Dunstan Road in the manner proposed will result in a significant adverse effect in terms of these heritage values, as the existing basic "dirt" road which extends from about Stony Creek to the Upper Taieri-Paerau Road is to be substantially upgraded. Such heritage values will also be diminished by the landscape and visual amenity effects of the proposed wind farm (as discussed above), including the presence of wind turbines in close proximity to the Old Dunstan Road.

In recent years there has been significant growth in the number of persons using the Central Otago Rail Trail, with many persons using mountain bikes to traverse the rail trail from Clyde to Middlemarch and between the localities along the rail trail. The growth of patronage of the rail trail, and other factors (including the art of Grahame Sydney, commercials featuring the "Southern Man" brand and a desire to experience areas remote from main visitor centres such as Queenstown and Wanaka) has resulted in rapid expansion of visitor and tourism activity in Central Otago.

It is anticipated that the Old Dunstan Road will become increasingly popular with four wheel drive and mountain bike enthusiasts, and the proposed wind farm will have an adverse effect in terms of the existing amenity values of this locality, as enjoyed by such persons. Such adverse effects must be weighed against the positive effect of providing visitors with the opportunity to view a substantial wind farm (with huge wind turbine towers) at close range from the Old Dunstan Road and from any viewpoints provided within the project site.

Several submitters have referred to the growth in the film industry, which uses locations in the upland areas of Central Otago for feature films and commercials. It appears to us that alternate locations in Central Otago would be available elsewhere for such activity, notwithstanding the dramatic change that the wind farm would create to the landscape experience in this locality.

Our conclusion is that overall the proposed activity will have a significant adverse effect in terms of heritage and tourism values.

We acknowledge any effects on archaeological values can be mitigated by appropriate conditions of consent and by the relevant provisions of the Historic Places Act 1993, which requires an archaeological authority to destroy, damage or modify an archaeological site.

9.2.3 Ecological Effects

An Ecological Assessment prepared by Kingett Mitchell Limited is attached as Appendix E to the AEE. That report addresses the effects of the proposed wind farm on known ecological values within the project area, together with recommended options to avoid, remedy or mitigate any potential adverse effects identified.

In paragraph 3.1 the Kingett Mitchell report identifies principal potential ecological effects of wind farm development as follows:

> *"● Removal/loss of terrestrial vegetation and potential habitat for fauna (eg., terrestrial invertebrates and lizards).*
>
> *● Sedimentation/erosion and associated reduction in aquatic habitat health.*
>
> *● Loss of avifaunal breeding success through disturbance.*
>
> *● Mortality of fauna (eg., birds, lizards, invertebrates).*
>
> *● Disruption of fish migration and breeding patterns.*
>
> *● Pest plant and animal introductions and disruption of natural ecosystems."*

9.2.3.1 Construction Effects

The construction phase of the wind farm involves earthworks associated with the installation of platforms for turbines, the development of access road networks and the provision of associated infrastructure (eg. lay down areas and substation sites). The Kingett Mitchell report confirms that this necessitates the removal/translocation and modification of substrate material (eg., surface soils and rocks) and the overlying vegetation. Associated fauna (eg., invertebrates and lizards) and habitat will be temporarily or permanently modified within disturbed areas.

Wind farms also have the potential to adversely effect aquatic ecosystems during both the construction and operational phase of the project. The Kingett Mitchell report at paragraph 3.4 confirms that the greatest potential effect is associated with sediment control during the construction phase. The primary concern is sediment runoff from the large area of exposed soils created during the construction of roads, turbine platforms and other infrastructure. The effects of fine sediment on aquatic ecosystems include effects caused by suspended sediments (eg. reduced light penetration and photosynthesis, gills clogging, fish avoidance behaviour) and effects caused by sediment deposition (eg. smothering of vegetation or fish spawning sites).

The Kingett Mitchell report also advises that discharges of other contaminants into waterways (eg. diesel during vehicle refuelling) are also possible and could adversely affect water quality and ecosystems.

During construction, upstream passage of migrating fish may be blocked by temporary in-stream sediment control measures such as coffer dams or silt fences. Fish passage can also be permanently affected by construction of culverts, weirs, or bridges that have an invert above the natural stream bed level (ie. a fall), or by creating water velocities or depths that are too swift or shallow for fish passage.

Stormwater from increased and permeable areas can affect aquatic ecosystems both through altered stream hydrology (greater flood flows, but lower base flow) and by reducing water quality from contaminants present in stormwater runoff (eg. sediment, heavy metals and hydrocarbons). The Kingett Mitchell report confirms that still water or wetland habitats are generally the most sensitive to changes in hydrology, as even subtle changes in hydrology can result in a shift in vegetation type.

Paragraphs 4.2.1 – 4.2.4 confirm that field work (including ecological surveys) were undertaken at the site in March 2006. In paragraph 5.9.5 Kingett Mitchell summarises the ecological values of the project site. Kingett Mitchell considers that the wind farm area features sites of ecological significance (most relatively localised) but considers that the site is not regarded as ecologically significant as a whole. Kingett Mitchell advises:

> *"● The area encompasses suitable extensive tussock grassland and localised rock habitats for a significant lizard fauna, however these habitats are widespread throughout the ER.* [Central Otago Ecological Region].
>
> ● *Most streams and open water wetlands within the area are significant as they either support populations of threatened fish species, or provide juvenile trout-rearing habitat.*
>
> ● *Sphagnum and cushion bog wetlands are common within the Project Hayes area and, although generally modified, are regionally and nationally significant due to their universal rarity. These wetlands also potentially support significant threatened plant populations and provide habitat for a unique terrestrial invertebrate fauna.*
>
> ● *The Project Hayes wind farm site is of value as a buffer to hydro schemes and the adjoining conservation estate though this aspect in itself is not sufficient to regard the entire site as of ecological significance, as extensive areas of surrounding farmland can be considered to have the same buffering role and ecological value.*
>
> ● *The extensive snow tussock grasslands are considered of only moderate ecological significance as they are essentially representative of snow tussock grasslands elsewhere in the ER except that they have been modified by low-moderate intensity land use practices in recent times. Extensive, less modified, better quality snow tussock examples can be found in the adjacent conservation estate."*

It is unclear whether the fieldwork identified any acutely threatened and chronically threatened plants as identified in Schedule 19.6B of the Proposed Central Otago District Plan, and we anticipate that this will be clarified by the applicant at the hearing.

Section 6 of the Kingett Mitchell report assesses the effects of the proposed wind farm works and identifies the measures to avoid, remedy or mitigate such effects. In paragraph 6.2.1 the Kingett Mitchell report confirms that quick and effective revegetation of disturbed sites is a priority, in order to limit weed invasion and to reduce the potential for erosion where vegetation is disturbed. Rehabilitation of disturbed tussock grassland sites could include a combination of "direct transfer" techniques and revegetation with exotic grasses. "Direct transfer" involves the careful excavation of intact sods or clumps of vegetation (approximately 1-2m^2) along with the attached soil horizon using a hydraulic excavator or face shovel. The clumps of soil and vegetation are then transported and placed either directly onto the site to be rehabilitated or stockpiled indefinitely in adjacent areas of pasture until required (provided they are kept well watered and weed populations are properly managed). Kingett Mitchell also advises that seeding with suitable exotic grasses is a suitable revegetation approach where sufficient tussock material is unavailable, the disturbed site is inaccessible and/or the translocated vegetation is spread thinly or fails. Hydro seeding is identified as a practical vegetation option on steeper cut slopes.

We question whether effective revegetation of disturbed sites can be readily achieved given the limited topsoil and extreme climatic conditions which are present at the project site. We also anticipate that further information will be provided at the hearing with respect to the practicality of revegetation, having regard to the substantial areas (including 150 kilometres of roading) that will be involved in a project of this scale. We also question the appropriateness of seeding with exotic grasses in this locality. The presence of exotic grasses, (particularly adjacent to the access roading which is to be reduced in width) will exacerbate visual effects associated with such roading. In Clause 6.2.2 Kingett Mitchell refers (in the context of excess fill disposal) to knowledge of similar projects (eg. Te Apiti wind farm). We question whether such knowledge and experience is relevant, given the different topography, soils and extreme climatic conditions which relate to the project site.

In Clause 6.2.3 Kingett Mitchell confirms that vegetation, soil and gravel disturbance in transportation, and large numbers of traffic movements through the site, are likely to facilitate the importation, dispersal and establishment of invasive weeds through the introduction of seeds and plant fragments. Kingett Mitchell advises that weed invasion (especially mouse-air hawkweed, gorse and broom) pose a minor-moderate threat to native snow-tussock communities and (depending on the species) could potentially compromise fauna habitat. Kingett Mitchell also confirms that the project site lies within the Otago Regional Council gorse and broom free areas, and that both gorse and broom are subject to total control within the site.

Kingett Mitchell identifies potential measures to minimise effects of the introduction of weeds as follows:

> "● *Minimising the importation and transport of all invasive species via best management practices, which should be communicated to employees.*
>
> ● *As far as is practicable, ensuring soil and vegetation is cleaned off vehicles between jobs (to avoid introducing soil from other sites on tyres, etc).*
>
> ● *Sourcing aggregate, sand, soil etc, to be used for construction purposes from a weed free environment (where weeds such as gorse, broom, thistle, etc occur around quarry sites, regular weed control should be undertaken to prevent contamination of aggregate).*
>
> ● *As far as possible, confining vehicle movements to formed accessways.*
>
> ● *Revegetating disturbed areas quickly to inhibit weed establishment.*
>
> ● *Undertaking routine monitoring of site works to ensure new infestations (especially gorse and broom) are detected and removed before they have an opportunity to spread."*

Kingett Mitchell considers that any effects associated with weed infestations will be less than minor.

In Clause 6.6.1 the Kingett Mitchell report discusses the construction effects on aquatic ecosystems. The report identifies mitigation measures proposed in the Construction Effects and Management report (Appendix B to the AEE), that relate to the construction of culverts as well as other works within the vicinity of watercourses. These mitigation measures are as follows:

> *"● Designing culverts to take flood flows (5 year event) with secondary flow paths created for greater events or to deal with culvert blockage from floating debris.*
>
> ● *Designing culverts to ensure no impediment to the passage of fish if applicable.*

- *Installing suitable run-off controls to minimise discharge of sediment to stream including diverting runoff from disturbed areas.*
- *Minimising the area of disturbance.*
- *Staging works to minimise work in stream beds.*
- *Removal of all construction materials on completion of the works.*
- *Not using any materials that may be toxic to aquatic ecosystems.*
- *Stabilising all exposed areas of soil against erosion by re-vegetating or other methods.*
- *Not storing or refuelling machinery in a location that could lead to a spill to the stream."*

Kingett Mitchell also considers that any significant works in water bodies should be timed to avoid spawning periods for native fish or brown trout, if either are present in the waterway. Kingett Mitchell considers that provided the above mitigation measures are implemented, that any effects on aquatic ecosystems should be less than minor.

We anticipate that the anticipated effects on aquatic ecosystems will be a matter for particular consideration in the context of the consents required from the Otago Regional Council for works affecting watercourses and wetlands.

9.2.3.2 <u>Effects on Birds</u>

In Clause 3.3 the Kingett Mitchell report identifies potential effects of wind farms on birds as:

- *"Collision mortality.*
- *Collision risk.*
- *Displacement due to disturbance.*
- *Barrier effects (alterations of travel and migratory routes).*
- *Habitat change and loss."*

Kingett Mitchell advises that bird strike is one of several potential wind farm effects on avifauna. They also advise that literature on the environmental effects of wind power plants acknowledge a risk of bird mortality, but that the effects are, in general, poorly quantified.

Kingett Mitchell advises that while most bird species are generally able to navigate around turbines, the behavioural characteristics of some raptor species (being birds of prey such as falcons and hawks) evidently reduce their ability to see or avoid turbine towers, rendering them more susceptible to bird strike. Factors include predation behaviour, whereby raptors fixate on prey items from a long distance and hence fail to detect turbine towers; flying patterns, as raptors often glide on ascending wind currents that form along hill slopes, which may drive them into the path of turbine blades; and foraging habitat, as raptors favour open terrain with limited cover for their prey (such as small birds, lizards and rodents).

Kingett Mitchell advises that particular attention is being given to determining the presence and abundance of New Zealand falcon in the Project Hayes area, given the potential vulnerability of this species to the risk of bird strike. Clause 4.4.2 of the Kingett Mitchell report confirms that surveys for the New Zealand falcon, and searches for nesting sites, were undertaken from the 29th-30th March 2006. The survey area encompassed the proposed wind farm site and extended south of Deep Creek, and north and east around the Old Dunstan Road, and west along the scarp overlooking the Taieri River (Paerau Valley).

In Clause 5.4.2 Kingett Mitchell confirms that there are two native raptor species (New Zealand falcon and Australasian harrier) that could be affected by the proposed development. Kingett Mitchell advises that the Australasian harriers are common and widespread throughout New Zealand, whereas New Zealand falcon populations are listed in the "gradual decline" threat category.

Eastern falcons (a variety of New Zealand falcon that inhabits open country of the eastern South Island) nest in simple scrapes beneath rock outcrops or in sheltered sites, generally on the sides of valleys with good views of the surroundings and opportunities for nest defence. Eastern falcons also require some nest site protection, generally in the form of bush cover. Kingett Mitchell advises that Eastern falcons are unlikely to nest directly within the project site area as few suitable nesting sites with significant stands of trees or bush cover were found; and that suitable falcon nest sites in the area are more or less confined to steep, rock escarpments in the vicinity of Deep Creek and possibly the Logan Burn gorge which bisects the project site. Kingett Mitchell confirms that no falcons were sighted during the formal survey conducted in late March 2006, though falcons have previously been observed over-flying the western scarp above the Lammermoor Station.

