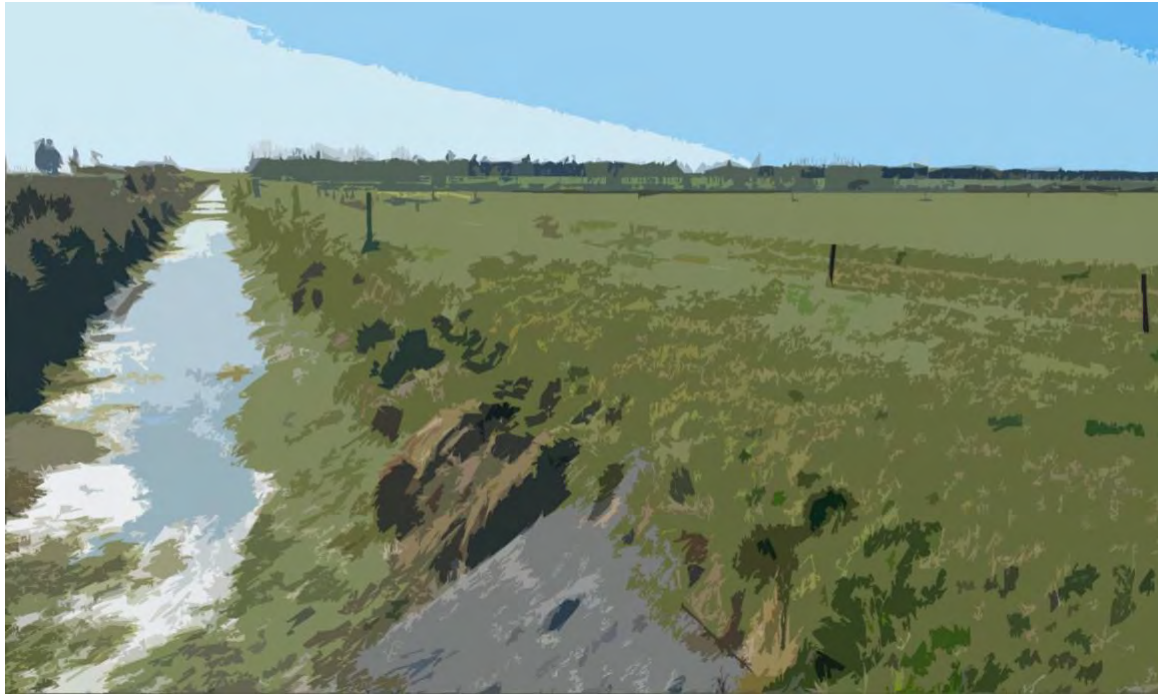


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LANDSCAPE ASSESSMENT PROJECT KEA

Prepared For:

Babbage Consultants Ltd

Brown NZ Ltd
August 2022

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1. Introduction

This report addresses the landscape and visual amenity effects associated with the proposed development of an Energy from Waste (EfW) incineration plant (known as Project Kea), on a site at the junction of Carrolls Road and Morven Glenavy Road, south of Waimate in South Canterbury. In particular, this assessment focuses on the effects of the proposed main power house building – up to 52.5m high – and the 72m height of the stack directly east of it, because of their elevation within the otherwise largely flat, outwash plain of the Waitaki River.

The EfW Plant is to be located between the small settlement of Glenavy, on the northern bank of the Waitaki River, and the much larger town of Waimate, within an area that is totally dominated by farming activity, both physically and visually. As such, it is not an area that is renowned for its natural landscape and features, but the subject site is located close to the Waimate Highway / State Highway 1 (SH1) and within viewing distance of both farms and residential properties around it. As a result, this report focuses on changes to the rural character that would arise from the proposal, as well as effects on residential properties around it.

The assessment in this report is contextualised by relevant provisions in Section 4 Rural Zone of the Waimate District Plan, which address rural character and amenity, and the matters for assessment of Discretionary Activity applications for resource consent to establish industrial activities within the Rural Zone. This report also address the mitigation of adverse effects, and the description of the project includes an outline of the measures proposed – both in relation to the main building’s design, materiality and colour, and landscape design around it – to address this issue. In addition, because of Project Kea’s relatively close proximity to another industrial site – the Oceania Dairy Factory, directly abutting SH1 – the issue of cumulative effects is also addressed for some viewing sectors and vantage points.

This report follows the sequence outlined in the Table of Contents, progressing from descriptions of the proposal and its landscape setting, discussion of its statutory context, analysis of key receiving environments and audiences, use of representative viewpoints to evaluate effects in detail, extrapolation of those findings to other surrounding areas, and description of effects in relation to local farmhouses and other residential properties. It concludes with a review of the proposal against key district plan provisions and overall conclusions.

2. The Proposal

The Proposal (“**Project Kea**”) is to construct and operate New Zealand’s first large scale Energy from Waste Plant (“**EfW**”) to recover energy from Municipal Solid Waste which would otherwise be dumped to landfill. Project KEA comprises several key buildings and structures. By far the most prominent is the main power house building, which would be located centrally on the site, and the associated discharge stack. These have heights of 52.5m and 75m respectively and are the most visible elements of the EfW Plant.

Several other relatively low-level ancillary buildings and structures would also be located on the site next to Carrolls and Morven Glenavy Roads, including:

- Office and amenities building located to the north of the main powerhouse
- Baled waste storage building located to the south of the main powerhouse
- Rail siding and container handling facility to the west of the main powerhouse
- Various other buildings housing support services such as maintenance workshop, water treatment plants, cooling towers and the like.

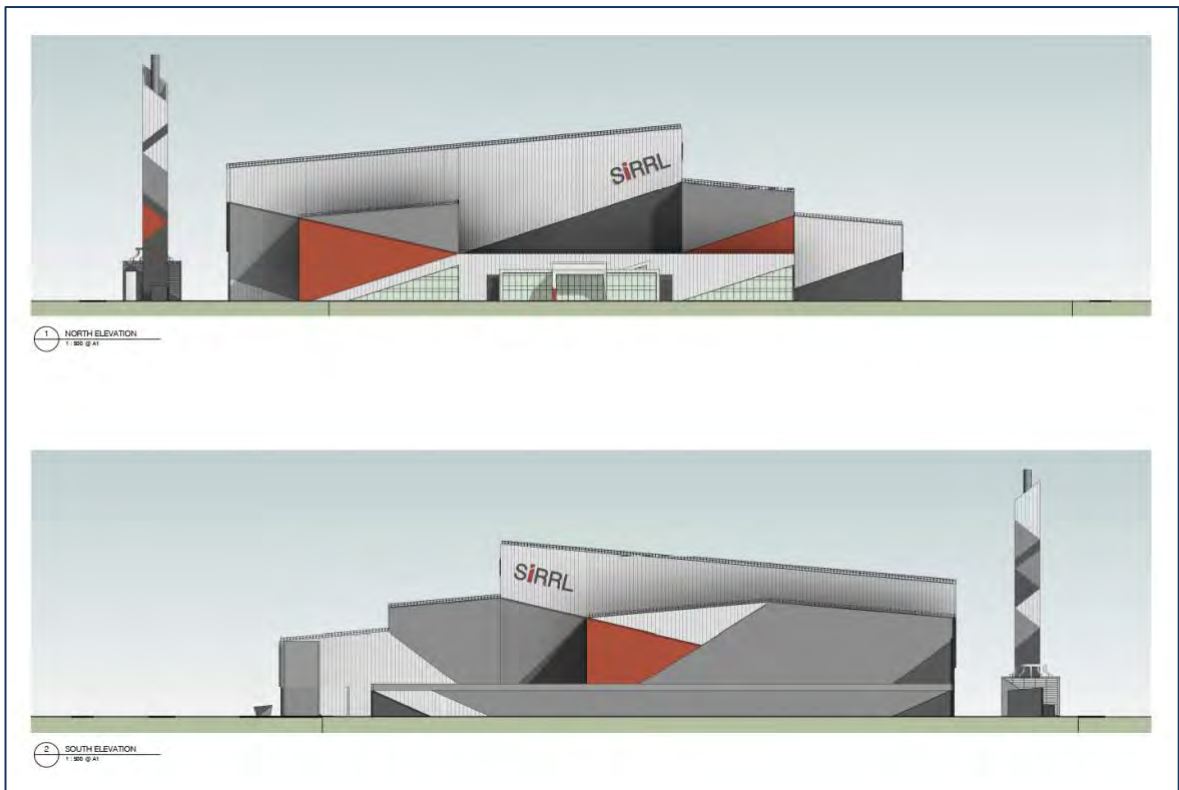
The Project Kea site is located within the flat river plain north of the Waitaki River site just over 1.0km east of the Waimate Highway /SH1 and nearly 4km from the Pacific coast to the east. It would directly abut the South Island Main Trunk railway line (SIMT) to the west and Morven Glenavy Road to the east, with what appears to be part of Carrolls Road to the south. In fact, Morven Glenavy Road runs ‘over the top’ of the shorth stretch of Carrolls Road adjoining the Project Kea site, however, for the sake of simplicity that section of road (directly south of the EfW site) is referred to as “Carrolls Road” in this report and on the graphic Attachments appended to it – in line with Google Maps, most NZ topo mapping and how the road is perceived when travelling along it.

The EfW site has an area of approximately 14.85ha and, beyond the roads and railway just described, together with Whitneys Creek down its northern boundary, would be physically enclosed by flat to low lying, paddocks on the edge of farms that surround the site.

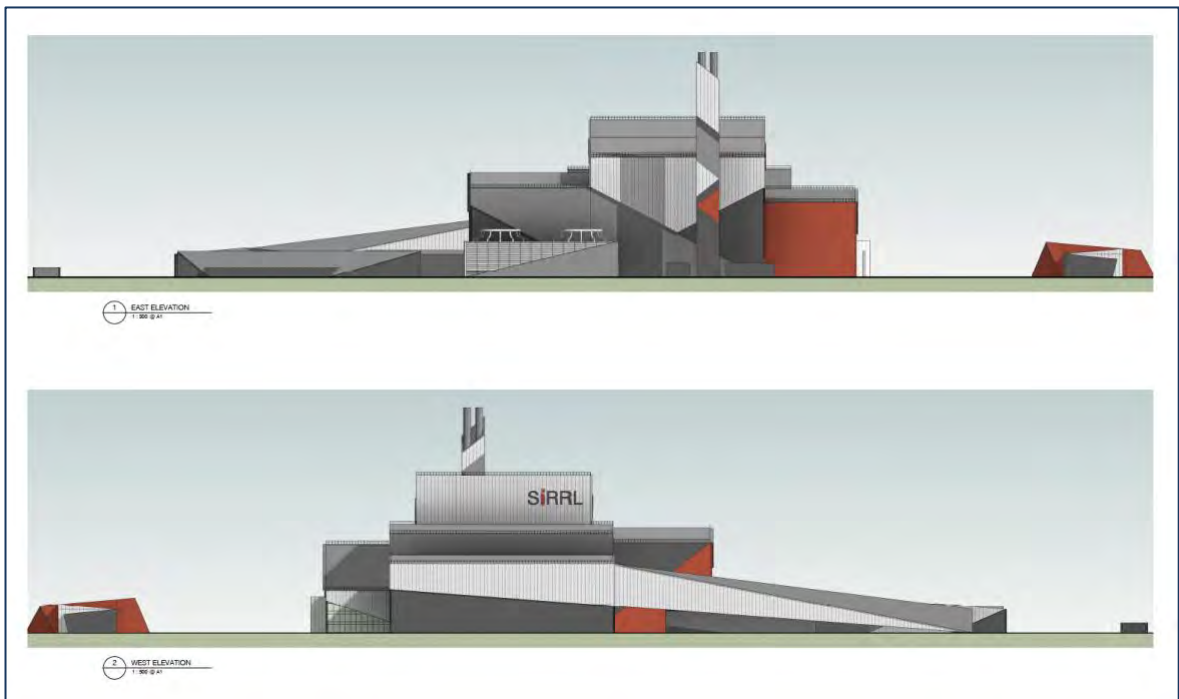
2.1 The Development Concept

Babbage Consultants Limited (Babbage) has developed a palette of colours and materials for the main power house building, the stack, and the ancillary workshop and storage buildings, that are designed to both: ‘break up’ the profile of the development *en masse* – preventing it from seeing overly monolithic – and; to ground it in its rural setting. Most of the main power house building, shown below and overleaf, would comprise ‘panels’ of dark to light grey that cut across its main walls and are interspersed with other panels of barn red (“Pioneer Red”). This division of the building façade into smaller segments would be complemented by the use of vertical sheet cladding that is evocative of corrugated iron, which is commonly used on farm buildings. The transition from darker colours closer to the ground to lighter colours higher up across the northern and eastern building facades would also help to ‘ground’ the main buildings and lighten them higher up.

