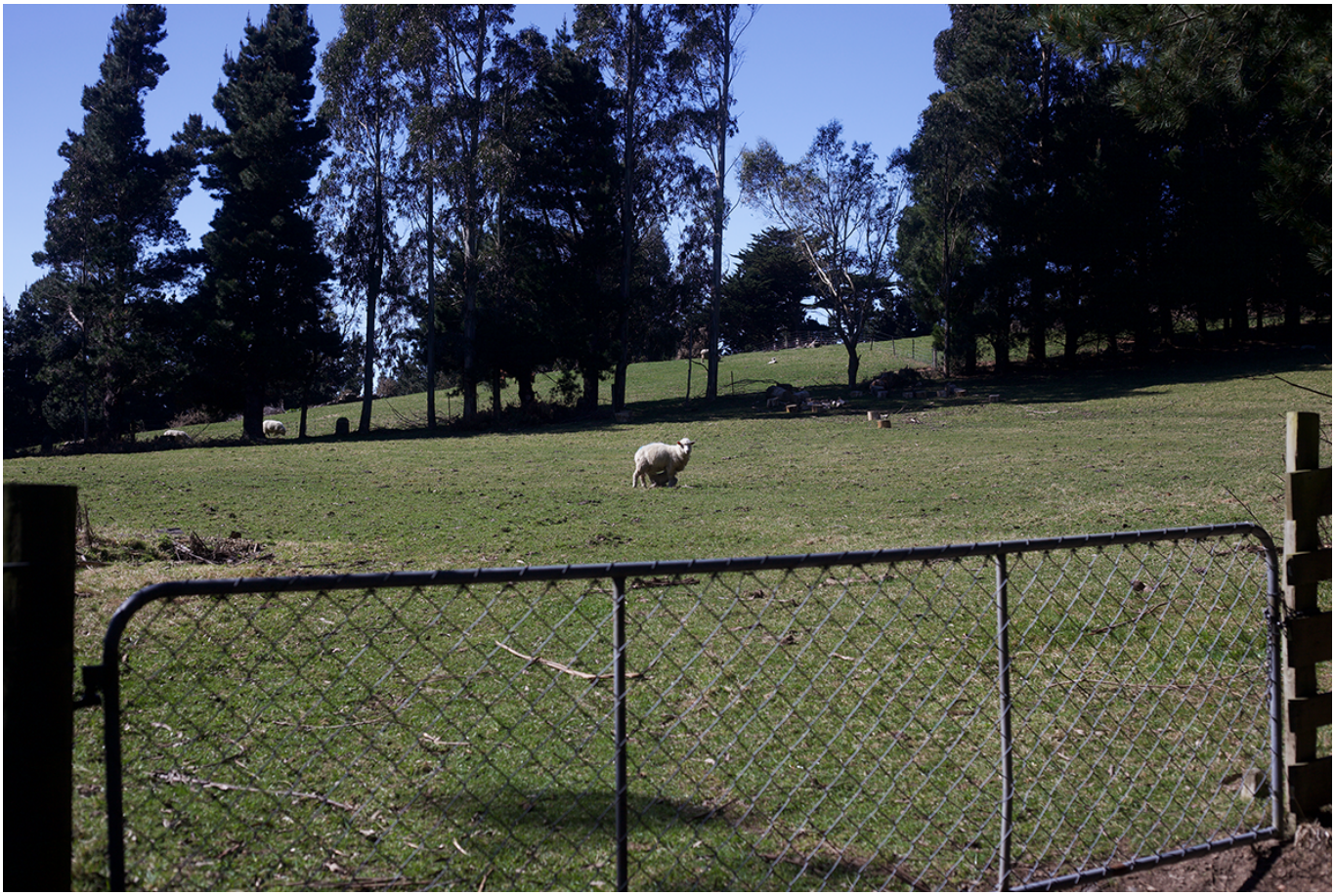

Landscape and Visual Assessment

256 BLUESKIN ROAD, CAREYS BAY

OCTOBER 2018

site.
ENVIRONMENTAL CONSULTANTS

Figure list

1. Introduction

1.1 This report describes a proposed 6 lot subdivision at 256 Blueskin Road, Careys Bay and provides a landcape and visual assessment in support of this application. It includes the following sections:

- Executive summary;
- Proposal;
- Site description;
- Site visibility;
- Landscape context;
- Landscape and visual assessment;
- Policy assessment; and
- Conclusion
- Appendices 1 - 2 (Attachment 1)

1.2 Reference is made to the Operative Dunedin City District Plan ('Operative District Plan') and the Proposed Second Generation Dunedin City District Plan ('Proposed Plan') throughout this assessment. The application is lodged under the operative plan and the final assessment is made on this basis.

1.3 Plans and photographs are included that provide details of the proposal, its context, and views within the site and from surrounding public areas Images that are identified as 'full frame' in the title line are approximate to the same site view if printed at A3 size and viewed at arms length (Attachment 2).

2. Executive summary

2.1 The applicant seeks resource consent to subdivide 256 Blueskin Road, Careys Bay into 6 lots, including the existing residence. The site is 14.36ha in area and contains 3 titles. It falls within the Rural Zone under the operative plan and the rural residential 2 zone under the proposed plan. In addition to establishing 5 additional house sites the application proposes to replace all the present forestry planting with native vegetation and to slightly increase the present pasture area.

2.2 Landscape overlays place a higher landscape value on the site in both operative and proposed plans. This value is equivalent to an 'amenity landscape' within the definition section 7(c) of the Resource Management Act (1991) ('RMA'). The proposal is non-complying under both plans in respect of minimum lot size and due to the 'Flagstaff/Mt.Cargill' landscape overlay in the proposed plan.

2.3 The potential long term adverse landscape effects of the proposal are asssessed as being a 'low' on the scale 'low, medium-low, medium, medium-high, high'. The long term potential adverse visual effects are assessed as 'low' on the same scale. This assessment was reached on the basis of a systematic review of close and distant view points that were established by site visit and reflects the positive change from pine trees to native coastal vegetation, and the low potential visual impact of the proposed sites.

2.4 The residential development is assessed as being in similar character and spatial arrangement to the rural residential housing that is located to the north/west of the site, on the same ridgeline, and the bush

residential housing to the east and below the site. None of these existing dwellings are assessed as being adversely affected by the proposal and several will experience a signifiant increase in their visual amenity.

2.5 The proposal is expected to increase the legibility of the dominant ridge that marks the north/west catchment of Deborah Bay and its relationship with Mihiwaka by removing the adverse landscape and visual effects of the present pine trees. The extent of native planting proposed is assessed as significant and will increase ecological values and the landbridge connection to surrounding coastal forest and support the Halo project that is operating in Deborah Bay.

2.6 These outcomes are considered to be consistant with the landscape policy directions of both plans and to exceed the potential adverse effects on the minimum lot size rules that apply. For these reasons the application is not considered contrary to the landscape objectives of either the Operative Dunedin City District Plan or proposed Second Generation Dunedin City District Plan and consent is recommended.

3. Proposal

3.1 It is proposed to subdivide the present site into 6 lots with access from existing farm tracks. All lots have identified building platforms and landuse conditions that address design, materials, size, and colour. The proposal is underpinned on the removal of the present pine based farm forest planting and its replacement with native vegetation and additional pasture area (Fig. 1).

3.2 A geology report undertaken indicates that volcanic rock underlies the site surface in most areas. Subsidence or slipping is unlikely to result from the proposed works but the banks above the lower north/east access road from Field 5 to lot 5 are steep and some surface material may fall to the edge of the lower access road until new planting has established. Leaving the stumps in place from the previous pine trees is expected to mitigate this risk (Geosolve - 'Geotechnical Assessment, 256 Blueskin Road, 26 September 2018').

3.3 Electrical supply

Overhead power will be supplied to lot 1 and lot 2 from the west side of Blueskin Road. The remainder of the proposed new lots will be sold on an 'off grid' basis and will not require overhead wires.

3.4 Building platforms and design guidelines

The proposed building platforms are located in 3 areas within the site that reflect its present structure of landuse and topography and access. The building platforms have been chosen to provide a physical separation and individual outlooks for all future residents and have also taken off-site views into consideration (Fig.1). Platforms are proposed above Blueskin Road ('south/west slopes'), the mid part of the upper ridge ('ridge farmland'), and the lower northern tip of the site ('lower north/east slopes') (Fig. 4).

3.5 Table 2 provides a summary of the characteristics of each proposed platform and the work anticipated to establish individual residences. Distances between platforms range between approx. 90m (lot 4 and lot 5) and 175m (lot 5 and lot 6). Mitigation for the potential off site effects of the establishment of houses on the platforms is provided in their siting and in the design guidelines that apply (Table 3).

Table 2: Proposed building platforms - location, establishment, and mitigation

Lots	Location	Establishment (Fig. 1)	Mitigation Planting
Lot 1 1.4 ha	▪ South/west slopes ▪ 267m asl ▪ 17.14% grade	▪ Benching, minor retaining ▪ Pine removal ▪ Install access road and overhead power	▪ Native planting - north/west and south/west boundaries ▪ Retention of shelter belt to north/east
Lot 2 2.0 ha	▪ South/west slopes ▪ 266m asl ▪ 17.14% grade	▪ Benching and minor retaining ▪ Pine removal ▪ Install access road and underground power	▪ Native planting - east and south ▪ Retention of shelter belt to north/east ▪ Reinstatement of pasture
Lot 3 3.1 ha	▪ Eastern end of main site ridge ▪ 286m asl / 10% grade	▪ Existing house - no physical establishment work required ▪ Pine removal - north/east boundary of Field 4	▪ Native planting along northern boundary of field 4 ▪ Retention of shelter belts surrounding fields 1 - 3
Lot 4 1.4 ha	▪ Upper north/east slopes ▪ 276m asl / 13.5% grade	▪ Benching and minor retaining ▪ Removal of macrocarpa ▪ Install access road	▪ Native planting - north/east and south/east slopes, along north/west platform boundary and along boundary with lot 5
Lot 5 2.3 ha	▪ Eastern end of main site ridge ▪ 282m asl / 11% grade	▪ Benching and retaining ▪ Pine removal ▪ Install access road	▪ Native planting - on slopes below and along boundary ▪ Retain shelter planting - 5 years
Lot 6 4.4 ha	▪ Lower northern pasture ▪ 196m asl / 14.33% grade	▪ Minor excavation, benching, and retaining	▪ Native planting - south and east of the platform

3.6 Native regeneration planting

The north/east forestry slopes will be replanted with native shrub and tree species. The south/west slopes will include a mixture of native planting and pasture. It is expected to plant approx. 3.5ha of native vegetation in total with approx. 14,000 plants in the north/east slopes and 3050 plants on the south/west slopes, planted at a rate of one plant per 1.5 m^2.

3.7 Plant material for all lots is to be sourced from the site, or native vegetation within Deborah Bay or the wider Otago Harbour area if necessary by a local nursery. Planting and maintenance is to be undertaken by a qualified contractor with a professional or trade record of revegetation planting, as approved by Council at building consent for lot 1, lot 2, and lot 4. A 7 year maintenance programme is required for the planting will be required as a consent condition (Appendix 1).

Table 3: Proposed conditions Key: ● applies / allowed ● does not apply / precluded

Condition	Lot 1	Lot 2	Lot 4	Lot 5	Lot 6
Building Platform: 30 m diametre circle	●	●	●	●	●
Platform: all structures and hardstanding areas	●	●	●	●	●
Boundary offset - 40 m		●	●		●
200 m^2 maximum residential unit FA[3]		●		●	
250 m^2 maximum residential FA	●		●		●
100 m^2 maximum accessory building FA	●	●			
60 m^2 maximum accessory building FA			●	●	●
Maximum building height of 5m from existing or modified ground level		●	●	●	
Maximum building height of 6m from existing or modified ground level	●				●
Front elevation - max. 20 m length	●	●	●	●	●
External materials: Wood & natural stone	●	●	●	●	●
Concrete	●	●	●	●	●
Block	●	●	●	●	●
Plaster	●	●	●	●	●
Brick	●	●	●	●	●
Stainless steel (exposed) and mirror glass	●	●	●	●	●
Concrete paving: Tint to 50% LRV[4]	●	●	●	●	●
External wall colours: 45% max. LRV	●	●			
35% max. LRV			●	●	●
Roof colours 5% below LRV of walls	●	●	●	●	●
Retaining walls: 1.5 m max. above existing or modified ground level. Colour - 40% or less LRV	●	●	●	●	●
Retaining: 2 m max. from house on all sides			●		●
Retaining: 4 m max. from house on all sides	●	●		●	
Water tanks: 40% LRV max – locate behind house	●	●	●	●	●
Installation & maintenance of native planting for minimum of 7 years	●	●	●	●	●
Setting aside and management of existing native vegetation for conservation purposes				●	●

3 FA means Floor Area. Maximum floor area for residential units excludes attached garages

4 LRV refers to light reflectivity values – Resene Colour Chart BS5252

3.8 Planting of lot 5 and 6 will comprise the bulk of the planting and is to be undertaken in the first season after forest harvesting as a condition of subdivision consent. A 7 year maintenance programme is to be undertaken by the subdivision consent holder, beginning with the end of planting, with the same level of track record or professional ability required for lots 1, 2 and 4.

3.9 The native planting list will be based on the forest types that have been identified within the site and will include additional species will be included that are beneficial to native birds (Appendix 2). Planting for all lots is to be undertaken at a rate of 1 plant per 1.5 m^2 with an 85% success survival rate to be met at 5 years. Planting areas and plant numbers are to be submitted to Council at consent and approved prior to planting. The areas are to be equivalent to those indicated on the proposal plan (fig. 1).

3.10 Pasture

It is expected to establish approx. 2ha of new pasture on the south/west slope area included in lot 2. This pasture will offset the potential loss of approx. 3000m^2 of pasture that will be included in the proposed access roads and building platforms elsewhere on the site. This pasture will also increase the total pasture area that is presently on site by approx. 1.85ha.