Kingett Mitchell have acknowledged that since March is not the most suitable time to undertaken comprehensive surveys for New Zealand falcon activity (as there is a seasonal component to their distribution and conspicuousness) further monitoring is recommended immediately prior to and during the next breeding season (ie. from August-December). It is unclear whether this monitoring has now been undertaken to provide more precise evidence with respect to the New Zealand falcon population of the project site and surrounding area.

It appears that no definitive information is available with respect to the potential effects of the proposed activity on the New Zealand falcon. Notwithstanding this, Kingett Mitchell have concluded that the risk of bird strike during the construction and operational phases of the project are considered less than minor and that no further mitigation is necessary. Kingett Mitchell recommends documentation of bird strike events for two years subsequent to the establishment of the wind farm to ensure effects are no more than minor, and to provide data to inform assessments of future developments. This two year timeframe is considered sufficient to assess the immediate effects of the installation, and to determine whether bird behaviour adapts to the presence of turbines in the landscape (Clause 6.3 of the Kingett Mitchell report).

9.2.3.3 Conclusion : Ecological Effects

Our conclusion is that the proposal will have adverse ecological effects in terms of vegetation and aquatic systems. The potential appears to exist to mitigate such effects by adopting the measures recommended or supported by Kingett Mitchell. The effects on vegetation could be further reduced if a smaller crane is utilised for turbine assembly (the potential for which is noted in the AEE) enabling narrower road formations to be established.

In our view inadequate information has been provided with respect to the New Zealand falcon population in this locality which is a threatened species. We anticipate that further information will be presented at the hearing, on the basis that Kingett Mitchell's recommendation that a further survey be conducted in the August – December 2006 period.

9.2.4 Noise Effects

An Ambient Sound Level Monitoring and Wind Farm Noise Assessment report prepared by Malcolm Hunt Associates is presented at Appendix I to the AEE.

Several opposing submitters have expressed concern at the potential noise effects of the wind turbines, particularly in the context of the Paerau Valley to the west of the project site. Several submitters have emphasised the natural quiet which exists in the valley, where noise apparently carries over substantial distances.

The Hunt report confirms that the Proposed Central Otago District Plan noise rule (Rule 4.7.6E) and the provisions of New Zealand Standard NZS 6801:1999 and 6802:1999 are not suitable for the assessment of noise from wind turbines or wind farms for a number of technical reasons, and that NZS 6808:1998 Acoustics – The Assessment and Measurement of Sound From Wind Turbine Generators (NZS 6808) should be used instead.

NZS 6808:1998 bases acceptability of predicted wind farm sound levels on ambient sound levels (measured as L95 background sound levels), determined under a range of wind conditions to obtain full information and set levels appropriate to the conditions. In Clause 1.6 the Hunt report advises that NZS 6808:1998 recommends wind farm noise limits be set at a level of 40dBA or 5dBA above the background, whichever the greater. The Hunt report confirms that wind farms are often located in areas with a rural character and that the NZS 6808:1998 assessment method is particularly suited to assessing noise impact in quiet environments.

Section 2 of the Hunt report confirms that ambient sound level monitoring has occurred at three sites, including two sites in the Paerau Valley. In Clause 2.1 the Hunt report confirms that the ambient sound level data indicates that the sound climate in this rural area is quite low, and as expected increases at times of increasing wind speed.

In Clause 3.4 the Hunt report summarises its predictions by stating that sound level calculations for nominated rural receiving locations typically between 850m and 6 kilometres (from the turbines) shows sound levels predicted under worst case conditions of 40dBA or less at all assessment locations used in the study. The Hunt report also considers that these predictions are likely to be an over-estimate of future sound levels for reasons stated in Clause 3.4. In Clause 4.3 the Hunt report summarises its sound assessment, and states as follows:

> *"This assessment concludes that, based on the ambient sound level data gathered at various locations, with varying wind and weather conditions, when considered together with predicted sound levels from the wind farm operating under various wind speeds and conditions, the proposed wind farm will be able to comply in all respects with the limits set out in NZS 6808:1998 Acoustics – The Assessment & Measurement of Sound From Wind Turbine Generators."*

On the basis the Hunt report concludes:

> *"It is therefore possible to conclude that no significant adverse noise effects are likely to arise as a result of the proposed wind farm development, in the form and layout described within the Application, and on which this assessment is based."*

The noise assessment prepared by Malcolm Hunt Associates is based on the use of a Vestas V90 wind turbine model. The Hunt report confirms that if a different wind turbine were selected in the final design, that the report's conclusions remain valid for any turbine with a noise and output similar to or less than V90, and that the conclusions of the assessment are therefore valid for a range of wind turbines that may be finally adopted for the project.

The Genesis decision, in the context of a discussion of the noise effects of a wind farm, discussed the use of standards generally and NZS 6808:1998 in particular commencing at paragraph 120. At paragraph 120 the Court quotes another decision of the Environment Court (in McIntyre v Christchurch City Council [1996] NZRMA 289), and this includes the following-

> *"A party to resource consent proceedings is entitled to rely on compliance with a relevant New Zealand Standard as tending to show that effects on the environment of a proposed activity should be acceptable because emissions would not exceed levels set in that document. Absent challenge by another party, a consent authority may treat the Standard as setting an appropriate level of emissions that would not have unacceptable effects on the environment.*
>
> *However parties to resource consent proceedings are not bound to accept that compliance with a New Zealand Standard would avoid adverse effects on the environment that should be taken into account in deciding whether resource consent should be granted or refused. Because New Zealand Standards are not given particular status by law, parties must be free to assert that significant adverse effects on the environment would occur despite compliance with the Standard.*
>
> *In practice, New Zealand Standards are prepared by committees of people well-qualified in the subject, and with consultation with interested sections of the community. The Standards are generally accorded respect.* ***So opposition to a resource consent application based on an assertion of significant environmental harm despite compliance with a relevant New Zealand Standard would usually need to be supported by expert opinion to be worthy of serious consideration. A mere assertion of harm, without such support, may not be a responsible exercise of a right of appeal.***
>
> *[Emphasis added by the Court]"*

In paragraph 127 of the Genesis decision the Court agreed that Counsel for Genesis that NZS 6808:1998:

> *"*
> - *is a New Zealand Standard*
> - *was prepared by committees of people well qualified on noise and with consultation with interested sections of the community.*
> - *the "plus 5dBA" component, is a scientific and careful formula that recognises that an essential ingredient of wind turbine operation is wind. Given wind's inherent noise, a specific practical noise methodology is required."*

The Hunt report confirms that sound assessment has been undertaken in accordance with NZS 6808:1998, and that noise from the proposed wind farm satisfies the standard. Having regard to the contents of the Hunt report, we consider that any noise effects associated with the proposed activity beyond the project site and the Old Dunstan Road adjacent to this site will not be significant.

We note that several submitters have referred to potential "vibration" effects. We anticipate that this will be addressed by the applicant at the hearing. We acknowledge that NZS 6808:1998 defines sound for the purposes of that standard as being air borne vibration within the audible frequency range. If this is the "vibration" referred to by submitters, the Hunt report confirms that predicted noise levels will meet the guidelines provided by NZS 6808:1998.

9.2.5 Transmission Effects

In 9.1 (above) we quoted from the Genesis decision which quoted various positive effects (including benefits of renewable energy) associated with an 18 wind turbine wind farm on the Awhitu Peninsula near Auckland. Two factors listed under "benefits of renewable energy" at paragraph 64(vi) of that decision were:

> *"(c)* ***Reduction in dependence on the national grid.*** *Wind energy farms may be installed relatively close to the source of electricity demand, thereby minimising load on the national grid and delaying the need for transmission upgrades. The location of the Awhitu wind farm makes this benefit particularly relevant, being located close to New Zealand's major load centre, Auckland.*
>
> *(d)* ***Reduction of transmission losses.*** *The further the distance the greater the loss of electricity through dissipation. The average loss is 5% rising to 15% at very high transmission rates through the Cook Strait Cable. The proposed Awhitu wind farm will reduce supply requirements from more distant resources thereby materially reducing transmission losses which are effectively wasted supply."*

In this instance the proposed wind farm is to be located a substantial distance from New Zealand's major load centre, Auckland, and from the South Island's major load centre in Christchurch; and the proposal is likely to require a transmission upgrade of the national grid. Several opposing submitters have expressed the opinion that a wind farm should be located closer to where the energy is required. Contact Energy Limited has also expressed concern at the effects on hydro generation of a congested transmission system.

It appears that significant transmission loss is likely if power generated from the proposed wind farm is transmitted to the North Island. The Court has noted that transmission losses are effectively wasted [energy] supply.

It appears that the wind farm (due to its location) will have adverse effects in terms of dependence on the national grid and transmission losses.

The submission by the Minister for the Environment states as follows:

> *"The electricity generated from Project Hayes will generally be fed into the Roxburgh-Three Mile Hill (ROX-TMH) 220kV transmission line. Currently there is sufficient capacity to support some of the proposed 176 turbines. If, however, the project was completed to its full potential (630 megawatts), transmission capacity as it currently stands may be constrained and investment in the lines would be required to allow the full output of the wind farm to be injected into the national grid.*
>
> *Transpower anticipates that a new transmission line between Roxburgh and Twizel would be required if new generation south of the Waitaki valley exceeds 300 megawatts, and its forward planning anticipates a new transmission line as one of a number of possible upgrades to the grid backbone in the next ten years. Any new transmission line could be seen as a potential future effect of the development of Project Hayes to be considered by the consent authority.*
>
> *A new transmission line would require its own consenting process, and the environmental effects of any new line would be considered at that time."*

The Minister's submission confirms that there is not sufficient capacity to support all of the 176 turbines proposed at the wind farm. No information has been provided in the current application to identify the route of a new transmission line despite the fact that the Minister considers that "any new transmission line could be seen as a potential future effect of the development of Project Hayes to be considered by the consent authority".

In the absence of information to the contrary, it is expected that an adverse effect of the proposed activity will be that a new transmission line will be required between Roxburgh and Twizel which will pass through the district. We are not able to properly assess the effects of this transmission line, given that no information with respect to this vital infrastructure has been provided with the application. We also note that no submission has been lodged by Transpower New Zealand Limited to provide information with respect to this matter.

Additional transmission lines are proposed on site including 33kV internal cable reticulation (where the applicants intention is that most such cables will be located underground), and 220kV overhead transmission lines are proposed between substations and to link the Sluicing substation to the Roxburgh-Three Mile Hill 220kV line. These overhead lines will have adverse effects on the environment, to the extent that they can be viewed from outside the project site. Such effects are likely to be minor having regard to the presence of the existing 220kV Roxburgh-Three Mile Hill line. Clause 6.1 of the Rough report confirms that the Truescape photosimulations show the proposed power transmission lines linking the proposed substations.

We consider that transmission effects, including increased load on the national grid, transmission losses and the requirement for an additional new transmission line external to the site are significant adverse effects associated with the proposed activity.

9.2.6 Traffic Effects

A Transport Assessment prepared by Traffic Design Group (TDG) is attached as Appendix H to the AEE. Additional information from TDG was provided by the applicant on 16 September 2006, and on or about 9 November 2006 (Annexure 4 to this report).

Traffic effects will be associated with the construction phase of the proposed wind farm, including transportation of turbine components to the site, the transportation of construction materials and other traffic associated with construction, including staff transport. Traffic effects will also occur after the commissioning of the proposed wind farm.

Our discussion of landscape and visual effects and ecological effects (above) has considered the effects of earthworks associated with the 150 kilometres of roading proposed within the site. We have also discussed the effects of upgrading Old Dunstan Road on heritage values.

9.2.6.1 Turbine Transportation

Turbine components are to be transported from Leith Wharf in Dunedin to the project site. The total blade (rotor) length is in the order of 58.5 metres. The blades are carried individually on specially built trailers with steerable rear axles to provide additional manoeuvrability. In Clause 4.1 the TDG report anticipates that the height of the transporter carrying the blade will be 4.9 metres (measured from the carriageway surface to the top of the load).

Nacelles contain all the wind turbine machinery and the weight varies according to the potential power generation. A 3.6 MW machine has a maximum weight of 125 tonnes. Each nacelle is expected to be transported on two multi-access trailers, with the nacelle itself slung between the two units. An illustration of such a transporter (and an indicative configuration of a blade transporter) are contained in Clause 4.1 of the TDG report. The height of the laden nacelle transporter is around 4.5 metres, and the width is a maximum of 4 metres. On gradients, a prime mover may be required at the rear of the transporter as well as at the front, resulting in a total vehicle length of approximately 60 metres.

Towers comprise of 4 or 5 sections, which will be transported separately and assembled on site. The tower is tapered, having a lesser diameter at the top compared to the bottom, which results in the dimensions of the individual sections being different. The base section is generally wider and shorter (in the order of 4.2 metres wide and 10 metres long) and the top section is 2.8 metres wide and 30 metres long. The heaviest tower section may weigh up to 60 tonnes. The TDG report advises that wider sections of tower will be transported in the same manner as the nacelle (ie. slung between the two trailer units) and longer sections of tower will be transported in the same manner as the blade.

Each hub or nose cone is circular and may be up to 3 metres in diameter, weighing up to 35 tonnes. The TDG report also advises that the largest confirmed transformer size is 4.2 metres in height, 8 metres in length and 4 metres in width (albeit that the applicant has advised that transformers may be about 6 metres in height – see 8.9 above). Such dimensions are broadly comparable to that of a nacelle, and the weight of a transformer is estimated to be 105 tonnes. The TDG report identifies the potential effects of transporting the turbine components as being:

> *"*
> - *restrictions on the routes available due to the height, width and weight of the load;*
> - *the ground clearances between the load and the carriageway surface;*
> - *the wide swept path requirements when turning corners or rounding tight curves;*
> - *the potential for slow travel speeds of the loads at certain locations, which could affect other road users."*

TDG advises that the majority of these effects can be fully mitigated through careful consideration of the possible routes to be used, and the implementation of minor improvement schemes where necessary in advance of any load being moved, with additional measures required to mitigate the latter two effects.