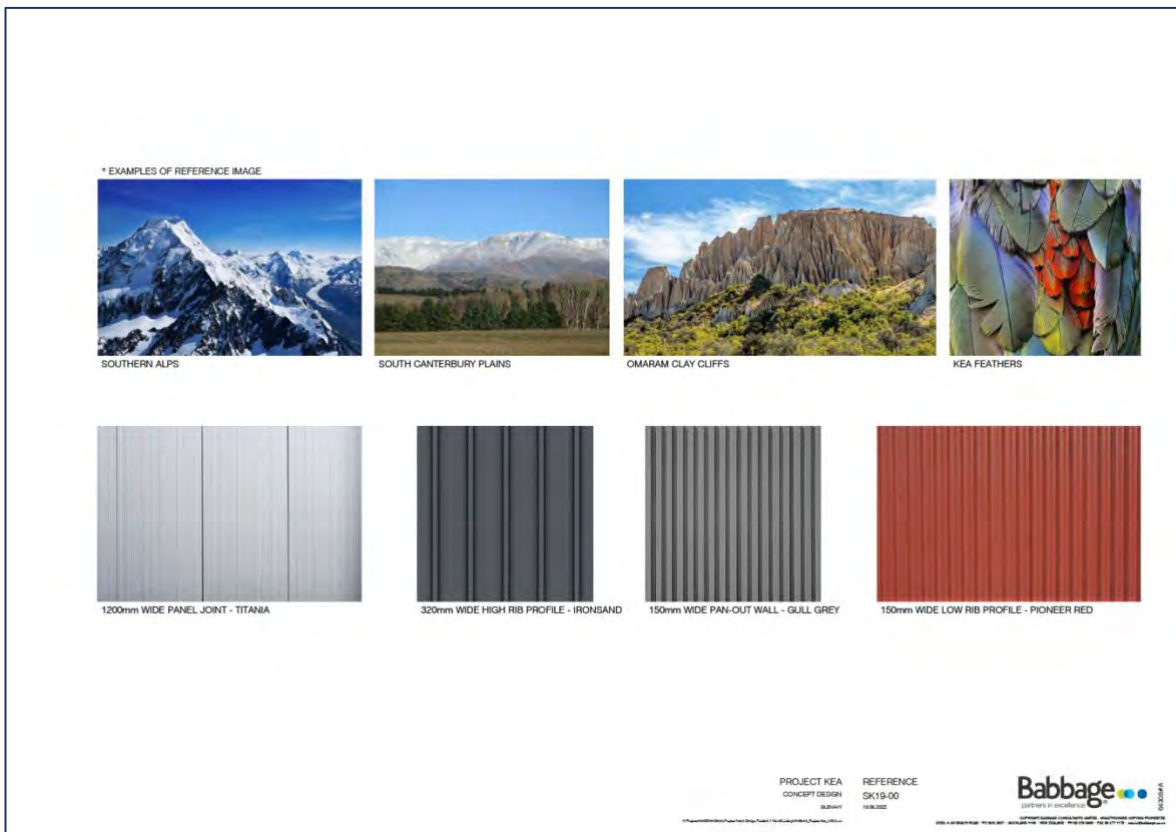
Overall, the main power house and ancillary buildings would be significantly down-scaled. The colour palette proposed would help to make its seem reasonably recessive, but also distinctive – in a positive fashion.



Northern and southern power house elevations



Eastern and western power house elevations



Colour palette and material references

2.2 Landscape Mitigation

A **Landscape Mitigation Plan** (overleaf and **Attachment 1**) has been developed that reflects the rural character of the site’s surrounds. Mitigation planting is proposed to envelope the main power house building, other key buildings, and the stack. Mitigation planting is designed in layers of both deciduous (faster growing) and evergreen (slower growing) trees that face towards Carrolls Road and Morven Glenavy Road. A 20m deep band of lowland shrub planting and kahikatea is to be located along the site’s northern boundary, beside Whitneys Creek, located on the adjoining site. The shelterbelt planting and kahikatea are located to progressively break up the profile of the mainpower house and ancillary buildings and the stack, with the deciduous trees (willow, Chinese poplar or similar) providing quicker intervention and visual buffering that is gradually complemented and ‘in-filled’ by the kahikatea also lining the site’s margins and remnant paddocks (near Carrolls Road). In the long term, it is anticipated that the deciduous trees may well be replaced by the kahikatea shelterbelts and creek-side planting. In addition to addressing Carrolls and Morven Glenavy Roads, this planting would provide a long-term buffer between the proposed plant and residential properties to both the north and north-east – near Viewpoint 27 and Mairos Road, as well as Archibalds Road and Morven Glenavy Road closer to the small settlement of Morven.

The only side of the proposed development not addressed by in-depth planting is its western flank, which is to be lined by a railway siding connected with the SIMT and associated vehicle accessways. There is insufficient room down that boundary and side of the site for substantial screen or mitigation planting, which faces towards the Waimate Highway / SH1. For this reason, particular attention has been paid to the colour and materiality of the proposed development to deconstruct and down-scale it, as described above.



Proposed Landscape Mitigation Plan

3. The Site & Its Landscape Context

3.1 The Project Kea Site

The Project Kea site sits in the centre of the Waitaki River's former outwash plain and terraces north to north-east of Glenavy. It is bounded by Moven Glenavy Road to the South and East, an irrigation race to the west and Whitneys Creek to the north. The South Island Main Trunk Line (SIMT) also runs past the site, located immediately west of the north-south aligned irrigation race (part of the Morven Glenavy Ikawai –“MGI” – Irrigation System) that Carrolls Road passes over before following the southern edge of the Project Kea site.

Attachment 3 (Viewpoints 1 and 2) contains photos of the subject site, looking from near the intersection of the irrigation canal with Carrolls Road – near the site's south-western corner – and from an elevated part of Morven Glenavy Road that overlooks the site from the north-east. They reveal a flat, low lying, paddock that is largely devoid of features other than a line of polars and willows next to Whitneys Creek that marks the site's northern boundary. Some of those trees were in the process of being removed at the time of my site visit and that clearance activity is visible in **Attachment 3**. Also lined by smaller ditches (presumably for irrigation) around much of the site perimeter, the site is otherwise unremarkable within a landscape that is totally dominated by paddocks used for cattle grazing and dairy production. It reveals no distinctive or site-specific elements that are not found within the broad 'checkerboard' of other paddocks located between the foothills west of SH1 and the Pacific Ocean just over 3.7kms from the Project Kea site.

Consequently, the only 'feature' of note in the very immediate vicinity of the subject site is a slight rise in the terrain immediately north of it – in the order of 8-9m. This occurs beyond Whitneys Creek described above, with an east-west aligned irrigation canal traversing the near-crest of this rise (and running under Morven Glenavy). Although not particularly notable in its own right, this change in elevation does help to differentiate between the lower outwash plain closer to the Waitaki River that includes the subject site and a slightly more elevated terrace that most of Morven Glenavy Road runs across in the direction of Morven village. This change also helps to visually separate the application site from farmhouses and other residential properties to the north, around Morven Glenavy Road, Mairors Road and Archibalds Road.

3.2 The Site's Wider Landscape Setting

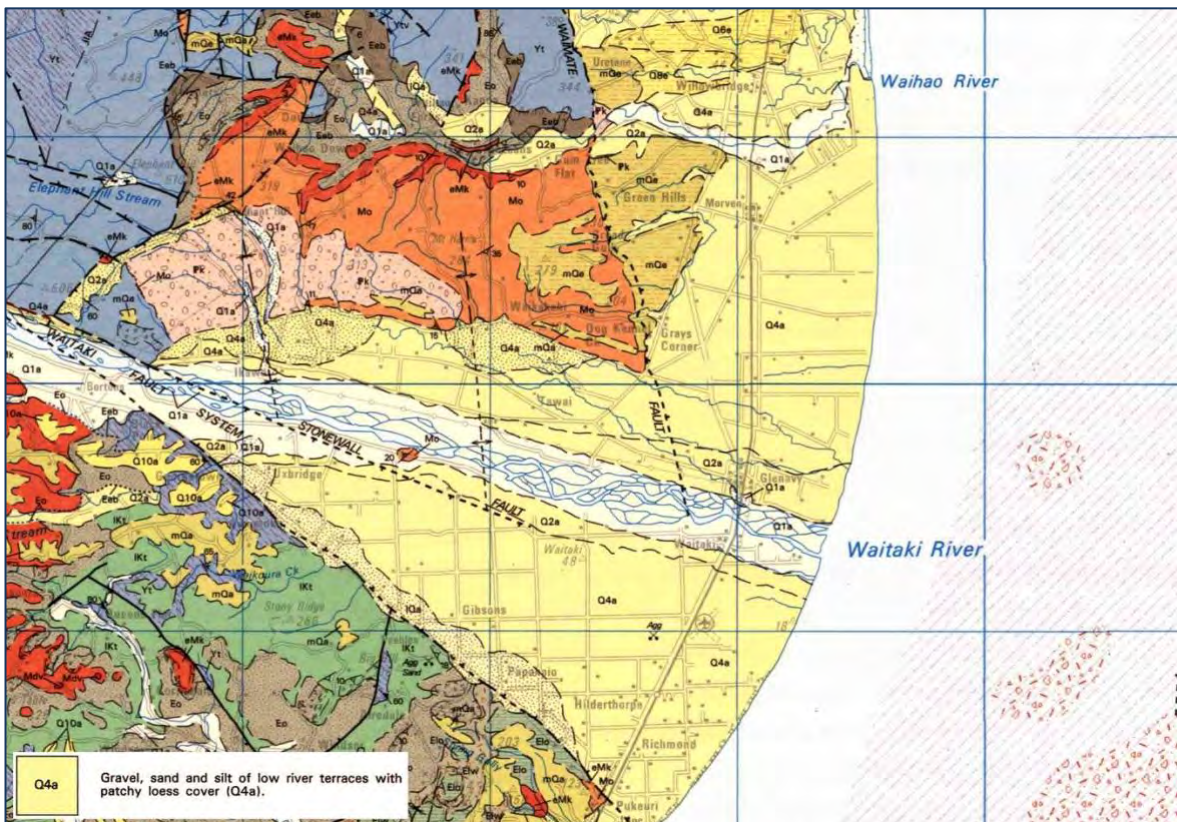
This review of the Project Kea site's wider landscape setting is accompanied by photos in **Attachments 3 – 16**. All of these photographs were taken on the 27th of May 2022, using a Fujifilm GFX 100s medium format camera and either a 35mm (equivalent) lens – for close up views, such as those from Viewpoints 1 and 2 of the subject site – or a 50mm equivalent lens. Most of the viewpoint images comprise either 3 or 4 photos stitched together using Autopano Giga 4.4 software. Each photo location, as shown on **Attachment 2**, was GPS located in the course of that site visit.

