

Clutha District Landscape Management Recommendations

Outstanding Natural Features and Landscapes

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Prepared for Clutha District Council by

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Introduction

This report has been commissioned by Clutha District Council as one of a number of background documents to assist in the review of the Clutha District Plan. It is a subsidiary report of the Clutha District Landscape Management Recommendations report by Mike Moore Landscape Architect dated October 2013. Its purpose is to make recommendations about those areas and features of the District that should be recognized and managed as 'outstanding natural features and landscapes' under Section 6(b) of the Resource Management Act 1991 (RMA).

Section 6 of the RMA deals with 'matters of national importance' and requires Council to 'recognise and provide for': (b) '*The protection of outstanding natural features and landscapes from inappropriate subdivision, use and development*'. Other sections of the Act of particular relevance to landscape management include section 6(a) – the preservation of the natural character of the coastal environment (including wetlands, lakes and rivers and their margins) and Sections 7 (c) and (f) – the maintenance and enhancement of amenity values and the quality of the environment. Whilst wider landscape management has been addressed in the October 2013 report (and will be the subject of further subsidiary reports) the focus of this report is on outstanding natural features and landscapes within the District. Following completion of the draft assessment of the natural character, landscapes and natural features of the coastal environment of the Clutha District (Moore M and others, dated 15 May 2015), some amendments have been made to this report to achieve consistency.

Statutory framework

As discussed above, Council has a statutory responsibility under the Resource Management Act (RMA) to address landscape issues as part of its role in the promotion of the sustainable management of natural and physical resources. In particular, in achieving the purpose of the Act, the RMA requires Council to 'recognise and provide for' 'the protection of outstanding natural features and landscapes from inappropriate subdivision, use and development' as one of the 'matters of national importance' under Section 6(b) of the RMA.

Other statutory documents that are relevant to outstanding natural features and landscapes are the New Zealand Coastal Policy Statement (NZCPS), the Otago Regional Policy Statement (ORPS), the Otago Regional Plan: Coast (ORPC) and the Otago Regional Plan: Water (ORPW).

Policy 15 of the NZCPS 2010 addresses the protection of natural features and natural landscapes of the coastal environment. The Otago Regional Policy Statement contains objectives and policies that provide for the protection of outstanding natural features and landscapes from inappropriate subdivision use and development (Objective 5.4.3 and Policy 5.5.6). The Otago Regional Plan: Coast identifies outstanding natural features and landscapes above mean high water springs (Schedule 3.2) and lists values associated with these. It does not identify the landward extent of these features and landscapes. The Otago Regional Plan: Water identifies outstanding natural features and landscapes associated with lakes and rivers in Schedule 1A and briefly describes the values supporting this status. It also identifies significant wetlands based on ecological, cultural and naturalness values.

Methodology

'Outstanding natural features and landscapes' are not defined in the RMA. This report distinguishes between features and landscapes on the basis that features are distinct elements, whilst landscapes refer to broader areas containing many features.

Outstanding natural features and landscapes can be defined as 'notable due to the expression of natural elements, patterns and processes' (NZILA 2010). These are both natural and of exceptional quality and are outstanding at the district level.

The outstanding natural features (ONF) and outstanding natural landscapes (ONL) have been identified based on field observations, desktop research, consultation and submissions. It is anticipated that those included to date may be augmented or refined through on-going consultation. A significant source for identification of ONF's has been the Inventory and Maps of Important Geological Sites and Landforms in the Otago Region (Hayward and Kenny, 1998), hereafter referred to as the 'Otago geopreservation inventory 1998'.

A widely used system of evaluation currently in use in New Zealand is the 'Amended Pigeon Bay Criteria'. As noted in the NZILA Best Practice Note, there is 'accumulated case law and a level of acceptance of their use as a framework for landscape assessment'. These factors reflect a broad understanding of landscape including biophysical features, patterns and processes, sensory qualities, and associative meanings (NZILA 2010). They are described as follows (Peart 2004):

- Natural Science factors – the geological, topographical, ecological and dynamic components of landscape.
- Aesthetic values – including memorability and naturalness.
- Expressiveness – legibility i.e. how obviously the landscape demonstrates the formative processes leading to it.
- Transient values – occasional presence of wildlife; or its values at certain times of the day or of the year.
- Whether the values are shared and recognized
- Value to Tangata whenua
- Historical associations

This assessment uses these factors to ascribe values to the various features and landscapes identified. The values assessment is based to a large extent on the knowledge, research and observations of the author but has also been informed by submissions, and by the Clutha District Plan Manawhenua Section Issues and Options report (Kai Tahu Ki Otago 2008).

For each feature or landscape, the key landscape management issues and objectives are identified and possible management methods proposed.

Outstanding Natural Landscapes (ONL)

ONL1 : Lammerlaw high country



Landscape Values

This area includes the high country associated with the Lammerlaw Range and is largely tussock covered. The area identified coincides to a large extent with the part of the Te Papanui Conservation Park that is within Clutha District. The area is of very high ecological value, protecting a large intact tussock grassland area increasingly rare internationally, and the insect fauna of the area is of national importance. It is host to a large variety of native plants and animals including many rare wetland plants.

The landscape is characterized by a uniform but asymmetric landform pattern comprising broad ridges with parallel streams dissecting the slopes in rhythmical patterns. It has a strong sense of remoteness. The area also has cultural values being significant to Kai Tahu and containing gold mining relics such as water races which fed the Gabriels Gully and Waipori gold fields. Protection of this landscape is important in terms of Section 6(b) and (c) of the RMA.

The key landscape values are as follows:

- Natural Science / Expressive values
 - High ecological / biodiversity values associated with the large intact area of tussock grassland, insect fauna of national importance and rare wetland plants.
 - The dissected peneplain landform is expressive of the effects of water and wind erosion on an ancient land surface.