In Clause 4.5 the TDG report discusses the proposed route for turbine components from Mosgiel to Wyllies Crossing. It is proposed that transporters will travel along State Highway 1 (from the Dunedin port) and through East Taieri, before turning northwards at Riccarton Road, turning again at State Highway 87. To facilitate the State Highway 1/Riccarton Road turn, the applicant has secured access to a property located on the north-western corner of the intersection.

We note that a substantial number of submissions have been received from residents of Riccarton Road promoting that an alternate route (or mode of transport ie. rail) be used to transport turbine components. Several submitters have referred to Gladfield Road and the Allanton-Outram Road as potential alternatives to Riccarton Road, and have noted that Riccarton Road East is a residential area, and that constraints in terms of road width also apply at Riccarton Road West.

The TDG report advises that:

> *"Gladfield Road is unsealed for a considerable part of its length and would also need significant improvements. This route option was therefore not taken forward for any further analysis."*

We anticipate that the applicant will provide further information at the hearing to demonstrate why Gladfield Road cannot be used as a route to transport turbine components. The use of Gladfield Road which passes through a rural area would appear to have less environmental effect than transporting large turbine components via Riccarton Road.

In Clause 4.6 of the TDG report the Wyllies Crossing (east of Outram) to Rockland Station (along State Highway 87) portion of the route is discussed. The TDG report confirms that the winding alignment of the route from Outram means that the blade transporter is likely to need to repeatedly enter the opposing traffic lane over much of the route, and that the gradients of this section of route are also likely to require the addition of a second prime mover unit to the heavier loads.

Several opposing submitters have expressed concern at the potential effects on traffic movements on State Highway 87. It is unclear whether the applicant proposes to install passing bays at regular intervals along this portion of State Highway 87 and we anticipate that this will be clarified by the applicant at the hearing. Several submitters have expressed concern at the potential impact on the safe and efficient operation of the state highway, particularly as vehicles travelling at normal speed (up to 100kph) encounter slow moving transporters. It is acknowledged that such effects can be mitigated through proper management of the transportation process utilising pilot and following warning vehicles.

Other components such as cement, reinforcing steel and substation components are likely to be sourced from Dunedin via the turbine transportation route.

9.2.6.2 <u>Other Traffic</u>

The TDG report in Clause 5.9 notes that a total of some 76,900 vehicle movements will occur over the whole construction period, half of which will enter the site and half will exit. Some vehicle movements may be associated with locations to the north rather than to the south, and these are listed in Clause 5.9 as follows:

> *"● Materials for Old Dunstan Road upgrade, and internal roading network pavements and basecourse: may be sourced from Kokonga, and will enter the site via State Highway 87, State Highway 85, Patearoa, Paerau and Old Dunstan Road (north);*
>
> *● Consumables: may be sourced from Middlemarch or Paerau;*
>
> *● Workers: may travel from Middlemarch or Paerau; and*
>
> *● Aggregates and sand: may be sourced from Alexandra and/or Oamaru, and will enter the site via State Highway 85, Patearoa, Paerau and Old Dunstan Road (north)."*

Traffic from Central Otago (via Paerau) would utilise the northern portion of the Old Dunstan Road. In addition traffic resulting from the future operation of the wind farm may also come from that direction (depending upon where the 18 full time employees are based). The TDG report in Clause 5.11 does not envisage that there will be significant numbers of tourist/sightseeing vehicles either during construction or subsequently during the operation of the wind farm, and we have some reservations with respect to this suggestion, given that the wind farm will be the biggest in the world with potentially larger turbines than seen elsewhere in New Zealand. We also note in this context that a public road is located adjacent to the wind farm, which provides opportunities to view the wind farm at close range, irrespective of any opportunity for the public to enter the site to view the wind farm.

In Clause 10 of the TDG report various recommendations are made with respect to traffic effects as follows:

> *"● Transportation of the over-weight and/or over-dimension turbine components shall be undertaken in accordance with the appropriate operational approvals, prepared by the applicant to the satisfaction of the Road Controlling Authorities and/or Land Transport New Zealand;*
> - *Sealed stopping areas shall be formed on State Highway 87 between Wyllies Crossing and the site, both for the over-dimension/over-weight loads and also for construction traffic.*
> - *All necessary works to facilitate the movement of the over-dimension/over-weight loads should be completed before any such loads are moved.*
> - *Pre and post inspection of the routes proposed for over-weight loads will be carried out, and maintenance carried out where deficiencies are identified.*
> - *There should be close liaison with Ontrack to ensure that the movement of over-dimension/over-weight loads across the Riccarton Road railway level crossing occurs when trains are not due, or when other vehicles may be placed at risk due to the load (such as at peak road traffic or train times).*
> - *All construction traffic shall operate in accordance with a Construction Traffic Management Plan prepared by the applicant to the satisfaction of all relevant authorities.*
> - *As far as possible, construction traffic should not use the roading network during the weekday morning and evening peak periods.*
> - *As far as possible, deliveries to the site should be made from locations/settlements to the north, to minimise journey distances and the amount of additional traffic to the south and east.*
> - *Construction traffic should avoid travelling through Mosgiel between 8am to 9am and 3pm to 6pm to avoid contributing to, and experiencing, congestion through the town, subject to operational requirements.*
> - *Measures should be taken to inform road users of the re-mobilisation of the site following any extended shut-down period and prior to any construction traffic returning, to ensure that no road safety concerns are introduced.*
> - *The drivers of any slow-moving day-to-day construction traffic should be instructed to pull over and allow other traffic to pass when it is safe to do so.*
> - *During construction, visitor numbers shall be monitored and a viewing area developed if necessary.*
> - *The sections of State Highways 85 and 87, and sealed sections of old Dunstan Road used by construction traffic should be inspected regularly and if necessary swept clear of any loose aggregate during periods of intense construction activity."*

9.2.6.3 <u>Central Otago Road Network</u>

The TDG report at Appendix H to the AEE is silent with respect to the adequacy of the local road network within the Central Otago District (such as the Upper Taieri Paerau Road, the Styx Patearoa Road, the Patearoa Waipiata Road and the Waipiata-Kyeburn Road and other potential routes) to carry heavy traffic associated with the proposed activity. Information with respect to anticipated vehicle movements on the Central Otago District roading network is provided in a Supplementary Transport Assessment prepared by TDG in September 2006 and in correspondence to the applicant from TDG dated 9 November 2006 (Annexure 4 to this report).

The Council's Engineering Consultants MWH (New Zealand) Limited have reviewed the effects of the proposed activities on the Central Otago roading network and have advised that sections of the sealed and unsealed roads in the district would be destroyed beyond normal maintenance repairs within the first weeks to months of heavy traffic usage and that other sections would fail progressively during project construction. In essence the district roading system has not been constructed to accommodate the traffic weights associated with the proposed activity. Major upgrading of the roading network will be required to facilitate the construction of the proposed wind farm and significant works may be required to restore the roading system following the completion of the construction phase. A copy of MWH (New Zealand) Limited's report is attached as Annexure 6 to our report.

In our view these effects can be mitigated by requiring a full preliminary audit of the roading network that is to be utilised as part of wind farm construction, and by requiring that the consent holder re-establish roads to at least the condition that existed prior to construction of the wind farm commencing.

Several opposing submitters have also raised concerns with respect to the environmental effects of additional traffic movements on their amenity. It appears that substantial traffic movements associated with the construction of the wind farm are likely in communities such as Patearoa. We anticipate that the applicant will address this further at the hearing, and will advise, for example, whether it is prepared to meet the costs of appropriate mitigation measures such as double glazing and remedying any adverse effects which may result from vibrations (associated with heavy traffic movements) on structures adjacent to the roading system.

Our overall conclusion is that traffic effects can be avoided, remedied or mitigated through adherence to appropriate conditions of consent, in the event that consent is granted. Close consultation will be required with the roading authorities (the Dunedin City Council, Transit New Zealand and the Central Otago District Council) when planning for traffic movements associated with the proposal.

We note that construction is to occur at certain times of the year (7-9 months) when climatic conditions permit. Traffic movements associated with construction will occur during the balance of the year, including summer months when increased volumes of traffic are likely to experienced on State Highway 87 and on the Central Otago roading network.

9.2.7 Aviation Effects

Clause 9.15 of the AEE confirms that the site is remote from any aerodromes and is not within any Obstacle Limitation Surfaces of any aerodromes. The applicant has advised that an existing agricultural airstrip exists on the project site and that the landowners have no concerns about any potential effects of the proposed wind farm on that airstrip.

The applicant also advises that the Logan Burn Reservoir is a water source for rescue helicopters to fill monsoon buckets. The applicant considers that given the distance between the reservoir and the wind turbines that helicopter pilots will be able to manoeuvre to fill monsoon buckets without impediment from the wind farm.

Preliminary consultation with the Civil Aviation Authority by the applicant has indicated that obstacle lighting is required to be installed on up to 36 wind turbines, including the meteorological monitoring masts. Such lighting is intended to avoid an adverse effect in terms of collision. Such obstacle lighting has an adverse effect in terms of visual effects at night which has been discussed above.

The submission by BJ Mason has advised that the proposed wind turbines between the Logan Burn and Old Dunstan Road are on the direct flight path for light aircraft tracking between Taieri/Dunedin and Alexandra or Wanaka. Mr Mason advises that flying along this route usually requires flying at or close to the minimum height of 500 feet above the surface, usually following (or close to) the Old Dunstan Road. Mr Mason advises that the presence of the wind turbines will preclude legal, safe aircraft passage when cloud ceilings are level with the southern end of the Rock and Pillars, which he advises is a frequent climatic condition in this locality. Mr Mason considers that the presence of obstacle lighting will not mitigate the effective obstruction to passage by aircraft when normal cloud ceilings are present, and he therefore considers that wind turbines and wind monitoring towers should not be located between the Logan Burn and the Old Dunstan Road.

We anticipate that the applicant will address this potential effect at the hearing. Such a potential effect of low probability which has a high potential impact is an effect to be considered in terms of sections 3(f) and 104(1)(a) of the Act.

9.2.8 Telecommunications/Broadcasting Effects

Broadcast Communications Limited (BCL) has prepared a report on the compatibility of the proposal with radio services, and this report is attached to the AEE as Appendix L.

The BCL report has found that approximately 10 residences in the area may have their analogue television reception quality impaired by ghosting caused by a reflected or scattered signal associated with the wind turbines. BCL has noted that of the 10 residences, a total of 8 residences are contracted landowners (ie. landowners of the project site).

Mitigation strategies for any affected residences include correcting the antenna type and pointing direction where appropriate or, if need be, providing assistance with receiving the free to air channels via digital satellite service such as Sky TV or TVNZ. BCL considers that further investigation is warranted to assess the potential for multi-path interference with fixed microwave links. Such interference is caused by wind turbines impinging on the ray path between the transmitter and receiver, resulting in scattering. No definitive information has been provided with respect to this effect, and BCL considers that further investigation should be carried out during the detailed design phase of the wind farm so as to include the final turbine placement and selection.

BCL advises that the applicant is currently discussing with the owner of the radio link the terms of a suitable agreement to achieve this outcome. It is anticipated that further information with respect to this matter will be presented at the hearing.

In Clause 4.8 the BCL report concludes that beyond a 600 metre contingency zone around the wind farm, wide area coverage services such as cellular services, mobile radio services, broadband wireless services and FM radio would be protected from disturbance. Interference could be suffered within the 600 metre zone, including on that portion of the Old Dunstan Road generally to the north-east of the wind farm.

Our conclusion is that adverse effects on broadcast and telecommunication services can be mitigated through adherence to appropriate conditions of consent, except for possible interference with cellphone services on that part of the Old Dunstan Road adjacent to the project site.

9.2.9 Effects on Public Safety

Some opposing submitters have raised issues with respect to public safety, including ice shards being thrown off the wind turbines, potential fire risk and effects on horses.

Several submitters have raised the issue of ice shards being thrown off the wind turbine towers. This potential effect does not appear to have been addressed in the Assessment of Environmental Effects, and we anticipate that additional information on this matter will be presented by the applicant at the hearing. We note in this context that wind turbines are to be located as close as 60 metres to Old Dunstan Road which is a public road.

Some submitters have raised concerns with respect to the risk of fire in this remote area. Such risk is associated with the movement of equipment on site and the activities of personnel during the construction phase, and with respect to potential lightening strikes once the wind farm is constructed. The avoidance and mitigation of fire risk during the construction phase is a matter for proper site management. We anticipate that provision for on-site fire fighting will be made, and that no smoking will be permitted to occur outdoors at the project site. We anticipate that this matter will be addressed by the applicant at the hearing, as will the potential risk of lightening strike and associated fires following completion of the wind farm.

Effects on equestrian activities was a key matter for consideration by the Court in the Genesis decision. Following consideration of considerable evidence on this matter, the Court found that the potential for aversive stimuli on horses generated by wind farm turbines is unlikely to cause effects which are more than minor. In that instance properties involving equestrian activity were located as close as 600 metres to the nearest turbine, and at the closest point visitors would ride horses 80 metres from the closest turbine.

As noted above the closest turbine to Old Dunstan Road is located some 60 metres from the road. Equestrian activity (particularly associated with the Goldfields Cavalcade) utilises the Old Dunstan Road. It appears, based on the findings of the Genesis decision, that effects on equestrian activity will be no more than minor.

9.2.10 Cultural Effects

Clause 9.13 of the AEE confirms that the applicant has commissioned Kai Kahu ki Otago to prepare a draft Cultural Impact Assessment (CIA) for the proposal. The AEE confirms that the applicant is currently engaged in ongoing consultation with Kai Kahu ki Otago and Te Runanga o Otakou which will ultimately contribute to the formulation of a final CIA.

As noted above (in our discussion of heritage and tourism effects) an archaeological assessment has also been prepared by Mr Petchey of Southern Archaeology Limited (Appendix G to the AEE) which has identified various prehistoric sites.