This series of photos reveals the following characteristics and facets of the landscape around the Project Kea site when approaching the subject site and its surrounds from the south (**Attachments 4-8 and 16; Viewpoints 3-11 and 25**):

- South of the Waitaki River and progressing northwards past the Alliance Pukeuri Abattoir, the landscape opens out from foothills to the south, revealing a landscape that is almost entirely dominated by a flat ‘checkerboard’ of farmland much like that already described around the subject site further north. Visually subdivided by a rectilinear matrix of pine, macrocarpa and willow shelterbelts, this planar landscape sits on a sequence of shallow river terraces that fall slowly, but inexorably, towards the Waitaki River and its accompanying bands of willows and other vegetation that demarcate both sides of the river from one another. Inevitably, the focus of travellers passing through this area falls on the working, rural production, landscape in closer proximity to SH1 and other local roads, while its flat nature limits the degree to which features beyond it are visible and influence perception of it. At most, the tops of the foothills enclosing the river corridor and its terraces are visible above and beyond intervening shelterbelts, while the main divide is distantly apparent up the river valley.
- Reflecting this situation, the settlement of Waitaki Bridge is also largely ‘land locked’. Although located in close proximity to the south bank of the Waitaki River, it is closely hemmed in by shelterbelts, a stand of pines, silver birches and other trees at its western entrance (McPherson Road) and the gradually rising terrain both sides of the river. Moreover, it is entirely screened from the main body of the river and its north bank by large tracts of willow and gorse that thoroughly enclose its fairway. As a result, the ‘village’ has a quite contained quality, devoid of any real visual connection with the rural domain north of the Waitaki River.
- Although the Project Kea site is just over 3.1km from the lower Waitaki River, it is effectively screened from that river by intervening shelterbelts and a sequence of gently rising river terraces that traverse the rural landscape east of Glenavy. Vegetation lining, and enclosing, the banks of the river provides a second ‘line of defence’ between its fairway and the Project Kea site, including dense stands of willows both east and west of the SH1 road and rail bridges over it. Consequently, even though the Waitaki River is a key river system that directly links South Canterbury’s Pacific coastline with the Upper Waitaki and Mackenzie Basin catchments, it actually has quite limited exposure to the public domain and rural landscapes either side of it. For many, such engagement is instead largely limited to views of the river from its SH1 bridge and glimpses of it from the road corridors up the Waitaki River valley.
- Similarly, even though the northern edge of Glenavy is just over 1.9km from the Project Kea site, a series of shelterbelts and other planting spread across the intervening ‘grid’ of farm paddocks, preclude any direct interaction between it and the nearby settlement. Instead, the outlook from the margins of the settlement and nearby is entirely dominated by layers of open, flat, farmland interrupted by the aforementioned shelterbelts. Even SH1, local roads and a very slightly more elevated SIMT largely ‘sink’ into the flat plane of this pastoral landscape, which retains the distinctive ‘working’, productive, character already described.
- North of Glenavy, this situation barely changes, although the distant foothills rising up around Waikakahi, Mt Harris and Broad Gully become more apparent and influential as the landscape opens out somewhat approaching the Oceania Dairy Factory. Although successive lines of pines, macrocarpa and willows still traverse this terrace / planar landscape, subdividing its farms and

paddocks into the sort of geometric ‘checkerboard’ already described, that undulating sequence of low hills becomes increasingly important as a reference point in the landscape, while the blocky profile of the dairy plant also starts to rise up above intervening shelterbelts. It also helps to locate the Project Kea site, which would sit amid the flat plane of farmland to the right (east) of that established plant. For the most part, however, this remains a working landscape that is dominated by the array of paddocks and shelterbelts already described.

When approaching the Project Kea site and its general vicinity from the North, the (**Attachments 9-12 and 17-19; Viewpoints 12-19 and 26-28**), much the same type of landscape unfolds, dominated by the open planar landform created by a series of very shallow river terraces (see GNS QWaitaki Map below) overlain with pockets of sand and loess that are now largely covered by pasture and a matrix of linear shelterbelts, although these are less frequent and visually prominent than closer to Glenavy. However, the Waimate Highway / SH1 corridor is more closely hemmed in by foothills to the immediate west around the Waihao River and Broad Gully until near the intersection with Old Ferry Road and Pakihau, at which point it turns away from that hill country to reach out across the terrace landscape just described.



GNS QWaitaki Map

The other feature that becomes increasingly prominent when journeying south from that turning point is the Oceania Dairy Factory, rising up from the plain and largely open paddocks around it (**Attachments 9, 11, 12 – Viewpoint 19 – and Attachment 18**). Much like the rest of the landscape visible south of Waimate, the foothills close to SH1 also reflect the heavily modified, rural production character of the plain that they partly enclose, with a mixture of open pasture, evergreen and willow shelterbelts, and production pine forestry unfolding across the slopes that extend inland – up the northern side of the Waitaki River valley.

This 'working rural landscape' character is also very marked across the open plain to the east of SH1 – around the small settlement of Morven and southwards from there. Following the path of Morven Glenavy Road and the side roads that branch laterally off it, a broad swathe of open pasture, more loosely criss-crossed by shelterbelts, is again revealed. This extends down towards Carrolls Road and the Project Kea site, without any significant breaks in, or variations on, this 'theme', apart from a scattering of farm dwellings and buildings near many of these roads and the increasingly obvious profile of the main factory building within the Oceania Dairy complex as one travels southwards. This main block becomes increasingly prominent near Archibalds Road and Mairo's Road, although its taller stack is noticeably less prominent in most such views.

Nearly all of the landscape characteristics just described are also apparent in views from the west – as are experienced by those using the likes of Ikawai Middle Road and Tawai Ikawai Road (**Attachments 13-15**). Again, the landscape is generally open and pastoral, with a very marked working / production aesthetic. The only significant change in this regard is the emergence of pivot irrigators, which are particularly apparent near parts of Old Ferry Road and Glenavy Tawai Road closer to the junction of both roads with Tawai Ikawai Road. The rectilinear profile of Oceania Dairy's' main block is also distantly visible from some vantage points, but far from obvious or overly prominent.

Instead, as with elsewhere around Glenavy, the landscape remains subdivided into a patchwork of often quite verdant paddocks that are subdivided, both physically and visually, by the straight lines of successive bands of shelterbelt planting. Near Glenavy Tawai Road, this vegetation cover is further reinforced by amenity planting around the farm dwellings both sides of that road and glimpses of the dense tracts of willow that lines the margins of the Waitaki River.

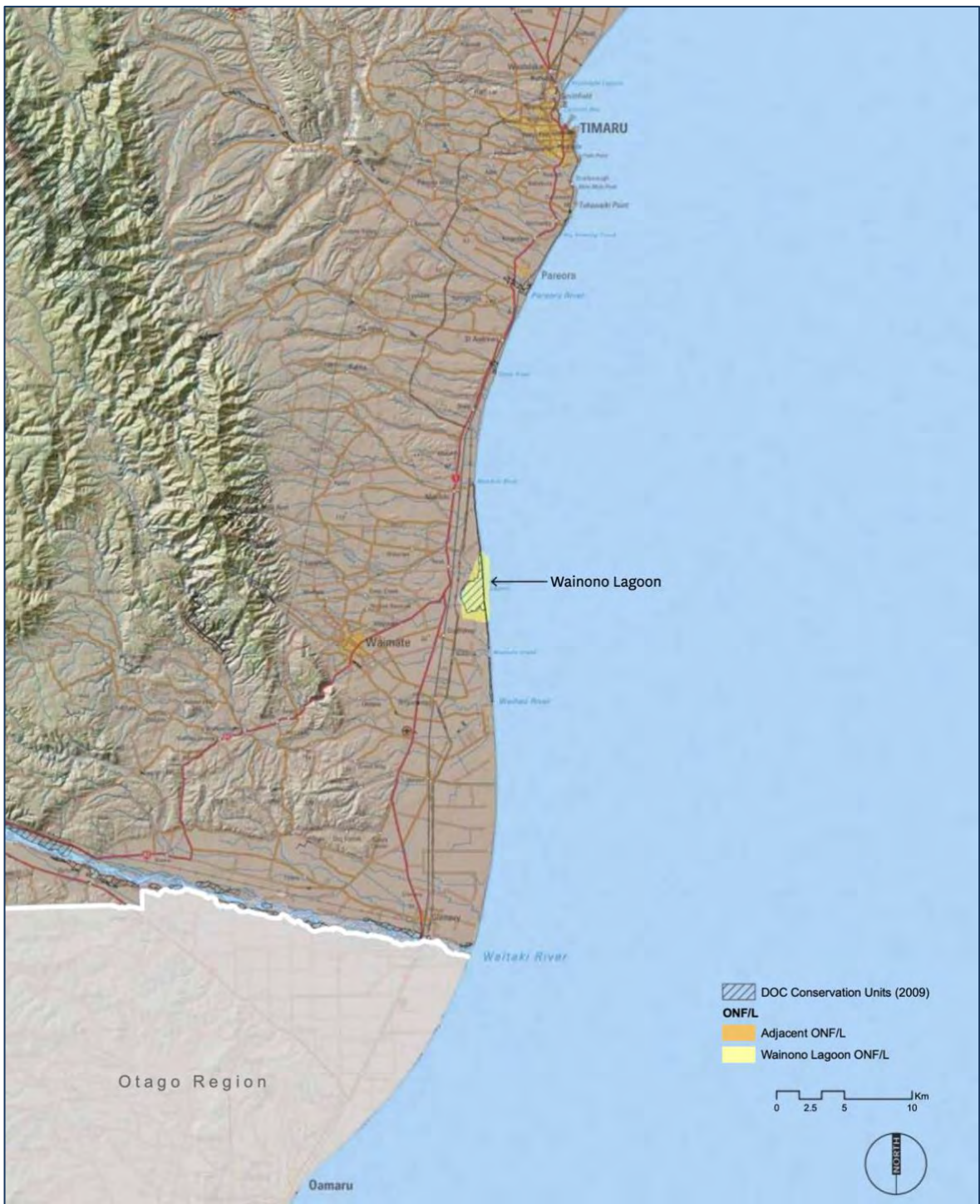
3.3 Significant Values

The Waitaki River is one of Canterbury's major braided rivers, although the number of 'freshes' associated with it and related levels of gravel passage down it have declined since the completion of the Waitaki Hydro-electric System. However, neither the Waimate District Plan nor the Canterbury Regional Policy Statement (RPS) identifies any Outstanding natural Landscapes or Areas of Outstanding Natural Character within the lower river's boundaries.



Lower Waitaki River and the SH1 bridge over it with Glenavy to the right

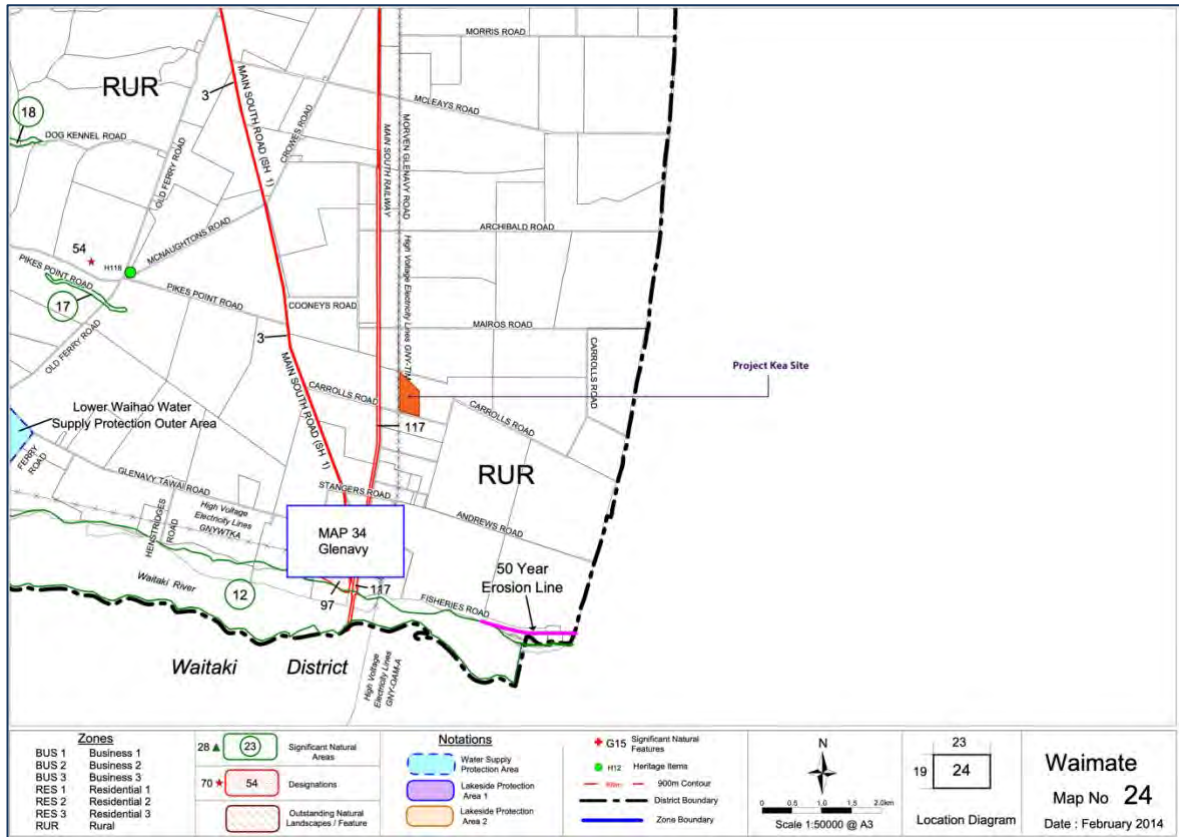
Similarly, even though the Wainono Lagoon Conservation area, east of Waimate and some 18kms from the Project Kea site, is identified as an ONL in the Canterbury RPS (overleaf), no other parts of the nearby coastline are attributed ONL or ONC status.