3.11 Building platforms

Proposed lots 1 and 2 are located within existing clearings, either side of a historic quarry and within an area of forestry. These lots look south/west towards Sawyers Bay and Roseneath, at approx. 2.5 km^+ distance.

3.12 Lot 3 contains the existing residence and is sited at the mid eastern end of the upper ridge top. The boundary separating lot 1 and lot 2, and the native planting area on lot 2, will be fenced for protection. It is expected that lot 2 will be suitable for grazing limited livestock or horses (Fig. 4 and fig. 5).

3.13 Lot 4 is located on the northern tip of the previous homestead site and located above the access road to the lower farm area. This residence will look due north to north/east and towards the Purakaunui Road ridge at a distance of approx. 1.4 km. A short terrace is located on the northern end of the home field terrace that surrounded the farm house and the platform will be located half in the lower terrace and half excavated into the upper field. The design guidelines restrict this house to a 5m maxium height above ground and this approach will further lower its profile.

3.14 Lot 5 is proposed for the south/east corner of the homestead terrace in within an area that presently contains pine trees and opens to a block of eucalyptus that are visible from off-site view. The platform will be located on a gentle grade of approx. 11% (Table 2) and will look towards the harbour mouth and Deborah Bay over extensive planting of native forest species. (Fig. 4 and fig. 5).

3.15 Lot 6 is located in the lower northern part of the site. This platform will be located at the head of the present pasture area. Native vegetation is established in the lower slopes to thee north/west of this platform and further planting will be undertaken as the pine trees are removed to the east and south of the pasture (Fig. 1, Fig. 4, and Fig. 5).

3.16 Design Guidelines

Development conditions are proposed for the houses that will be constructed on the proposed building platforms. Controls apply to extent of floor area, building height, front elevation, external and roof cladding materials, and the reflectivity of external surfaces, including retaining walls and concrete surfaces where these apply. The location of external fixtures such as water tanks and sheds and the visibility and extent of free standing walls are also considered (Table 3).

3.17 The main principles are that off site visibility and impact will be low at construction ro soon receded when external cladding material, glazing, and metal fixtures, external walls, and paving materials have low light reflectivity values (LVR) and the scale of the structure is low in comparision to its surrounding land form and is located in a wider context of vegetation.

3.18 Summary

The proposal provides for 5 additional house sites in the context of a change of land use from forestry to native coastal forest. An overall increase in pasture area is expected. The existing structure of the farm layout will be retained which allows for physical and visual separation between the building platforms and access from existing farm tracks. Earth works will be limited and will not be required to establish the majority of the proposed sites. Design guidelines are proposed to limit the potential for adverse off site landscape and visual effects and to clarify the planting obligations that each lot is required to meet.

4. Site description

4.1 256 Blueskin Road is 14.306 ha in area and comprises one legal title. The site is located on the western side of the Otago Harbour channel on the apex of a broad ridge and lies approx. 1.4km north/west and inland from Port Chalmers (Fig. 2). It has a rectangular form that runs south/west to north/east and spreads either side of the large ridge which underlies the site and then descends to form the slopes behind Port Chalmers shoreline. A small promontory occurs just east of the upper site boundary and is a feature for many off-site views at approx. 292m asl (Fig. 3).

4.2 The majority of the site area is located on broad upper ridgetop slopes and within steep north/east facing slopes that lie within the Deborah Bay valley catchment. The usable site areas are within the broad upper ridge slopes and on the south/west area that bounds Blueskin Road (Fig. 3). The land on the south/west side of the ridge has an underlying grade of approx. 17.4%. while the north/east slopes fall at a grade that reaches 65% in places (Fig. 4).

4.3 The south/west slopes contain the main accessway to the site, on its western boundary. A previous quarry is located along the Blueskin Road boundary and which provided stone for orignal construction in the township of Port Chalmers (Fig. 6). Two fields are located in the upper part of the slopes and bound the access road to the present residence - Fields 1 and 2. Pine trees and group of eucalyptus trees cover the mid to lower slopes apart from two small clearings that are the proposed location of the building platforms for lot 1 and lot 2 (Fig. 6).

4.4 The main ridge area contains a further 3 field areas and the existing residence. The pasture area contained within all five fields includes approx. 2.65 ha of pasture, and is bounded by shelter planting. The underlying grade on the upper ridge falls generally north/west and catches midday and afternoon sun as

well as strong north/east and south/west winds. Field 5 is the largest area and contains the site of the previous farm house for the area. The house site is marked by a group of mature macrocarpa that would have provided shelter and a stone wall remains along the boundary of this home field area.

4.5 The applicants live in a one and a half level dwelling at the south/east end of the upper ridge and farm a small number of beef cattle and sheep that are mainly grazed on the upper pasture areas. A farm shed of approx. 54m^2 is located 40 m north from the house and services the home field in this area, Field 4, and other small sheds provde for storage of equipment and fire wood.

4.6 The north/west corner of Field 5 falls more steeply towards the western field boundary and provides the route of the farm track that accesses the lower north/east site areas. This track is benched as it descends from west to east and provides access to the lower field area to the north of the site. This track falls at approx. 14% grade and varies between 3.5 – 4m in width.

4.7 The upper north/east slopes contain a continuous block of pine trees while native vegetation has reestablished across the lower areas. The pine tree are mature and due for harvest. The lower northern site area falls within the triangular part of the boundary. This has a lower grade of approx. 14.3% and contains pasture as well as an eastern boundary of pine trees that presently blocks views to the harbour beyond. Wide views are available to the top of the northern side of upper Deborah Bay Valley, which is marked by the route of Purakaunui Road.

4.8 Landcover

Forestry accounts for approximately 55% of the site area, excluding domestic wood lots, shelter belts, and eucalyptus blocks. The trees were planted in the early 1990's and are estimated to include approx. 5.5ha of millable timber, although their physical spread is greater. The trees have not been maintained and are closely planted on the northern slopes (Fig.6).

4.9 Three areas of native vegetation are located on the lower north/east slopes (Fig.3). These contain areas of 'mahoe broadleaf forest', 'kanuka- broadleaved forest' and 'mahoe, and fuchsia and kanuka forest' and meet similar vegetation on the lower north and north/east boundaries. The adjoining vegetation is part of approx. 170ha of native forest that remains in Deborah Bay and is original forest cover (Appendix 2, 'Ecological Assessment of Indigenous Vegetation and Habitats at 256 Blueskin Road, Dunedin', 'Report No.4778, September 2018, Wildlands Consultants). Wildands Consultants, Section 3.1 - 6.2).

4.10 Existing native site vegetation provide habitat for exotic and native birds. Bellbird, grey warbler, fantail, and NZ pigeon were observed during the ecologists site visit and silver eye, brown creeper, South Island tomtit, and rifleman are also expected to use these areas, as the vegetation forms a physical extension of the wider native valley forest area. This area will be set aside and managed for conservation values and ptotected by a condition of land use consent.

4.11 Surrounding landuse

The site is bounded by rural residential housing to the north/west, gorse and emerging/remnant native vegetation and scattered forest blocks on its lower north/east boundary, and pastoral farming and forestry on the spur that descends to the east.

4.12 Numbers 258 and 278 Blueskin Road share the western site boundary and are offset by approx. 70m and 90m respectively. 258 Blueskin Road is orientated towards the site but is the only dwelling to do so, with the remainder facing north/east and over the valley (Fig. 4).

4.13 The south/west boundary is marked by the route of Blueskin Road. Careys Bay lies to the east and down slope from the promontory that is visible in most off-site views. The upper slopes of Careys Bay meet Blueskin Bay Road and contain scattered housing off which some accesses Reynolds Town Road. Views from Blueskin Bay Road overlook the housing scattered across bush that characterises these upper slopes.

4.14 Landscape values

Present site values are considered at a higher policy level in the operative and proposed district plans. These seek to maintain the landscape qualities of the western harbour coastal slopes and the relatively undeveloped horizon line above. The site contributes to those values through its location on a strategic part of a ridgeline that is an extension of the volcanic form of Mihiwaka and prominent within parts of the upper Otago Harbour.

4.15 The present value of the site and ridgeline is partly compromised by the location of extensive pine planting within its boundaries. The majority this is located on slopes which are close to the shoreline and face towards Deborah Bay. The tall and regular form of the pines and their dark colour highlights their visiblity within the shoreline of Deborah Bay and from off-shore viewpoints. As well as being quite visible the trees appear out of scale against the pasture and native forest areas that surround them.

4.16 The topography of the broad upper ridge areas and steep coastal slopes provide clear seperation between different site areas. This separation is accentuated by the vegetation cover of field shelter belts, pine and eucalyptus blocks and areas of native coastal forest that are intruding into the site below the north/east slopes and which all surround and contain the access ways and fields that make up the active farm areas.

4.17 Many of the elements of rural character identified by the operative plan are present in the site including the historic artifacts of the stone wall, old farm house site, and quarry as well as the pattern of field planting and presence of animals. The proposal reflects this pattern and maintains the same structure of extensive planting, including the present field boundary trees, and would continue the present lifestyle farming of beef and sheep as well as providing for 5 house sites.

5. Site Visibility

5.1 Site visits were undertaken to parts of the eastern side of Otago Harbour and to the areas south and north of Deborah Bay on the western coastline to determine the visibility of the site area and its boundaries (Fig.8). These views were then aggregated to provide a viewshed plan, or zone of theortical visiblity ('ZTV') that indicates the area within which most visual sensitivity is likely to occur in respect of proposed change.

5.2 The viewshed plan indicates that the off site views with a wider strategic view are limited to points on the eastern side of the harbour or within the harbour itself. These views are mostly to the north/east of Deborah Bay and reflect the screening effect that the lower coastal slopes have behind Port Chalmers and the similar effect that Quarantine Island and Portobello Peninsula have on the east coast of the harbour.

5.3 Coastal views from the western side of the harbour are available from the southern slopes of Mt. Cargill and Sawyers Bay, limited views from Roseneath, and shoreline views from Deborah Bay. Most of these are at a distance of 2.5 km or more with the exception of views from the immediate waterfront of Deborah Bay and views from the roads that mark the upper areas of the wider area of Deborah Bay catchment.

5.4 Views that were considered to be representative viewpoints that could be viewed on a regular basis were those from Harbour Cone, Harrington Point, Sawyers Bay, Deborah Bay, Reservoir Road, and Purakaunui Road (Vpt's.1, 2, 5, and 7 – 10). These views were then used as the basis for a detailed assessment of potential landscape and visual effects of the proposed development. This is summarised in section 6 of this report and included in full in Appendix 3.

6. Landscape context

6.1 Operative District Plan

The site falls within the landscape conservation area of 'Flagstaff/Mt Cargill' within the operative plan and is also identified as a visually prominent area ('VPA') (Operative plan map 78 and maps 16 and 22). A landscape conservation area ('LCA') is equivalent to a section 7 (c) visual amenity landscape in terms of the Resource Management Act (1991) ('RMA'). It does not reach the standard of 'outstanding' but indicates land of higher value that requires resource management.

6.2 The purpose of the Flagstaff/Mt Cargill LCA is to preserve the visual values of elevated land areas that bound the City (s14.5.3, (a) (i). These include the higher land areas to the west, north and east of urban Dunedin and those rising from the south of Waitati and the site within its lower western boundaries and the slopes above it (Fig.7).

6.3 The values to be conserved are identified as (14.5.3 (a) (ii)):

- The visual dominance of natural landform and indigenous vegetation, over cultural or human-made landscape elements, e.g. buildings or plantations;
- The extent, integrity, coherence and natural character of the natural elements such as landform, streams and areas of indigenous vegetation; and
- The extent and quality of views from the principal public routes and viewpoints.

6.4 Threats to these values include (14.5.3 (a) (iii)):

- Structures: Inappropriate siting, design, scale, density and finish of structures;
- Forestry Blocks: Inappropriate siting, scale and layout of forestry blocks; and
- Roads and Tracks.

6.5 Proposed District Plan

The site falls with the 'Flagstaff/Mt Cargill Significant Natural Landscape Area' ('SNL') and includes all land above the 100m contour within the western slopes of Otago Harbour, and including the site. Section 10 'Natural Environment' identifies the requirement to identify and manage higher value landscape areas

(Objective 10.2.5). The site falls within the 'Significant Natural Landscape' ('SNL') overlay and land use and development are required to maintain present values (Policy 10.2.5.11).

6.6 The values that are to be protected for the Flagstaff/Mt.Cargil area include (Section A3.3.2.2):

- natural science factors - distinctive natural landforms, including Mt.Cargill and Mt. Kettle;
- natural character - areas of indigenous vegetation, including Orokonui;
- cultural and historic values - values significant to manawhenua, including Mihiwaka; and
- aesthetic and amenity values:
  - visual prominence, including the backdrop to the north/west side of Otago Harbour
  - natural landform values - factors of naturalness, memorability, and aesthetic coherence.

6.7 Indigenous Vegetation – Operative plan and proposed plan

The operative plan identifies the need to promote awareness of areas of ecological and biodiversity within the City and also provides for the protection or enhancement of areas within private ownership.

- *Provide for the establishment and operation of activities whose effects contribute positively to the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna in the City. (Policy 16.3.4)*

6.8 Coastal landscape context

Roseneath, Sawyers Bay, Port Chalmers and Careys Bay, and Deborah Bay form the coastline that includes the foothill slopes of the ridgeline that underlies the site and the Bay catchments and valleys that are located either side of the ridge. This coastline extends for approx. 4.3km is differs markedly from the coastal landscape between Port Chalmers and the harbour entry and the upper harbour mouth.

6.9 The hills and ridges to the north and south run out to narrrow coastal terraces. Settlement is located along the coastal terraces and extends up coastal spurs. Sawyers Bay, Careys Bay, and Deborah Bay all contain defined shoreline areas, small and larger valley areas, and contain coastal settlement within their valley areas. The form of these Bays is largely determined by the extent and form of the main Port Chalmers ridge.