In Clause 9.13.4 of the AEE the applicant acknowledges that the upland areas of Otago have been identified as a significant cultural landscape, which is enhanced by its heritage features, significant landforms and ecological value. The applicant proposes to minimise the risk to traditional Maori heritage by the careful siting of turbines, tracks and other infrastructure and further consultation with iwi prior to and during construction. The applicant considers that adherence to an agreed Accidental Discovery Protocol and remediation of disturbed sites will assist to ensure that effects on the cultural significance of the site are appropriately managed.

The submissions by Kati Huirapa Runaka ki Puketeraki and Te Runanga o Otakou (Inc) confirms that the applicant approached these organisations on 6 November 2006 to seek a meeting to discuss the matters raised in the draft CIA. In essence that meeting was not able to occur prior to the closing date for submissions.

It is anticipated that the applicant will provide further information at the hearing to confirm whether such meetings have now occurred, and the outcome of such meetings with respect to the cultural effects of the proposed activity.

9.2.11 Cumulative Effects

Several opposing submitters have expressed concern at the effects of the proposal, having regard to a proposal by TrustPower to establish a wind farm near Lake Mahinerangi, and with respect to other proposals for wind farms elsewhere in Otago.

TrustPower has applied to the Clutha District Council and the Otago Regional Council for resource consents to establish a wind farm near Lake Mahinerangi (approximately 20 kilometres from the project site) that will have a maximum of 100 turbines up to 145 metres high. The application was publicly notified by the Clutha District Council on 20 January 2007, with submissions closing on 2 March 2007. At the time of reporting the TrustPower application and submissions have not been heard or decisions made.

In Dye v Auckland RC [2002] 1 NZLR 337 the Court of Appeal concluded that a cumulative effect is concerned with things that will occur rather than something that may occur. In this instance consents have not been granted to permit the TrustPower wind farm and there can be no certainty that this will proceed. In these circumstances a cumulative effect (as defined in Dye) does not occur with respect to the TrustPower wind farm proposal, or with respect to any other wind farm for which consents have not yet been granted.

Until such time as consent is granted to another wind farm, such wind farm does not form part of the environment against which the current proposal should be assessed. This is consistent with the Court's approach at paragraph 84 of the Unison decision.

Cumulative effects are likely to result in terms of demand for infrastructure and particularly for transmission capacity in the national grid. We have addressed these effects above.

Our conclusion is that there will be no adverse cumulative effects, in terms of the effects of the proposed activity in addition to any unconsented proposed wind farm.

9.3 Effects : Conclusion

Following consideration of the effects of the proposed wind farm activity, we conclude that the proposal will have positive effects in terms of the use of the renewable energy resource, such positive effects being described in the submissions of the Minister for the Environment and the Energy Efficiency and Conservation Authority in particular. The proposal will have a range of adverse effects which are discussed above. Landscape and visual amenity, heritage and tourism and transmission adverse effects are likely to be significant. The proposal will also have other adverse effects which may be mitigated through adherence to appropriate conditions of consent.

10.0 REGIONAL POLICY STATEMENT AND REGIONAL PLANS

10.1 Regional Policy Statement

The Regional Policy Statement for Otago became operative on 1 October 1998. Relevant objectives and policies from the Regional Policy Statement are attached to the AEE as Appendix F. In our view the following objectives and policies from Appendix F appear to be of particular relevance:

*"**5. Land***

Objective 5.4.3
To protect Otago's outstanding natural features and landscapes from inappropriate subdivision, use and development.

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

(d) Are unique to or characteristic of the region; or
(e) 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
(f) Represent areas of cultural or historic significance in Otago; or
(g) Contain visually or scientifically significant geological features; or
(h) Have characteristics of cultural, historical and spiritual value that are regionally significant for Tangata Whenua and have been identified in accordance with Tikanga Maori.

12. Energy

12.4 Objectives
12.4.1 To avoid, remedy or mitigate the adverse effects on Otago's communities resulting from the production and use of energy.
12.4.2 To sustainably and efficiently produce and use energy taking into account community values and expectations.
12.4.3 To encourage the use of renewable energy to produce energy.

12.5 Policies
12.5.2 To promote the sustainable management and use of energy through:
(a) Encouraging energy production facilities that draw on the region's renewable energy resources; and
(b) Encouraging the use of renewable energy resources, in a way that safeguards the life-supporting capacity of air, water, soil and ecosystems that avoids, remedies and mitigates adverse effects on the environment as a replacement for non-renewable energy resources; and
(c) Encouraging the sustainable development of Otago's renewable energy resources.

12.5.4 To promote the securing of appropriate benefits for Otago's communities from any energy developments within the region."

Other objectives and policies contained in the Regional Policy Statement are also relevant to a greater or lesser extent. We are conscious that the Hearings Panel will receive a report from officers of the Otago Regional Council (ORC) with respect to consents required from that Council. We anticipate that the objectives and policies of the Regional Policy Statement will be dealt with in greater detail in that report.

10.2 Regional Plans
We also anticipate that provisions of various regional plans, including particularly the Regional Plan : Water (operative 1 January 2004) will be addressed in the ORC officers report.

11.0 DISTRICT PLAN OBJECTIVES AND POLICIES

11.1 Transitional Plan

The project site is subject to the provisions of the Maniototo and Silverpeak Sections of the Transitional District Plan. In our view the objectives and policies of the Transitional Plan are of limited relevance, as the relevant provisions of the Proposed Central Otago District Plan have passed the stage where they can be subject to submissions and references (appeals). We also note that the Maniototo and Silverpeaks Sections of the Transitional District Plan appear to make no specific reference to wind farm development in the Rural A and Rural B Zones respectively.

11.2 Proposed Plan

The Proposed Central Otago District Plan was publicly notified on 18 July 1998, and amended by decisions on submissions on 1 July 2000. References (appeals) lodged in response to the Council's decisions on submissions have been resolved through informal negotiation, through mediation and in hearings before the Environment Court. There are no outstanding references (appeals) to be resolved. Several variations have been publicly notified, but these have no particular relevance to the current proposal.

11.2.1 Section 13

Section 13 of the Proposed District Plan relates to infrastructure, energy and utilities, including the use and development of energy. Objectives and policies that relate to the development of energy resources include the following-

"13.3.3 ***Objective - Development of Energy Resources***

In the development of energy resources, to have particular regard to the use of natural and physical resources in a manner which avoids, remedies or mitigates significant adverse effects on the environment.

13.4.7 ***Policy - Development of Power Generation Facilities***

To ensure that the development of power generation facilities avoids, remedies or mitigates:

- ***(a) Adverse effects on ecosystems, habitats, soils and minerals.***
- ***(b) Impact on communities, infrastructure and services.***
- ***(c) Adverse effects generated during the construction phase particularly in terms of noise, lightspill, glare, vibration, dust, traffic generation and earthworks.***
- ***(d) Potential for the loss of or irreversible change to outstanding landscapes.***
- ***(e) Impacts on heritage values.***
- ***(f) Adverse effects on cultural values of importance to Kai Tahu ki Otago.***
- ***(g) Ongoing effects of the development including land stability issues.***
- ***(h) Potential effects on local climate.***
- ***(i) The potential impact of natural hazard events and the effect the activity itself may have on exacerbating natural hazards.***
- ***(j) Impact on public access to and along the margins of lakes and rivers or to natural and physical features.***

13.4.8 ***<u>Policy - Reducing the Environmental Impact of Power Generation</u>***
To promote the development of power generation facilities that have minimal environmental impact by encouraging investigation into a wide range of renewable energy sources and prohibiting the production of nuclear power within the District."

This objective and policies are relevant to the current proposal. We note in the context of Policy 13.4.7(d) that Mr Espie's report has found that the project site is in an outstanding landscape. Effects referred to in the policy have generally been discussed earlier in the body of this report. We note in the context of Policy 13.4.7(h) that several submitters have referred to potential effects on the local climate resulting from the operation of the wind turbines. We anticipate that this effect will be addressed by the applicant at the hearing.

Objectives and policies in Section 13 are also relevant to works associated with the proposal, including the installation of additional transmission lines. These objectives and policies are as follows:

"13.3.2 ***<u>Objective - Utilities</u>***
To enable the efficient operation and development of utilities while ensuring that effects on amenity, heritage, landscape values and public safety are avoided, remedied or mitigated.

13.4.4 ***<u>Policy - Development of Utilities</u>***
To ensure that the design, location and operation of utilities, having regard to specific locational and operational efficiency requirements, recognises and provides for the following matters, where relevant:

- ***(a) The avoidance, remedying or mitigation of the adverse effects of noise, vibration, lightspill and glare on the environment.***
- ***(b) The avoidance, remedying or mitigation of adverse effects on landscape values.***
- ***(c) The protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna and valued non-indigenous fauna, Water bodies and their margins.***
- ***(d) The avoidance, remedying or mitigation of any significant increase in risk to the safety of the public.***
- ***(e) The maintenance of the efficient operation of other utilities and infrastructure.***
- ***(f) The protection of the integrity of significant heritage values.***
- ***(g) The protection of the integrity of sites of importance to Kai Tahu ki Otago.***

13.4.5 ***<u>Policy - Utility Corridors and Co-siting</u>***
To reduce the impact that utilities have on the landscape values of the District by promoting and encouraging the co-siting of utilities and the location of utilities in "corridors" where this is possible and practicable having regard to the operational and commercial efficiencies of the utility concerned.

13.4.6 ***Policy - High Voltage Transmission Lines***
To encourage the location of high voltage transmission lines away from urban areas and by restricting the location of residential development near such lines."

In our view the objective and policies relating to the development of energy resources are the matters of particular relevance in this instance as the wind farm development, is the core element of the proposed activity.

The objectives and policies contained in Sections 13.3 and 13.4 of the proposed Central Otago District Plan contain the following notes:

> *"The objectives in this section of the Plan are intended to provide a complete code for those activities to which Section 13 applies.*
>
> *The policies in this section of the Plan are intended to provide a complete code for those activities to which Section 13 applies."*

Section 104(1)(b)(iv) obliges a consent authority to have regard to a plan or proposed plan. It appears to us that the statute enables the consent authority to have regard to objectives and policies contained in other parts of the Proposed District Plan which are relevant to the proposed activity, and that such consideration is not limited to the objectives and policies stated in Section 13.3 and 13.4 of the Proposed Central Otago District Plan. This is consistent with the broader approach taken in Section 7 of AEE which discusses relevant objectives and policies from Section 3, 4, 12, 13 and 14 of the Proposed District Plan.

11.2.2 Section 4

In our view objectives and policies from Section 4 are relevant to the proposed activity. Objectives and policies stated in Section 4 (which relates to the Rural Resource Area) are as follows:

"Objectives

4.3.1 ***Objective - Needs of the District's People and Communities***
To recognise that communities need to provide for their social, economic and cultural wellbeing, and for their health and safety while ensuring environmental quality is maintained and enhanced.

4.3.2 ***Objective - Landscape and Amenity Values***
To maintain and enhance rural amenity values created by the open space, landscape, natural character and built environment values of the District's rural environment.

4.3.3 ***Objective - Outstanding Landscapes and Natural Features, Land Over 900 metres and Land in the Upper Manorburn/Lake Onslow Landscape Management Area***
To protect the Districts outstanding landscapes and natural features, land over 900 metres and land in the Upper Manorburn/Lake Onslow Management Area (including landforms) from the adverse effects of inappropriate subdivision, use and development.

4.3.4 ***Objective - Recreation Resources***
To maintain and enhance the quality of the District's recreation resources and public access to those resources.

4.3.5 ***Objective - Water Resources***
To maintain and enhance the quality of the District's water resources by avoiding, remedying or mitigating the adverse effects of land use activities adjacent to water bodies.

4.3.6 ***Objective - Margins of Water bodies***
To preserve the natural character of the District's water bodies and their margins.

4.3.7 ***Objective - Soil Resource***
To maintain the life-supporting capacity of the District's soil resource to ensure that the needs of present and future generations are met.

4.3.8 ***Objective - Significant Indigenous Vegetation and Habitats of Indigenous Fauna***
To recognise and provide for the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna."

"Policies

4.4.1 ***Policy - Landscape and Amenity Values***
To manage the effects of land use activities and subdivision to ensure that adverse effects on the open space, landscape, natural character and amenity values of the rural environment are avoided, remedied or mitigated through:

(a) The design and location of structures and works, particularly in respect of skylines, ridgelines, prominent places and natural features,
(b) Development which is compatible with the surrounding environment including the amenity values of adjoining properties,
(c) The ability to adequately dispose of effluent on site,
(d) Controlling the generation of noise in back country areas,
(e) The location of tree planting, particularly in respect of areas of outstanding landscape value and natural features,
(f) Controlling the spread of wilding trees.

4.4.2 ***Policy – Sustainable Management of Infrastructure***
To ensure that the development of infrastructure in the rural environment promotes sustainable management by:
(a) Requiring developers to contribute a fair and reasonable proportion of the costs involved, and
(b) Maintaining and enhancing the safe and efficient operation of the infrastructure network (including roading), while avoiding, remedying or mitigating adverse effects.

4.4.3 ***Policy - Riparian Margins***

To manage the effects of the use, development or protection of land within riparian margins of water bodies (including wetlands) to ensure that the natural character and amenity of water bodies and their margins are preserved, by, as far as practicable:

(a) Maintaining bank stability,

(b) Protecting, and where appropriate, enhancing riparian and instream habitat quality,

(c) Maintaining riparian vegetation,

(d) Maintaining water quality,

(e) Maintaining and enhancing public access to and along the lakes and rivers,

(f) Reducing the incidence and severity of flooding where this is achievable, and

(g) Maintaining and enhancing the safety and efficiency of navigation on the adjacent water body where this is relevant

while recognising that some activities need to locate within riparian margins to operate efficiently.