- Aesthetic / Wild and Scenic values
 - The uniform but asymmetric landform pattern is distinctive and highly memorable. The grassland cover provides for high landform coherence.
 - There are high natural character values based on the indigenous vegetation cover and vast landscape scale.
 - A sense of remoteness associated with the scale and naturalness of the landscape.

- Transient values
 - Lighting effects and the effects of snow cover can highlight the character of the peneplain landform.

- Tangata whenua values
 - Te Papanui (the Lammerlaw Range) has Ara tawhito, Mauka, Wahi taoka and Wahi tohu values for Kai Tahu.

- Historic Heritage values
 - Relic goldfields water races feeding Gabriels Gully have heritage significance.
 - Pastoral farming historic relics include a musterers' hut and fenceline remains.

- Shared and recognized values
 - The high conservation values are recognized in the Department of Conservation Otago Conservation Management Strategy and in the Conservation Park status of most of the area.

Outstanding Natural Features (ONF) and Significant Natural Features (SNF) within the ONL (refer to map)

None

Heritage / Cultural Features (HCF) within the ONL (refer to map)

Map Code	Feature	Values
HCF 1	Te Papanui (The Lammerlaw Range)	Ara tawhito, Mauka, Wahi taoka and Wahi tohu values

Landscape Management Issues

Threats

- The area is largely protected by reserve status however adverse effects could potentially arise from the impacts of forestry (e.g. wildings from nearby plantations) or large scale structures (e.g. infrastructural or energy projects).
- Changes due to tenure review.

Opportunities

- Changes due to tenure review.

Landscape Management Objectives

The key management objectives identified for the Lammerlaw High Country are as follows:

- Protection of the outstanding natural landscape values

Possible Management Methods

The following methods could be used to help achieve the landscape management objectives and to provide a District Plan layer of protection to back up the protection offered by its reserve status.

1. Specific ONL provisions including appropriate controls over subdivision, removal of indigenous vegetation, riparian management, buildings / structures, forestry and earthworks.

Mapping comments

The area identified is contiguous with Outstanding Natural Landscapes in both Central Otago District and Dunedin City. The 700m contour has been selected for the boundary as this generally reflects a subtle change in the vegetation character from more modified to more natural grasslands or from plantation forestry to tussock grassland. The 700m contour boundary proposed is lower than the adjacent area in Central Otago District which adopts the 900m contour, but higher than much of the High Country Outstanding Landscape Area boundary in Dunedin City which follows the base of the Hyde Escarpment. Adjacent to the Beaumont River the proposed boundary dips below the 700m contour to reflect the boundary of the Te Papanui Conservation Area.

ONL2 : Black Umbrella Range high country



Landscape values

The Clutha District boundary runs along the ridge of the Black Umbrella Range. The high country between this and the Pomahaka River and the upper Pomahaka Gorge have significant natural character values. There are ecological and habitat values associated with beech forests and Olearia shrublands and the coherent peneplain landform under its grassland cover has high aesthetic values. Gem Lake in its cirque basin is considered to be an Outstanding Natural Feature. O Tuparaoa (the Black Umbrella Range) and the Pomahaka River (Pou mahaka) have significant cultural values for Kai Tahu. The protection of the natural character of this area is important in terms of Section 6(b) of the RMA.

The key landscape values are as follows:

- Natural Science / Expressive values
 - High ecological / biodiversity values associated with the large intact area of tussock grassland, Beech forests and Olearia shrublands including the presence of threatened species.
 - The natural landforms are expressive of the effects of water and wind erosion on an ancient land surface.
 - Gem lake / cirque is an outstanding natural features expressive of glacial processes.

- The Upper Pomahaka Beech forests and Olearia shrublands are ecologically significant.
- Aesthetic / Wild and Scenic values
 - The natural landform pattern is distinctive and highly memorable. The patterns of the indigenous vegetation cover provides for high landform coherence.
 - There are high natural character values based on the indigenous vegetation cover and vast landscape scale.
 - A sense of remoteness associated with the scale and naturalness of the landscape.
 - The river gorge landscape has high wild and scenic qualities
- Transient values
 - Lighting effects and the effects of snow cover can highlight the character of the peneplain landform.
- Tangata whenua values
 - O Tuparoa (Black Umbrella Range) has Mauka, Wahi taoka and Wahi tohu values for Kai Tahu.
 - Pou mahaka (Pomahaka River) is subject to a statutory acknowledgement and has Ara tawhito, Mahika kai and Wahi taoka values for Kai Tahu.
- Historic Heritage values
 - Nineteenth century gold mining sites are present including areas of ground sluicing with associated tailings and hut sites.
- Shared and recognized values
 - None noted in statutory documents although conservation values are recognized in tenure review reports where completed.

Outstanding Natural Features (ONF) and Significant Natural Features (SNF) within the ONL (refer to map)

Map Code	Feature	Values
ONF4	Gem Lake and Cirque	A cirque and tarn, expressive of glaciation. The most easterly example of glacial landforms in the region.
SNF1	Pomahaka River	The river is a major landscape forming element with intrinsic natural values

Heritage / Cultural Features (HCF) within the ONL (refer to map)

Map Code	Feature	Values
HCF 2	Pou mahaka (Pomahaka River)	Subject to a Statutory Acknowledgement. Ara tawhito, Mahika kai and Wahi taoka values.
HCF3	O Tuparaoa (Black Umbrella Range)	Mauka, Wahi taoka and Wahi tohu values

Landscape Management Issues

Threats

- Degradation of the natural values of native vegetation cover through farming practices
- Visually prominent tracking
- Large scale structures (e.g. associated with infrastructural or energy projects)
- Forestry
- Changes due to tenure review.