The Wainono Lagoon ONL: the only ONL or ONC Area even remotely near the Project Kea site

4. Statutory Context

As a result, the only statutory provisions relevant to the Project kea application are those found in the Waimate District Plan, and Map 24 (below) shows an absence of Significant Natural Areas, Significant Natural Features or other locations subject to higher order environmental constraints in the general vicinity of the application site.



Map 24 of the Waimate District Plan showing the Project Kea site location

The following objectives, policies and Discretionary Activity assessment criteria in the Waimate District Plan are relevant to the proposal, focusing primarily on visual amenity effects within the **Rural Zone**:

Objective 6 - Rural Amenity and Environmental Quality

A level of rural amenity which is consistent with the range of activities anticipated in rural areas, but which does not create unacceptably unpleasant living or working conditions for the District's residents or visitors, nor a significant deterioration of the quality of the rural environment.

Policy 6I – Non-Rural Uses

To recognise that the Rural Zone may be the most appropriate environment for some utility, industrial, service or commercial uses to establish, provided the amenity and character of the rural area is maintained.

Explanation and Reasons

- As for Objective 6
- A wide variety and scale of industrial or services activities may want or need to establish in the Rural Zone. These activities often serve the productive use of the Rural zone or they

may require large areas of land only available within the rural area. Examples of such activities include a contractors' yard, transport companies, timber mills and dairy processing plants.

- The rural environment may be able to absorb these activities better than other more developed parts of the District. However, there is a need to ensure that the amenity and character of the environment in which such activities may locate is maintained. Given the wide variety and scale of such activities, the Council has reserved its discretion over these activities so they can be assessed on a case-by-case basis.

Related Assessment Matters for the Rural Zone are as follows:

12.1 Height of Buildings

Assessment Matters:

The extent to which:

- a. The proposed building is compatible with the character of the local environment.
- b. The proposed building has adverse effects on neighbouring properties including effects on privacy, outlook, sunlight and daylight admission.
- c. Any adverse effects can be mitigated.

12.24 Industrial and Service Activities

Assessment Matters:

- a. The degree to which the activity is compatible with the amenity, quality and character of the area and extent to which the activity will impact on the surrounding rural community or natural resources, in particular the following:
 - traffic generation (and consequent pressure for road upgrading);
 - demand on water resources;
 - effect on margins of waterbodies and waterways;
 - volume, and methods of disposal of, refuse waste, hazardous substances and sewage;
 - impact on long term use of the District's Class I and II soils for primary production;
 - production of noise, odour, glare, fumes or vibration.
- b. The extent to which landscape or natural or conservation values, or the visual amenity generally, is adversely affected (refer to Assessment Matters - Sites of Natural Significance).
- c. In addition, regard should be given to the following assessment matters as described within this section.

12.27 Heavy Vehicle Movements

Assessment Matters:

- e. The adverse effects of extra traffic, particularly heavy vehicles, generated by the development on the amenity and safety of the surrounding environment.

5. Effects

5.1 Effects In General

Assessments addressing changes to the various landscapes and environments, and the community perceptions of such change, often refer to a range of effects on visual, landscape, natural character and amenity values. The following descriptions of each type of effect are designed to help clarify their areas of commonality and difference, which, in turn, affects how they have been addressed in this report.

Visual Effects

‘Visual effects’ reflect changes to the visual composition, configuration and character of a locality or landscape, together with the perceived magnitude or scale of such change(s) – in terms of their relative legibility and prominence. However, an assessment of visual effects does not address the values (including community values) associated with such change, which are more appropriately addressed in relation to the landscape, natural character and amenity attributes of an area. Visual change and ‘effects’ are, in effect, devoid of value: they convey a sense of the magnitude of visible change that would be experienced from a viewpoint or viewpoints, but not the impact that this would have on the character, values and identity of the subject site and its surrounds. As such, visual ‘effects’ are no more than a stepping stone to addressing effects on landscape, amenity and natural character values, which are ultimately much more meaningful precisely because such assessment focuses on how such changes would actually impact on public and private perceptions of the subject landscape / environment.

Landscape Effects

“Landscape” is an all-encompassing term. The NZ Institute of Landscape Architects’ Charter (2010) describes “*Landscape*” as being “*the cumulative expression of natural and cultural elements, pattern and processes in a geographical area.*” Moreover, the Charter’s Preamble offers the following, slightly more fulsome, description of landscapes – as follows:

“Landscapes are the result of unique combinations of biophysical, cultural and social processes, evolving over time and interwoven with memory, perception and tradition. They include land, water systems and marine areas, and play a vital role in human nurture, fulfilment and in shaping individual and collective identity. Landscapes range from the outstanding and the memorable, to the familiar and commonplace”

In addition, the NZILA’s *Te Tangi A Te Manu – Aotearoa New Zealand Landscape Assessment Guidelines, 2021* (p. 35, section 4.22) identifies landscape values as comprising three ‘layers’ of attributes:

Physical, associative, and perceptual dimensions

The current professional practice of conceptualising ‘landscape’ as the overlap of its physical, associative, and perceptual dimension is reflected in ‘case law’ including the following recent decision¹:

¹ [2011] NZEnvC 384, *Mainpower NZ Limited v Hurunui District Council*, (‘Mount Cass Wind Farm’), paragraph 300-301

“Landscape means the natural and physical attributes of land together with air and water which change over time and which is made known by people’s evolving perceptions and associations.”

“In keeping with the Act such a definition enables the development of landscape assessment which takes account of:

- (1) natural and physical environment: and*
- (2) perceptual; and*
- (3) associative aspects (beliefs, uses, values and relationships) which may change over time”*

In relation to most urban and suburban environs, the latter two layers are typically of greater concern and relevance, whereas in more rural or natural environments, the biophysical state and values of that environment can be more significant.

Within South Canterbury’s rural areas, landscape effects therefore relate to modification of both the biophysical and sensory (or perceptual) characteristics and values of an environment. Often, these are addressed in terms of changes to the landforms, vegetation cover, sea / water forms, biota and land uses within a landscape, together with the visual legibility, expressiveness, aesthetic value, transient values and other ‘associative’ matters (with reference to the well-known, ‘*Modified Pigeon Bay / WESI factors*’). However, changes to the character of a landscape may also affect people’s appreciation of its ‘shared and recognised values’ and identity (reflecting appreciation of a landscape by local communities and the public at large), together with its cultural dimensions and historical values.

Natural Character Effects

Natural character effects overlap with landscape effects, with emphasis on effects that impair, or otherwise alter, the naturalness of the coastal environment in terms of its biophysical attributes and perceived character. Policy 13 (2) of the NZ Coastal Policy provides further direction in this regard, by identifying some of the elements / features / characteristics associated with natural character values, including:

- (a) natural elements, processes and patterns;*
- (b) biophysical, ecological, geological and geomorphological aspects;*
- (c) natural landforms such as headlands, peninsulas, cliffs, dunes, wetlands, reefs, freshwater springs and surf breaks;*
- (d) the natural movement of water and sediment;*
- (e) the natural darkness of the night sky;*
- (f) places or areas that are wild or scenic;*
- (g) a range of natural character from pristine to modified; and*
- (h) experiential attributes, including the sounds and smell of the sea; and their context or setting.*

These elements and characteristics are not exclusive, however, and the significance of effects in relation to any one factor (or more) need to be considered with regard to the particular elements, patterns and processes that contribute to the natural character values of any coastal environment. Thus, coastal environments that are highly natural will be much more sensitive and susceptible to the effects of change than those that are already highly developed and modified – or within those where such change is anticipated by relevant statutory instruments.

Amenity Effects

Again, effects on amenity values overlap with effects on the 'sensory' and 'associative' qualities of landscape, and the meaning attributed to Amenity Values in the Resource Management Act describes them as being:

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.

This indicates that 'amenity' pertains to areas that are known, understood and appreciated by those who live within them or visit them – often on a reasonably regular basis. Amenity values also relate to such factors as noise, lighting, smells and awareness of activity and movement; in effect, the fuller spectrum of sensory factors that contribute to perception and appreciation of an area's character, pleasantness and aesthetic coherence. Inevitably, this also brings into play perceptions of identity and sense of place (evolved from the Greek concept of the '*genius loci*') that reflect the more particular, even unique, qualities of a locality or environment. Concepts of familiarity, shared ownership (in a figurative sense) and pride of place are also important in this regard. Moreover, Section 7(c) of the Resource Management Act refers to "*cultural and recreational attributes*", which often pertains to areas used for a range of more passive recreation activities.

Amenity effects can also include so called, 'nuisance' effects that degrade the 'pleasantness', 'aesthetic coherence' and other values associated with a particular locale. These often pertain to such matters as:

- Visual dominance or over-dominance;
- Loss of open space and perceived spaciousness;
- Encroachment on privacy;
- Over-shadowing; and
- Noise.

Cumulative Effects

In addition to the direct effects that developments can generate in relation to specific receiving environments and audiences, cumulative effects need to also be considered. These typically relate to viewing or experiencing a development proposal in one of two ways:

- Either in a dynamic fashion from transport corridors and / or multiple viewpoints in which the proposal becomes part of a sequence of accumulative change (successional / sequential effects); and / or
- The development proposal becomes part of a sequence of change in which two or more developments of similar character are visible from one or multiple vantage points (simultaneous effects).

5.2 Effects Relevant to Project Kea

Although the range of effects theoretically relevant to any application is therefore very broad, a number of key effects are of greater relevance to the Project Kea development – derived from the nature of the

proposal, its location and landscape setting, and the relevant Waimate District Plan provisions described above:

- effects on rural character and related landscape values; and
- effects on amenity values, including those associated with farmhouses and other residential properties within the rural environment around the Project Kea site.

These effects have been addressed in three stages:

1. Through identification of the main receiving environments and audiences likely to be affected by Project Kea;
2. Through the use of representative viewpoints to analyse the landscape and amenity effects of development generated by the proposal for different receiving environments and audiences; and
3. Through extrapolation of the viewpoint findings to the key receiving environments and audiences identified around the application site.

5.3 Receiving Environments & Audiences

The key receiving environments exposed to the Project Kea site and future development on it comprise:

1. The Waimate Highway / SH1;
2. Local roads, including Carrolls Road, Morven Glenavy Road, Mairos Road, Archibalds Road and Pikes Point Road;
3. Farms, farmhouses and lifestyle residences distributed around the application site – mostly located off the roads identified above; and
4. The SIMT.

The audiences associated with these key receiving environments and vantage points comprise:

- The occupants of local farms and lifestyle blocks;
- Waimate Highway / SH1 users;
- Local road users;
- Farm workers; and
- Railway workers and any passengers on trains.