4.4.5 ***Policy – Adverse Effects on the Soil Resource***

To ensure that the location, construction and/or operation of land use activities and subdivision make adequate provision for the protection of the soil resource by avoiding, remedying or mitigating the adverse effects of practices which may cause:

(a) Erosion, instability or loss of topsoil,

(b) Loss of nutrient or incidence of soil contamination,

(c) Loss of soils with special qualities,

(d) A reduction in vegetation cover and moisture holding capacity, and

(e) Soil compaction.

4.4.6 ***Policy - Outstanding Landscapes and Natural Features, Land Over 900 metres and Land in the Upper Manorburn/Lake Onslow Landscape Management Area***

To recognise the District's outstanding landscapes and natural features, and land over 900 metres and land in the Upper Manorburn/Lake Onslow Management Area which:

(a) Are unique to the district, region or New Zealand; or

(b) Are representative of a particular landform occurring in the Central Otago District or of the collective characteristics and features which give the District it's particular character; or

(c) Represent areas of cultural or historic significance in the district, region or New Zealand; or

(d) Contain visually or scientifically outstanding geological features; or

(e) Have characteristics of cultural, historical and spiritual value that are significant to Kai Tahu ki Otago

and provide protection for them from inappropriate subdivision, use and development.

4.4.7 ***Policy – Significant Indigenous Vegetation, Wetlands and Wildlife***

To protect areas of:

(a) Significant indigenous vegetation,

(b) Significant habitats of indigenous fauna,

(c) Significant wetlands,

(d) Indigenous vegetation or habitats that support a significant indigenous fresh water fishery, and

(e) Habitats of valued non-indigenous fresh water species, including trout and salmon.

from the adverse effects of land use activities and subdivision and to promote and encourage, where practicable, the retention, enhancement and reinstatement of indigenous ecosystems within the District.

4.4.8 ***Policy - Adverse Effects on the Amenity Values of Neighbouring Properties.***

To ensure that the effects associated with some activities including (but not limited to):

(a) Noise (including noise associated with traffic generation, night time operations), and vibration,

(b) The generation of a high level of traffic, in particular heavy vehicles,

(c) Glare, particularly from building finish,

(d) A reduction in visual amenity due to excessive signage and the storage of goods or waste products on the site,

(e) The generation of odour, dusts, wastes and hazardous substances, and

(f) The use and/or storage of hazardous goods or substances

do not significantly adversely affect the amenity values and privacy of neighbouring properties or the safe and efficient operation of the roading network.

4.4.10 ***Policy – Rural Subdivision and Development***

To ensure that the subdivision and use of land in the Rural Resource Area avoids, remedies or mitigates adverse effects on:

(a) The open space, landscape and natural character amenity values of the rural environment,

(b) The natural character and values of the District's wetlands, lakes, rivers and their margins,

(c) The amenity values of neighbouring properties,

(d) The safety and efficiency of the roading network,

(e) The loss of soils with special qualities,

(f) The ecological values of significant indigenous vegetation and significant habitats of indigenous fauna,

(g) The heritage and cultural values of the District,

(h) The water quality of the District's surface and groundwater resources, and

(i) Public access to or along the rivers and lakes of the District,

particularly through the use of minimum (and average) allotment sizes.

4.4.12 ***Policy - Weed and Pest Plant and Animal Infestation***
To encourage land use practices that avoid, remedy or mitigate weed infestation, in particular wilding tree spread, and the spread of pest plants and animals throughout the district.

4.4.13 ***Policy - Public Access to Significant Features***
To promote the provision of public access opportunities to the Districts significant natural and physical land features including areas of value for recreational purposes.

4.4.14 ***Policy - Back Country Amenity Values***
To ensure that activities avoid, remedy or mitigate adverse effects on the open space, landscape, historic, natural character, natural quiet and amenity values of the quality and range of recreational opportunities available in, the District's back country and/or remote areas."

We note in the context Objective 4.3.3 and Policy 4.4.6 that Mr Espie's advice is that the project site is within an outstanding landscape. We also note that the project site contains land over 900 metres in elevation and that part of the project site is located within the Upper Manorburn/Lake Onslow Landscape Management Area.

The objectives and policies contained in Section 4 of the Proposed Plan refer to actual and potential effects, which are generally addressed in our discussion of the effects of the proposal above. In our view the proposed activity is not consistent with the protection of outstanding landscapes, land over 900 metres and land in the Upper Manorburn/Lake Onslow Landscape Management Area from inappropriate use and development (in terms of Objective 4.3.3 and Policy 4.4.6) and we do not consider that the proposal will serve to maintain and enhance rural amenity values in this part of the District's rural environment.

11.2.3 Section 15

Section 15 of the proposed Central Otago District Plan relates to financial contributions. Financial contributions are a method the Act identifies as an appropriate means of addressing the adverse effects of activities and for achieving the objectives and policies of the District Plan. Relevant objectives and policies from Section 15 are as follows:

11.2.3.1 Objectives and Policies

"15.3.5 ***Objective - Effects Not Able to be Adequately Avoided or Remedied***
To require financial contributions on development which generates adverse environmental effects that cannot be adequately avoided or remedied in physical terms to achieve mitigation of those adverse effects through the funding of compensation measures which off-set any adverse effects.

15.4.2 ***Policy - Financial Contributions on Resource Consent***

A financial contribution may be required as a condition of

- ***Subdivision consent and/or***
- ***Land use consent***

to achieve the objectives and policies of this plan and the purpose and principles of the Resource Management Act and in particular, for the following purposes:

(a) ***To provide for the expansion and/or development of the recreational resources and facilities of the District.***

(b) ***To connect to, upgrade or install public network utilities including sewerage, water, stormwater and roading systems within subdivisions and/or developments and/or servicing subdivisions and/or developments.***

(c) ***To protect and/or enhance ecosystems, habitats, landscapes, landforms or significant natural features including the natural character of rivers, lakes and wetlands and their margins.***

(d) ***To maintain and enhance amenity values.***

(e) ***To provide, relocate or upgrade public services and facilities including parking facilities.***

(f) ***To protect sites of heritage and cultural value including sites of importance to Kai Tahu ki Otago.***

(g) ***To avoid, remedy, mitigate or compensate for adverse environmental effects on the community or any group within the community.***

(h) ***To provide for public access where appropriate.***

(i) ***To restore land and/or other natural and physical resources upon completion of an activity.***

15.4.3 ***Policy - Financial Contributions To Be Fair & Reasonable***

Financial contributions shall be:

(a) ***Justifiable in that they shall directly relate to avoiding, remedying or mitigating adverse effects on the environment and/or contribute to a positive effect which provides some compensation or mitigation of an adverse effect on the environment caused or likely to be caused by the activity, and shall be***

(b) ***Of a proportion that is fair and reasonable and that takes into account:***

- ***The significance of the adverse effect to be generated;***
- ***The extent to which the design of the subdivision and/or development avoids, remedies, mitigates or compensates for the adverse effect;***
- ***The extent to which works and services provided as part of the development avoids, remedies or mitigates or compensates for the adverse effect;***
- ***Any negotiated private agreements between the subdivider and/or developer and affected parties;***
- ***The extent to which another subdivision and/or development contributes to the adverse effect; and***
- ***The positive effects of the activity on the environment.***

15.4.4 ***Policy - Effects Not Readily Quantifiable***
To encourage subdividers and/or developers to first deal with environmental effects not readily quantifiable through:
(a) Negotiation and private agreement with affected parties, and/or
(b) Through project design,
before utilising financial contributions to compensate for such effects."

This objective and policies provide the basis for Rule 15.6.4 which provides for a development impact levy to be charged with respect to significant developments, to avoid, remedy or mitigate adverse effects on amenity values, in particular visual amenity values. In our view a development impact levy would be appropriate in this instance, in the event that consent were granted to the proposed wind farm.

11.2.3.2 Development Impact Levy
Rule 15.6.4 provides for a development impact levy as follows:

> ***"15.6.4 DEVELOPMENT IMPACT LEVY***
>
> ***(1) Circumstance - Resource Consent For Developments Exceeding $5,000,000 in Value***
>
> *A development impact levy may be charged on any development requiring resource consent that exceeds a value of $5,000,000 for the purpose of achieving the objectives and policies of this plan and/or the purpose and principles of the Resource Management Act and in particular, avoiding, remedying or mitigating adverse effects on:*
> ***(i)*** *Public facilities, infrastructure and services including roading and waste water systems.*
> ***(ii)*** *Amenity values, in particular visual amenity values.*
> ***(iii)*** *The impact on the community or any group within the community.*
>
> *The level of contribution payable shall be determined in accordance with (3) Level of Contribution below.*
>
> ***(2) Circumstance - Adverse Effects that cannot be adequately Avoided or Remedied***
>
> *A development impact levy may be charged on land use resource consents for the purposes stated in Rule 15.6.4(1) and specifically for the purposes of off-setting/compensating for the adverse effects of that development that cannot be adequately avoided or remedied through project design, financial contributions in terms of Rules 15.6.1, 15.6.2 and/or 15.6.3 or other means.*
>
> *The level of contribution payable shall be determined in accordance with (3) Level of Contribution below.*

> ***(3) Level of Contribution under Circumstances (1) and (2) above.***
>
> *The level of contribution payable under Circumstances (1) and (2) above shall not exceed 0.5% of the value of the development and may take the form of money and/or land.*
>
> *For the purpose of this rule the value of the development means the estimated costs of the development including the cost of all improvements and fixed plant and machinery forming part of the development as determined by valuation of the work as at the date of application but does not include the value of the land affected by the development or any remedial works."*

The applicant has advised in correspondence to the Council dated 14 March 2007 that it remains unable to provide any meaningful estimate of the capital value of the proposed wind farm, and that this is likely to remain the situation until much closer to the time when an application for a building consent could be lodged. In these circumstances, and given that section 108(2)(a) provides for conditions of consent to require a financial contribution (in the event that resource consent is granted), we have applied an estimate of the value of the development based on information available in the public arena with respect to the value of the project which we are not aware has been refuted by the applicant. A figure of up to $2 billion has been reported (in the Otago Daily Times on 18 October 2006), and we have used this figure for the purpose of our report.

We note that an amenity grant of $2.5 million was paid with respect to the Clyde Dam, based on 0.5% of the estimated value of the project at the time that it was authorised by the Government. We also note that a financial contribution of $265,000 is to be paid to the Southland District Council with respect to the 58 MW White Hill wind farm near Mossburn.

In the event that a condition is applied that requires payment of a development impact levy in terms of Rule 15.6.4, provision should be made for the figure to be adjusted based on more accurate information becoming available in future with respect to the value of the development.

11.3 Dunedin City District Plan

The project site is adjacent to the Dunedin City boundary, and some turbines are to be located in close proximity to land in the Dunedin City that is in the High Country OLA.

The Dunedin City Council (DCC) has lodged a submission in opposition to the proposed activity which observes that the effects of the wind farm activity extends beyond the boundary line between the two council's districts. The DCC has requested that the Hearings Panel have regard to the objectives, policies and zone description attached as Appendix 1 to the DCC submission.

Objective 14.2.1 and Policy 14.3.1 of the Dunedin City District Plan are of particular relevance. These are:

> **"Objective 14.2.1**
> **Ensure that the City's outstanding natural features and landscapes are protected.**
>
> **Policy 14.3.1**
> **Identify Dunedin's outstanding landscapes, and identify and protect their important characteristics (as listed in part 14.5.1 of this section)."**

The DCC submission contains extracts from part 14.5.1, being Clause 14.5.1(b) which relates to the High Country Outstanding Landscape Area. This states as follows:

"(b) **High County Outstanding Landscape Area**

(i) **Extent**

This area includes the high mountain and hill country defining the Strath Taieri basin. It also includes the high plateau country to the west of the Hyde Escarpment. On the Rock and Pillar Range it extends from the top of the grass paddocks to the top of the range.

(ii) **Landscape Character**

This area contains the distinctive and rugged landform features of the Rock and Pillar Range and Taieri Ridge and is essentially the most visible and sensitive part of a wider highly significant high country landscape centred around the Strath Taieri plain. It is characterised by strongly defined landform and minimal influence of human elements. The scale is large and expansive. Although much of the area is grazed and managed under an extensive pastoral regime, the vegetative cover, in the main, retains its natural patterns and character.

The landscape is highly coherent with rock outcrops creating particular interest. The skyline in many places is dramatic on account of these. The majority of people experience this landscape from State Highway 87, the railway line or Middlemarch township (ie viewed from external viewpoints), and often from a considerable distance given the scale of the area. The Old Dunstan Road provides the only internal viewing corridor of any significance. Although this is a seldom used route, its heritage and historic significance gives it, and the areas visible from it, added importance.

(iii) **Features and Characteristics to be Protected**

- The highly coherent natural landform under an apparently largely unmodified grassland vegetative cover.
- The very limited visual impact of any human imposed elements such as tracks or buildings.
- The rock outcrops which give rise to a dramatic skyline and create particular visual interest generally.
- The large scale, open, expansive, remote wilderness character.
- The skyline which is almost entirely free of human structures when viewed from the Middlemarch valley.
- The vegetation patterns which reinforce and reflect landform character.
- The fragile ecosystems, eg cushion bogs.
- The significant landform features, ie. Rock and Pillar solifluction features (NZ Geological Society Geopreservation Inventory for the Otago Region).
- The extent and quality of the visual contribution made by areas of highly significant intact snow tussock grassland.

(iv) **Principal Threats to Visual Quality**

- Forestry Blocks:
  Inappropriate siting, scale and layout of forestry blocks such that the character of the underlying landform or other natural features is diminished.
- Roads and Tracks:
  Inappropriate siting, scale and design of roads and tracks such that they cut across the landform rather than follow it and become visually dominant features.
- Quarries and Other Excavations:
  Inappropriate siting and scale of quarries and other excavations such that they become visually dominant focal points.