Opportunities

- Enhanced protection of the natural values and natural landscape character.
- Changes due to tenure review.

Landscape Management Objectives

The key management objectives identified for the Black Umbrella High Country are as follows:

- Protection of the outstanding natural landscape values

Possible Management Methods

The following methods could be used to help achieve the landscape management objectives and to provide a District Plan layer of protection to back up the protection offered by its reserve status.

1. Specific ONL provisions including appropriate controls over subdivision, removal of indigenous vegetation, riparian management, buildings / structures, forestry and earthworks.
2. Providing for appropriate incentives for landowners to provide legal protection and appropriate management of existing areas of indigenous vegetation and areas with identified significant natural or cultural landscape features.

Mapping comments

The area mapped is contiguous with an area of Outstanding Natural Landscape in the Central Otago District but there is no adjacent ONL identified within Southland District. The 900m contour is adopted along the southern boundary of the area identified for consistency with Central Otago District ONL and because this level generally coincides with a change in character from less to more natural vegetation cover. The Pomahaka River (and the Clutha District boundary) has been adopted as the boundary on the eastern side however, to include the Upper Pomahaka Gorge and associated areas of Beech forest and Olearia Shrublands.

ONL3 : Catlins forests and coast



The Catlins coast is rugged and spectacular and has significant habitat and wildlife values as well as important cultural and historic values. In many places, native vegetation runs in unbroken sequences from the coast to subalpine tops and contributes to qualities of remoteness and its wild and scenic character. The area has landscape and natural character values that are considered outstanding and its protection is important in terms of Sections 6(a), 6(b), 6(c), 6(e), 7(c) and 7(f) of the RMA.

The key landscape values are as follows:

- Natural Science / Expressive values
 - In common with the rest of the Catlins, the area has the distinctive Southland Syncline landform often spectacularly expressed at the coast (e.g. Nugget Point).
 - The coastal cliffs and beaches are highly expressive of the erosive (and depositional) power of the sea.
 - The area includes numerous areas of ecological significance including wetlands, remnant bush and other areas with significant natural values. It is the largest remaining area of indigenous forest on the east coast of the South Island and contains unbroken sequences of indigenous vegetation from the coast to sub-alpine tops. The Tahakopa Valley is more or less the dividing line between two distinctive forest types, being Silver Beech to the

north and Podocarps / hardwood to the south. The Maclennan River is the southernmost extent of Silver Beech in New Zealand. The area is also very significant as habitat and breeding areas for indigenous wildlife.

- The presence of a number of outstanding natural geological and landform features as listed in the tables below:
 - The presence of numerous significant natural features including areas of indigenous vegetation and habitat for indigenous fauna as listed in the tables below:
- Aesthetic / Wild and scenic values
 - Spectacular and highly memorable coastal scenery with high wild and scenic values.
 - Spectacular and highly memorable waterfalls (e.g. Purakanui Falls) with high wild and scenic values
 - High natural character values based on the presence of large areas of native forests and generally low impact of built development and exotic plantings. Natural elements, patterns and processes are strongly dominant over built / modified.
 - The low impact nature of coastal settlements (where present) due to their generally modest scale, well contained form and low key, informal character.
 - Numerous landform features of particular interest e.g. cliffs, sweeping sandy beaches, sea caves and off shore islands.
 - Qualities of apparent remoteness and isolation based on the natural character of the landscape and low impact of built elements.
 - The rural or natural character of the coastal hinterland is a major factor contributing to coastal landscape values.
 - Transient values
 - Wildlife, permanently located along the coastline provides reliable year round viewing opportunities for visitors.
 - The dynamic weather is a vital part of the character of the place, particularly in terms of atmospheric conditions associated with rain, wind and Sub-Antarctic squalls, and stormy sea conditions along with the attendant drama of waves crashing on beaches and cliff faces.
 - Tangata Whenua values

- The coast and off-shore islands in this area are generally significant to Kai Tahu. Places and features of particular importance (HCF) are listed in the tables below:

- Historic associations values
 - The larger river mouths were the early timber exporting ports
 - The tables below list significant heritage cultural features (HCF)

- Shared and recognized values
 - Landscape values in this area are currently recognized as follows:
 - The Clutha District Plan recognizes the following as 'potentially outstanding landscapes':
 - The coastline from Tirohanga – Surat Bay
 - All offshore Islands
 - The 'Inland Catlins' (defined as the area generally south of Catlins Lake and extending inland to the Wisp Range and south to the Southland District boundary)
 - Table Hill
 - The coastline from Penguin Bay to the Brothers Point
 - The Clutha District Plan currently recognizes the following as 'outstanding natural features'
 - Nugget Point
 - Purakanui Falls
 - Jacks Blowhole
 - Nugget Point / Roaring Bay Triassic fauna
 - Jacks Bay Jurassic macro fossil assemblage
 - Kaka Point Triassic fossiliferous metasediments
 - Nugget Point Parks Bluff Triassic fauna
 - Nugget Point Triassic volcanoclastics
 - Nugget Point Zeolite facies
 - Cathedral Caves
 - The Otago Regional Plan: Water recognizes the following as 'outstanding natural features or landscapes':
 - Tautuku River
 - Catlins River
 - Purakanui Falls

- Maclennan River
- The Otago Regional Plan: Coast recognizes Nugget Point and the coastline from Cannibal Bay – Surat Bay and from Penguin Bay to Wallace Beach (and the adjacent offshore islands) as ‘outstanding natural features and landscapes’

Outstanding Natural Features (ONF) and Significant Natural Features (SNF) within the ONL (refer to map)