6.10 Sawyers Bay

Sawyers Bay has a coastal boundary of approx. 700m and an inner valley that extends approx. 1.4km before the western valley slopes begin to rise. It contains a medium sized suburban residential area and light industrial sheds. The coastal highway and railway line cross the shoreline and two additional roads enter the valley from the south and the north. Its overall character is developed.

6.11 The wider valley area provides residents with views to the surrounding valley slopes, which are primarily rural to the west, , north, and north/east. Those houses on the south/west side of the valley and its foot hills have direct views to the site ridge and the horizon line that rises in a sihouette to Mihiwaka and broad slopes that extend west and east below Blueskin Road.

6.12 Port Chalmers and Careys Bay

The coastline between Sawyers Bay and Deborah Bay includes the coastal slopes behind Port Chalmers Township and the shoreline and inland slopes of Careys Bay. This is a developed urban landscape and includes working Port Chalmers and the more intimate but still busy fishing and boating and residential environment of Careys Bay. This section of coastline is screened from the site area and Deborah Bay by surrounding slopes and ridgelines.

6.13 Deborah Bay

Deborah Bay has a shallow half moon form that is approx. 1km wide between main headlands and a simple coastal landscape structure that includes a short valley mouth that is lined by a mix of 1900's era villa and more modern houses. Native coastal vegetation marks both ends of this shoreline and the narrow shoreline road is separated from the harbour by a stone wall. There are no side roads within the inner valley although the railway rises across the contours, lower to mid slope.

6.14 Small boats anchor between the shore and an outer bar and use a pier at the south of the Bay. A small retained earth jetty provides a viewing point for pedestrians mid shoreline and the overall character of the shoreline is informal and small scale seaside residential. The Bay is screened from approach from the north and south and opens to view as vehicles pass the headlands at either end. The northern approach provides wider views, which include the southern headland spur and the site area above.

6.15 The shoreline and its headlands include a relatively small portion of the wider valley catchment which. The upper valley area is marked by a transition from farm land to native vegetation, scrublands, exotic weeds, and some areas of pine forest while the shoreline area includes approx. 17 houses, several life style blocks and a more extensive area of pastoral farming on the southern headland spur. The railway provides a dividing line between the coastal landscape and the inner valley. Including all valley areas the catchment covers approx. 245 ha (Fig.3).

6.16 An area of rural residential housing is located in the upper north/west valley ridge area, and due west from the site. These houses were consented in 1992 and include 7 lots of between 2 ha and 8.8 ha in size. Some are quite small, at approx. 150m^2 in floor area, and others are large at approx. 335 m^2. Front elevations range between 15 - 35 m in length. Separation distances between these dwelllings range between approx. 32 m and 160 m. All are orientated due north/east apart from 258 Blueskin Road, which is a two level dwelling and one of two immediate neighbours to the north/west.

6.17 Views of the inner valley are difficult to gain from the shoreline of Deborah Bay with the upper western slopes being most visible. Smaller spurs run out on both sides of the valley and screen views either direction when covered with vegetation, particularly exotic species. Vegetation also follows the rear catcment boundary formed by Reservoir Road and prevents most public views back down the valley.

6.18 The visual character of the upper valley is dominated by emerging native species, often dominated by a kanuka canopy, and large areas of gorse that are bounded by the native species and indicate recent pasture areas. Pine trees consist of a small area of the planting but are visually prominent from the shore line of Deborah Bay, particulary the north/east facing site slopes and lower southern headland, and above the railway line at mid valley.

6.19 Summary – Landscape Context and Character

The site proposal sits within a landscape structure that is distinctive in its form and within the surrounding western coastline. Much of this structure is determined by the form and route of the ridge that underlies the site and continues to form the shoreline behind Port Chalmers and Careys Bay. This ridge is expressive of the volcanism that formed the harbour and surrounding slopes and has a clear path from the mid slopes of Mihiwaka. The majority of land lies within the Deborah Bay catchment or on the upper ridge area and this is its primary landscape context.

6.20 Deborah Bay includes a small scale and relatively sensitive shoreline landscape and a much larger inner valley landscape which lies westward from the railway line route. A large scale change in landcover is evident in the inner valley and reflects a transition from pasture to native vegetation. Pine trees have a high visual impact in this valley landscape when in elevated areas but reflect a much smaller land area.

6.21 Mihiwaka rises to the west of Deborah Bay and is silhoutted against the skyline. The statutory framework is concerned with maintaining the value of the coastal slopes and ridge areas on the western side of the harbour, which includeds the site area. The key threats to these values include structures, roads, tracks and forestry in visually prominent areas.

7. Landscape and visual impact assessment

7.1 Introduction

This section provides an assessment of landscape effects and visual effects that maybe considered to arise from the removal of the present pine plantation, re-planting of the majority of this area with native vegetation, the establishment of accessways and location of 5 additional dwellings within the site.

7.2 The assessment was undertaken on the basis of 7 viewpoints that were selected for their overview of the site and their potential to represent views that others might have. Each view point was assessed for landscape and visual effects on a short term basis, the value of proposed or existing mitigation, long term effect, cumulative effect, and if the overall effect was considered to be adverse, neutral, or positive (Appendix 3). The terms ‘effect’ and ‘cumulative effect’ may equally reflect positive and beneficial outcomes as much adverse effects. The final assessment stage is the one that makes this judgement.

7.3 The definition of cumulative effect that is applied in this assesment is a description of the potential for an activity or environmental change to be seen in combination with other changes, whether connected to the project or coincidental, and to produce a wider change in landscape or visual character, either in the present or in the future.

7.4 The mitigation considered included the removal of pine planting, planting of native species, distance of the viewpoint, and the existing landscape context. The removal of the pine trees and their replacement with native planting was considered to be a positive effect and this assumption underlay the assessment of landscape and visual effects and significantly influenced the assessment of cumulative effects. This was due to the extensive framework of native vegetation that exists in the wider valley catchment and which is already intruding into the site.

7.5 The assessment of landscape effects considered the degree of change to the site area and the potential effects on surrounding character that those changes might bring about. The assessment of visual effects

considered the impact of the potential change on the amenity that a present viewer might obtain from that view point. The frequency and intensity of the views, the distance of viewpoints from the site, and the potential for future viewers to be able to determine a level of detail or visual impact were considered in the assessment.

7.6 Landscape Effects

Table 4 provides a summary of the landscape effects assessments of the individual view points. There are 14 observations over the 7 viewpoints chosen, as each viewpoint may include several lots. The following summary points can be drawn:

- all lots had a high level of short term landscape effect;
- all lots were assessed as being associated with positive landscape effects of which 50% had a medium to high level of cumulative effect;
- the level of cumulative effect ranged from medium/low to high;
- mitigation was considered to have a high value for most locations;
- lots 1, 2, and 4 have a low level of visibility within site boundaries and from off-site; and
- lot 5 and lot 6 have the highest level of off-site visibility.

7.7 Short term landscape effects

The proposal is based on the assumption that all present forestry areas will be milled and extracted. This process includes noise, visual effects, heavy machinery, earth works, on-site processing, and transportation of the logs off-site in large truck and trailer units. The outcome is the sudden removal of almost all landcover and the exposure of many area of bare ground in elevated areas, unexpected views, and significant off-site effects of a temporary and long term nature. The effects were assessed as high for all lots for these reasons.

7.8 Cumulative and positive landscape effects and mitigation

The transition from forestry to native planting was assessed as positive from all view points and the potential change in character from rural to residential was assessed as minor. The factors contributing to this conclusion include the small size of the building platforms relative to the site area, the pre existing track network, and the separation of the different platform locations by elevation and the varied topography.

7.9 Other elements of mitigation included the distance of most views to the proposed lots and the potential for the development conditions to lower the off site prominence of the proposed lots. All of these factors contribute to the maintenance of present rural values while the transition from forestry to native vegetation is considered to be a significant positive cumulative effect.

7.10 Low visibility - Lot 1, Lot 2, and Lot 4

Lot 1 and lot 2 are only visible from the southern slopes of Sawyers Bay and from limited areas of private dwellings within the upper slopes of Roseneath. Sawyers Bay provides the closer views and has a line of sight that excludes the Port area and harbour. Lot 4 will be visible from the northern side of the upper

valley where there a limited viewing opportunities at a distance of 1.6 km. This lot is unlikely to be seen by adjacent neighbours due to existing boundary shelter planting and the requirement to plant buffer areas between the wester boundary and the future dwelling.

7.11 High visibilty – lot 5 and lot 6

Lot 5 and lot 6 fall within the viewsheds of off-site views to the north/east and north of the site. The closest shoreline view is to lot 6 and at at distance of approx. 1 km. The most strategic viewpoints for landscape character are Vpt. 2, Vpt. 8 and Vpt. 10 - 832 Tidewater Road, 289 Aramoana Road, and 41 Purakaunui Road. Of these the viewpoints the view from Purakaunui Road provides a wide overview of the main ridgeline and the location of these lots.

Table 4: Summary of landscape effects

Lots	Vpt.	Short term effect	Value of mitigation	Long term effect	Cumulative effect	Adverse, positive, neutral effect
Lot 1	5	M / H	H	M	M / L	P
Lot 2	1	M	H	M / L	M / L	P
	5	M / H	H	M	M / L	P
Lot 4	9	H	H	M / H	H	P
	10	H	H	H	H	P
Lot 5	1	M	H	M / L	M / L	P
	2	M	M / H	M	M / L	P
	7	M / H	H	H	H	P
	8	M / H	H	M	H	P
	10	H	H	H	H	P
Lot 6	2	M	M / H	M	M / L	P
	7	M	H	M	M	P
	8	M / L	M	H	M	P
	10	M	M	M / L	M	N

7.12 The view also includes the upper valley catchment slopes, the network of native vegetation and the prominence of the more limited areas of pine forest. Within this context the proposed lots are not considered to be significant elements. This is due to the scale of the proposed planting and the mitigating effect of the design guidelines.

7.13 Rural and Rural Residential Character

The operative and proposede district plans largely describe rural character and amenity in terms of what a rural land area can provide. Element include the ability to maintain livestock, areas of crops, forestry, or native vegetation, and a low population density relative to urban living. Apart from a requiring a minimum area of 1 house per hectare in rural residential 1 areas (proposed plan) the framework is not exact.

7.14 Vpt.9 and Vpt.10 provide an overview of the character and pattern of existing rural residential development on the upper south/west slopes and the relationship of proposed lot 4 and 5 to these houses. The scale of the present dwellings appears to meet the outline description of rural amenity in regards to a pattern of open space and land use elements that include pasture, domestic animals, and shelter belt planting.

7.15 The proposal has been developed to maintain physical and visual separation for the building sites and to meet the same standards of the present residential. All dwellings, apart from lot 1 and lot 2, have a different outlook and location and will be sited within a context of structure and shelter planting or a the broad network of native planting that is proposed.

7.16 Proposed lot 1 and lot 2 will have a separation distance of 100m and significant areas of native planting between their boundaries. Proposed lot 5 will have a separation distance of approx. 100m from the existing residence and will be approx. 90m from lot 4 building platform. This compares to separation distances of 32 - 170m for the residences to the north/west of the site and includes substantial screeing planting.

7.17 The existing pattern of access within the farm is not being replaced, but will be slightly extended. Animals will continue to be farmed by the owners and the existing ridgeline field pattern will be retained and will remain visible to immediate neighbours.

7.18 Effects on the wider environment

The operative and proposed plan seek to preserve the open character of the upland slopes of Mihiwaka and surrounding peaks, the prominance of natural landforms, enhancement of indigenous vegetation, and maintenance of the visual prominence of the harbour slopes and their landscape coherence. The site reflects many of these values but is compromised by forestry. Implementation of the proposal is considered to support all of the wider landscape and environment values that are sought for the Flagstaff/Mt.Cargill landscape overlays and remedy this issue (Fig.3).

7.19 Visual Effects

Table 5 provides a summary of the visual effects ratings for the 14 individual view points. The following points can be drawn:

- none of the viewpoint were considered to represent ‘adverse’ visual effects;
- 5 viewpoints were assessed as having ‘neutral’ visual effects;
- short term visual effects ranged ‘low’ to ‘medium’ with 2 sites having medium/high levels of effect;

- almost all platform sites were assessed as benefiting from high levels of mitigation; and
- all lots were assessed as having a low level of 'intensity' of effect.

7.20 Shoreline views

Lot 5 appeared to have the potential to have a ridgeline silhoutte effect when viewed from the northern approach to Deborah Bay. The approved building platform for this lot is set back from the top of the coastal slope and an 5m height restriction applies. Native planting is proposed below and behind this platform and will have significant visual effect due to slope that rises up to the ridge. For these reasons it is considered unlikely that more than a minor part of the future structure will be visible. Close shoreline views will not be able to see the platform.

7.21 Southern View

The view from the southern slopes of Sawyers Bay are direct to the south/west slopes of the site at a distance of approx.2.5 km. This is a strategic view that includes all of the upper slopes of Mihiwaka and the coastal slopes above Port Chalmers, when on site. The removal of the pine trees is expected to be quite noticeable but their replacement with pasture and an area of native forest is expected to bring adjacent rural landscape character into the site and to be a visual gain in amenity from this viewpoint when established.

7.22 Upper Valley View

Vpt. 10 provides a strategic view across the upper valley from Purakaunui Road to the site at approx. 1.6km+ distance. Some dwellings have high levels of light reflectivity associated with wall cladding but none of them dominate.

7.23 Lot 4, Lot 5, and Lot 6 are visible in this viewpoint with the main issue being the potential impact of lot 4 on the edge of the ridgeline and its congruence or otherwise with the adjacent dwellings. Lot 5 will be screened by vegetation reasonably quickly from this location and lot 6 is mostly out of the field of view unless the viewer is actively looking downwards and seeking to locate it.