(v) **Other Threats to Visual Quality**

- Structures:
  Inappropriate siting, design, scale and finish of structures such that they become visually dominant from public viewpoints.
- Shelterbelts:
  Inappropriate siting, scale and design of shelterbelts such that they diminish the visual coherence of the natural landform character.
- Areas of Indigenous Vegetation:
  Removal or diminution of significant natural features such as areas of indigenous vegetation.
- Overgrazing or Burning:
  Degradation of the vegetative cover due to overgrazing or burning.
- Wilding Trees and Other Weeds:
  Establishment and spread of wilding trees and other weeds such as hieracium, gorse and broom."

In our view the proposed activity which involves the construction of 176 turbines up to 160 metres high adjacent to the Dunedin City boundary in a landscape identified as High Country OLA will be contrary to Objective 14.2.1 and Policy 14.3.1 of the Dunedin City District Plan. We also note that part 14.5.1(b) notes that the vegetative cover, in the main, retains its natural patterns and character; and that the Old Dunstan Road provides the only internal viewing corridor of significance. Part 14.5.1(b)(ii) confirms that the heritage and historic significance of the Old Dunstan Road gives it, and areas visible from it, added importance in the context of the High Country OLA. We also note that Part 14.5.1(b)(v) identifies a threat to visual quality as being structures with inappropriate scale such that they become visually dominant from public viewpoints, such as from the Old Dunstan Road.

12.0 OTHER MATTERS

12.1 Consideration of Alternatives

Section 88(2)(b) of the Act requires that an application for resource consent include, in accordance with Schedule 4, an assessment of environmental effects in such detail as corresponds with the scale and significance of the effects that the activity may have on the environment.

Clause 1(b) confirms that an assessment of effects on the environment should include-

"(b) Where it is likely that an activity will result in any significant adverse effect on the environment, a description of any possible alternative locations or methods for undertaking the activity:"

As the proposed activity is likely to have significant adverse effects on the environment, it is appropriate to address alterative locations or methods for undertaking the activity. In this context we note that Section 10 of the AEE addresses alternatives to a limited extent.

The consideration of alternative sites contained in Clause 10.1 of the AEE confirms that there are two main "contextual drivers" for the location of Project Hayes:

- Geographic Diversity, and
- South Island generation demand

The applicant advises that it is critical to achieve geographic diversity in the siting of wind farms. If wind farms are located in separate parts of the country the effect of intermittency, which is based on when the wind is blowing or not, is reduced. The applicant advises that siting wind farms 200 kilometres apart is enough to ensure that weather patterns between areas can be managed within the existing generation system. The applicant notes that the vast majority of wind farm developments (to date) have concentrated on the Manawatu, Wellington and Hawkes Bay regions and considers that the proposal is an important departure from these locations.

The applicant also advises that no major electricity generation station has been built in the South Island since Clyde in the 1980's, while electricity demand and generation in the South Island has been growing at a rate of 250 GWh/y over the last 5 years. The applicant considers that with further demands being placed on South Island infrastructure from advances in agriculture (from irrigation and the flow on effects to dairying and viticulture) demand is expected to increase further.

The applicant considers that these two contextual drivers point to a need for new generation in the South Island. The applicant also considers that the project site is exceptional in the South Island, and advises that the project site area's potential for a wind farm was first identified in the mid 1970's.

The applicant confirms that the most important factor in site selection is high and consistent wind speeds. The applicant advises that based on its wind meteorological monitoring mast data throughout New Zealand, that there are few (if any) alternative sites to match Project Hayes in terms of wind speed, duration and scale. In addition to wind speed, Clause 10.1 of the AEE lists other criteria applicable to the development of a viable wind farm as being:

"
- *A smooth laminar airflow – low turbulence.*
- *Proximity to the local electricity grid – wind farms need to be connected to high capacity power lines in order to export the large quantities of electricity to the grid. There is a large cost associated with providing new power line connections from sites that are remote from these high capacity power lines. For this reason wind farms are usually located close to an existing power line where capacity is available.*
- *Site accessibility – the local road network needs to be able to facilitate the delivery of wind turbine components and construction equipment.*
- *Located as close as possible to a large load centre.*
- *Availability of privately-owned, cleared, freehold land with supportive landowners.*

- *Landscape amenity values need to be taken into consideration and this is usually undertaken against a recognised frame work that considers the project location in respect to local, regional and national landscape classifications. As an example some of New Zealand's highest wind speed sites are located within National Parks, however the landscape values associated with those parks means that Meridian would not consider development in them.*
- *Elevation. In general terms, for every 100m reduction in elevation there is approximately a 7% reduction in wind speed. Hence a site with an elevation of 900m (such as the Project Hayes wind farm) is a significantly increased wind speed than a lower elevation site."*

The applicant advises that the criteria listed above exclude large amounts of land within the South Island and Otago as being appropriate for the development of a wind farm. The applicant considers that the wind farm site is one of the few areas in the Otago region which is appropriate for development of a "utility scale wind farm". The applicant also advises that the site satisfies all of the criteria stated.

In Clause 10.2 the applicant addresses the issue of alternative site layouts. The applicant confirms that "effects based reviews" were undertaken by the applicant, and that there were no turbines that resulted in a level of adverse effect that warranted removal. The applicant advises that the proposed site layout was also dependent on the following criteria:

"- *The operational needs of the wind farm.*
- *Environmental effects.*
- *Engineering limitations related to the physical features of the sites.*
- *The cost of implementing different site development options."*

The applicant has confirmed that initial planning and wind modelling studies focussed on achieving the maximum number of technically feasible turbine sites based on the design criteria together with geo-technical considerations.

Many opposing submitters have asserted that wind farms should be located nearer to where power is required, and have also expressed a preference for smaller wind farms. We anticipate that the applicant will address these matters at the hearing. No evidence has been presented in the AEE to confirm why a "utility scale wind farm" of 176 turbines (with its associated environmental effects) is required on the project site.

It would appear that a series of smaller wind farms would be preferable, and such an approach could achieve the 200 kilometre separation nominated in Clause 10.1 of the AEE to reduce the effect of intermittency.

One of the criteria identified by the applicant as being applicable to the development of a viable wind farm is access to high capacity power lines with capacity to export the electricity generated. The submission by the Minister for the Environment has confirmed that the existing Roxburgh – Three Mile Hill 220kV transmission line has sufficient capacity to support some of the proposed 176 turbines, and that a new transmission line would be required if new generation south of the Waitaki Valley exceeds 300 MW. Contact Energy has also raised concerns with respect to transmission line capacity. The establishment of smaller wind farms closer to where the power is required would appear to overcome the need for additional transmission line capacity. There appears to be no reason why the proposed wind farm could not be reduced in scale accordingly.

The plans attached to the application confirm that the wind farm is concentrated within the strip of elevated land located between the Central Otago District/Dunedin City boundary and the north-western face of the Lammermoor massif above the Taieri River and Paerau Valley. It appears to us that land in the Dunedin City in close proximity to the project site would also qualify for consideration having regard to the criteria listed in Clause 10.1 of the AEE, noting that turbines are proposed adjacent to the Dunedin City boundary and land identified in the Dunedin City District Plan as High Country OLA. A reconfigured wind farm which, say, deletes turbine locations close to Old Dunstan Road and above the escarpment overlooking the Paerau Valley may serve to avoid or mitigate landscape, visual and heritage effects. The AEE is silent on such an alternative.

We note that in late 2004 resource consents were granted to the applicant by the Dunedin City Council and the Central Otago District Council to erect wind monitoring masts in this locality. One such mast was to be located within the Central Otago District at Spillers Hill, and four masts were originally proposed within the Dunedin City, such mast sites being generally to the south of the Great Moss Swamp and Logan Burn Reservoir. The 2004 applications were subsequently amended to reduce the number of masts in the Dunedin City from four to three. In these circumstances, it appears likely that the applicant would be in a position to explain whether the project site differs in any significant respect (in terms of wind resource) from alternative sites which may be located generally to the east of the Central Otago District/Dunedin City boundary. For completeness we note that at least one of the participating landowners (Rockland Station Trust) owns land within the Dunedin City that is adjacent to the project site.

Clause 5.1 of the Rough report (Appendix D to the AEE) has confirmed that the 160 metre high turbines are much taller than any turbines used to date in any existing wind farms in New Zealand, and that overseas wind farms utilising such turbines are off shore. The discussion of alternatives contained in the AEE does not clearly state why such large turbines are necessary in this instance.

Opposing submitters have identified several alternatives for meeting national demands for electricity. Reference has been made to solar energy, to wave and tidal energy and to nuclear energy as potential alternatives to wind power. We anticipate that these alternatives will be addressed at the hearing, as will the suggestion by many opposing submitters that energy conservation is an alternative to the construction of the proposed wind farm. Again, we anticipate that these matters will be traversed by the applicant at the hearing.

We note that further information was requested from the applicant with respect to various alternatives, including matters traversed above. The applicant's response was to refuse to provide the information pursuant to section 92A(1)(c), and sections 92(1)(a) and (c). The applicant advised that there is no particular obligation on the applicant for resource consent to provide a consent authority with alternatives, notwithstanding that alternatives are included as a matter for consideration in the AEE. It appears to us that information with respect to alternatives (or the absence thereof) is a matter that can be considered by the consent authority in the context of section 104(1)(c).

12.2 Precedent

Several opposing submitters have raised the matter of precedent. In this instance the proposal is a discretionary activity and precedent is not normally a consideration in the context of applications for consent to discretionary (as opposed to non-complying) activities. We acknowledge however that this is the first application for a wind farm in the Rural Resource Area of the Central Otago District, and that the need to treat like cases alike is a central imperative of environmental justice. If consent is granted a precedent will therefore be set for future applications for wind farms with like effects on the environment.

12.3 District Brand

Several opposing submitters have referred to the Central Otago brand "A World of Difference". This is essentially an awareness, educative and marketing instrument for the district and has little direct relevance to the consideration of the proposal. Effects on landscape, heritage and tourism values are relevant considerations, as discussed earlier in this report.

13.0 SUBMISSIONS

A total of 1045 submissions were received in response to the application. These included 516 supporting submissions, 524 opposing submissions and 5 submissions which were neither in support or opposition to the proposed activity. As noted above the submissions are summarised in Annexures 1, 2 and 3 to this report.

We have addressed matters raised in submissions in the body of this report. Many supporting submitters have acknowledged that the wind farm is a sustainable/renewable energy source, is better than alternatives and that the proposal is in the national interest. Local benefits and the fact that the landscape is already modified has also been emphasised by some of the supporting submitters.

The submitters who have opposed the application have raised concerns with respect to adverse effects on visual/iconic landscape values and some opposing submitters consider that the scale of the turbines and of the wind farm development as a whole will detract from natural character and amenity values of the landscape. Concerns have also been expressed with respect to the effects on ecological, heritage and recreational values. The submitters have also expressed concern at noise/vibration effects and the effects of heavy traffic movement, particularly in the Riccarton Road/Outram areas, on State Highway 87 and in communities such as Patearoa where significant heavy traffic movements are expected. The full text of submissions should be referred to, as a tabular summary has constraints in fully conveying the detailed contents of submissions.

14.0 BASIS FOR RECOMMENDATION

At the time of reporting we have had the opportunity to consider the contents of the application and additional information provided by the applicant to the consent authority in responses to a section 92 request. We have also had the benefit of Mr Espie's report (Attachment 5) and the report on the proposal received from the Council's engineering consultants, MWH (New Zealand) Limited (Attachment 6). We have also had the benefit of considering the contents of all submissions lodged in response to the application.

We have not had the benefit of hearing the evidence which will be presented at the hearing, and of considering any additional information to be provided by the applicant (and submitters) in response to matters raised in this report. Our recommendation is therefore based on the information that is currently available to us.

The proposal will result in a number of positive effects associated with renewable energy, generation of electricity and climate change considerations as explained in the submissions of the Minister for the Environment and the Energy Efficiency and Conservation Authority in particular.

We have also found above that the proposed activity will have significant adverse landscape and visual amenity effects within an outstanding landscape and that the proposal will also have adverse effects in terms of the heritage and tourism values of the Old Dunstan Road. Significant adverse effects are also anticipated in terms of transmission issues and it appears to us that other adverse effects can generally be avoided or mitigated through adherence to appropriate conditions of consent.

The Genesis decision at paragraph 213 confirms that the cardinal and pivotal matter to be borne in mind in weighing and evaluating the evidence and exercising discretion is the Act's single purpose as set out in section 5.

In essence the positive effects of the proposal must be weighed against adverse effects, with section 5 of the Act being the cardinal and pivotal factor. The Environment Court in the Genesis and the Unison decisions has weighed these matters and has given consideration to the directions contained in sections 6, 7 and 8 of the Act (as reproduced in part 7.0 of this report) which the Genesis decision confirms are an elaboration of the single purpose of the Act. The Court found in both the Genesis and Unison decisions that consent should be granted to the wind farms subject to those decisions.

In the Unison decision at paragraphs 81 and 82 the Court stated as follows:

> *"[81] For the reasons just set out, the capacity to produce a reliable, and relatively affordable, supply of electricity is vital to enable people and communities to provide for their social and economic wellbeing, and for their health and safety. Producing electricity in the way proposed will, even if in a small way considered globally, help slow the rate of climate change and thus contribute to sustaining the potential of the planet's resources to meet the needs of future generations. It will do that by helping to safeguard the life-supporting capacity of those resources.*
>
> *[82] There is a price to be paid for that ... While recognising all that the RMA and the District Plan say about the protection and recognition to be given to those* [landscape and visual amenity and cultural] *values, we are in no doubt that in an overall balancing of the competing factors, the purpose of sustainable management, as set out in s5, will be best promoted by granting these consents. That said, we should not be understood as indicating that electricity generation from renewable sources will always be favoured in the balancing exercise. We make this decision on a site-specific basis. It may well be that other sites, perhaps for example more iconic in character, or closer to houses or clusters of population, will call for a different result."*
>
> *(emphasis added)*

The project site is situated within an iconic landscape (as confirmed by the Parliamentary Commissioner for the Environment) and the proposed activity will have significant adverse effects on outstanding landscape, visual amenity, heritage and tourism values. We have also noted that the proposal is contrary to the objectives and policies of the Proposed District Plan and of the Dunedin City District Plan, particularly with respect to landscape and amenity values and natural character. In all the circumstances, and given the uncertainty with respect to transmission effects and the lack of information with respect to alternatives (including smaller wind farms closer to where the electricity is required) we recommend below that consent be refused.