Map Code	Feature	Values
ONF6	Nugget Point and Islands	Spectacular, rugged promontory. Spectacular coastal expression of the Southland syncline. Haul out site for NZ Fur Seals, Elephant Seals, Hookers Sea Lions, Visited by Leopard Seals, Breeding Area for Yellow-eyed and Little Blue Penguins. Visited by other Penguin species. Classified as having regional scientific importance in the Otago Geopreservation Inventory 1998. Recognised as an ONFL in the Otago Regional Coastal Plan.
ONF7	False Islet	Spectacular, rugged headland and tombolo. Spectacular expression of the Southland syncline. Includes a regionally significant wetland.
ONF8	Purakaunui Falls	Spectacular waterfall with high aesthetic values. Recognised as an ONFL within the Otago Regional Plan: Water.
ONF9	Jacks Blowhole	Spectacular coastal feature and blowhole. Within an area recognized as an ONFL in the Otago Regional Coastal Plan.
ONF10	Tuhawaiki Island	Island with significant habitat, natural character and cultural values.
ONF11	Cosgrove Island	Island with significant habitat, natural character and cultural values.
ONF12	Rainbow Isles	Island with significant habitat, natural character and cultural values.
ONF13	Cathedral Caves	Impressive sea caves accessible at low tide expressive of marine erosive power. The best example of a large joint controlled sea cave on the Catlins Coast. Classified as having regional scientific importance in the Otago Geopreservation Inventory 1998. Within an area

		recognized as an ONFL in the Otago Regional Coastal Plan.
ONF14	Frances Pillars	Spectacular conglomerate rock formations. Within an area recognized as an ONFL in the Otago Regional Coastal Plan.
ONF15	Lake Wilkie	Ancient dune hollow lake with a complete vegetation sequence from marsh to mature podocarp forest. Significant wetland.
ONF16	Kinakina Island	Island with significant natural character aesthetic and cultural values.
SNF2	Blair Fen	Significant wetland
SNF3	Blair Swamp	Significant wetland
SNF4	Cannibal Bay Road Swamp	Significant wetland
SNF5	Catlins River wetland	Significant wetland
SNF6	False Islet wetland management area	Significant wetland
SNF7	Harrington Mill Road swamp	Significant wetland
SNF8	Hukihuki swamp	Significant wetland
SNF9	Hungerford Point saltmarsh	Significant wetland
SNF10	Lenz Reserve wetlands	Significant wetland
SNF11	Maclennan River Podocarp Swamp complex	Significant wetland
SNF12	Ratanui Swamp	Significant wetland
SNF13	Samson Hill Marshes	Significant wetland
SNF14	Stuarts Marsh	Significant wetland
SNF15	Tahakopa Bay Podocarp swamp	Significant wetland
SNF16	Tahakopa Marsh complex	Significant wetland
SNF17	Tahakopa River Bogs	Significant wetland
SNF18	Tautuku River Mouth marsh	Significant wetland
SNF19	Upper Tahakopa Swamps	Significant wetland
SNF20	Catlins Lake Estuary	A largely unmodified estuary and wetland. Important habitat for waterfowl and fish breeding
SNF21	Tunnel Rocks Reserve	Little Blue and Yellow-eyed Penguin colony site.

		Outstanding habitat value
SNF22	Sandy Bay	Yellow-eyed Penguin colony. Outstanding habitat value.
SNF23	Penguin Beach / Penguin Bay	Yellow-eyed Penguin colony. Outstanding habitat value. Haul out site for NZ Fur Seals.
SNF24	North Jacks Bay	Yellow-eyed Penguin breeding site. Outstanding habitat value.
SNF25	Cannibal Bay – Surat Bay	Haul out site for Hookers Sea Lions.
SNF26	Hayward Point and Jacks Bay	Breeding site for Yellow-eyed Penguins
SNF28	Tautuku dune ridges	Intact sequences of indigenous forest on dune ridges and swampland
SNF29	Wisp Range bush	High quality stand of native bush with high habitat value.
SNF31	Papatowai Scenic Reserve	Rare lowland podocarp forest with high habitat value. Intact sequences of indigenous forest on dune ridges and swampland with a large area of Pingao.
SNF32	Long Point and Chasm Island	Yellow-eyed Penguin colonies. Site of outstanding habitat value. Haul out for NZ Fur Seals. Sooty Shearwater colony.
SNF33	Waiparau Head	Yellow-eyed Penguin colonies. Site of outstanding habitat value.
SNF34	Wallace Head	Haul out site for NZ Fur Seal
SNF35	Chaslands Mistake	Haul out site for NZ Fur Seal
SNF36	Purakanui Bay – Cosgrove Island	Haul out site for Hookers Sea Lion. Breeding area for NZ Fur Seal, Yellow-eyed Penguin, Little Blue Penguin and Sooty Shearwater.
SNF37	Hinahina Cove	Breeding area for Yellow-eyed Penguin. Haul out site for NZ Fur Seal
SNF38	Duff Islands – Castle Rock	Haul out site for NZ Fur Seal.
SNF39	Waipati Beach	Haul out site for Hookers Sea-lion

Heritage / Cultural Features (HCF) within the ONL (refer to map)

Map Code	Feature	Values
HCF4	Parauriki (Kaka Point)	Wahi tohu
HCF5	Maka Tu (Gateway at	– Urupa and Wahi tapu values