7.24 The ridgeline includes a pattern of forestry, houses and pasture and trees which extends east to west. The proposed pattern of native vegetation and one dwelling on the rim of the ridgeline is considered consistant with the present pattern.

7.25 Summary - landscape and visual effects

The main finding of the assessment of landscape effects is that the effects are all positive. This is due to the lack of land modification required, wide spread positive change associated with the revegetation proposal, the site of the proposed sites within the existing farm context, and the maintenance of the lifestyle farm landuse that is currently practiced.

7.26 The change from pine forest to native vegetation is the most significant effect that may be associated with the proposal and will noticeable from the water front of Deborah Bay and the wider areas of the eastern harbour shoreline. This is a wide spread and cumulative landscape and visual effect that is assessed as beneficial by the operative and proposed district plans.

Table 5: Summary of visual effects

Lots	Vpt	Short term effect	Value of mitigation	Long term effect	Intensity of effect	Adverse, positive, neutral effect
Lot 1	5	M	H	M / L	L	P
Lot 2	1	L	H	L	L	P
	5	M	H	M / L	L	P
Lot 4	9	L	H	L	L	N
	10	M / H	H	M / L	L	P
Lot 5	1	L	H	L	L	P
	2	L	H	M / L	L	P
	7	M	H	L	L	N
	8	M	H	L	L	N
	10	M / H	H	M / L	L	P
Lot 6	2	L	H	M / L	L	P
	7	M / L	H	L	L	P
	8	M / L	H	L	L	N
	10	M / L	M / L	L	L	N

8. Policy assessment

8.1 The proposal is submitted for consent under the operative district plan and falls under the assessment requirements of the rural zone and the Flagstaff/Mt.Cargill landscape overlay. Table 6 outlines the assessment matters for the rural zone.

Table 6: Rural assessment matters

6.7.3 Amenity values

(i) The effect that the activity will have on amenity values

6.7.4 Cumulative Effect

The cumulative effect of the activity on the natural and physical resources of the City including, but not limited to, cumulative adverse effects in relation to:

(a) Amenity values

(ii) Rural character

(vi) Landscape Management Areas or Areas of Significant Conservation Values

6.7.9 Bulk and location

The bulk and location of buildings and their effect upon the amenity values of the site, adjoining sites, adjoining roads and the surrounding areas.

6.7.13 Visual impact

(i) The visual impact arising from an activity on the character of the rural landscape, visual amenity and significant views

(ii) The potential effect of structures on significant views from public viewpoints, including visibility from State Highway 1

(iii) The effect of an activity on the open amenity of the rural area

6.7.15 Residential Units

(i) The cumulative effects of an increased density of residential development in this location

(iv) The extent to which a residential unit on the site affects the amenity and economic well-being of neighbouring properties

(v) The degree to which amenities relating to the open nature of the environment are compromised

6.7.22 Indigenous Vegetation and Habitats

(ii) The potential for the enhancement of indigenous habitat or vegetation.

8.2 These can be summarised as:

- Cumulative effect of amenity values, rural character, and landscape management areas;
- Bulk and location of buildings;
- Visual impact of an activity on the character of the rural environment;
- Effect of an activity on the open amenity fo the rural area; and
- Cumulative effect of increased density on the open nature of the environment.

8.3 Rural character

Deborah Bay contains both the foreshore and valley area that meets the harbour edge and a wider rural valley in its upper catchment slopes. The site is primarily located in the upper valley area although its elevation also places it in the coastal slopes that face the harbour.

8.4 The upper valley is characterised by rural residential development, hobby farms and roads in the upper ridge areas and extensive patterns of native vegetation and exotic weeds that include isolated but prominent blocks of pine trees with the valley slopes and bottom. The proposal will maintain all aspects of this existing character while tipping the balance more towards biodiversity and the visual amenity associated with native vegetation.

8.5 Bulk and location of buildings

All of the proposed building platforms have design guidelines that are proposed as conditions of subdivision consent. While this application is lodged under the operative plan the conditions also include most of the performance rules for the rural residential 2 zone that apply to environmental and landscape issues and building in sensitive environments. The building platforms have been selected to minimise off-site effects and to maintain the amenity of the site for the future residents and existing neighbours.

8.6 Visual impact

An thorough review of potential landscape and visual effects underpins the proposal and found that there were no adverse effects associated with the building platforms.

8.7 Effect on the open Amenity

Operative plan policy 6.3.5 indicates that amenity values may include any of the following elements:

a) a predominance of natural features over human made features

b) high ratio of open space relative to the built environment

c) significant areas of vegetation in pasture, crops, forestry and indigenous vegetation

g) low population densities relative to urban areas

h) absence of urban infrastructure

8.8 The proposal is considered to meet all of these factors of amenity value. The present farming activity will be maintained by the applicants and the potential for increased life style livestock management is provided through the reinstatement of pasture areas on the south/west site slopes (lot 2). The natural feature of the site ridge will be furhter revealed due to the change in land cover proposed. No overhead wires will be run into the wider site with the exception of one cable run to lot 1.

8.9 Cumulative effect

The assessment of landscape effects concluded that there would be a high level of positive cumulative effects that would be associated with the removal of the pine trees and replacement with native planting.

8.10 Landscape matters – Operative Plan

Table 7: Landscape assessment matters

14.7.1 Visibility

The effects of the visibility of the proposed activity or development from the main public viewpoints.

14.7.2 Adverse Effects

The extent to which any adverse effects on the landscape can be avoided, remedied or mitigated

14.7.3 Sympathetic Siting and Design

The extent to which the activity or development is sympathetic to the forms, character and scale of the landscape in its siting and design.

14.7.4 Landscape Features and Characteristics

The extent to which the activity or development impacts upon the important landscape features and characteristics to be protected, preserved or conserved (identified in part 14.5 of this section) within the relevant landscape management area.

14.7.5 Compatibility of Scale and Character

The extent to which the activity or development is compatible with its landscape setting in terms of its scale and character.

8.11 The proposal is required to demonstrate how it will fit with the existing context of the site and its surroundings in terms of its extent, size, and design. Wider consideration is to be given to potential adverse landscape effects on important landscape features and characteristics and how potential adverse effects will be avoided, remedied, or mitigated.

8.12 Section 2 of this report provides detail of how the proposal will be implemented and how the design development has engaged with the present site. The key objective of the proposal is landscape transformation from forestry to rural residential in an ecological environment that involves off grid living and a low impact life style.

8.13 Guidelines are intended to provide development that is not detrimental to existing landscape values and which will add to those that are considered beneficial within the operative and proposed plans. A revegetation programme that has been researched and attached in large part to the subdivision consent underlines this commitment. It is considered that the proposal meets the assessment objectives of 147.1 – 14.7.5.

8.14 Subdivision assessment

Table 8: Subdivision assessment matters

Objective 18.2.6

Ensure that the adverse effects of subdivision activities and subsequent land use activities on the City's natural, physical and heritage resources are avoided, remedied or mitigated.

18.6.1 Subdivision Section Assessment Matters

(a) When considering subdivision applications:

- In the ... Landscape Management areas .... The Council will have regard to the objectives, policies and rules of those areas ...

(h) . . the appropriateness of identifying a 'Landscape Building Platform', which may include:

- Restrictions on floor area and height of buildings and associated site development and
- Requirements for landscaping the site

8.15 Height restrictions apply to all building platforms. These range from 5m to 6m and reflect the containment of the site and potential off site visual impact. Floor areas are restricted to 200m2 on all sites. A site wide revegetation planting and mitigation programme is outined in the proposal and underpinned with subdivision and building consent conditions.

8.16 Summary

The landscape and visual assessment indicates that the proposal will have minimal off site adverse effect and will include a significant level of positive landscape and visual effects that are supported in both the operative and proposed plans. For this reason and for the responses above it is considered that the proposal has adquately met the assessment criteria for appropriate development in the rural environment and that no adverse effects will ensue.

9. Conclusion

9.1 Both the operative and proposed plans seek to preserve the open ridge areas and slope areas of the western harbour coastline. The proposal does not encroach on these objectives and is assessed as having a positive effect on increasing the legibility of the ridgeline that underlies it and which expresses the formative processes of volcanism in form and relationship to Mihiwaka above.

9.2 The proposal is intended to rehabilitate forestry land and enhance the landscape values associated with the remanent coastal forest within Deborah Bay and to increase the visual amenity of the Deborah Bay shoreline by doing so. Design guidelines and assessment criteria support these objectives and the proposal details. The key mechanism of this transformation is the creation of an additional 5 lots

9.3 For the reasons outlined above and on the basis of the findings of the design development and assessment stages it is recommended that consent be approved.

Hugh Forsyth

Site Environmental Consultants Ltd

Attachment 1

Appendicies

256 Blueskin Road - Landscape and Visual Assessment

Appendix 1

Planting maintenance schedule and proposed species

Native revegetation planting – 256 Blueskin Road

1.0 Introduction

1.1 The northern/east facing site slopes and the south/west facing slopes are both subject to strong coastal winds that are funneled within the harbour and upwards by landform. The effect can be plant failure due to excessive wind pressure and loss of water through drying out. The other serious threat to new planting is posed by predators, such as oppossum and rabbits.

1.2 The proposed redevelopment of the site will require a large number of plants that will need to be collected from seed stock and grown on, whether from the site or surrounding areas of Otago Harbour. The final choice of the species to gather and replant is guided by others experience in revegetation in the Otago coastline and the indicators already on site.

1.3 A final selection of plant species will be made on the basis of the advice provided by Wildlands Consultants and will take into consideration the local knowledge of the Orakanui Halo Project to add value to the planting for the wider objectives of bird habitat. The applicant will undertake predator control on the site independantly and is also happy to cooperate with the wider predator free Dunedin programme that is being currently rolled out.

1.4 Emails from Wildlands and the Halo project office are attached. Wildlands site assessment of 256 Blueskin Road is appended at the end of this section.

2.0 Species

2.1 Wildlands Consultants have undertaken an assessment of the site and identified the 4 areas of native scrubland and forest that are on site. These areas are all contiguous with the wider valley area and representative of remnant forest and what will establish on site. The forest types are described as Kānuka - broadleaved forest, located on the upper north/east slopes, and broadleaved forest, which is growing along the base of these slopes and along the lower north/east boundary (Figure 1, Wildlands report).

2.2 Reestablishing native planting usually requires two stages. The first provides canopy cover and wind shelter and helps retain moisture. Once the initial pioneer species are established infill, or 'enrichment', planting can be undertaken to fill out the pallette of plant material and provide a wider habitat for birds, insects, and lizards.

2.3 A final decision on what to plant will be partly determined by supply and also by the Company or individuals contracted to undertake the work. Advice has been sought from Wildlands Consultants and form the basis of the following outline lists.

2.3 The following plant species are recommended and would provide the basis for initial planting.

Upper northern slopes:

- ngaio - Myoporum laetum
- Kanuka - Kunzea ericioides
- Kowhai - Sophora microphylla

- kōhūhū - Pittosporum tenuifolium

Lower slopes:

- harakeke/flax - Phormium tenax
- cabbage tree - Cordyline australis
- Kanuka - Kunzea ericioides

2.3 The following plant species wil provide the basis for infill planting.

- tarata/lemonwood - Pittosporum eugenioidies
- Kotukutuku - tree fuchsia - Fuchsia excorticata
- Kapuka - broadleaf - Griselinia littoralis

3.0 Implementation

3.1 The proposal conditions require the implementation of all planting to be undertaken by a qualified contractor or professionally qualified person. This requirement seeks someone or an organisation that can demonstrate practical experience of successful revegetation or a track record of maintenance of this type of planting. The stages include supply of plant material, pest control, ground preparation, planting, watering, weeding, replacement of failed plants, and watering, at a minimum, over the first summer.

3.2 This contract will be assessed and let by the applicant subsequent to being granted resource consent. Wildlands have been approached to provide an estimate to undertake this work and their response is appended to this outline. The figures have been withdrawn for commercial reasons but the proceedure is consistant with good practice and as undertaken by conservation groups through out the Harbour area.

3.3 The outcome sought is semi canopy closure at the end of 7 years and the replacement of failed plants to achieve an overall success rate of 85% coverage. The planting rate is to be undertaken at 1 plant per 1.5 m^2

Email 1: Advice from Wildlands Consultants

On 28/09/2018, at 2:21 PM, Kelvin Lloyd <Kelvin.Lloyd@wildlands.co.nz> wrote:

Hi Hugh

Our restoration ecologists have estimated the following planting and maintenance costs for 1 hectare and 5 hectares of planted trees at 1.6m spacing. This includes supply of plants, planting, and subsequent infilling and maintenance.

Site Preparation	$	[redacted]
Plant Supply	$	[redacted]
Plant Labour	$	[redacted]
Infill plant supply (2nd planting season)	$	[redacted]
Infill planting (2nd planting season)	$	[redacted]
Maintenance (Year 1)	$	[redacted]
Maintenance (Year 2)	$	[redacted]
Maintenance (Year 3)	$	[redacted]

Total establishment cost per hectare	$	[redacted]
Total establishment cost per five hectares	$	[redacted]

Costs are based on supply of approximately 20,000 plants
Two weed control visits per year for three years
95% of plants supplied as 0.5L, remainder as 2L
No pest animal control or repellent included.

I hope this is helpful.