We emphasise that our recommendation is finely balanced following our assessment of the proposal, and having regard to the information that is available to us at the time of reporting. We also note that the positive effects associated with the proposal (in terms of national energy considerations) could be achieved at other locations, whereas the adverse effects of the proposal are specific to the project site on the Lammermoor Range.

15.0 RECOMMENDATION: Having regard to the information available to us prior to the Hearing Panel's consideration of the application, we recommend that the proposal be considered as an application for land use consent to a discretionary activity in terms of sections 104 and 104B of the Resource Management Act 1991.

For the reasons detailed in the body of this report, we have come to the view that the proposed activity will have a range of effects on the environment, some of which are significant and adverse and some of which are positive at a national level, and that the proposal is contrary to objectives and policies of the amended Proposed District Plan and the Dunedin City District Plan. We have concluded that the proposal is contrary to the purpose and principles of the Act, having considered the national benefits and site-specific adverse effects of the proposed activity.

We recommend that the Hearings Panel refuse consent to the application.

Note: In the event that our recommendation to refuse consent is not accepted, we have prepared a draft set of conditions at Annexure 7 for the consideration of the Hearings Panel and the parties.

JOHNSTON WHITNEY

W D WHITNEY
Planning Consultant

30 March 2007

ANNEXURE 1 : SUPPORTING SUBMISSIONS

SUMMARY KEY : REASONS FOR SUPPORT

A. Wind farm a sustainable/renewable energy source.

B. Wind farm better than alternatives (nuclear/fossil fuels/hydro). Keep country clean and green.

C. The project is in the national interest – provides additional energy to support economic growth/our future energy needs.

D. Project will provide secure energy supply for the South Island.

E. Activity consistent with section 7(i) and (j) of RMA.

F. Activity will provide employment/economic benefits to the district (including tourism/recreation benefits).

G. Wind farm provides diversification of electricity production methods.

H. Site is a remote location/few people will be directly affected. Location suitable for wind farm.

I. Wind farms look good in the environment/turbines have an attractive design, not unsightly.

J. Submitter has viewed wind farms overseas/elsewhere in New Zealand and supports them.

K. Improvements to roading/infrastructure will result from proposal (including potential direct route to Central Otago). Roading effects temporary.

L. The landscape at the site is already modified – there are other areas of Central Otago landscape available to view.

M. Continued farming activity on site supported – areas around turbines to be reinstated.

N. Mitigating amenity/community fund should be provided/supported.

O. N/A

P. Turbines to be removed at end of working life to avoid wind farm structures being left derelict.

Q. Farm owners should be able to farm what they wish, including wind.

R. Object to people from outside area opposing proposal, when they have never visited/frequented area.

ANNEXURE 2 : OPPOSING SUBMISSIONS

SUMMARY KEY : REASONS FOR OPPOSITION

1. Adverse effects on visual/iconic landscape

2. Size of turbines/scale of development will detract from natural character/amenity values of landscape.

3. Motion, reflection, strobe effects of turbines a concern.

4. Site is an outstanding landscape/recognised internationally.

5. Significant adverse effects on rural character, amenity and landscape values of Dunedin City/Central Otago.

6. Landscape assessment flawed/photographic material in application misleading.

7. Proposal represents industrialisation of landscape.

8. Adverse effect on Central Otago "brand" – "A World of Difference".

9. Adverse effects on Te Papanui Conservation Park/Rock & Pillar Conservation Area.

10. Assessment of Environmental Effects deficient/inadequate.

11. Adverse effects on ecosystems/indigenous plants and animals (including NZ Falcon/birds).

12. Adverse effects of works (including roading) in sensitive sub-alpine environment/will create scars that will not heal.

13. Effects on water courses/gullies/wetlands/soils associated with construction (including disposal of spoil).

14. Introduction of noxious weeds during construction process.

15. Geomorphic effects (on surface features)/effects on geology.

16. N/A

17. Effects of associated infrastructure (roads, transmission towers, substations and construction facilities) that will have adverse environmental effects.

18. Lack of information about how power is to be transmitted (conducted) from site.

19. Adverse effects on heritage and archaeological values (such as Styx Gaol and Old Dunstan Road).

20. Adverse effects on recreational values of Old Dunstan Road/Loganburn Dam recreational area.

21. Adverse effects on tourism values, film industry.

22. Cumulative effects of wind farms (including Trustpower's proposal nearby).

23. Land resource close to Dunedin, Lammerlaws and Rock & Pillars accessible to Dunedin.

24. Noise/vibration effects.

25. Proximity to Paerau School, effects on children.

26. Construction effects including effects of heavy traffic on state highway/rural roads.

27. Effects of heavy traffic movements on Riccarton Road/Outram roads and roads/road users elsewhere.

28. Light spill/lighting effects.

29. Aviation effects.

30. Risk of fire in remote area.

31. Effects on horses (during cavalcade), livestock and dogs.

32. Consultation process inadequate.

33. Proposal not necessary and is being rushed.

34. Submitter has viewed wind farms overseas and opposes them.

35. Wind farms contribute to global warming and therefore have climatic consequences.

36. Contrary to spiritual economy and public interest.

37. Activity contrary to objectives and policies of the Proposed District Plan.

38. The activity is contrary to regional plans.

39. The activity is contrary to the purpose/principles of the RMA.

40. National energy plan/strategy should be in place to avoid ad hoc energy planning.

41. Wind farms should be located nearer to where power is required.

42. Smaller scale wind farms preferred.

43. Wind not a reliable energy source.

44. Power generated will not meet national demands.

45. In-depth studies into electricity production, consumption and demand in New Zealand required.

46. Energy conservation is an alternative.

47. Solar is an alternative.

48. Wave and tidal energy could be a viable alternative by time wind farm project is completed.

49. The wind farm may become inefficient and obsolete.

50. N/A.

51. Parliamentary Commissioner for the Environment's findings on wind farms should be considered carefully.

52. Sale of carbon credits - makes nonsense of renewable green energy (from wind farm).

53. Precedent for future wind farm proposals.

Annexure 7

General

1. The development shall be undertaken in general accordance with the information provided in the resource consent application dated 12 July 2006, and further information which accompanied correspondence from the consent holder dated 15 August 2006 and 19 September 2006, subject to compliance with the following conditions.

2. The consent holder shall ensure that the crane selected to assemble the wind turbines shall have a wheel base that is as narrow as is practicable, to minimise the width of access roading.

3. In accordance with section 125(1) of the Resource Management Act 1991, this consent shall lapse if not given effect to within ten years of it being granted.

4. The wind farm shall be constructed in stages, with Stage One being the south-west portion of the development, where access is achieved off Pylon Road.

5. Upon completion of Stage One (as detailed in condition 4) the consent holder shall advise the Chief Executive of the Central Otago District Council.

   Note: The Chief Executive will determine whether a review of conditions is necessary based on any adverse effects associated with Stage One notwithstanding the general Review condition below.

Landscape

6. No more than one hundred and sixty (160) wind turbine generators (turbines) shall be permitted to be installed in terms of this consent, subject to the following:

   - Turbines WSV8, W4W4, W1X4, V323 and U7Z5 (being turbines within 500 metres of Old Dunstan Road) and turbines K2I6, K4J2, J9J5, J9KI, K9I8, LOJ5, LOK1, K4L1, L5K5, L3L1 and L1L7 (being turbines within 7 kilometres of the Te Papanui Conservation Park) shall be deleted from the wind farm that is authorised by this consent.
   - Each turbine shall be within 150m of the location identified on the plan marked "Drawing No 1 – Overall Site Development – Site Layout" submitted with the application.
   - Turbine height (to vertically extended blade tip) shall be limited to 160m.
   - Lattice pylons shall not be used for the wind turbine structures.
   - The Yard Substation shall be moved 1400 metres to the south-east to mitigate the effects of transmission lines.

7. Low reflectivity finishes shall be used on turbines and turbine blades, that shall be finished in such a manner so as to minimise blade glint. The low reflectivity finish shall be obtained using the Resene paint called "Moon Mist" (9-093/7.5 GR05) or such other finish that is approved by the Chief Executive of the Central Otago District Council.

8. Substations and operations and ancillary facilities shall be located, designed and finished so as to minimise their visibility from publicly accessible locations to the greatest extent practicable, subject to the following:

- Substation and switchyard buildings shall have roofs finished in Resene 'Sandstone' 4B030 and any walls clad in metal or timber shall be finished in Resene 'Schooner' 5B030. Concrete walls and structures shall be left unpainted to weather naturally.
- Smaller buildings and gantry structures shall be finished in Resene 'Schooner' 5B030.
- The maximum height of any buildings shall be 12 metres.

Radio Interference

9. Cables linking the turbines and any substations shall be installed in accordance with industry standard practices and protocols, in order to avoid Earth Potential Rise (EPR) interference with existing communication facilities.

10. The consent holder is to ensure that the exercise of this consent does not cause any nuisance effects as a result of electrical interference with radio, television, telecommunications signals, or any other electrical equipment.

11. The consent holder shall, at its cost, rectify any electrical interference directly attributable to the development and/or operation of the wind farm operation, if requested to do so by any affected person.

Noise

12. All earthworks, site remediation and other construction activities shall be designed and carried out to ensure that the noise from the works complies with the New Zealand Standard NZS 6803:1999 "Acoustics – Construction Noise" at all times.

13. The operation of the wind farm shall comply at all times with the New Zealand Standard NZS 6808:1998 "Acoustics – The Assessment and Measurement of Sound from Wind Turbine Generators".

14. Within three months of all wind turbines that are to be constructed within 3 kilometres of the Upper Taieri-Paerau Road becoming operational, a follow up noise assessment shall be carried out at the consent holder's cost, in accordance with New Zealand Standard NZS 6808:1998 (Acoustics – The Assessment and Measurement of Sound from Wind Turbine Generators") and the results submitted to the Chief Executive of the Central Otago District Council, within one month of the completion of the field measurements.

15. The consent holder shall install noise suppression insulation and double glazing at the Paerau School and shall install such outdoor noise suppression measures in the school grounds as are considered necessary following consultation with the Ministry of Education.

Earthworks/Construction/Restoration

16. Prior to any site works commencing, the consent holder shall submit to the Chief Executives of the Central Otago District Council and the Otago Regional Council for approval, a detailed Construction Environmental Management Plan detailing measures to minimise and mitigate any effects that have the potential to be significant.

17. Prior to any site works commencing for each major component of on-site works, the consent holder shall submit to the Chief Executives of the Central Otago District Council and the Otago Regional Council for approval, Erosion, Sediment and Dust Control Plans detailing measures to avoid or mitigate adverse effects on the environment including any effects on waterways and to ensure compliance with the conditions of this consent.

18. The Construction Environmental Management Plan shall include conditions for management of the risk of fire and for fire suppression.

19. Prior to starting construction work the consent holder shall prepare a Fire Prevention and Fire Fighting Plan. The plan shall be prepared in consultation with the Dunedin City Council's Manager of Civil Defence and Rural Fire and the Principal Rural Fire Officer of the Central Otago District Council.

20. The Construction Environmental Management Plan shall include conditions for the management of hazardous substances and spill contingency plans.

21. That all areas of earthworks, other than those associated with the operational roads and access tracks, shall be progressively re-vegetated, in accordance with a revegetation plan to be prepared by a suitably qualified person at the consent holder's expense, and approved by the Chief Executives of the Central Otago District Council and the Otago Regional Council.

22. The revegetation plan shall provide for tussocks to be planted in preference to exotic grass species.

23. The consent holder shall meet the cost of a suitably qualified person who shall be appointed to independently monitor the implementation of the revegetation plan to ensure that plants are established, and that replanting occurs where the strike is not successful or erosion is occurring.

24. Upon completion of the site remediation works, by the consent holder, the Chief Executives of the Central Otago District Council and the Otago Regional Council shall be invited to inspect the works to confirm that the earthworks and site remediation works have been carried out in accordance with the conditions of the resource consent and relevant plans.

25. If construction results in the water quality at the Paerau School breaching the Drinking Water Standards for New Zealand 2005, construction activities shall cease until the breach is remedied or the consent holder shall provide an alternative water supply be tanker, with provision for additional storage tanks if required to be funded by the consent holder.

26. The consent holder shall meet the costs of any repairs or remedial works necessary to ensure that the operations of the Maniototo Irrigation Company Limited are adversely affected by the development.

Threatened Plants

27. The consent holder shall provide information to confirm whether any acutely threatened or chronically threatened plants as identified in Schedule 19.6B of the Proposed Central Otago District Plan are present on the project site, and shall provide for the protection of any such plants.

Weeds

28. The consent holder shall undertake a Weed Monitoring and Eradication Programme that shall extend, at a minimum, from the commencement of construction until five years following the construction of the wind farm. The Weed Monitoring and Eradication Programme shall provide for all imported gravels that may contain weeds or exotic weed seeds to be treated so that such gravels are free of weeds or exotic weed seeds.

Bird Monitoring

29. The consent holder shall record and report any evidence of bird strikes. Should a bird species that is nationally critical, nationally endangered, nationally vulnerable, or in serous decline be found injured or dead at the site, the Otago Conservator of the Department of Conservation is to be notified immediately and the bird provided for autopsy or rehabilitation. Fish and Game New Zealand shall be advised if any statutorily managed game birds are found injured or dead at the site as a result of bird strike.

30. The consent holder shall prepare in consultation with the Chief Executive of the Central Otago District Council and the Otago Conservator of the Department of Conservation an appropriate bird monitoring program to record birds present on the site.