	Urupa at Kaka Point, where Kai Tahu killed Maka Tu, a Kati Mamoe chief)	
HCF6	Maranuku (A Kaika at Kaka Point)	Pa / Kaika
HCF7	O-waia (Campbell's Point)	Kai Moana; Wahi tohu values
HCF8	Te Tau O waea (Campbells reef)	Kai Moana
HCF9	Taumata o Kotare (Hill behind Campbells Point)	Wahi tohu
HCF10	Puna-wai-Toriki (Hays Gap)	Kai Moana, Wahi Tohu values
HCF11	Kai Mataitai Bay (Bay north of Nugget Point)	Kai Moana, Wahi tohu values.
HCF12	Tokata (The Nuggets)	Subject to a statutory acknowledgement.. pukarea, Kai Moana, Wahi taoka and Wahi tohu values.
HCF13	Taumata o Rakipokia (Tokata Hill on which the Nuggets lighthouse stands)	Wahi tohu values
HCF14	Hakaparaoa (Roaring Bay)	Wahi tohu values
HCF15	Te One O Piriao (Sandy Bay)	Wahi tohu values
HCF16	Te Rakiutuhia (Cannibal Bay)	Wahi tohu values
HCF17	Te Rae O Rakiutuhia (Cannibal Bay Point)	Wahi tohu values
HCF18	Tua Te Pere (Table Hill)	Wahi tohu values
HCF19	Kuramea (Catlins lake)	Subject to Statutory Acknowledgement). Mahika kai, Pa / Kaika and Wahi taoka values.
HCF20	Papatowai	Pa / Kaika values
HCF21	Ira Huka (Long Point)	Wahi taoka, Wahi tohu values
HCF22	Te Hapai (Beach at Long Point)	Kai Moana; Wahi taoka; Wahi tohu values.
HCF23	Puke Mauku Uku (Cosgrove Island)	Wahi taoka, Wahi tohu values
HCF24	Maka ti (Chaslands	Wahi taoka, Wahi tohu values.

	Mistake)	
HCF25	Nugget Point Lighthouse	One of the oldest continually operated lighthouses in NZ.
HCF26	Jacks Bay Crib settlement	Traditional coastal crib settlement with historic heritage values expressive of a past kiwi holiday culture.
HCF27	Newhaven	Traditional coastal crib settlement with historic heritage values expressive of a past kiwi holiday culture.
HCF28	Surat Bay	Site of historic shipwreck that gave the bay its name.
HCF29	Tautuku	Site of historic whaling station where evidence of gardens remains. Traditional coastal crib settlement
HCF30	Wallace Beach	Site of historic gold mining operation
HCF31	Chaslands Mistake	Site of historic shipwreck
HCF32	Long Point	Site of historic shipwreck
HCF33	Wilsher Bay	Site of historic whaling station

Landscape Management Issues

Threats

Much of this area is protected in reserves or through covenants. Where this is not the case, landscape values face the following potential threats:

- Loss or degradation of areas of indigenous vegetation e.g. through removal or grazing pressures.
- Reduction in the natural values of streams, wetlands and estuaries resulting from runoff and poor agricultural or forestry practice.
- Insensitive change arising from subdivision and lifestyle / residential scale development.
- Insensitive siting and / or design of buildings.
- Exotic tree planting including forestry that reduces landform coherence.
- Insensitive change arising through development of large scale structures e.g. associated with infrastructural, energy or tourism projects.
- Large scale earthworks.
- Insensitive expansion of or redevelopment within, the coastal settlements resulting in a significant change in character.

Opportunities

- Enhancement of the natural character of the area through the restoration of indigenous vegetation where possible, particularly in riparian and coastal edge areas and by management of existing areas of indigenous vegetation to exclude stock and to enhance their natural values and vitality.
- Enhanced legal protection of areas with important natural or cultural values where possible / required.

Landscape Management Objectives

The key management objectives identified for the Catlins forests and coast ONL are as follows:

- The preservation and enhancement where appropriate, of the natural character of the coastal environment.
- The protection and enhancement where appropriate, of the outstanding natural landscape values.
- The protection of the outstanding natural features.
- Conservation and enhancement of the natural character rural amenity values whilst providing appropriately for environmentally and economically sustainable rural land use activities.
- Protection of the identified significant natural features and heritage cultural features.

Possible Management Methods

The following methods could be used to help achieve the landscape management objectives:

1. Specific ONL provisions including appropriate controls over all significant subdivision, removal of indigenous vegetation, riparian management, buildings / structures, forestry and earthworks.
2. Provision as appropriate for expansion of the settlements within the area.

3. Providing for appropriate incentives for landowners to provide legal protection and appropriate management of existing areas of indigenous vegetation.
4. Provision for appropriate incentives for landowners to provide legal protection and appropriate management of areas with identified significant natural or cultural landscape features.
5. Rural landscape management guidelines to encourage development and management that is sensitive to landscape values including appropriate siting and design of buildings and plantings, encouragement of riparian plantings, and best practice as regards the landscape effects of forestry.
6. Development guidelines for the coastal settlements to conserve and enhance their distinctive character where applicable.

Mapping comments

The area included as the Catlins Forests and Coast Outstanding Natural Landscape includes the entire Catlins coast included within Clutha District and the southern significantly bush covered area. From Kaka Pint to Tahakopa Bay the boundary has been drawn to include the catchments orientating directly to the open coast and in this way includes the 'coastal environment' in terms of Section 6(a) of the RMA. Inland from the coast, the boundary has been drawn to incorporate the visually prominent and / or bush covered parts of the Rata, Wisp and Beresford ranges, the boundary generally reflecting a change to steeper upper slopes or a change from pasture to bush cover. In a few places (north side of Rata and Wisp Ranges) contour lines have been adopted as a convenient way to demark the higher more visually prominent areas from the lower slopes.

There are no corresponding landscape management areas over the border in Southland District except that the 'Coastal Environment' has been identified.

Note: The area mapped will require some adjustment and refinement to achieve consistency with the draft assessment of the natural character, landscapes and natural features of the coastal environment of the Clutha District (Moore M and others, dated 15 May 2015).

Outstanding Natural Features (ONF)

ONF1 : Lower Taieri River Gorge

Location

Lower section of the Taieri River gorge from the Taieri Mouth bridge to the end of the schist section.