5.4 Viewpoints Assessment

Assessment Viewpoints

This assessment employs 5 representative viewpoints that represent the full range of public receiving environments and related audiences around the Project Kea site. The viewpoints employed in this assessment are located as follows (**Attachments 2 and 16-20**):

- Viewpoint 25. **Waimate Highway SH1 (south of site)**
- Viewpoint 26. **Waimate Highway SH1 (west of site)**
- Viewpoint 27. **Waimate Highway SH1 (north-west of site)**
- Viewpoint 28. **Waimate Highway SH1 (north of site)**
- Viewpoint 29. **Mairos Road (north-east of site)**

It is important to note that the greater bulk of effects discussed in Section 5.2 of this report pertain to the public domain and effects on community values and their weighting towards different part of the Waimate Highway / SH1. These viewpoints provide the basis for comparison of the current situation with that anticipated at the completion of Project Kea.

This comparison has been undertaken using existing photos taken with a 50mm lens and full-frame 35mm camera. Those photos capture views towards the application site from each viewpoint, and provide the basis for photo simulations (again addressing each viewpoint) that portray the Project Kea development superimposed on them. The digital modelling required for those simulations has been undertaken by Virtual View and is attached as **Annexure A** to this report. A ‘Statement of Methodology’, prepared by Virtual View, is also found at the end of that Annexure.

Assessment Criteria

In assessing the extent and nature of such effects for each viewpoint (and surrounding locality, where applicable), the following checklist of key matters has been employed:

1. Existing Landscape Character & Values:

- a) *Biophysical Components: including landforms, vegetation cover and key cultural elements / features: buildings, other structures and activities*
- b) *Perceptual Components: legibility, expressiveness, aesthetic appeal, naturalness & ephemeral / transient values*

2. Prominence / Visual Change:

- c) *Visibility / Legibility of The Proposed Development: the extent to which the activity proposed would be legible & prominent from near each viewpoint*
- d) *Integrating Factors: the elevation of the viewpoint relative to the proposed development; viewing distance; screening / intervening elements; & backdrop elements*

3. Landscape Effects:

- e) *Biophysical Values: impacts on landforms, vegetation cover & water features*
 - f) *Perceptual Values: impacts on the landscape’s expressiveness (including formative values), legibility, expressiveness, naturalness, aesthetic character & appeal, and transient values*
 - g) *Associative Values: impacts on any known tangata whenua, community, historic values*
-

4. Rural / Residential / Community Amenity Effects:

- h) Rural Character: loss of spacious, open character & the unbuilt nature of the rural environment
- i) Residential Amenity: impacts on the character of the rural environment & outlook from residential properties
- j) Community Amenity: impacts on the identity and sense of place associated with the area around the subject site

Effects Rating Scale

The effects ratings for each receiving environment or vantage point are 'scored' in accordance with the following rating scale (**Table 1** overleaf). This is aligned with the 7-point ratings scale recommended in the *Te Tangi A Te Manu - Aotearoa New Zealand Landscape Assessment Guidelines* (p.64), as:

- It is symmetrical around 'moderate';
- It has even gradations;
- It uses neutral rating terms;
- The scale is suitable for both positive and adverse effects – though in this case addresses any negative effects; and
- The seven points provide for nuanced ranking, while being near the practical limit at which such distinctions can be made reliably.

Table 1.

| <i>Adverse Effects:</i> | | <i>Adverse Effects Rating:</i> |
|-------------------------|--|--------------------------------|
| 1 | <i>No appreciable change to landscape character, together with landscape & amenity values: no visual intrusion / 'nuisance'</i> | Very Low |
| 2 | <i>Limited change to landscape character; no appreciable change to landscape & amenity values: no visual intrusion / 'nuisance'</i> | Low |
| 3 | <i>Increasingly evident change to landscape character; limited change to landscape & amenity values & a low level of visual intrusion / 'nuisance'</i> | Low – Moderate |
| 4 | <i>Appreciable change to parts of the local landscape; more obvious impact on some landscape & amenity values, but still limited visual intrusion / 'nuisance'</i> | Moderate |
| 5 | <i>Marked change to parts of the local landscape; obvious impact on some landscape & amenity values, including evident visual intrusion / 'nuisance'</i> | Moderate – High |
| 6 | <i>Obvious changes to landscape character with degradation of landscape & amenity values, including obvious visual intrusion / 'nuisance'</i> | High |
| 7 | <i>Severe degradation of landscape & amenity values accompanied by high levels of visual intrusion / 'nuisance'</i> | Very High |

Visual Effects Evaluation

The following tables summarise the assessment undertaken for each viewpoint and the corresponding receiving environments. As indicated above, they are accompanied by the 'before and after' images prepared by Virtual View that are contained in **Annexure A**.

Viewpoint 25. Waimate Highway /SH1 (south of site)



Existing Landscape Character & Values:

As one leaves Glenavy and head north, the shelterbelts and amenity enclosing that settlement dissipate somewhat, allowing motorists to view more ‘deeply’ into the farm landscapes that unfold north of the Waitaki River. Views from this vantage point and nearby reflect this transition as the enclosed settlement gives way to farmland interspersed with a ‘looser’ matrix of farm shelterbelts. Indeed, notwithstanding their presence, it is increasingly a landscape that is dominated by the open expanse of flat farmland and pasture between SH1 and the Pacific coast, just over 4kms away.

Although criss-crossed by the mixture of deciduous and evergreen shelterbelts just described, gaps between them still allow for views that penetrate an appreciable distance beyond the more immediate highway margins – towards the coast and Project Kea site. However, they also affirm the cultural / human-made qualities of this environment, while the landscape in general still retains its markedly horizontal, planar, nature. Furthermore, there is nothing natural about it: the landscape both across and around the Waimate Highway is very clearly imbued with the sort of working, rural production, aesthetic that permeates nearly all of the lowland environment both sides of the Waitaki River.

As a result, views from the general vicinity of this landscape reveal little that is distinctive or memorable about the locality. Instead, it simply melds with the rest of the farmland north of Glenavy. Although its landform is highly evocative of the outwash plain and terraces which underpin much of the visual and physical character of the area, its values are very limited in terms of other biophysical qualities, its legibility and memorability, perceived naturalness and endemic values, and aesthetic appeal overall.

Values Rating: **Low-Moderate**

Prominence / Visual Change:

The very flatness and openness of the landscape revealed to this vantage point means that any sizeable vertical elements could tend to ‘pop up’ within it. However, as **Annexure A’s** photo simulations for Viewpoint 25 show, the shelterbelts directly east of the Waimate Highway would visually fragment the proposed EfW Plant and – at least in part – screen it from motorists on this part of the highway.

Moreover, with just over 1.2km from it to the main power house building and slightly more (nearly 1.4km) to the 72m high stack near Morven Glenavy Road, both would be partially visible, but far from prominent or dominant. The EfW Plant’s geometric patterning – both colours and cladding – would further help to break up its form and visually subdivide it into a ‘patina’ of smaller components beyond the shelterbelts in the foreground to middle distance. Even the taller stack would be partly screened by both the intervening vegetation and main power house building, while most views from the highway towards Project Kea and its main structures would remain brief to fleeting.

Overall, therefore, Project Kea's would introduce another industrial component to this existing rural landscape, much like that of the Oceania Dairy Factory, but it would be more recessive, without the same degree of immediacy and visual presence.

Prominence / Visual Change Rating: **Low-Moderate**

Landscape Effects:

Although still partly visible, Project Kea's main power house building and stack would have a limited impact on the character and qualities associated with views from the Waimate Highway / SH1 towards the subject site. It would retain its strongly rural, but also marked 'working' / productive aesthetic, while the visually fragmented profile of most of the proposed development would have little impact on the geometric grid of paddocks and shelterbelts that prevail on both sides of the highway corridor. In effect, the intervening shelterbelts would 'push' it into the background of most views from the highway.

The Project Kea buildings and related structures would still be fleetingly visible through breaks in the shelterbelt planting that become larger north of this viewpoint. However, the base of the complex would remain largely hidden by more distant shelterbelt planting, helping to lower its profile, while both the intermittent nature of such interaction and the viewing distance to the Project Kea site would reinforce its 'background' location. Consequently, even though the main power house building and the stack would still reinforce some of the more utilitarian qualities of the current landscape exposed to this vantage point, such effects would be limited and incremental, subtly reinforcing a rural aesthetic that has a very strong production orientation already.

Although the additional screening derived from the proposed mitigation planting would initially be quite limited, it would over time help to gradually soften and break up the profile of the main power house building (in particular) and start to screen it from view – beyond approximately 10 years. The planting closer to Carrolls Road would be particularly important in this regard, helping to gradually reduce the vertical scale of the main power house building and the stack.

Landscape Effects Rating: **Low-Moderate** (short term); **Low** (long term)

Rural / Residential / Community Amenity Effects:

For the reasons already outlined, effects in relation to the rural character of views from this vantage point (and nearby) would be quite limited. Furthermore, those living within the local area are already pre-conditioned, to some degree at least, to the sporadic incursion of industrial elements near SH1 – including the existing Oceania Dairy Factory to the immediate north and, south of the Waitaki River, Alliance's Pukeuri Abattoir, both of which directly abut SH1. Indeed, the proposed EfW Plant would not have the same sense of immediacy as either of those industrial premises. As a result, the proposed EfW Plant would have a limited impact on the perceived 'pleasantness' and 'aesthetic coherence' of the landscape exposed to Viewpoint 25 (with reference to the meaning of 'Amenity Values' in the Resource Management Act).

The only local residents more directly exposed to the Project Kea development would be those living at 4470 Waimate Highway (photo overleaf). However, views from their driveway and front door would be partly buffered by planting near that dwelling, while the orientation of the house – with both its living areas and outdoor terrace facing towards the Waitaki Valley and the foothills enclosing it – would remain away from the highway, and traffic on it, together with the Project Kea development.



Residence at 4700 Waimate Highway viewed from the highway

Consequently, even though more elevated parts of the EfW project would be visible from both the Waimate Highway and the residential property at no.4470, it would have a limited impact on the overall character, identity and sense of place associated with views from this vantage point, and nearby.

Amenity Effects Rating: **Low**

Viewpoint 26. Waimate Highway /SH1 (west of site)



Existing Landscape Character & Values:

See Viewpoint 25: although there are fewer shelterbelts near this vantage point, with the exception of the pine shelterbelt to the left of views towards the Project Kea site, the content and nature of views from this vantage point remains very similar to that described in relation to that viewpoint.

Additionally, this viewpoint is closer to the Oceania Dairy Factory, so that those travelling south have just past it, whereas those travelling north are clearly aware of it, emerging through the branches and foliage of the pine shelterbelt just described. As a result, the landscape around this part of the state highway retains the sense of being part of a wider, rural production landscape – as previously described – but awareness of the Oceania Dairy Factory next to the Waimate Highway also infuses it with an industrial dimension that is much more marked than near Viewpoint 25.

Values Rating: **Low-Moderate**

Prominence / Visual Change:

Compared with both the adjoining pine shelterbelt and the Oceania Dairy Factory nearby, the proposed main power house building and the stack would appear much smaller. Although clearly visible and penetrating the eastern skyline, both would appear relatively distant. As a result, the proposed EfW Plant complex would have much less visual presence than either the aforementioned shelterbelt or Oceania Dairy Factory. The proposed colour scheme and materiality of the EfW Plant would further assist in this regard, so that, although clearly apparent, both the main power house building and the stack would appear grounded and like a collection of smaller buildings, rather than two main buildings / structures.

In addition, planting either side of the main power house building, and beyond it, would help to visually ‘downscale’ the complex in the longer term.