Lizards

31. Before any disturbance of a potential lizard habitat resulting from the development, the consent holder will apply to the Otago Conservator of the Department of Conservation for permission to:

- Survey potentially significant lizard habitat where necessary,
- Destroy habitat and protected lizards,
- Undertake a rescue and relocation programme when and where required.

Traffic Management

32. A Construction Traffic Management Plan shall be prepared by the consent holder and approved by the Regional Manager of Transit New Zealand and the Chief Executives of the Dunedin City Council and the Central Otago District Council before any transportation to the site begins. The purpose of the Construction Traffic Management Plan will be to set out and detail the extent and timing of construction traffic activity, and temporary traffic management provisions to be put in place during this time and shall:

- Set out the nature and timing of local physical improvement works to be undertaken on the roading network at the consent holder's cost.
- Detail the intended traffic arrangements and provisions for the delivery of over-weight and over-dimensioned major components to the site, including any time restrictions for the movement of over-weight and over-dimensioned vehicles.
- Manage construction traffic (other than component delivery) during the construction phase.

33. The Construction Traffic Management Plan shall provide for construction traffic to use Gladfield Road and not Riccarton Road when travelling from State Highway 1 to State Highway 87 on the Taieri Plain.

34. The Construction Traffic Management Plan referred to in condition 32 shall provide for suitable passing/stopping bays to be installed on State Highway 87 to minimise disruption to traffic flow on State Highway 87 between Outram and Clarks Junction.

35. If wind farm components are to be transported by rail to Sutton, condition 34 is hereby amended to provide for suitable passing/stopping bays to be installed only on that part of State Highway 87 that is to be used for transporting wind farm components.

36. The Construction Management Plan referred to in condition 32 shall provide for the notification of the principals of all schools along routes to be used by construction traffic and the Paerau School of the commencement and cessation of seasonal construction periods.

37. The consent holder shall comply with the approved Construction Traffic Management Plan referred to in condition 32 at all times, when carrying out the construction works.

38. The consent holder shall undertake all necessary road improvements to provide for construction traffic in the Dunedin City at the consent holders expense, such improvements being to a standard that is approved by the Chief Executive of the Dunedin City Council and the Regional Manager of Transit New Zealand.

39. The Construction Traffic Management Plan shall identify all roads within the Central Otago District that are to be used by construction traffic.

40. The consent holder shall ensure that all heavy vehicles associated with construction are clearly identified with labels to confirm that they are associated with Project Hayes to facilitate the monitoring of vehicle movements.

41. The consent holder shall ensure that all construction traffic within the Central Otago District shall utilise those roads which have been identified to be used by construction traffic in the Construction Traffic Management Plan.

42. The existing condition of all roads to be used by construction traffic in the Central Otago District (as identified in the Construction Traffic Management Plan) shall be investigated and reported upon in a Base Condition Report that shall be prepared by the consent holder. The Base Condition Report shall contain information including classifier traffic counts, High Speed data capture, system recording – profile, texture and roughness and falling weight deflectometer. The Base Condition Report shall identify the existing condition of roads, which roads require upgrading, potential remedial works during construction and monitoring requirements during and at the end of the construction period. The Draft Base Condition Report shall be lodged with the Chief Executive of the Central Otago District Council a minimum of 9 months prior to the commencement of construction works at the project site.

43. The Chief Executive of the Central Otago District Council shall appoint a technical Peer Reviewer to review the Draft Base Condition Report and to certify its adequacy prior to the Base Condition Report being formally accepted by the Chief Executive and construction works commencing at the project site. The cost of retaining the services of the technical Peer Reviewer shall be met by the consent holder.

44. The consent holder shall be responsible for the maintenance of all roads to be used by construction traffic in the Central Otago District for the duration of the construction period; and the Chief Executive may require the consent holder to produce an Additional Base Condition Report during the construction period, where road condition is worse than determined in the Base Condition Report. The Additional Base Condition Report may be subject to review by a technical Peer Reviewer, with the cost met by the consent holder.

45. The consent holder shall be responsible for preparing a Post Construction Condition Report at the conclusion of construction works with respect to all roads subject to the Base Condition Report. The Draft Post Construction Condition Report shall be lodged with the Chief Executive and shall provide data with respect to road condition that is consistent with that contained in the Base Condition Report. The Post Construction Condition Report may be reviewed by a technical Peer Reviewer at the cost of the consent holder prior to the Post Construction Condition Report being formally accepted by the Chief Executive.

46. The consent holder shall ensure that all roads used by construction traffic in the Central Otago District are restored to a standard that is consistent with or exceeds the condition recorded in the Base Condition Report.

47. Prior to construction commencing the consent holder shall deposit a bond with the Chief Executive of the Central Otago District Council for an amount that equates to the maximum value of the potential remedial works on roads to be used by construction traffic in the Central Otago District with an allowance for engineering fees and Council administration, indexed to the roading construction inflation index of Land Transport New Zealand. The estimated value of potential remedial works shall be stated in the Draft Base Condition Report to enable the quantum of the bond to be calculated.

48. The consent holder shall investigate and prepare costs of upgrading the Central Otago Roading Network from Kokonga to the Old Dunstan Road to a safe sealed standard for the anticipated traffic volumes with costs split between the Central Otago District Council and the consent holder, in the ratio of the incremental traffic to existing traffic volumes. This information shall be included in the Draft Base Condition Report.

49. The consent holder shall investigate and prepare costs of upgrading the Ida Valley Omakau Road (Ida Valley Road) pavement to a standard sufficient for anticipated traffic volumes in the event that this road is to be used for construction traffic. This information shall be included in the Draft Base Condition Report.

50. The consent holder shall widen roads in the Central Otago District to be used by construction traffic, if such widening is necessary to comply with the Central Otago District Council's Hierarchy Policy for the total anticipated traffic volumes.

51. The consent holder shall investigate and prepare seal extension designs and costings for unsealed roads that will exceed the thresholds for sealing under the Central Otago District Council's Addendum to NZS 4404:2004. The consent holder shall fund the cost of this work unless it attracts Land Transport New Zealand construction assistance in which case the consent holder shall fund the local share of the cost of sealing these roads. This information shall be included in the Draft Base Condition Report.

52. The consent holder shall fund the cost of constructing cattle underpasses at existing cattle crossing points on the Styx-Patearoa Road (Paerau Road).

53. The consent holder shall supply a geo-technical stability report on the 16.5 metre cut proposed on Old Dunstan Road and a landscape architect shall design the form of the cut and dump site, with the location of the dump site to be nominated by the consent holder. There shall be no casting of cut material over existing batters. The geo-technical stability report and landscape architects design shall be provided with the Draft Base Condition Report.

54. The consent holder shall ensure that the proposed temporary seal on the hill section of Old Dunstan Road shall be designed and retained as a permanent seal. The design details for this permanent seal shall be provided in the Draft Base Condition Report.

55. The consent holder shall take the best practicable option to avoid the deposit of debris onto public roads during the construction period.

56. A Transport Safety Co-ordinator shall be appointed for the construction phase. The contact details for that person shall be included in the Construction Traffic Management Plan.

Recreation

57. The consent holder shall be responsible for notifying all relevant tourism operators and those recommending use of the route (Old Dunstan Road) for recreational purposes (including the Managers of all Visitor Information Centres in Dunedin City and the Central Otago District) approximately three months prior to commencement of construction of the wind farm. These groups will be informed about the construction process, and the relevant changes to the characteristics of Old Dunstan Road. Those who need to be notified shall be determined in consultation with the Chief Executive of the Central Otago District Council.

58. The consent holder shall be responsible for locating advice signs notifying all potential users of Old Dunstan Road and the site that construction and heavy vehicle use is taking place approximately two weeks prior to commencement of any construction activity.

Cultural Heritage and Archaeology

59. The consent holder shall prepare an Accidental Discovery Protocol as part of the overarching Construction Environmental Management Plan. This Protocol shall apply with respect to any earthmoving or ground modification that occurs during the construction and operation of the proposed wind farm. This Protocol shall clearly set out the steps to take should any prehistoric (Maori) or historic archaeological site be found at any time. The Protocol shall be approved by both Kai Tahu ki Otago and the NZ Historic Places Trust prior to construction of the wind farm.

60. The site location data contained in the *Archaeological Report* (Appendix G of the AEE), shall be entered onto a suitable recording system, so that all archaeological site locations are known during all construction planning and activity. This database shall be updated if and when any further sites are located during construction activity.

61. At all times all practicable means should be taken to avoid damage of any sort to any identified archaeological/historic site, including any unrecorded sites found during or after construction.

62. A programme of archaeological site investigation shall, where appropriate, be carried out where construction is undertaken at known archaeological sites, prior to construction of the wind farm. All archaeological sites that will be affected by construction activities shall be properly excavated, recorded, analysed and reported upon under the supervision of an appropriately qualified archaeologist. All archaeological work shall be carried out to the best professional standards.

Advice Note:

An archaeological authority shall be obtained from the NZ Historic Places Trust prior to any disturbance occurring in any area that might affect any archaeological or historic sites, as required in terms of section 21 of the Historic Places Act 1993.

Transmission

63. Transmission circuits adequate to take the additional output from the proposed wind farm shall be operational before the wind farm is commissioned.

Aviation

64. The consent holder shall install obstacle lighting on a minimum of 36 of the wind turbines, including the meteorological monitoring masts, as determined in consultation with the Civil Aviation Authority and such obstacle lighting shall be shielded to screen downward lightspill.

65. The consent holder shall install obstacle identification pods on new transmission lines, if such action is deemed to be necessary following consultation with the Civil Aviation Authority.

Waste/Refuse

66. There shall be no disposal of waste construction materials or refuse on the site.

Provision for Visitors

67. The consent holder shall develop a centre or area where visitors can see and appreciate the wind farm, with appropriate provision for parking and public information.

68. The consent holder shall ensure that access is provided to all or part of the internal road access network for motorists, pedestrians and cyclists who wish to view the wind farm subject to the agreement of the landowner. Such access shall be provided (as a minimum) to that part of the wind farm located between Old Dunstan Road and the Logan Burn Gully.

Removal

69. If the wind farm is decommissioned in part or in its entirety all turbines and other above ground structures that are decommissioned shall be removed and turbine footings covered and re-vegetated.

Development Impact Levy

70. Pursuant to section 108(2)(a) of the Resource Management Act 1991 and Rule 15.6.4 of the Proposed Central Otago District Plan a financial contribution of $10,000,000.00 shall be paid to the consent authority being a sum that equates to 0.5% of the value of the development ($2 billion) and such levy shall be subject to adjustment in terms of condition 71.

71. The quantum of the financial contribution payable in terms of condition 70 shall be adjusted to reflect the actual value of the development, as detailed in a report prepared by an appropriately qualified person that shall be furnished by the consent holder prior to the commissioning of the final turbine to be constructed as part of the activity. A refund shall be payable if the actual value of the development is less than the value stated in condition 70, and the adjusted financial contribution shall equate to 0.5% of the value of the completed development.

    Note: The Development Impact Levy is separate from any community fund that may be established by the consent holder.

As-Built Plan

72. The consent holder shall provide the Chief Executive of the Central Otago District Council with an as-built plan showing the location of all constructed turbines, access roads, substations, transmission lines and any other works, following the completion of the works authorised by this consent.

Community Consultation

73. The consent holder shall establish a Community Consultative Group that is to be consulted during the construction and on-going operation of the wind farm. The following shall be invited to participate in this group:
    - Landowners of properties in the Paerau Valley.
    - A representative of the Maniototo Community Board.
    - A representative of the Strath Taieri Community Board.
    - The Chief Executives of the Central Otago District, Dunedin City and Otago Regional Councils.
    - The Otago Conservator, Department of Conservation.

    All costs associated with the establishment and operation of the Community Consultative Group shall be met by the consent holder. The consent holder shall be responsible for the distribution of minutes from all minutes of the Community Consultative Group to all participants in the Community Consultative Group.

Complaints Register

74. i. The consent holder shall maintain and keep a complaints register for any complaints about the construction activities and operation of the wind farm received by the consent holder in relation to traffic, noise, dust, or other environmental effects of the activity. The register shall record, where this information is available:

        - The date, time and duration of the incident that has resulted in a complaint;
        - The location of the complainant when the incident was detected;
        - The possible cause of the incident; and
        - Any corrective action taken by the consent holder in response to the compliant, including timing of that corrective action.

    ii. The register shall be available to the Chief Executive of the Central Otago District Council and the Community Consultative Group at all reasonable times upon request. Complaints received by the consent holder that may infer non-compliance with the conditions of this resource consent shall be forwarded to the Chief Executive within 48 hours of the complaint being received.

Review

75. In accordance with section 128 of the Resource Management Act 1991, the Central Otago District Council may one year after the commencement of this consent and at one yearly intervals thereafter, serve notice on the consent holder of its intention to review any of the conditions of this consent for any of the following purposes:
    i. To deal with any adverse effects on the environment which may arise from the exercise of the consent, which it is appropriate to deal with at a later stage; or
    ii. To require the consent holder to adopt the best practicable option to mitigate any adverse effect upon the environment; or
    iii. To deal with any other adverse effect on the environment on which the exercise of the consent may have any influence.

76. Unless it is otherwise specified in the conditions of this consent, compliance with any monitoring requirement imposed by this consent shall be at the consent holder's expense.

77. The consent holder shall pay to the Council all required administration charges fixed by the Council pursuant to section 36 of the Act in relation to:
    a) Administration, monitoring and inspection relating to this consent; and
    b) Charges authorised by regulations.

78. Upon completion of the wind farm, the consent holder shall advise the Chief Executive in writing (quoting RC 060222) that all conditions of this consent have been adhered to.

79. Such other conditions that the Hearings Panel considers appropriate following the hearing of the application.

Note: The consent holder shall obtain any necessary consents to use Crown Land or to achieve access over Crown Land.

Annexure 4

Annexure 5

Annexure 6