Values

- Recognised in the Otago inventory of important geological sites and landforms as an unmodified and well defined coastal gorge of international importance.
- Includes wetlands of regional significance
- High expressive and aesthetic values
- Recognised as an ONFL in the Otago Regional Plan: Water
- Kai Tahu wahi taoka, pa / kaika, wai maori, wahi paripari, tauraka waka, ara tawhito and mahika kai values.
- Has historic heritage values as a transport route to the interior

Management Issues

Threats include adverse effects on natural landscape character from structures and / or exotic plantings on the skyline of the gorge and possible indigenous vegetation clearance and development of buildings or plantings that detract from natural character values on land not protected by reserve status. There may be opportunities to enhance protection through reserve status or covenant for those parts of the gorge currently unprotected.

Management Objective

Protection from inappropriate subdivision, use and development.

Management Recommendation

Identify this feature as an ONF in the District Plan.

ONF2 : Cooks Rock (Aonui), Chrystalls Beach

Location

Chrystalls Beach

Values

- A visually distinctive, anomalous jointed basaltic stack on Chrystalls Beach, incorporating the only occurrence of the taranakite in the South Island. Classified as having national scientific importance in the Otago Geopreservation Inventory 1998.
- Kai Tahu wahi taoka values.
- Recognised as an ONFL (along with Chrystalls Beach) in the Otago Regional Coastal Plan 2001.

Management Issues

There are no significant threats from land use and development identified.

Management Objective

Protection from inappropriate subdivision, use and development.

Management Recommendation

Identify this feature as an ONF in the District Plan.

ONF3 : Taieri Island and Tombolo (Moturata)

Location

Taieri River mouth.

Values

- A visually distinctive island connected to the mainland by a tombolo.
- Provides important habitat for indigenous wildlife
- A wahi taoka site for the Moturata Taieri Whanua with values including Pa / Kaika; Kai Moana; Urupa; Wahi Taoka; Wahi tapu.
- The site of an historic whaling station.
- Recognised as an ONFL in the Otago Regional Coastal Plan 2001.

Management Issues

The Island has Scenic Reserve status and there are no significant threats from land use and development identified.

Management Objective

Protection of the island's natural values from inappropriate subdivision, use and development.

Management Recommendation

Identify this feature as an ONF in the District Plan.

ONF4 : Gem Lake and Cirque

Location

On the eastern side of the Whitecoomb Range, Black Umbrella Mountains

Values

A cirque and tarn, expressive of glaciation. The most easterly example of glacial landforms in the region.

Management Issues

There are no significant threats from land use and development identified.

Management Objective

Protection from inappropriate subdivision, use and development.

Management Recommendation

Identify this feature as an ONF in the District Plan.

ONF5 : Birch Island

Location

Clutha River, Rongahere Gorge

Values

Predator free island with high biodiversity values. The wider area (Rongahere Gorge) is recognized as an ONFL in the Otago Regional Water Plan.

Management Issues

This island is managed by the Department of Conservation as 'Stewardship Area'. Potential threats from land use and development include damming of the river for hydro electricity generation.

Management Objective

Protection of the island's natural values from inappropriate subdivision, use and development.

Management Recommendation

Identify this feature as an ONF in the District Plan.

ONF6 : Nugget Point and Islands

Location

Nugget Point and stacks directly offshore.

Values

- Spectacular, rugged promontory. Spectacular coastal expression of the Southland syncline. Haul out site for NZ Fur Seals, Elephant Seals, Hookers Sea Lions, Visited by Leopard Seals, Breeding Area for Yellow-eyed and Little Blue Penguins. Visited by other Penguin species. Classified as having regional scientific importance in the Otago Geopreservation Inventory 1998.
- Includes various sites of geological significance
- Spectacular coastal feature with high aesthetic values
- Recognised as an ONFL in the Otago Regional Coastal Plan.

- High Kai Tahu values. Subject to a statutory acknowledgement.
- Historic values related to the lighthouse.

Management Issues

This area is managed by the Department of Conservation as Lighthouse Reserve and Stewardship Area. There are no significant threats from land use and development identified.

Management Objective

Protection of the natural values from inappropriate subdivision, use and development.

Management Recommendation

Identify this feature as an ONF in the District Plan.

ONF7 : False Islet

Location

Between Surat and Cannibal Bays

Values

- Recognised in the Otago inventory of important geological sites and landforms as an excellent example of coastal erosion controlled by bedding.
- Includes a regionally significant wetland
- High expressive and aesthetic values
- Kai Tahu cultural and spiritual values

Management Issues

This area is managed by the Department of Conservation as a recreation Reserve. There are no significant threats from land use and development identified.

Management Objective

Protection of the natural values from inappropriate subdivision, use and development.

Management Recommendation

Identify this feature as an ONF in the District Plan.

ONF8 : Purakanui Falls

Location

Purakaunui River. Access from Purakaunui Falls Road.

Values

Scenic waterfall. Recognized as an ONFL in the Otago Regional Water Plan.

Management Issues

This feature is within the Department of Conservation Purakaunui Falls Scenic Reserve. There are no significant threats from land use and development identified.

Management Objective

Protection from inappropriate subdivision, use and development.

Management Recommendation

Identify this feature as an ONF in the District Plan.

ONF9 : Jacks Blowhole

Location

North side of Penguin Bay. Accessed from Jacks Bay.

Values

Spectacular coastal feature and blowhole. Within an area recognized as an ONFL in the Otago Regional Coastal Plan.

Management Issues

This feature is within the Department of Conservation Hinahina Cove Scenic Reserve. There are no significant threats from land use and development identified.

Management Objective

Protection of the feature and the natural character of its setting from inappropriate subdivision, use and development.

Management Recommendation

Identify this feature as an ONF in the District Plan.