Prominence / Visual Change Rating: **Moderate**

Landscape Effects:

Project Kea would have more of a stand-alone quality in views from this direction, sitting amid the open expanse of farmland east of the Waimate Highway / SH1 with limited vegetation cover around it. On the other hand, its visual subdivision into a ‘collection of buildings’, combined with the 1.7km viewing distance to the main power house building, would prevent it from appearing overly prominent to dominant. It would remain within the background of views from the highway and its patina of materials and colours would, to some extent, reflect the geometric grid of the rural landscape that frames it. Importantly, these same factors would help to diminish the apparent height and overall scale of the development, so that it wouldn’t appear disproportionate relative to the scale of the paddocks and shelterbelts around it.

In addition, with motorists either becoming more aware of the Oceania Dairy factory as they head northwards or having travelled past that plant to reach this viewpoint, they are, to a degree at least, pre-conditioned to the presence of productive activities and ‘working’ elements in the rural landscape either side of the highway.

On the other hand, awareness of a second major industrial installation would add subtly to the perception of industrial ‘incursion’ into the landscape east of the Waimate Highway / SH1. Although it would be difficult for passing motorists to view both developments at the same time, there would be sequential exposure to both as motorists travel up or down the highway – creating the impression of modification to that landscape in a cumulative manner. Even so, there would remain significant disparities between both developments: the Oceania Dairy Factory would be much larger and subject to more immediate exposure from the highway, whereas Project Kea would lie beyond the critical middle distance of views from it, seeming more remote and limited in terms of its visual presence and scale.

On balance, it is considered that the proposal would compound the ‘industrialisation’ of the north Waitaki River landscape to some degree. Yet, cognisant of that environment’s current nature and values, it is further considered that it would have a limited impact on the perceived naturalness, expressiveness, legibility and aesthetic appeal of its landscape setting, overall.

Landscape Effects Rating: **Moderate**

Rural / Residential / Community Amenity Effects:

For the reasons already outlined, effects in relation to the rural character of views from this vantage point (and nearby) would be limited. The landscape both sides of the Waimate Highway has a markedly productive character, while – much as for Viewpoint 25 – those using it on a regular basis would be well aware of the other industrial premises found near it, including the Oceania Dairy Factory and the Alliance freezing works described above. Again, the Project Kea development would not have the same sense of immediacy as either of those industrial premises, and its impact on the local environment’s ‘pleasantness’ and ‘aesthetic coherence’ would, accordingly, be more subtle than those two existing developments. While it would subtly reinforce the cumulative loss of such values within the rural landscape of the Waitaki Plain, this would not reach the point of appreciably altering the area’s sense of place and identity.

The only local nearby residents more directly exposed to the Project Kea development are those living at 4634/4636 Waimate Highway and 13 Pikes Point Road (see below & overleaf). However, both



Residence at 4634/4636 Waimate Highway viewed from the highway



Residence at 13 Pikes Point Road viewed from Pikes Point Road

dwellings are substantially screened from both the nearby highway and views across it by planting on the eastern side of their properties. As a result, it might be possible to glimpse the Project Kea development from them, but it would not impact on their main indoor or outdoor living spaces. Indeed, the property at 13 Pikes Point Road is both closer to and far more exposed to the Oceania Dairy factory than it would be to the Project Kea development. Any impacts on the residential amenity of the occupants of both properties would be of a very low order.

Amenity Effects Rating: **Low-Moderate**

Viewpoint 27. Waimate Highway /SH1 (north-west of site)



Existing Landscape Character & Values:

Views from this part of the Waimate Highway / SH1 traverse the Waitaki River's terraces close to the foothills that terminate at Pikes Point. As with other views across the northern Waitaki terraces, those from this vantage point are dominated by the paddocks carpeting an unremittingly flat landform, broken only by a mixture of hawthorn, macrocarpa and pine shelterbelts, albeit in a more sporadic fashion than for Viewpoints 25 and 26. These are often trimmed lower than further south, so that the landscape appears even more open and, for the most part, featureless.

However, when travelling south down the Waimate Highway / SH1 from its Old Ferry Road junction, the rectilinear form of the main Oceania Dairy buildings and its stack soon emerge – 'front and just off centre' – of views from the highway. The blocky profile of its main plant, lower lying warehouses and stack become clearly visible, imprinting its industrial profile and character on the local landscape. Indeed, to a certain extent, it is now a signature feature of the landscape between Glenavy and Waimate, a way-marker across a plain that is otherwise largely featureless, irrespective of the direction of travel.

As a result, views from the highway are strongly imbued with the sort of productive, utilitarian, characteristics already described in relation to Viewpoint 26, within a wider rural setting that also exemplifies a working landscape. However, the presence of the dairy factory next to SH1 amplifies the industrial content of the landscape, further reducing its naturalness, expressiveness (in a positive sense), aesthetic appeal and coherence.

Values Rating: **Low**

Prominence / Visual Change:

Project Kea's main power house building and stack would be almost entirely screened by the combination of the Oceania Dairy Factory and the pine shelterbelt directly beyond it. For the most part, the Project Kea development that is visible would either merge with the Oceania Dairy Factory components or be filtered by the branches and foliage of that shelterbelt. As a result, it would be barely visible, rising just above the Oceania Dairy Factory warehouses to the left of its main factory building. For all intents and purposes, it would appear part of that existing complex.

Prominence / Visual Change Rating: **Very Low**

Landscape Effects:

Project Kea would not change the landscape character or value of views from this vantage point.

Landscape Effects Rating: **Very Low**

Rural / Residential / Community Amenity Effects:

Project Kea would not change the perceived pleasantness, aesthetic character or identity and sense of place associated with views from this vantage point.

Amenity Effects Rating: **Very Low**

Viewpoint 28. Waimate Highway /SH1 (north of site)



Existing Landscape Character & Values:

At the junction with Old Ferry Road near Pakihau, the Waimate Highway / SH1 turns from south-west to south and descends onto the northern Waitaki plain from the edge of the foothills that the highway follows through to Waimate. As the highway turns and reorients itself, a brief overview is offered of the pastoral landscape spread across the plain, framed by a mixture of yet more pasture, shelterbelts and production pine forest climbing up the slopes west of Old Ferry Road.

The boxy profile of the Oceania Dairy Factory is just visible above a series of intervening shelterbelts and amenity planting clustered near the highway, while the terrace landscape opens out either side of them in a very expansive fashion. For the most part, however, the landscape experienced as one moves across the old river terracing is very similar to that described for Viewpoint 25: predominantly flat, open, rural, production oriented and largely featureless – apart from the rising foothills, forestry and pasture framing the right-hand (western) side of views down the highway.

Values Rating: **Low-Moderate**

Prominence / Visual Change:

Views from this vantage point would reveal the top of the Project Kea's main power house building and stack just to the left of the Oceania Dairy Factory. However, most of the proposed EfW Plant would be hidden by the shelterbelts and planting on the near side of the Oceania Dairy Factory, with the main power house building rising above a stand of more distant willows, but well below the level of the evergreen shelterbelts and trees closer to the Oceania Dairy Factory and the Waimate Highway. Even the taller stack would be largely 'lost' beyond the willows, poplars, macrocarpas and other vegetation anchored by farm housing on the eastern side of the Waimate Highway

Prominence / Visual Change Rating: **Very Low**

Landscape Effects:

Project Kea would not appreciably change the landscape character or values of views from this vantage point to any appreciable degree.

Landscape Effects Rating: **Very Low**

Rural / Residential / Community Amenity Effects:

Project Kea would not appreciably change the perceived pleasantness, aesthetic character or identity and sense of place associated with views from this vantage point to any appreciable degree.

Amenity Effects Rating: **Very Low**

Viewpoint 29. Mairos Road (north-east of site)



Existing Landscape Character & Values:

This viewpoint captures the outlook towards the Project Kea site from near two farmhouses at 190 and 197 Mairos Road. Much like most of the views from other viewpoints, those from Mairos Road are dominated by three characteristics:

- The flat, open terrace of part the Waitaki River's outwash plain;
- A broad swathe of open pasture across that landform; and
- A mixture of amenity planting and shelterbelts that both traverse and enclose the outer margins of the paddocks both sides of Mairos Road.

The amenity planting is most marked around the two-storey dwelling at 197 Mairos Road, which also features deciduous planting lining its driveway, hedgerows around its west-facing outdoor living area and a large stand of both evergreen and deciduous trees that wraps around the northern to eastern sides of the property. As a result, just the upper storey of this dwelling retains views out over Mairos Road in the general direction of the Project Kea site. A second, larger house is located immediately north of that just described, flanked by a mature, garden that contains both a quite contained, strongly articulated, 'courtyard' to the north (albeit in lawn) and other open spaces that open out, in a well-defined / contained manner, to the west. The tree planting around these spaces, together with the aforementioned hedgerows focus views from this main residence towards the northern side of the Waitaki River valley and its enclosing foothills, but away from the Project Kea site. The planting near the cottage at 190 Mairos Street is more limited, with some mature eucalypts, poplars, other deciduous trees, together with a large hedge, framing it. Even so, that planting creates a defined area of open space on the north-western side of the cottage, again facing away from the Project Kea site.

Beyond the more immediate bounds of both residential areas, the landscape retains the open farmland qualities already described from other viewpoints. This creates a very strong sense of dichotomy, particularly between the quite introverted, high amenity, environment found wrapping around both dwellings at 197 Mairos Road (in particular) and the expansive, planar, working environment that otherwise lines both sides of Mairos Road and extends up the broad plain of the Waitaki Valley. The only other features of note in such views are the distant outline of the Main Divide and foothills either side that 'peek' above the shelterbelts at the far edge of the paddocks near the road corridor. Although visible, these remain entirely secondary to the expanse of flat farmland in the foreground and middle distance of views from this vantage point.

Values Rating: **Low-Moderate**

Prominence / Visual Change:

Project Kea's main power house building and stack would visibly change this situation, with both projecting through the skyline currently afforded by a line of shelterbelt planting and more distant foothills. As for Viewpoint 2, the new buildings would stand somewhat apart from their surrounds: they would be clearly visible, and their industrial profile would be quite marked. However, the lower reaches of both the main power house

building and stack would also be ‘cropped’ by the shelterbelt at the far edge of the field in the foreground and the 8-9m drop in level from the terrace around Mairo Road to the Project Kea site. This would help to ‘ground’ the main power house building and stack, visually – sitting in the landscape, rather than on top of it. Moreover, with nearly 1.3km separating this viewpoint and both adjoining residential properties from the Project Kea’s main buildings and structures, and the patterns of proposed materials and colours breaking up its profile, the proposed complex would be quite obvious, but not so close that it might be regarded as over prominent or dominant.

In the longer term, the proposed planting near Morven Glenavy Road and the Whitneys Creek along the subject site’s northern boundary would help to visually ‘downscale’ the complex, but because of the change in level just described this could well take 15-20 years before it has a marked effect.

Prominence / Visual Change Rating: **Moderate**

Landscape Effects:

As with Viewpoint 26, Project Kea would have somewhat of a stand-alone quality when viewed from Mairo Road – sitting amid a broad swathe of open farmland both sides of the road corridor. However, as for that other viewpoint, the proposed development would be visually subdivided into a ‘collection of buildings’, while its lower elevation, combined with the intervention of shelterbelts on the near side of it would ‘push it’ towards the background of views from this direction. To a certain extent, its patina of colours and materials would reflect the geometric grid of the rural landscape surrounding it, and the combination of factors just described would help to limit the apparent height and overall scale of the development. As a result, it wouldn’t appear disproportionate.

In effect, it would appear much like the Oceania Dairy Factory and any number of other such plants that are scattered throughout the South Island’s working rural environments. Although different from the farmland that inevitably surrounds most of them, they remain ‘part and parcel’ of those environments. In this case, there is very little to differentiate the EfW Plant from a Oceania Dairy Factory , and it would ultimately have a quite limited impact on most of the values currently associated with the landscape around Mairo Road, including its biophysical qualities, expressiveness and formative values, legibility and aesthetic appeal. Furthermore, even though the presence of the proposed EfW Plant would inevitably erode some of the local area’s rural character and open space values, it would have very little impact on the locality’s perceived naturalness, which is already quite limited.

As a result, while Project Kea would introduce a new industrial element to the part of the north Waitaki River landscape near Mairo Road, it would not be over prominent or dominant visually, and it would actually have a limited impact on the values currently associated with it.