Regards

Kelvin

Kelvin Lloyd Principal Ecologist

Wildland Consultants Ltd Ph 0064 3 477 2096

Mobile 021 757 303 Email kelvin.lloyd@wildlands.co.nz Web www.wildlands.co.nz

764 Cumberland St, Dunedin 9016, New Zealand; Call Free 0508 945369;

Wildlands offices are located in Dunedin, Rotorua, Auckland, Hamilton, Tauranga, Whakatane, Wellington, Christchurch

From: Kelvin Lloyd
Sent: Monday, 24 September 2018 10:55 AM
To: 'Hugh Forsyth' <hugh@siteinfo.co.nz>
Cc: Russell Frew <russell.frew@otago.ac.nz>; Cathy Frew <cathyjfrew@hotmail.com>
Subject: RE: Revegetation approach

Hi Hugh

Question 1:

On the steep east-facing slopes where we suggest the 'kōwhai-ngaio' forest species, most of the species are exposure tolerant so don't specifically require a cover crop. E.g. ngaio is very hardy, and kanuka, kōwhai, and kōhūhū tolerate exposed conditions well. So these four species could dominate the initial plantings. You could also use cabbage trees to provide some additional fast-growing cover. Kōwhai is slow growing, so if planted too late, might suffer from competition with earlier plantings. Narrow-leaved lacebark and fierce lancewood could be established a bit later in gaps.

On gentler northern slopes with more moisture, it could be helpful to plant harakeke/flax, cabbage trees, and kanuka initially to provide shelter for the broadleaved forest trees such as tarata/lemonwood and kotukutuku/fuchsia that are less tolerant of exposure. Lowland ribbonwood, kōhūhū, kāpuka, and totara are exposure tolerant and can also be planted at an early stage.

Shelter will be more necessary on the SW slopes exposed to SW winds, so a greater focus on initial planting of harakeke and cabbage trees in this location. I hadn't considered these slopes in the advice I gave in the report. They would support a broadleaved forest dominated by kāpuka and kōtukutuku, but other species such as kānuka, cabbage tree, kōhūhū, horopito, and Putaputāwētā could be planted.

Question 2 – I'll get back to you on this one.

Question 3 – I would contact the local plant nurseries (Ribbonwood, Blueskin) to see what they could provide, then go wider in South Island (e.g. Pukerau) if required to make up the numbers, but still specify locally-sourced stock. Local sourcing could be relaxed to the Otago Coast ecological region (Palmerston to Balclutha) if necessary, to provide a large range of sources, as Dunedin ecological district is quite small.

Regards

Kelvin

Kelvin Lloyd Principal Ecologist

Wildland Consultants Ltd Ph 0064 3 477 2096

Mobile 021 757 303 Email kelvin.lloyd@wildlands.co.nz Web www.wildlands.co.nz

Email 2: Advice from HALO project

RE: Native Forest Restoration
15/10/2018 16:25

James Tweed

To hugh@siteinfo.co.nz
Copy Sophie Penniket

Hi Hugh

Great to hear you're working with a client on a large restoration project and we're always happy to provide advice where possible. I'll try to answer your questions in order just to keep it neat and tidy.

1. I'm assuming you're talking about controlling mammalian pests (e.g. stoats, possums and rats). If so, the only method we use at the moment is traps (not toxins) to control these species. Depending on what species you're wanting to control we can provide advice as to which traps to use and the best practice methods for their use (e.g. trap safety, effective baits, trap locations, etc.). I've copied Sophie (Halo Coordinator) into this email. She'll be able to provide much of the detail in this regard.

2. There are a lot of native plant species that can benefit birdlife and if you plant a diverse range of species, chances are you'll benefit a range of different bird types (e.g. nectar feeders, insectivores, frugivores). As I'm not exactly sure of the habitat type you're restoring it's hard to say exactly which species would be best but I can provide some general advice about plant species I know to grow in this area. Nectar feeders such as tui, bellbird and kaka will really benefit from trees that produce masses of large flowers like kowhai and fuchsia, with flax also being a great option for this (particularly in really damp areas such as around streams/ponds).

Species that produce smaller flowers (as well as the species already mentioned), such as kanuka, manuka and various species of Olearia, will attract insects which in turn benefits the insectivorous birds such as grey warbler, brown creeper and morepork. Most native birds (particularly kereru) will eat fruit to some degree and many native plant species produce edible berries. Cabbage tree, mahoe, five-finger and seven-finger all produce berries that native birds love. Podocarp species such as rimu and totara will also produce berries but are slower growing species though in the long run they're likely to dominate the forest canopy. I've attached a document produced by the DCC which contains a very useful list of plant species found all over Otago with one section dedicated to Dunedin. If you're looking to help out native lizards as well then Muehlenbeckia species can provide great shelter as well as having bunches of flowers (and berries) which attract insects (food for lizards and birds).

3. Shade tolerant broadleaf species such as five-finger and seven-finger as well as many species of coprosma (e.g. Coprosma areolata) do well in the understorey of forest in this area. Astelia fragrans and/or nervosa are also found around here and are adapted to understorey environments. Otherwise there are a whole range of fern species and some tree ferns (e.g. Dicksonia squarrosa and Cyathea smithii) that do really well in much of the forest understorey around here.

Hopefully that goes some way to answering your questions. If you want to know any more information (e.g. about trapping methods) it would be great if you could come into our office in Port Chalmers at a time when both Sophie and myself are here. I'm also happy to ring and discuss it with you on the phone if you'd prefer.

Cheers,

James

ECOLOGICAL ASSESSMENT OF INDIGENOUS VEGETATION AND HABITATS AT 256 BLUESKIN ROAD, DUNEDIN

providing outstanding ecological services to sustain and improve our environments

Wildlands

R4778

ECOLOGICAL ASSESSMENT OF INDIGENOUS VEGETATION AND HABITATS AT 256 BLUESKIN ROAD, DUNEDIN

Contract Report No. 4778

September 2018

Project Team:
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Federico Mazzieri - GIS mapping

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CONTENTS

1. INTRODUCTION

Russell and Cathy Frew intend to subdivide a rural lifestyle block (Figure 1) - total area *c.*15 hectares - at 256 Blueskin Road, above Deborah Bay, Dunedin, to provide for additional residential housing. The southwestern half of the site closest to Blueskin Road straddles a broad ridge with paddocks and shelterbelts, but the north-eastern half comprises steep slopes covered in a mixture of plantation pine forest, indigenous forest remnants, and exotic scrub.

A landscape plan is being prepared as part of the application for subdivision consent at the site, and includes removal of exotic forest and extensive planting of indigenous tree and shrub species to help mitigate the visual effects of residential development and provide a positive effect to balance any other adverse effects. Ecological information is needed to inform the landscape plan, to determine what ecological features and values currently present at the subdivision site, and to determine the best range of indigenous trees and shrubs for use in the proposed planting.

Wildland Consultants were commissioned to undertake the ecological assessment, and this report describes the assessments undertaken and the findings from this work.

2. METHODS

Relevant existing information was reviewed. This included relevant reports and articles, aerial imagery, and spatial layers such as the land cover database and land environments of New Zealand.

A field visit to the site was undertaken on 12 September 2018. During this field visit the areas of indigenous forest were traversed on foot, vegetation and habitats were described and mapped, and indigenous vascular plant species observed at the site were recorded. Bird species observed at the site were also recorded.

3. ECOLOGICAL CONTEXT

3.1 Study site

The site lies half way up a ridge that runs from Port Chalmers at sea level to the forested slopes of Mihiwaka at 561 metres above sea level. Areas of indigenous forest on the property are located 200-260 metres above sea level, on the steeper eastern slopes of the ridge.

The site is within the *c.*280 hectare Deborah Bay catchment, which is notable for retaining approximately 60% (170 hectares) of its original forest cover, and *c.*25 hectares of gorse scrub that would transition to indigenous forest over time if left alone.

Land across much of the forested upper catchment is owned by Dunedin City Council.

3.2 Ecological districts

The property site is located in Dunedin Ecological District, which is part of Otago Coast Ecological Region. The following summary is adapted from McEwen (1987).

Dunedin Ecological District is characterised by well-dissected Miocene sunken volcanic terrain with large whale-backed hills, eroded caldera and volcanic skeleton. The long, sheltered non-surge Otago Harbour with its central island chain separates the Otago Peninsula from the mainland. The exposed coast contains several smaller inlets and bays with fine white sand, dune-backed beaches.

The climate is moist and coastal, with rainfall of 700-1,200 mm per annum, evenly distributed throughout the year. Summers are mild and winters cool.

Soils are formed from variable cover of loess and solifluction debris over basalt and sedimentary rocks. On gentler slopes where soil cover is thickest, soils in lower rainfall areas have compact pale-coloured and mottled subsoils and poor winter drainage. With increasing rainfall, soils become very strongly leached to podzolised. Soils from basalt have dark-coloured heavy textured subsoils and show a similar leaching sequence. Gradations between all of these soil types occur, and are likely to be present across the Blueskin Road site.

The remaining indigenous vegetation mainly comprises podocarp/hardwood forest, with small remnants of mataī (*Prumnopitys taxifolia*)-tōtara (*Podocarpus totara*)-rimu (*Dacrydium cupressinum*)/māhoe (*Melicytus ramiflorus*)-lowland ribbonwood (*Plagianthus regius*) forest on drier coastal hills, rimu-miro/māhoe-broadleaf forest extensive at mid altitudes, and kaikawaka (*Libocedrus bidwillii*)-Hall's tōtara (*Podocarpus laetus*)/hardwood forest above *c*.400 metres above sea level. The Blueskin Road site occurs at an altitude this is in the middle of this forest gradient, and would naturally have been covered in a mixture of the first two of these forest types.

Narrow-leaved snow tussock (*Chionochloa rigida*) grasslands occupy higher altitudes in the west of the ecological district, with kānuka and mānuka communities common throughout. Silver beech (*Lophozonia menziesii*) forest occurs as scattered small stands on and northwest of Mt Cargill. There are extensive salt marshes on the margins of Blueskin Bay.

3.3 Land environments

The entire property is within a land environment classified as ‘At Risk’ on a national basis, with 20-30% of the original indigenous vegetation remaining (Figure 2).

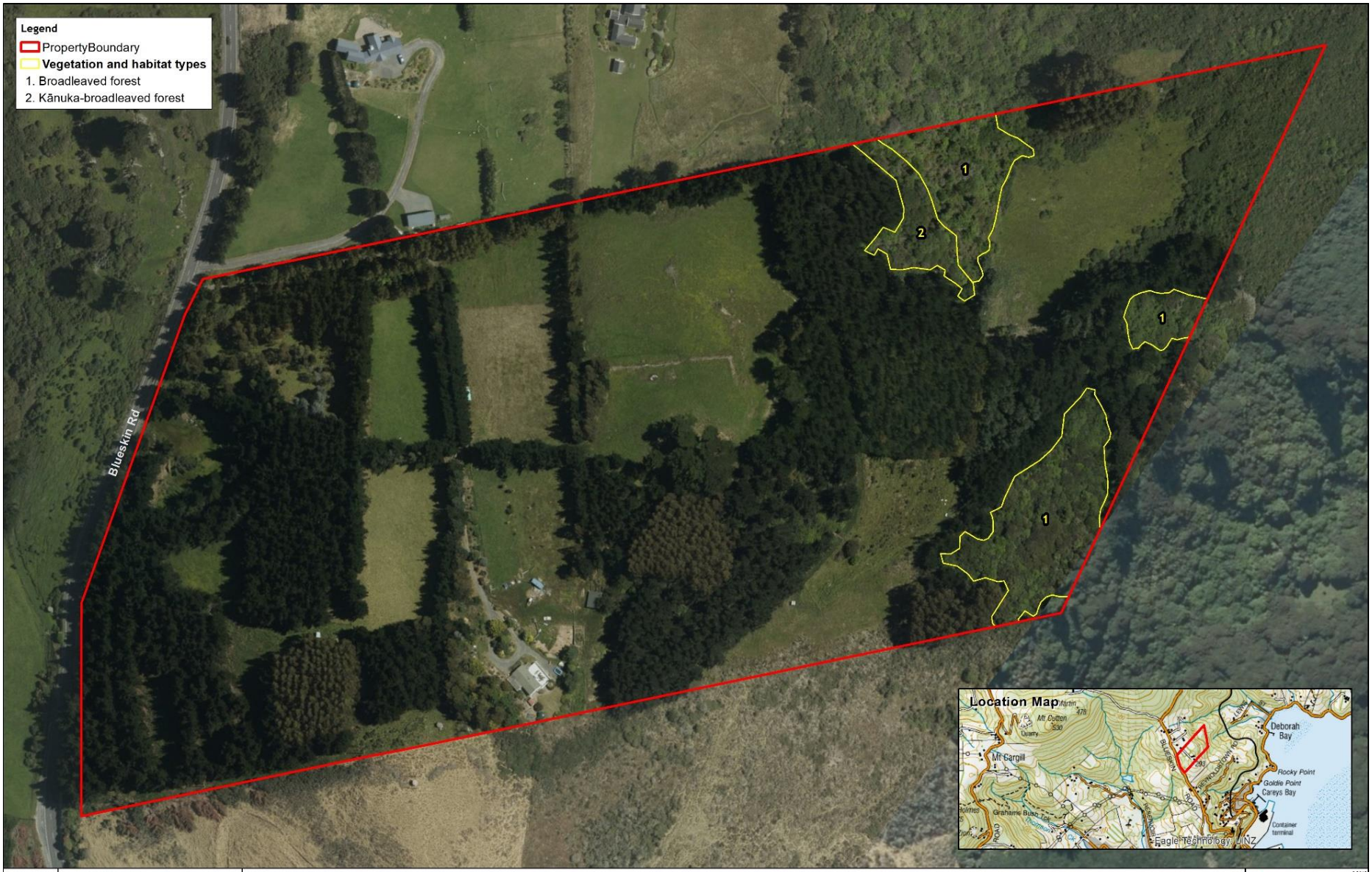
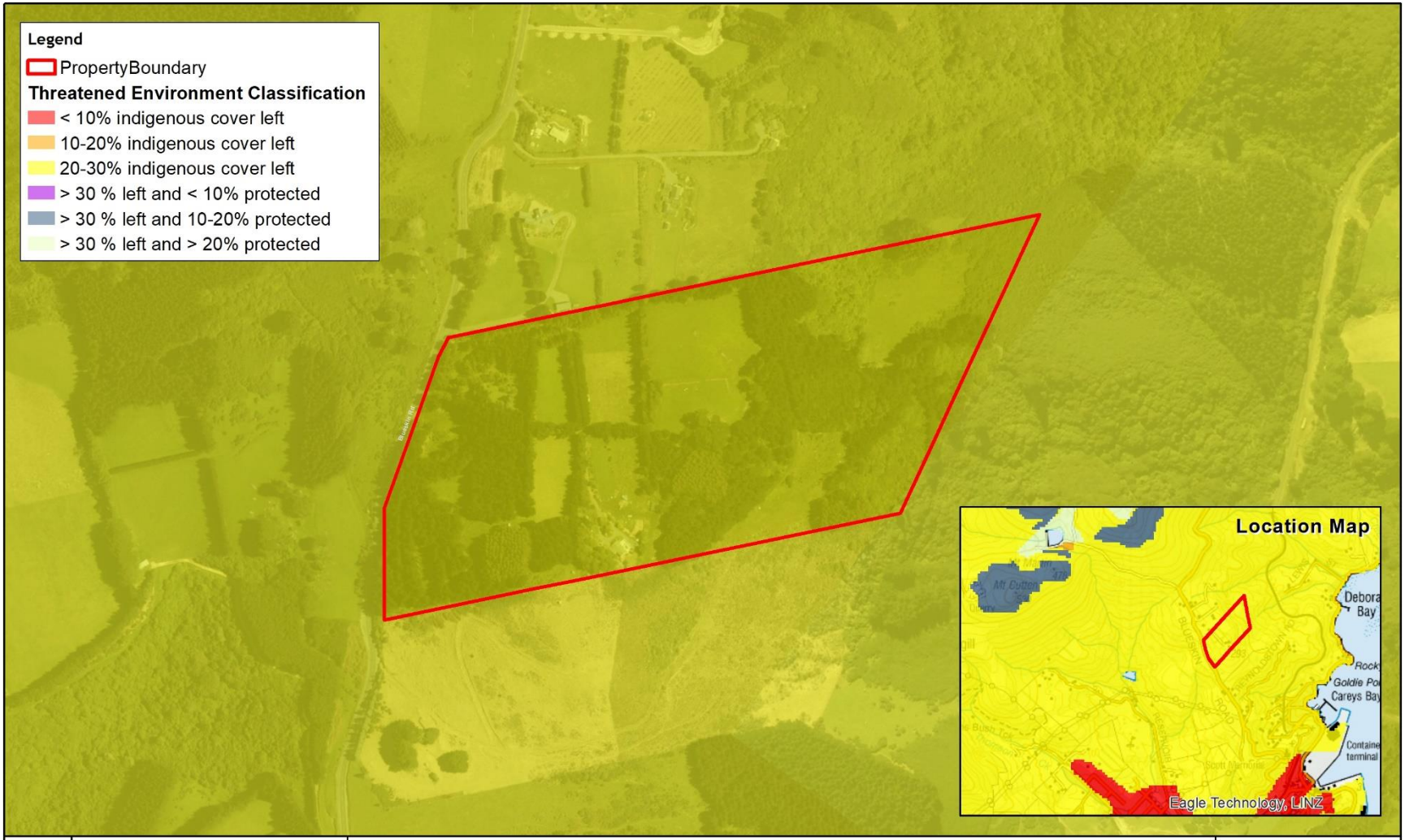