ONF10 : Tuhawaiki Island

Location

South of Jacks Bay

Values

- Haul out site for NZ fur seals and a breeding area for sooty sheerwater and little blue penguin.
- High expressiveness and aesthetic values
- Recognised as an ONFL in the Otago Regional Plan: Coast.
- Kai Tahu cultural and spiritual values including ipukarea, kai moana, mahika kai, wahi taoka, wahi tapu and wahi tohu.

Management Issues

This feature is managed as a scenic reserve by the Department of Conservation. There are no significant threats from land use and development identified.

Management Objective

Protection of the feature and the natural character of its setting from inappropriate subdivision, use and development.

Management Recommendation

Identify this feature as an ONF in the District Plan.

ONF11 : Cosgrove Island

Location

South of Purakaunui Bay

Values

- Breeding area for NZ fur seal, yellow-eyed penguin, little blue penguin, sotty sheerwater and fairy prion. Haul out site for sea lion.
- High expressiveness and aesthetic values
- Recognised as an ONFL and as a marine mammal and bird site in the Otago Regional Plan: Coast.
- Kai Tahu cultural and spiritual values including wahi taoka and wahi tohu.

Management Issues

This feature is managed by the Department of Conservation. There are no significant threats from land use and development identified.

Management Objective

Protection of the feature and the natural character of its setting from inappropriate subdivision, use and development.

Management Recommendation

Identify this feature as an ONF in the District Plan.

ONF12 : Rainbow Isles

Location

Off Skeleton Point at the northern end of Tautuku Bay

Values

- Breeding area for yellow-eyed penguin and a haul-out site for NZ fur seal.
- High expressiveness and aesthetic values
- Recognised as an ONFL and as a marine mammal and bird site in the Otago Regional Plan: Coast.
- Kai Tahu cultural and spiritual values

Management Issues

This feature is managed by the Department of Conservation. There are no significant threats from land use and development identified.

Management Objective

Protection of the feature and the natural character of its setting from inappropriate subdivision, use and development.

Management Recommendation

Identify this feature as an ONF in the District Plan.

ONF13 : Cathedral Caves

Location

North end of Waipati Beach

Values

Impressive sea caves accessible at low tide expressive of marine erosive power. The best example of a large joint controlled sea cave on the Catlins Coast. Classified as having regional scientific importance in the Otago Geopreservation Inventory 1998. Within an area recognized as an ONFL in the Otago Regional Coastal Plan.

Management Issues

There are no significant threats from land use and development identified.

Management Objective

Protection from inappropriate subdivision, use and development.

Management Recommendation

Identify this feature as an ONF in the District Plan.

ONF14 : Frances Pillars

Location

Western side of Lathyrus Bay, west of Tautuku Peninsula

Values

Spectacular conglomerate rock formations. Within an area recognized as an ONFL in the Otago Regional Coastal Plan.

Management Issues

There are no significant threats from land use and development identified.

Management Objective

Protection from inappropriate subdivision, use and development.

Management Recommendation

Identify this feature as an ONF in the District Plan.

ONF15 : Lake Wilkie

Location

Dune lake adjacent to Tautuku Bay, accessed from Chaslands Highway.

Values

Ancient dune hollow lake with a complete vegetation sequence from marsh to mature podocarp forest

Management Issues

Within the Tautuku Bay Scenic Reserve (DOC). There are no significant threats from land use and development identified.

Management Objective

Protection of its natural values from inappropriate subdivision, use and development.

Management Recommendation

Identify this feature as an ONF in the District Plan.

ONF16 : Kinakina Island

Location

Off Waipati Beach

Values

- High expressiveness and aesthetic values
- Recognised as an ONFL and as a coastal protection area in the Otago Regional Plan: Coast.
- Kai Tahu cultural and spiritual values

Management Issues

This feature is managed by the Department of Conservation. There are no significant threats from land use and development identified.

Management Objective

Protection of the feature and the natural character of its setting from inappropriate subdivision, use and development.

Management Recommendation

Identify this feature as an ONF in the District Plan.

Other potential ONL's and ONF's considered

The Clutha District contains other natural features and landscapes that whilst not perhaps meeting the rigorous 'outstanding' test, are considered to also have significant natural character values that should be recognized and sustainably managed in the District Plan. It is proposed that these be addressed in detail in a separate report. To provide context now however, the following lists the feature / landscape involved with a brief comment on the reasons they are not considered outstanding.

Significant Natural Landscapes

The Coastal Landscape, Taieri Mouth – Kaka Point

The Coastal landscape north of Kaka Point has natural character values and features of both natural and cultural significance but is not considered to be an outstanding natural landscape in the way that the Catlins Coast is. This is largely because it lacks the scenic drama associated with the interface of the Southland syncline landform and the sea and large areas of indigenous vegetation. Its natural character values are of significance however, and need require sustainable management in terms of Section 6(a) of the RMA. It is proposed that this section of coast is managed as a 'Coastal Riparian Landscape'.

Lakes Waihola and Waipori and associated wetlands

Lakes Waihola (Waihora) and Waipori (Waipouri) and the wetlands (including Sinclair Wetlands / Te Nohoaka a Tuliauau) associated with them are remnants of a much larger complex of lakes and wetlands and have significant natural and cultural values. The potential ONL includes the lakes and wetlands and their immediate context where this still retains a significant degree of natural character. The preservation of the natural character of this landscape is clearly important in terms of Section 6(a) of the RMA and given its cultural significance, section 6(e) as well. Overall however, this area is considered to be too modified and to have insufficient scenic qualities, to warrant ONL status. It is recommended that it is recognized and managed as a 'Coastal Riparian Landscape'.