Landscape Effects Rating: **Low-Moderate** (short term); Low (long term)

Rural / Residential / Community Amenity Effects:

As described above, most of the landscape both sides of Mairo Road comprises a flat expanse of farmland that has a distinctly working, productive character. Although the proposed plant would be clearly different, even visually distinctive, this key consideration would limit its impact on the local environment’s ‘pleasantness’ and ‘aesthetic coherence’ to some degree. While it would subtly reinforce the cumulative

loss of such values within the rural landscape of the Waitaki Plain, this would not reach the point of significantly altering or degrading the area’s sense of place and identity.

Turning to the residential properties associated with this viewpoint, the EfW plant would remain peripheral to the key areas of outlook from both 190 and 197 Mairors Road. It would remain visible from the upper level of the two-storey dwelling at no.197, but not from the main living areas and outdoor spaces associated with all three houses. Consequently, while there would be awareness of Project Kea – if only from everyday use of Mairors Road and activities on both farms – the proposed development would have a quite limited impact on the residential amenity enjoyed by the occupants of both properties.



Residence at 190 Mairors Road



Residence at 197 Mairors Road

Amenity Effects Rating: **Low-Moderate**

5.5 Summary

Table 2 (below) summarises the effects ratings for all 5 viewpoints:

Table 2.

| Viewpoint: | | Existing Values: | Prominence / Visual Change: | Landscape Effects: | Amenity Effects: |
|------------|---|------------------|-----------------------------|--|---------------------|
| 25. | Waimate Highway / SH1 (south of site) | Low-Moderate | Low-Moderate | Low-Moderate (short term) Low (long term) | Low |
| 26. | Waimate Highway / SH1 (west of site) | Low-Moderate | Moderate | Moderate | Low-Moderate |
| 27. | Waimate Highway / SH1 (north-west of site) | Low | Very Low | Very Low | Very Low |
| 28. | Waimate Highway / SH1 (north of site) | Low-Moderate | Very Low | Very Low | Very Low |
| 29. | Mairos Road (north-east of site) | Low-Moderate | Low-Moderate | Low-Moderate (short term) Low (long term) | Low |

The following factors have contributed to the ratings:

1. The absence of any ONLs or other areas of high environmental value close to the Project Kea site;
2. The ‘working’, rural production, nature of the landscape found largely around the site;
3. The low to flat angle of viewing towards the proposed EfW Plant, reinforced by the change in river terrace elevation between the application site and Mairos Road – so that the proposed development sits down ‘in the landscape’ and not ‘on top of it’;
4. The viewing distance from key receiving environments, including the Waimate Highway / SH1, to the subject site;
5. The presence of intervening hedgerows and shelterbelts – between the Waimate Highway / SH1 and the Project Kea site, in particular;
6. The presence of the Oceania Dairy Factory some 1.3km north-west of the application site – which both ‘pre-conditions’ those using local roads to the presence of factories in the north Waitaki River landscape and near SH1, but also contributes to the proposal’s effects in a cumulative manner;
7. The much smaller scale of audiences that would be impacted by the proposed development away from the Waimate Highway / SH1;
8. The limited presence of residential properties in close proximity to the subject site, together with the screen planting already found around many of them and their general orientation away from the site; and

9. The mitigation measures proposed for the Project Kea development (buildings and site), including the palette of building materials and colours to be used on the main power house building and the planting around them.

5.6 Effects on Other Receiving Environments

The strong focus on effects associated with use of SH1 and local residents means that the area north and south of Mairo's Road, but still east of the Waimate Highway / SH1, is not covered in the Viewpoint Analysis. Nor is the large catchment of farms west of the highway, at the edge of the lower Waitaki River valley.

North and South Of Mairo's Road

Most of the landscape near Carrolls, Mairo's and Andrews Roads, extending towards the coast, together with that either side of Morven Glenavy Road running up to Morven, is similar to that already described for Viewpoints 25, 26 and 29: flat, open, and totally dominated by pasture intersected by an increasingly sporadic matrix of shelterbelts to the east and north. The Oceania Dairy Factory is also an increasingly important landmark near central Morven Glenavy Road, connecting with Archibalds Road then Cooneys Road. Moving in any of these directions, as well as towards Glenavy, a loose scattering of farmhouses is apparent, but access is primarily to local farms, with limited use of all but Morven Glenavy Road by the public at large.

Project Kea's effects in relation to these areas would be much as described for Viewpoints 25, 26 and 29 – except that the audiences affected would be smaller. Even so, it is anticipated that views from around the northern intersection of Morven Glenavy Road with Archibalds Road, and northwards from there, would reveal a development that is significantly diminished in scale, that barely climbs above intervening vegetation (or not) and that is effectively 'lost' amid the broad sweep of paddocks and shelterbelts framing views down the road corridor, as is shown in **Attachments 10-12**. In views down most of Morven Glenavy Road, it would also remain a relatively minor component when compared with the more prominent Oceania Dairy Factory.

Again, it is considered that Project Kea would have a limited impact on the values of the landscape spread out around it from south and east to north, and this would combine with its relatively isolated siting (relative to residential properties especially), its location at the foot of a terrace slope, and the mitigation measures already described to limit its impact overall. Also recognising the limited level of public engagement with Project Kea within this area generally, it is considered that the proposals effects would range from **Very Low** north of Mcleays Road and near the eastern ends of Mairo's, Carrolls and Andrews Roads, to **Low** near Archibalds Road, and **Low-Moderate** near Mairo's Road, as well as more proximate parts of Carrolls and Andrews Roads.

West of Waimate Highway / SH1

Looking eastwards from Old Ferry Road and Glenavy Tawai Road, the EfW Plant would only be fleetingly visible at a considerable distance – between intervening shelterbelts, farmstead planting, hedgerows and even pivot irrigators. This planting, and its related screening noticeably, increases when approaching Glenavy, so that majority of views are over 3.3-5.0km or more. As a result, the proposed

plant would be less prominent than the Oceania Dairy Factory, which is also intermittently apparent, but quite small-scale, and it would remain a secondary, background, element in views from virtually all of this sector. This, combined with the productive nature of virtually all of the landscape farming such views / glimpses, strongly indicates that the effects generated by Project Kea on most of the area west of the Waimate Highway would be of a **Low** to **Very Low** order. The only exception to this would comprise farm properties close to SH1, but not the roads and public domain generally west of it.

5.7 Effects on Local Residents

A number of residential properties closer to the Project Kea site have been addressed already in conjunction with the Viewpoint Analysis, including those at 4634/4636 and 4470 Waimate Highway, those at 190 and 197 Mairors Road, and that at 13 Pikes Point Road. Others located out to a radius of just over 2.5km from the application site, include three houses at 109, 140 and 124 Archibalds Road, a farmhouse at 631 Morven Glenavy Road and another at 81 Pikes Point Road (below). Two of the three properties off Archibalds Road – at no.s 124 and 140 – would be largely screened from Project Kea by existing trees and shelterbelts, including structures on the southern side of both houses.



Dwellings at 124 (top) and 140 (bottom) Archibalds Road

The third property at 109 Archibalds Road is oriented away from the subject site, while views from it to the south are already dominated by the profile of the Oceania Dairy factory and activity associated with it (below).



Residence at 109 Archibalds Road

Looking southwards from the farmhouse at 631 Morven Glenavy Road, a shelterbelt of willows would provide a partial buffer between its immediate curtelage and development on the Project Kea site, while other, more distant, shelterbelts and a viewing distance of some 3.6km to the main power house building would reduce the profile of both it and the stack to the point where they are of little real consequence (below). The silos, sheds and other farm equipment stored immediately south-west of the house would continue to be much more significant than the distant profile of Project Kea.



Residence at 631 Morven Glenavy Road

Much the same situation is also found around 81 Pikes Point Road. Although open ground lies directly east of the dwelling on that property – in the direction of the nearby highway and Project Kea site – three lines of shelterbelts are located between it and the proposed main power house building, which is located nearby 2.7km away. In contrast, the Oceania Factory is just over a kilometre away, dominating the outlook down Pikes Point Road, while a range of sheds, farming paraphernalia and shade cloth also enclose the dwelling.

As a result, the Project Kea buildings and stack would remain quite distant elements on the eastern horizon that sink into the landscape across the Waimate Highway / SH1 and have limited visual presence, let alone prominence.



Residence at 81 Pikes Point Road

In fact, this is the case for virtually all of the dwellings located around the Project Kea site. Most are already screened from it by amenity planting and shelterbelts, while the flat lie of the land, viewing distance and the orientation of individual houses would all help to limit the proposed development's impact on local properties. Again, therefore, the effects in relation to residential amenity would be quite limited and of a **Low** to **Very Low** order overall.

6. Statutory Review

Returning, therefore, to Section 4 - Rural Zone of the Waimate District Plan, it is therefore considered that:

- A level of rural amenity would be maintained that is consistent with the range of activities anticipated in rural areas (Objective 6);
- The proposal would not create unacceptably unpleasant living or working conditions for the District's residents or visitors (Objective 6);
- The proposal will not result in a significant deterioration of the quality of the rural environment (Objective 6); and
- The amenity and character of the wider environment in which Project Kea is to be located would be substantially maintained, with adverse effects largely confined to the area immediately around the main power house building and stack (Policy 6I);

Turning to Rule 12.24 of Section 4 – Rural Zone of the Waimate District Plan, and the assessment matters for the establishment of industrial activities in the Rural Zone, it is considered that:

- The proposed buildings and structures are compatible with the character of the local environment, notwithstanding the close-up scale of the proposed main power house building and stack;
- The proposed buildings and structures would not affect residential amenity values, including those related to outlook, sunlight and daylight admission;
- Noting the scale of the main power house building and stack, it is acknowledged that not all adverse visual effects can be mitigated, but the location of the proposed development would ensure that any adverse visual amenity effects are kept to an appropriately low level;
- Any effects on landscape and visual amenity would be limited and in keeping with the general character and values of the site's northern Waitaki River's terrace landscape; and
- Any adverse amenity effects arising from heavy vehicle movements would be minimised by the close proximity of the proposed plant to both the SIMT and SH1, and the absence of any residential properties on western Carrolls Road.

7. Conclusions

Based on this assessment, I consider that:

- The landscape and visual amenity effects arising from the Project Kea proposal would be limited – typically of a Very Low to Low-Moderate order – less than that as surrounding mitigation planting matures; and
- The proposal is consistent with the relevant objective, policy and rules framework of the Waimate District Plan for the Rural Zone.

As a result, it is considered that the Project Kea proposal is appropriate from a landscape and amenity standpoint.

Stephen Brown

BTP, Dip LA, FNZILA



Annexure A



Viewpoint Location Map

Babbage Consultants Ltd
Project Kea



- Viewpoint 25
Waimate Highway/ SH1
(E)403165.614 (N)744294.437
- Viewpoint 26
Waimate Highway/ SH1
(E)402550.189 (N)746169.936
- Viewpoint 27
Waimate Highway/ SH1
(E)402364.561 (N)747576.720
- Viewpoint 28
Waimate Highway/ SH1
(E)401561.769 (N)751578.052
- Viewpoint 29
190 & 197 Mairors Road
(E)405041.294 (N)746313.052



Date Printed : 12-08-2022



Viewpoint 25 - Existing



Viewpoint 25 - Proposed



Easting: 403165.614
 Northing: 744294.437
 Elevation : 29.279m
 Height of Camera : 1.5m
 Orientation of View : NE
 Date of Photography : 15 June 2022
 Time of Photography : 14:39pm

Babbage Consultants Ltd - Project Kea
 Viewpoint 25 - Waimate Highway/ SH1

NOTES: All photos were taken by Virtual View with a Canon 5Dmk2 and a 50mm lens.
 Photo positions were surveyed by Davis Ogilvie (Aoraki) Ltd.
 Dashed white line indicates cropped viewpoint portion.