Figure 1. Indigenous vegetation and habitats on the 256 Blueskin Road site



Data Acknowledgment

Map contains data sourced from LINZ
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Figure 2. Threatened Environment Classification of the 256 Blueskin Road site

0 100 200 m

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Scale: 1:5,000
Date: 18/09/2018
Cartographer: FM
Format: A4R

4. INDIGENOUS VEGETATION AND HABITATS

4.1 Overview

Indigenous vegetation on the property comprises three patches of forest on the lower northeastern slopes, with a total area of just over one hectare (Figure 1). These forest patches are differentiated by aspect and topography:

- The western patch occurs on steep, relatively dry, north-facing slopes.
- The smaller eastern patch occurs in a northeast-facing gully on moderately-steep slopes.
- The southern and largest patch of indigenous forest mostly occurs on east-facing, moderately-steep slopes.

All three of these areas of indigenous forest are contiguous with other areas of indigenous forest on adjacent properties. The three areas of indigenous forest on the property are described below.

4.2 Western dry forest

Forest on steep, rocky slopes on the western boundary of the property comprises broadleaved forest on lower slopes, and kānuka-broadleaved forest on drier and steeper upper slopes.

The broadleaved forest is dominated by māhoe (*Melictyus ramiflorus*), *Coprosma rotundifolia*, and occasional tarata (*Pittosporum eugenioides*), above an understorey of ponga/silver fern (*Cyathea dealbata*), *Coprosma rotundifolia*, and *C. areolata*. Seedlings of other indigenous trees, such as putaputaweta (*Carpodetus serratus*), makomako (*Aristotelia serrata*), and kaikomako (*Pennantia corymbosa*) are also present. Hen and chicken fern (*Asplenium bulbiferum*), shield fern (*Polystichum vestitum*), kiwakiwa (*Blechnum fluviatile*), and *B. chambersii* are more prominent on toe slopes and in gullies within broadleaved forest, while button fern (*Pellaea rotundifolia*), *Asplenium hookerianum*, *Lastreopsis glabella*, and *Polystichum neozelandicum* subsp. *xerophyllum* are present on steep, sometimes rocky, dry sites (Plate 1). Tangles of kareao/supplejack (*Ripogonum scandens*) occur in gullies on the lower slopes.

Kānuka-broadleaved forest on the upper slopes has kānuka (*Kunzea robusta*) as the dominant species, with māhoe and tarata at lower abundance. *Coprosma rotundifolia*, *C. areolata*, and *C. rhamnoides* are the main understorey shrubs. Button fern, *Asplenium hookerianum*, *Lastreopsis glabella*, *Polystichum neozelandicum* subsp. *xerophyllum*, and hen and chicken fern are common in the ground layer.

4.3 Northeastern gully forest

The small gully forest in the northeastern part of the property is dominated by māhoe (Plate 2) with occasional kōtukutuku (*Fuchsia exorticata*) and kānuka. Kareao is abundant in the gully base, but otherwise there is a sparse understorey of *Coprosma rotundifolia*, and a sparse ground cover. Hen and chicken fern is the main ground cover species, with occasional shield fern and *Lastreopsis glabella*.

Plate 1: Diverse ground ferns on steep, dry slopes in māhoe forest.

Plate 2: Māhoe-dominant forest in the northeastern gully.

4.4 Eastern hillslope forest

The larger indigenous forest fragment in the eastern corner of the property comprises broadleaved forest dominated by māhoe and kōtukutuku on lower slopes, with māhoe and kānuka on upper slopes (Plate 3). The understorey comprises *Coprosma rotundifolia*, *C. areolata*, pāte (*Schefflera digitata*), and occasional kātote (*Cyathea smithii*). Hen and chicken fern, shield fern, kiwakiwa, *Polystichum neozelandicum* subsp. *xerophyllum*, and occasional *Blechnum procerum* are present in the ground tier.

Plate 3: Local kānuka in broadleaved forest in the eastern corner of the property.

4.5 Other vegetation and habitats

Elsewhere on the property there are plantations and shelter belts of radiata pine (*Pinus radiata*), woodlots of eucalypts (*Eucalyptus* sp.), paddocks of exotic pasture, and scrub dominated by gorse (*Ulex europaeus*) and Scotch broom (*Cytisus scoparius*). These areas of vegetation were not assessed in any detail, but it was noted that areas of radiata pine forest often contained māhoe, *Coprosma* shrubs, and indigenous ground ferns.

5. FLORA

Fifty indigenous plant species were observed in these areas of indigenous forest, none of which are classified as Threatened or At Risk (de Lange *et al.* 2018) and 18 exotic plant species (Appendix 1).

6. FAUNA

6.1 Avifauna

Seven bird species were observed at the 256 Blueskin Road site, four of which were indigenous and three exotic (Table 1).

Table 1: Bird species observed at the 256 Blueskin Road site.

Species	Common Name	Endemism	Status
Anthornis melanura	Kōparapara; bellbird	Endemic genus	Not Threatened
Gerygone igata	Rirorior; grey warbler	Endemic species	Not Threatened
Rhipidura fuliginosa	Piwaiwaka; fantail	Endemic species	Not Threatened
Hemiphaga novaeseelandiae	Kererū; NZ pigeon	Endemic genus	Not Threatened
Prunella modularis	Dunnock	NA	Introduced and Naturalised
Turdus merula	Blackbird	NA	Introduced and Naturalised
Turdus philomelos	Song thrush	NA	Introduced and Naturalised

Other indigenous bird species that would use the site include pipihi/silvereye (*Zosterops lateralis*), while pipirihika/brown creeper (*Mohoua novaeseelandiae*), miromiro/South Island tomtit (*Petroica macrocephala*), and tītitipounamu/rifleman (*Acathansitta* chloris) may also use the site occasionally (Wildland Consultants 2016).

All of the four indigenous bird species recorded at the site are currently classified as Not Threatened (Robertson *et al.* 2017), but many deeper endemics, i.e. those that are endemic to New Zealand at genus or higher level, declined from 1969-1979 to 1999-2004, including kererū (Walker & Monks 2017), which was observed commonly at the Blueskin Road site. Low indigenous forest cover was one factor related to reduced geographic distribution and occupancy of indigenous forest birds (Walker *et al.* 2017). Broadleaved forest and kānuka-broadleaved forest provide good quality habitat for indigenous forest birds in the Dunedin area (Wildland Consultants 2016).

6.2 Other indigenous fauna

No assessment of indigenous lizards or invertebrates was undertaken but it is likely that a diverse range of invertebrates is present, and low numbers of lizards.

6.3 Introduced pest species

The property is used for low intensity grazing with domestic animals. The usual range of introduced pest animals will also be present, including possums (*Trichosurus vulpecula*), hedgehogs (*Erinaceus europaeus*), rats (*Rattus* spp.), mice (*Mus musculus*), mustelids (*Mustela* spp.), feral cats (*Felis catus*), rabbits (*Oryctolagus cuniculus cuniculus*), and hares (*Lepus europaeus*). Feral goats (*Capra hircus*) and red deer (*Cervus elaphus scoticus*) are also present in low numbers in the wider area.

7. ECOLOGICAL VALUES

On a national basis, land environments at the site retain only 20-30% of their original vegetation cover (Figure 2).

The three areas of indigenous forest on the subject property are small, totalling one hectare in size, but are contiguous with a much larger tract and are important remnants of mature indigenous forest and provide good habitat for indigenous forest birds, especially the endemic species such as kōparapara (bellbird) and kererū. The forest remnants occur on a range of landforms and aspects which result in changes in indigenous forest composition across the site.

While the Deborah Bay catchment retains a considerable amount of indigenous vegetation cover, there is less cover at lower elevation within the catchment, and increasing the local extent of lower elevation forest cover within the catchment represents a positive effect that would benefit indigenous forest birds.

8. ECOLOGICAL RESTORATION AT THE SITE

Future planting at the site should be take note of the variation in forest composition across the site, and in particular utilise a different selection of species for planting on steep, relatively dry parts of the site, and less steep parts of the site with greater soil moisture.

While the scope of this report is not the provision of an ecological restoration plan for the site, general principles and relevant issues are described below.

Indigenous Planting

- Only local plant material should be used, sourced from the Otago Coast Ecological Region or Dunedin Ecological District.
- Kānuka and kōhūhū (*Pittosporum tenuifolium*) should be prioritised for planting on steeper, drier, slopes. Other species not observed at the site but which would be ecologically appropriate for planting on steep dry slopes include kōwhai (*Sophora microphylla*), ngaio (*Myoporum laetum*), narrow-leaved lacebark (*Hoheria angustifolia*), and fierce lancewood (*Pseudopanax ferox*). Steep coastal forest containing these species is now rare in Dunedin Ecological District.
- Māhoe, while currently a canopy dominant, regenerates beneath a forest canopy and often does not thrive when planted in the open. It should therefore be planted only in sheltered sites or once shelter from other plants is available.
- Kōhūhū, tarata, kāpuka (*Griselinia littoralis*), horoeka (*Pseudopanax crassifolius*), and kōtukutuku are appropriate for planting on toe slopes, gullies, and moderate slopes. Other species including the podocarps tōtara (*Podocarpus totara*) and matai (*Prumnopitys taxifolia*), and lowland ribbonwood (*Plagianthus regius*), could be considered in these habitats.

- Planted indigenous trees often thrive when planted some six months following felling and removal of pine forest. This is probably because of the dual effects of the deep layer of undecomposed needles in a typical radiata pine plantation, which decompose to provide a nutrient flush, yet provide a moisture-retentive mulch that reduces weed growth.

Weeds

- Weeds such as regenerating radiata pine and eucalypt trees will be very likely in areas where exotic forest has been removed, and will need to be controlled, along with any other woody weeds that appear.

Pest Animals

- Pest animals such as hare and goats can have significant adverse effects on newly-planted material and should either be controlled or plants should be protected from their browse with tree shelters and/or fencing.

9. CONCLUSIONS

Ongoing protection of indigenous forest on the property will be a positive initiative, especially when combined with planting to increase the extent and connectivity of indigenous vegetation. Planting should only use locally-sourced material, with species and species assemblages matched to the habitats present in various parts of the site. It will be important to regularly release planted trees from competitions with grass and herb swards in the early stages, but so long as woody weeds are controlled, the planted forest will become self-sustaining in time. Increasing the extent of kōwhai-ngaio forest on steeper slopes would help to address the significant losses of this forest type that have occurred in Dunedin.