Version info: 0002
 Date Printed: 12-08-2022





Viewpoint 25 - Existing

IMAGE TO BE VIEWED AT 50cm FROM EYE FOR CORRECT VIEWING SCALE WHEN PRINTED AT A3



Easting: 403165.614
Northing: 744294.437
Elevation : 29.279m
Height of Camera : 1.5m
Orientation of View : NE
Date of Photography : 15 June 2022
Time of Photography : 14:39pm

Babbage Consultants Ltd - Project Kea

Viewpoint 25 - Waimate Highway/ SH1

NOTES: All photos were taken by Virtual View with a Canon 5Dmk2 and a 50mm lens.
Photo positions were surveyed by Davis Ogilvie (Aoraki) Ltd.

Version info: 0002
Date Printed: 12-08-2022





Viewpoint 25 - Proposed

IMAGE TO BE VIEWED AT 50cm FROM EYE FOR CORRECT VIEWING SCALE WHEN PRINTED AT A3



Easting: 403165.614
Northing: 744294.437
Elevation : 29.279m
Height of Camera : 1.5m
Orientation of View : NE
Date of Photography : 15 June 2022
Time of Photography : 14:39pm

Babbage Consultants Ltd - Project Kea

Viewpoint 25 - Waimate Highway/ SH1

NOTES: All photos were taken by Virtual View with a Canon 5Dmk2 and a 50mm lens.
Photo positions were surveyed by Davis Ogilvie (Aoraki) Ltd.

Version info: 0002
Date Printed: 12-08-2022





Viewpoint 26 - Existing



Viewpoint 26 - Proposed



Easting: 402550.189
 Northing: 746169.936
 Elevation : 34.671m
 Height of Camera : 1.5m
 Orientation of View : SE
 Date of Photography : 15 June 2022
 Time of Photography : 13:09pm

Babbage Consultants Ltd - Project Kea

Viewpoint 26 - Waimate Highway/ SH1

NOTES: All photos were taken by Virtual View with a Canon 5Dmk2 and a 50mm lens. Photo positions were surveyed by Davis Ogilvie (Aoraki) Ltd. Dashed white line indicates cropped viewpoint portion.

Version info: 0002
 Date Printed: 12-08-2022





Viewpoint 26 - Existing

IMAGE TO BE VIEWED AT 50cm FROM EYE FOR CORRECT VIEWING SCALE WHEN PRINTED AT A3



Easting: 402550.189
Northing: 746169.936
Elevation : 34.671m
Height of Camera : 1.5m
Orientation of View : SE
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Time of Photography : 13:09pm

Babbage Consultants Ltd - Project Kea

Viewpoint 26 - Waimate Highway/ SH1

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Babbage Consultants Ltd - Project Kea

Viewpoint 26 - Waimate Highway/ SH1

NOTES: All photos were taken by Virtual View with a Canon 5Dmk2 and a 50mm lens.
Photo positions were surveyed by Davis Ogilvie (Aoraki) Ltd.

Version info: 0002
Date Printed: 12-08-2022





Viewpoint 27 - Existing



Viewpoint 27 - Proposed



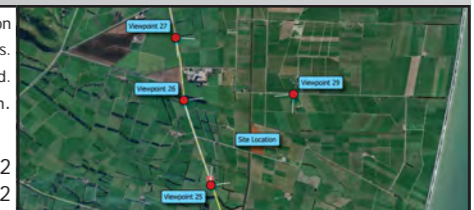
Easting: 402364.561
 Northing: 747576.720
 Elevation : 36.0179m
 Height of Camera : 1.5m
 Orientation of View : SE
 Date of Photography : 15 June 2022
 Time of Photography : 12:10pm

Babbage Consultants Ltd - Project Kea

Viewpoint 27 - Waimate Highway/ SH1

NOTES: All photos were taken by Virtual View with a Canon 5Dmk2 and a 50mm lens.
 Photo positions were surveyed by Davis Ogilvie (Aoraki) Ltd.
 Dashed white line indicates cropped viewpoint portion.

Version info: 0002
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Viewpoint 27 - Existing

IMAGE TO BE VIEWED AT 50cm FROM EYE FOR CORRECT VIEWING SCALE WHEN PRINTED AT A3



Easting: 402364.561
Northing: 747576.720
Elevation : 36.0179m
Height of Camera : 1.5m
Orientation of View : SE
Date of Photography : 15 June 2022
Time of Photography : 12:10pm

Babbage Consultants Ltd - Project Kea

Viewpoint 27 - Waimate Highway/ SH1

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Viewpoint 27 - Waimate Highway/ SH1

NOTES: All photos were taken by Virtual View with a Canon 5Dmk2 and a 50mm lens.
Photo positions were surveyed by Davis Ogilvie (Aoraki) Ltd.

Version info: 0002
Date Printed: 12-08-2022





Viewpoint 28 - Existing



Viewpoint 28 - Proposed



Easting: 401561.769
 Northing: 751578.052
 Elevation : 35.074m
 Height of Camera : 1.5m
 Orientation of View : SE
 Date of Photography : 15 June 2022
 Time of Photography : 11:28am

Babbage Consultants Ltd - Project Kea

Viewpoint 28 - Waimate Highway/ SH1

NOTES: All photos were taken by Virtual View with a Canon
 5Dmk2 and a 50mm lens.
 Photo positions were surveyed by Davis Ogilvie (Aoraki) Ltd.
 Dashed white line indicates cropped viewpoint portion.

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Babbage Consultants Ltd - Project Kea

Viewpoint 28 - Waimate Highway/ SH1

NOTES: All photos were taken by Virtual View with a Canon 5Dmk2 and a 50mm lens.
Photo positions were surveyed by Davis Ogilvie (Aoraki) Ltd.

Version info: 0002
Date Printed: 12-08-2022





Viewpoint 29 - Existing



Viewpoint 29 - Proposed



Easting: 405041.294
 Northing: 746313.052
 Elevation : 28.233m
 Height of Camera : 1.5m
 Orientation of View : SW
 Date of Photography : 15 June 2022
 Time of Photography : 13:50pm

Babbage Consultants Ltd - Project Kea

Viewpoint 29 - 190 & 197 Mairos Road

NOTES: All photos were taken by Virtual View with a Canon 5Dmk2 and a 50mm lens. Photo positions were surveyed by Davis Ogilvie (Aoraki) Ltd. Dashed white line indicates cropped viewpoint portion.

Version info: 0002
 Date Printed: 12-08-2022





Viewpoint 29 - Existing

IMAGE TO BE VIEWED AT 50cm FROM EYE FOR CORRECT VIEWING SCALE WHEN PRINTED AT A3



Easting: 405041.294
Northing: 746313.052
Elevation : 28.233m
Height of Camera : 1.5m
Orientation of View : SW
Date of Photography : 15 June 2022
Time of Photography : 13:50pm

Babbage Consultants Ltd - Project Kea

Viewpoint 29 - 190 & 197 Mairos Road

NOTES: All photos were taken by Virtual View with a Canon 5Dmk2 and a 50mm lens.
Photo positions were surveyed by Davis Ogilvie (Aoraki) Ltd.

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Viewpoint 29 - Proposed

IMAGE TO BE VIEWED AT 50cm FROM EYE FOR CORRECT VIEWING SCALE WHEN PRINTED AT A3



Easting: 405041.294
Northing: 746313.052
Elevation : 28.233m
Height of Camera : 1.5m
Orientation of View : SW
Date of Photography : 15 June 2022
Time of Photography : 13:50pm

Babbage Consultants Ltd - Project Kea

Viewpoint 29 - 190 & 197 Mairos Road

NOTES: All photos were taken by Virtual View with a Canon 5Dmk2 and a 50mm lens.
Photo positions were surveyed by Davis Ogilvie (Aoraki) Ltd.

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Virtual View
Photo Simulation Methodology



VIRTUALVIEW
3D VISUALISATION SPECIALISTS

INTRODUCTION

Qualifications and experience

1. My name is Jason Michael Blair.
2. I am a 3D Visualisation Specialist for the firm Virtual View Ltd (Virtual View). The company specialises in computer simulation.
3. I have been involved in the field of 3D visualisation for a total of 17 years. I hold a Diploma in Architectural Draughting from Otago Polytechnic 2001. I have worked for Virtual View since the beginning of 2007.
4. Virtual View's role includes working with planners, engineers, surveyors, architects, landscape architects and interior designers. The company uses photo simulations through to full computer-generated 3D video simulations to illustrate the concept of any proposed development - all of which are to virtual scale and location as would be viewed in the real world.

Involvement in project

5. Virtual View was engaged by Babbage Consultants Ltd to produce photo simulations of the proposed energy from waste facility. I have worked on and overseen the production of these photo simulations. I have been assisted by other Virtual View staff, all of whom have extensive training and experience in 3D modelling and the production of photo simulations.

METHODOLOGY FOR THE PREPARATION OF A PHOTO SIMULATION

6. The main objective of a photo simulation is to provide an image that, as realistically as possible, conveys the modification or change of a proposed activity. The most appropriate technical methodology has been applied to ensure the accuracy of what is depicted, in terms of its relative position, elevation, scale, and appearance. Photo simulations can never replace the real experience of being at a location, but they are a useful tool to assist in the decision-making process.
7. To achieve a photo simulation, a 3D model is rendered into a series of 2-dimensional photographs.
8. Viewpoint locations were chosen by Stephen Brown and taken by Virtual View. A full frame Canon 5D mk2 with a 50mm lens was used to take the photo panoramas from the designated positions.
9. The photo simulation positions, and corresponding reference points were survey marked by Davis Ogilvie (Aoraki) LTD.
10. The photos were then colour matched to ensure consistency throughout the image and manually stitched together to form a photo panoramic.
11. To achieve a photo simulation Virtual View Ltd firstly created a digital terrain model of the existing landform. A 3D model of the building was supplied by Babbage Consultants Ltd. The building was positioned in the correct location and material /textures were applied. Landscaping was then added to the model to supplied heights and locations.

12. A series of 3D computer cameras within the simulation software were then created. They were positioned accurately to the corresponding survey marked photo position from which the photos were taken. The camera used depicts a real-world camera, including matching the focal length of the 50mm lens.
13. To duplicate the view through the real-world camera, it was necessary to match the landform data and reference points to the respective physical objects in the photo – thus ensuring an accurate horizontal and vertical alignment.
14. A sunlight system was then created which uses light in a system that follows the geographically correct angle and movement of the sun over the earth at a given location. Location, date, time, and compass orientation can be chosen. The simulations Virtual View Ltd prepared, depict the proposed development at the same, time and date as specified, and are simulated to resemble the natural lighting.
15. Within the 3D software, the new image was then rendered containing the accurately positioned 3D model over top of the original photograph.
16. Existing foreground vegetation was overlaid using photo-editing software and was then checked against aerial photography from the site to ensure correct placement.
17. For the resulting photo simulations, the viewing scale is 50cm from the eye when printed at full scale A3. This scale produces an image that is 240mm high and was chosen as it is a comfortable distance to hold at approximately an arm's length, to appreciate what the view would be at scale in real life. (Refer to Figure 1 below for viewing scale).
18. Viewing on screen should be done tentatively as there are numerous variables such as screen size, zoom level and the application being used, that can affect the scale of what would be seen by the naked eye.

19. All photo simulations comply with the New Zealand Institute of Landscape Architects document: Visual Simulations Best Practice Guide 10.2.

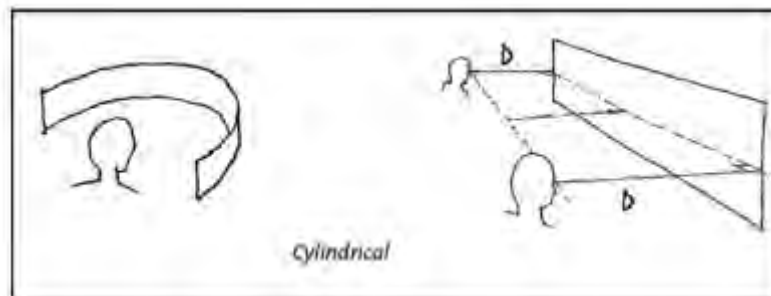


Figure 1: Viewing scale for Photo Simulations