ACKNOWLEDGMENTS

Hugh Forsyth is thanked for providing project liaison. The landholder is thanked for advice on health hazards and safety at the site.

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VASCULAR PLANT SPECIES RECORDED AT THE SITE

* Asterisks denote exotic plant species.

Species	Common Name	Plant Type	Abundance
Acaena juvenca	Bidibidi	Dicot herb	Occasional
Acaena novae-zelandiae	Bidibidi	Dicot herb	Rare
Aristotelia serrata	Wineberry	Tree	Rare
Asplenium bulbiferum	Hen and chicken fern	Fern	Frequent
Asplenium flaccidum	Hanging spleenwort	Fern	Rare
Asplenium hookerianum	Hooker's spleenwort	Fern	Occasional
Asplenium lyallii	Limestone spleenwort	Fern	Rare
*Berberis darwinii**	Darwin's barberry	Shrub	Rare
Blechnum chambersii	Lance fern, rereti	Fern	Occasional
Blechnum discolor	Crown fern	Fern	Rare
Blechnum fluviatile	Kiwakiwa	Fern	Occasional
Blechnum penna-marina	Little hard fern	Fern	Rare
Blechnum procerum	Kiokio	Fern	Rare
Brachyglottis repanda	Rangiora	Tree	Rare
*Cardamine hirsuta**	Bitter cress	Dicot herb	Occasional
Carpodetus serratus	Putaputāwētā	Tree	Rare
*Cirsium arvense**	Californian thistle	Dicot herb	Rare
*Cirsium vulgare**	Scotch thistle	Dicot herb	Occasional
Clematis paniculata	Puawānanga	Vine	Occasional
Coprosma areolata		Shrub	Occasional
Coprosma rhamnoides		Shrub	Occasional
Coprosma rotundifolia		Shrub	Frequent
Cyathea dealbata	Silver fern	Fern	Occasional
Cyathea smithii	Soft tree fern	Fern	Rare
*Cytisus scoparius**	Scotch broom	Shrub	Occasional
*Dactylis glomerata**	Cocksfoot	Grass	Occasional
Dicksonia squarrosa	Wheki	Fern	Rare
*Digitalis purpurea**	Foxglove	Dicot herb	Occasional
*Dryopteris filix-mas**	Male fern	Fern	Rare
Fuchsia excorticata	Tree fuchsia, kōtukutuku	Tree	Occasional
*Galium aparine**	Cleavers	Dicot herb	Rare
Griselinia littoralis	Kāpuka; Broadleaf	Tree	Rare
Histiopteris incisa	Water fern	Fern	Occasional
*Holcus lanatus**	Yorkshire fog	Grass	Rare
Hydrocotyle moschata		Dicot herb	Occasional
*Hypericum androsaemum**	Tutsan	Shrub	Rare
Hypolepis ambigua		Fern	Rare
Kunzea robusta	Kānuka	Tree	Occasional
Lastreopsis glabella	Smooth shield fern	Fern	Occasional
*Leycesteria formosa**	Himalayan honeysuckle	Shrub	Occasional
Libertia ixioides	Mikoikoi	Monocot herb	Rare
Melicytus ramiflorus	Māhoe	Tree	Abundant
Metrosideros diffusa	White climbing rātā	Vine	Occasional
Microsorum pustulatum	Hound's tongue fern	Fern	Rare
Muehlenbeckia australis	Pōhuehue	Vine	Occasional
*Mycelis muralis**	Wall lettuce	Dicot herb	Rare
Myrsine australis	Māpou	Tree	Occasional

Species	Common Name	Plant Type	Abundance
Parsonsia heterophylla	Native jasmine	Vine	Occasional
Pellaea rotundifolia	Button fern	Fern	Occasional
Pennantia corymbosa	Kaikomako	Tree	Rare
Pittosporum eugenioides	Tarata	Tree	Occasional
Pittosporum tenuifolium	Kohuhu	Tree	Rare
Polystichum neozelandicum	Shield fern	Fern	Occasional
Pseudopanax crassifolius	Lancewood/horoeka	Tree	Rare
*Pseudotsuga menziesii**	Douglas fir	Tree	Occasional
Pseudowintera colorata	Horopito	Tree	Occasional
Pyrrosia eleagnifolia	Leatherleaf fern	Fern	Rare
Ripogonum scandens	Supplejack/kareao	Vine	Frequent
Rubus cissoides	Lawyer	Vine	Occasional
Rytidosperma gracile	Danthonia	Grass	Rare
*Sambucus nigra**	Elder	Tree	Rare
Schefflera digitata	Pāte/seven-finger	Tree	Occasional
*Senecio jacobaea**	Ragwort	Dicot herb	Rare
Solanum laciniatum	Poroporo	Shrub	Occasional
*Sonchus oleraceus**	Pūha/sow thistle	Dicot herb	Rare
Stellaria gracilenta	Chickweed	Dicot herb	Rare
*Ulex europaeus**	Gorse	Shrub	Occasional
Uncinia uncinata	Hooked sedge	Sedge	Occasional

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Appendix 2

Landscape and Visual Assessment

Landscape and Visual Assessment

1 **Vpt.1: Harbour Cone**

Lot2 and Lot 5 - view north/west - 6.28 km approx. – Fig. 9

1.2 Harbour Cone is a recreation destination whose audience may include tourists and residents. This view shows Quarantine Island and Goat Island in the harbour channel, the small isthmus ridge that rises behind Back Beach and contains residential housing, the timber loading area of Port Chalmers, and the coastal slopes between Sawyers Bay and Deborah Bay that rise behind.

1.3 The broad form of the main coastal ridge is a focal point mid view and rises westward to end in a small pine and pasture covered promontory, and which marks the eastern site boundary. The volcanic form of Mihiwaka and its southern, eastern, and northern slopes is silhouetted. Lower and more regular coastal farm ridges and slopes extend north/east to the right of this image

1.4 The site sits behind the promontory and is marked by the cap of pine trees that extends either side of the ridge. A gap between the pine blocks indicates the location of the existing residence. A further block of pine trees is located on the spur below and marks the southern headland of Deborah Bay. The catchment ridge of Deborah Bay is visible to the right of the image and pasture and coastal forest extend up its slopes. Small boats are visible in the water off the shoreline.

1.5 Lot 2 will be set back within the slopes on the south/west side of the ridge, left in this view, and lot 5 will located slightly on the north/east side of the ridge, near the top and adjacent to the existing residence, in scale.

1.6 Landscape and visual features

- prominence of horizon line peaks and the extent of the forest cover on the western slopes;
- pastoral slope and gully vegetation pattern on the coastal slopes to north/east of Deborah Bay;
- strategic view of the Port area of the Harbour, Quarantine and Goat Island and evidence of the tidal cycle; and
- prominence of forestry blocks within the slopes near the coastline.

1.7 Proposed Change

- removal of the forestry either side of the central ridge, mid view;
- replacement of forestry with pasture and native planting to south/west slopes, and native planting to north/east slopes of the ridge; and
- construction of 1 dwelling on south/west slopes and 1 dwellings on the upper north/east slopes

1.8 Outcome anticipated

- the underlying ridge form will be exposed;
- some ridge areas to the west of the site will become visible;
- native planting will replace the pine forest over a 10-year period; and
- the additional dwellings will not be visible at this distance.

1.9 Assessment

Landscape effects – Lot 2 and Lot 5		Visual effects – Lot 2 and Lot 5	
(a)	Short term effect - medium	(a)	Short term effect – low
(b)	Value of mitigation - high	(b)	Value of mitigation - high
(c)	Long term effect – medium / low	(c)	Long term effect - low
(d)	Cumulative effect – medium / low	(d)	Intensity of effect - low
(e)	Adverse, neutral, positive - positive	(e)	Adverse, neutral, positive - positive

1.10 Comment

The landscape and visual sensitivity of the site area are both considered to be medium / low from this viewpoint due to the distance of the viewer to the site area and the wide field of view that is available. The pine trees on the site are visible in the context of the surrounding landscape and the proposed changes will be noticeable. The pine trees currently indicate the line of the eastern boundary and their replacement with native planting is expected to reduce this effect and to have more rounded character that will express the underlying land form instead.

2 **Vpt. 2: 82 Tidewater Drive, Harrington Point**

Lot 5 and Lot 6 – view east – 4.63 km approx. – Fig. 10

2.1 This is a direct view across the tidal harbour from Harrington Point to Port Chalmers, Careys Bay, and Deborah Bay. The site ridge and the north/east facing slopes of Deborah Bay catchment are widely visible from this perspective and extend back until the run to the broad upper valley slopes that meet the line of Reservoir Road, visible in the upper part of the image. The slopes of Mihiwaka rise to the west and Mt. Kettle is visible in the distance to the north/west.

2.2 This view includes a wide sweep of the Port and its facilities and residential areas, the coastal slopes behind its foreshore and the shoreline of Careys Bay and Deborah Bay. The port infrastructure and container area is a focal point in the foreground. Housing rises up the slopes behind Careys Bay and housing and pasture are visible on the shoreline of Deborah Bay.

2.3 Landscape and visual features

- coastal natural character is displayed in the exposed tidal flat and marine vegetation; and
- the coastal landform structure is fully visible in this view point as well as unimpeded views of Mihiwaka and Mt. Kettle
- development pattern of Port Chalmers and shoreline settlement is visible but not dominant
- overall visual and land cover pattern and character is working coastal rural

2.4 Proposed Change

- removal of the forestry either side of the central ridge and removal of eucalyptus wood lots;
- construction of two dwellings; and
- replacement native planting on the south/west and north/east slopes.

2.5 Anticipated outcome

The underlying form of the site slopes will be more visible due to the removal of the pine trees and replacement with pasture and native planting. This vegetation will add to the visual connection between the other areas of native vegetation in this view, although not very clear at this distance. The dwellings are expected to have a low to legible level of visibility due to distance, design conditions, and their location against a land form backdrop.

2.6 Assessment

Landscape effects – lot 5 and lot 6		Visual effects – lot 5 and lot 6	
(a)	Short term effect - medium	(a)	Short term effect – low
(b)	Value of mitigation - medium / high	(b)	Value of mitigation - high
(c)	Long term effect - medium	(c)	Long term effect – medum / low
(d)	Cumulative effect – medium / low	(d)	Intensity of effect - low
(e)	Adverse, neutral, positive - positive	(e)	Adverse, neutral, positive - positive

2.7 Comment

The landscape and visual sensitivity of the site area that is visible within the scope of this image are both considered to be medium/low from this viewpoint due to the wide field of view and distance across the harbour. The changes proposed will be perceived within the upper north/east facing slopes of Deborah Bay but as a small element in a much wider landscape and backdrop.

3 **Vpt. 5: 11 Brickhill Road, Sawyers Bay**

Lot 1 + Lot 2 – view north/east – 2.5 km approx. – Fig. 13

3.1 This view looks upwards and towards to the site from the southern slopes of Sawyers Bay. The promontory that underlies the site is clearly shown in this profile and the east to west extent of the site, which is outlined by the pine tree cover. The south/west slopes of the main ridge face Sawyers Bay and includes large areas of forestry to the west and a patchwork of pasture and forestry to the east and towards Port Chalmers.

3.2 The lower residential area, pasture slopes and pine shelter belts are the foreground focal point with a broad area of emerging native forest emerging as a point of difference in a gully line above. The lower slopes of Mihiwaka rise to the west and provide a continuous silhouette against the sky from peak to lower reach, highlighted by cloud effects beyond.

3.3 Landscape and visual factors

- Mihiwaka, its eastern slopes and the form of the Port Chalmers ridge are very legible;
- the pattern of houses, lower pasture, and slope areas have visual coherence and provide amenity in this view;
- pine trees are a strong visual and land cover element within the north/west facing slopes and across the site and define its character as production orientated rural land; and
- there is a lack of visible development in the slopes above the residential area.

3.4 Proposed changes

- removal of the forestry on the south/west slopes above Blueskin Road;
- construction of two dwellings; and
- establish 2 ha of pasture and planting of approx. 600 m^2 of native planting adjacent to the dwellings.

3.5 Anticipated outcome

The ridge slopes will be exposed to view to the east of the site and the western half of the upper ridgeline will have the present shelterbelt removed. As a consequent the western end of the site slopes will receive more sunlight and create more change and interest than the present view. The underlying landform will be more apparent, and the form of the previous quarry will be revealed the bottom boundary, although difficult to see at this distance. Pasture will be visible on the western site slopes in the short term and native shrub and tree planting will emerge over a 10-year period and surrounding the 2 dwellings.

3.6 Assessment

Landscape effects – lot 1 and lot 2		Visual effects – lot 1 and lot 2	
(a)	Short term effect - medium / high	(a)	Short term effect – medium
(b)	Value of mitigation - high	(b)	Value of mitigation - high
(c)	Long term effect – medium	(c)	Long term effect – medium / low
(d)	Cumulative effect – medium / low	(d)	Intensity of effect - low
(e)	Adverse, neutral, positive - positive	(e)	Adverse, neutral, positive - positive

3.7 Comment

The landscape and visual sensitivity of the site area that is visible within the scope of this image are both considered to be medium/high from this viewpoint due to their elevation and location against the horizon. Both dwellings are located below the ridgeline and within planting and are expected to have a very low level of visibility due to these mitigating factors and distance. Planting of shrubs and trees and pasture will provide a context and filter views from this location.

4 **Vpt.7: 135 Aramoana Road, Deborah Bay**

Lot 5 and Lot 6 – view due south/west – 1.20 km + 1.1 km approx. – Fig. 15

4.1 This view is from the middle of the small jetty that is located mid-point on Deborah Bay shoreline and looks over the corner of 126 Aramoana Road towards the south/west catchment ridge and the lower southern headland. forest plantation on the north/east slope of the valley. Number 280 Blueskin Road is just visible to the upper right of this image.

4.2 The southern headland spreads into the valley floor behind the houses, with gorse and pasture on its slopes in the mid left area of this image. The railway embankment is visible above the lower pasture area, mid view, and native vegetation can be seen spreading upwards to meet the lower site boundary. Gorse extends beyond to the west. The pine block highlights the upper ridge, north/east slopes and lower northern boundary of the site. A eucalyptus block is prominent on the upper eastern site boundary.

4.3 Platform 5 is proposed on the upper ridge slopes and set back from the top of the slope slightly. Platform 6 is proposed for a location behind the pine trees that mark the lower site boundary and meet an extensive area of gorse.

4.4 Landscape and visual factors

- the foreshore has a small-scale character and features that add to the appeal of the Bay;
- the site slopes and ridge form the backdrop for some shoreline and resident views; and
- the pine trees are a focal point within these slopes.

4.5 Proposed Changes

- The forestry and eucalyptus blocks will be removed;
- two dwellings will be located on the upper ridgeline slope and on the lower north/east boundary;
- all harvested areas will be replanted with native species; and

4.6 Assessment

Landscape effects - lot 5		Visual effects - lot 5	
(a)	Short term effect – medium / high	(a)	Short term effect – medium
(b)	Value of mitigation - high	(b)	Value of mitigation – high
(c)	Long term effect - high	(c)	Long term effect - low
(d)	Cumulative effect - high	(d)	Intensity of effect - low
(e)	Adverse, neutral, positive - positive	(e)	Adverse, neutral, positive - neutral

Landscape effects - lot 6		Visual effects - lot 6	
(a)	Short term effect – medium	(a)	Short term effect – medium / low
(b)	Value of mitigation - high	(b)	Value of mitigation – high
(c)	Long term effect - medium	(c)	Long term effect - low
(d)	Cumulative effect – medium	(d)	Intensity of effect – low
(e)	Adverse, neutral, positive - positive	(e)	Adverse, neutral, positive - positive

4.7 Anticipated outcome

Both lot 5 and lot 6 will be single level structures with planting below or beside their proposed platform locations. The dwellings will be partly noticeable at construction but will recede from prominence as the new vegetation establishes and external finishes begin to weather. Distance from the viewer and from the main viewing area will also contribute to this low visibility, i.e. views to the harbour instead of inland and uphill.

4.8 Comment

The landscape and visual sensitivity of the area within this view are both considered to be high for the upper slope areas and medium/low for the lower northern site area. The potential houses will be a minimum of 1 km from this viewpoint and 1.2km and are not within the direct coastal environment.

4.9 These factors combine with the texture and shading effects that will apply to the final elevations of these dwelling, the screening effects of vegetation, and the location of these houses within a wide scale landscape change from rural forestry activity to rural residential and native revegetation that will connect to adjacent land areas.

5 **Vpt.8: 207 Aramoana Road, Deborah Bay**

Lot 5 + Lot 6 – view south/west – 2.1 km and 2.0km approx. – Fig. 16

5.1 This view is from a vehicle pull in on the side of the coastal road on approach from the north/east of Deborah Bay. Houses are scattered along the Bay foreshore and other houses are visible mid valley slope, along the upper south/west ridge, and above Careys Bay. Small boats are present in the Bay.

5.2 The southern headland rises to the south/west, left in this image, and up to the site and the main ridgeline, mid-point and on the horizon line. The south/west catchment ridge continues to the west and rural residential properties and pasture areas can be seen in the upper right. Native vegetation extends up from the railway line that can be seen mid image and into the lower eastern site boundary. The pine trees provide a strong contrast along the upper site boundary.

5.3 The lower slopes of the southern headland and the form of the tidal bay and southern shoreline of Deborah Bay are the focal point of this image. This is the case for most views from motorists as they travel around this small series of Bays before reaching the main shoreline of Deborah Bay.

5.4 The headland ends in moderately steep scarp slopes that are highlighted by coastal native species and a gorse area and pasture above. These slopes run out into Deborah Bay in a small northern facing ridge and contain houses on their lower area and that form the backdrop to foreshore views. Farming remains a predominant use in the slopes above the coastal scarps and recent spraying indicates that more pasture area will be established.

5.5 The form of the main south/west ridge is outlined and the ridges and slopes of the southern side of the valley are visible as they extend inland. The present site residence is just visible within the pine trees at the top of the main ridge and number 278 and 294 Blueskin Road are visible in the rural residential development to the west.

5.6 Platform 5 is proposed for the terrace area that extends to the rear of the group of eucalyptus trees that can be seen emerging above the upper ridgeline, immediate right of the existing residence. Lot 6 platform is proposed in the lower northern part of the site and behind the pine trees that are bounded by gorse in this image.

5.7 Landscape and visual factors

- a small contained Bay and shoreline valley landscape, houses and waterfront are the focus;
- the southern headland is prominent and forms the main shoreline backdrop to Deborah Bay
- the broad slopes and wider areas of vegetation are visible in the wider valley;
- roading and infrastructure are absent from the main valley slopes;
- pine tree blocks are prominent in coastal slopes and the upper ridgeline
- pasture is being re-established on the southern headland; and
- native vegetation is noticeable in the lower slopes.

5.8 Proposed changes

- The pine and eucalyptus trees will be harvested and replanted with native species; and
- One dwellings will be located beyond the upper slopes and a further dwelling will be located in the lower northern tip of the site.

5.9 Anticipated outcome

- harvesting of the pine forest will occur and replanting with native species will take place;
- earthworks will occur along the inner side of the upper farm track for harvesting;
- The dwellings will be established within 2 years following harvest;
- Lot 5 will be partly visible when initially constructed but is expected to recede relatively quickly as vegetation established. Lot 6 is expected to have a low initial level of visibility as established native vegetation is growing between its eastern elevation and shoreline views.

5.10 Assessment

Landscape effects - lot 5		Visual effects - lot 5	
(a)	Short term effect – medium / high	(a)	Short term effect – medium
(b)	Value of mitigation - high	(b)	Value of mitigation - high
(c)	Long term effect – medium	(c)	Long term effect - low
(d)	Cumulative effect - high	(d)	Intensity of effect - low
(e)	Adverse, neutral, positive - positive	(e)	Adverse, neutral, positive - neutral

Landscape effects - lot 6		Visual effects - lot 6	
(a)	Short term effect - medium / low	(a)	Short term effect – medium / low
(b)	Long term effect - medium	(b)	Value of mitigation - high
(c)	Value of mitigation - high	(c)	Long term effect - low
(d)	Cumulative effect - medium	(d)	Intensity of effect - low
(e)	Adverse, neutral, positive - positive	(e)	Adverse, neutral, positive - neutral

5.11 Comment

The landscape sensitivity of the site area that is visible within the scope of this image is considered to be high due to the strategic nature of this view. The visual sensitivity of the site area is assessed as medium/low due to the distance of the view and the range of potential focal points.

5.12 This view provides an overview of initial and longer-term landscape and visual effects of the proposal. Harvesting the pine trees will represent a significant landscape and visual effect, regardless of other activities, and will include earthworks, heavy machinery, and extensive areas of newly exposed earth and spoil.

5.13 The proposal provides an alternative to replanting in pines and repeating this cycle. The physical and visual presence of the native coastal forest below the site provides an indication of the eventual character of that is expected to result, and in strong contrast to the present pine planting.

5.14 Design guidelines will apply to the proposed houses and at this distance it is expected that the structures will recede from view and will eventually be a minor element in the much wider and more prominent pattern of native vegetation.

6 **Vpt.9: 150 Reservoir Road**

Lot 4, due south/east – 0.6 km and 0.7 km approx. – Fig. 17

6.1 This view is taken from a short stretch of Reservoir Road that provides open views into the upper ridge area. Vegetation screens views from the remainder of the road to the north of this point.

6.2 Pine trees spread down the slopes on either side of the upper ridge slopes and create the horizon line. A group of large Macrocarpa marks the top of the ridge vegetation and the location of the old farmstead. Lot 4 building platform will be located to the immediate left of these trees. Lot 1 will be located behind the shelter planting to the south/west and right of this image and will not be visible from this viewpoint.

6.3 Rural residential extends along Blueskin Road and also meets the western site boundary. This is marked by the tall shelterbelt behind number 278 Blueskin Road, the white and tile house to lower left of the image, approx. 420 m in distance. Number 296 Blueskin Road is sited in the foreground, approx. 195 m distance. The existing site residence is located behind the far field in the middle of the image.

6.4 Landscape and visual factors

- low density rural residential life style development;
- a high proportion of open space, pasture areas, and shrub and tree planting along property boundaries, relatively low impact houses in most cases;
- views of the wider Otago Harbour and Peninsula to the east; and
- forestry prominent on the horizon line and reflecting the change in topography.

6.5 Proposed changes

- the forestry blocks will be removed and replaced with native species;
- the upper site ridge shelter belts will be retained;
- lot 4 building platform will be located on the northern side of the ridgeline and set slightly below the main ground level on a small terrace area; and
- native planting will be undertaken to the west, south, and east of proposed lot 4.

6.6 Anticipated outcome

- views to Otago Harbour and the Peninsula views will become available;
- the proposed lot 4 house will have little or no visibility; and
- native planting will screen future views of this house within 10 years.

6.7 Assessment

Landscape effects - lot 4		Visual effects - lot 4	
(a)	Short term effect - high	(a)	Short term effect - low
(b)	Value of mitigation – high	(b)	Value of mitigation - high

(c)	Long term effect – medium / high	(c)	Long term effect - low
(d)	Cumulative effect - high	(d)	Intensity of effect - low
(e)	Adverse, neutral, positive - positive	(e)	Adverse, neutral, positive - neutral

6.8 Comment

Lot 4 will be located partly on a small terrace that lies to the north of the old farmhouse area and partly within the terrace itself, via limited excavation. The house height will be restricted to 5m on this site and planting is proposed on either side and to the rear of the platform to protect against prevailing winds and to screen off-site views should the shelterbelt be removed.

7 **Vpt.10: 41 Purakaunui Road**

Lot 4, lot 5 and lot 6 – view south/west –1.6km (lot 4), 1.7km (lot 5), and 1.48km (lot 6) – Fig.18 and Fig. 19

This view is focused on the middle valley area of the wider Deborah Bay catchment and the area of the north/west catchment ridge that will be subject to the proposed works. Included in this area are the upper part of the lower coastal valley, the railway route, a medium pine block adjacent to the railway line, the upper area of the southern headland, the site promontory and north/east forest area, the lower part of the western valley slopes, and rural residential housing and pasture along the ridgeline to the west.

7.1 Both the prominence of forestry and the extent of land cover change are evident in this view. Pastoral farming appears to have almost ceased in the upper valley as shown by a pattern of recent pasture, currently invaded with gorse and surrounded by tongues of native vegetation that is extending up gully areas. This change isn't irrevocable as recent spraying activity on the lower slopes of the southern headland indicates that pasture use will be restored in that part of the valley, but the extent of exotic weed growth seems to indicate this isn't immediately likely.

7.2 The extent of rural residential development is clear within this upper valley view and includes number 278, 288, 294, and 296 Blueskin Road, from left to right. Number 278 Blueskin Road is quite apparent due to its light exterior colour while number 294 is finished in brick, which has a more recessive effect. All of these houses are orientated to the sun and due north/east. This is partly due to the elevation of the site promontory and which can be seen rising noticeably to the east of this area of housing, and also screening this development from most shoreline views.

7.3 Landscape and visual factors

- strong landform that provides a sense of place and containment to the upper valley and a high level of legibility;
- low density rural residential development
- high level of exotic weeds and visually discordant pattern of pine planting
- extensive areas of regenerating and remnant native vegetation
- separation of land use and character either side of the railway line

7.4 Proposed changes

- the forestry blocks and eucalyptus will be harvested and replanted with native species;
- earthworks will be required to widen access for forestry across the mid north/east slopes
- the upper site ridge shelter belts will be retained (Fig.1);
- houses will be established on building platforms on lot 4, Lot 5, and lot 6; and
- an access road will be formed on the route of the present farm track to lot 6.

7.5 Anticipated outcome

- a high initial landscape and visual impact at harvesting;
- the upper ridgeline landform within the site area will be more apparent;
- neighbours to the west will have a wider field of view and greater sunlight in the early morning;
- lot 4 and lot 5 houses will be visible from this perspective until the planting establishes,
- lot 4 will remain visible but will be not prominent; and
- lot 6 will remain visible but will not be prominent due to location, elevation, and distance.

7.6 Assessment

Landscape effects - lot 4 and 5		Visual effects - lot 4 and 5	
(a)	Short term effect - high	(a)	Short term effect – medium / high
(b)	Long term effect - high	(b)	Value of mitigation – high
(c)	Value of mitigation - high	(c)	Long term effect – medium / low
(d)	Cumulative effect - high	(d)	Intensity of effect – low
(e)	Adverse, neutral, positive - positive	(e)	Adverse, neutral, positive - positive

Landscape effects - lot 6		Visual effects - lot 6	
(a)	Short term effect - medium	(a)	Short term effect - medium / low
(b)	Value of mitigation - medium	(b)	Value of mitigation – medium / low
(c)	Long term effect - medium / low	(c)	Long term effect – low
(d)	Cumulative effect - medium	(d)	Intensity of effect - low
(e)	Adverse, neutral, positive - neutral	(e)	Adverse, neutral, positive - neutral

7.7 Comment

Lot 4 will in direct line of sight but will be viewed against a partial landform backdrop and an existing shelter belt, approx. 80m behind the building, and at a distance of 1.6 km. Design guidelines provide for a 5m high building and light reflectivity values of 40% and down. Further planting mitigation measures apply lot 4 and 5 which will both provide additional wind shelter and provide a context for these structures.

7.8 None of these provisions apply to the existing rural residential development. It is expected that proposed houses will be viewed as a minor element in a pattern of native forest, pasture, and housing that extends along this ridge. This outcome is expected to reinforce the present settlement pattern and add to its visual and landscape amenity.