Lake Tuakitoto and associated wetlands

Lake Tuakitoto and the wetlands associated with it (Te whata o Rakaihautu) are remnants of a larger lake / wetland complex and have significant natural and cultural values. Lake Tuakitoto was the larger of two lakes that once existed. The area identified includes the lakes and wetlands and their immediate context where this still retains a significant degree of natural character. The preservation of the natural character of this landscape is clearly important in terms of Section 6(a) of the RMA

and given its cultural significance, section 6(e) as well. Overall however, this area is considered to be too modified and to have insufficient scenic qualities, to warrant ONL status. It is recommended that it is recognized and managed as a 'Coastal Riparian Landscape'.

Waipori Gorge

This area is a deeply incised gorge predominantly covered in native forest and surrounded by exotic plantation forests. The lower part of the gorge extends into the territory of Dunedin City. This valley has high natural character values associated with the Waipori River, distinctive gorge landform and native forest cover. Natural values are modified in places by dams and other electric power station infrastructure including the Waipori Falls village. The level of modification precludes ONFL status but protection of the values of this landscape is important in terms of Section 6(c), 7(c) and 7(f) of the RMA and it is recommended that it is managed as a 'Significant Natural Landscape'.

Blue Mountains Upper slopes and bushlands

The Blue Mountains are a prominent landmark within Clutha District and the natural skyline and upper slopes form an attractive natural backdrop to surrounding rural landscapes. Naturalness values are higher for the eastern slopes which has more indigenous forest cover than the western slopes which are more modified by vegetation clearance, forestry and tracking. Tapuae nuku (Blue Mountains) are significant to Kai Tahu. The area that could be potentially considered as an ONL is the higher slopes of the range, generally over 600m and includes the major areas of indigenous vegetation. This area has high natural character and amenity values, but overall, it also has levels of modification that preclude this status. Protection of the landscape values of this area is important in terms of Section 6 (c), 6(e) and 7(c) however, and it is recommended that it is managed as a 'Significant Natural Landscape'.

Rongahere Gorge

Rongahere Gorge is the only remaining section on the main stem of the Clutha River flanked by indigenous forest. This forest includes rare forest types for the east of the South Island and represents the eastern limit of Beech forests. It is of significant conservation value and is habitat for rare or endangered bird and invertebrate species. Birch Island is predator free (apart from Possums) and is of particular ecological significance. This island is included above in the list of recommended ONF's. Mata-au (the Clutha River) is significant to Kai Tahu. Rongahere Gorge is listed as an 'outstanding natural feature or landscape in the Otago Regional Water Plan and as a 'potentially outstanding landscape' in the operative Clutha District Plan.

The area identified as potential ONL coincides more or less with the areas under indigenous forest cover and includes all the primary river facing slopes that comprise the gorge landform. Visually, the forested gorge is attractive although weedy species such as Willow and the influence of forestry in the areas surrounding detract from landscape values. These compromised aesthetic values preclude ONL status in my assessment. Protection of this area is important in terms of Section 6(a), (c) and (e) and Section 7(c) however, and it is recommended that it is recognized and managed as a 'Significant Natural Landscape'.

North Catlins

In common with the proposed Catlins Forest and Coast ONL, this area has a distinctive landform associated with the Southland Syncline, a nationally and internationally significant natural landform. The distinctive landform character is particularly strongly expressed in this area given the presence of the Murihiku escarpment, highly legible east – west strike ridges and conical hill forms. Human modification by farming and forestry is greater than in the southern part of the Catlins, precluding 'outstanding natural landscape' status but there are still significant areas of indigenous vegetation (including native bush and tussock grasslands) and the area is relatively sparsely settled. Protection of the landscape values of this area is important in terms of Sections 7(c) and 7(f) of the RMA and to the extent that the Southland syncline can be considered a vast outstanding natural feature, section 6(b)

also. It is recommended that it is recognized and managed as a 'Significant Natural Landscape'.

Significant natural features

Natural features listed in the Inventory and maps of important geological sites and landforms in the Otago Region (Hayward B and Kenny J (1998)).

The following features are listed in the Otago inventory and maps of important geological sites and landforms. Some features listed in the inventory are included as ONF's above rather than SNF's where their values are assessed as outstanding in terms of the Amended Pigeon Bay factors. Features located in quarries or which are considered to be primarily of cultural rather than natural significance (e.g. Benhar pottery works) have been excluded.

- Akatore Creek metachert with akatoreite
- Akatore Fault, Bull Creek swamp
- Akatore Fault, Taieri Beach faulted coastal plain
- Akatore Fault, uplifted marine terraces
- Blue Mountain No1 Fault
- Chrystalls Beach mélange
- Clifton Fault trace
- Clinton District porcellanite
- Jacks Bay Jurassic macrofossil assemblage
- Kaihiku Gorge Triassic fossils
- Kaka Point Triassic fossiliferous metasediments
- McPhee Cove Jurassic conglomerate
- Mitchells Point Paleocene Wangaloa fossils
- Nugget Point laumontite ash bed
- Nugget Point Parks Bluff Triassic fossils
- Nugget Point, Roaring Bay Triassic fauna and volcanoclastics
- Otago Coastal schist section
- Pomahaka River, Oyster Creek Oligocene estuarine fossils
- Pomahaka River, Waikaikai Creek, Oligocene estuarine beds
- Spylaw Fault

- Taieri River mouth psilomelane
- Titri Fault tilted gravels
- Tuapeka fault plane
- Waipati Estuary
- Waitahuna Loess flow
- Wangaloa Domain transgressive sequence
- Watsons Beach coombsite

Areas of significant indigenous vegetation and significant habitats of indigenous fauna

The following areas of significant indigenous vegetation and significant habitats of indigenous fauna are listed for completeness, and in recognition of their contribution to the natural character of the landscape. Whilst these may have highly significant ecological values, ecological values are not the subject of this report and none were considered to have outstanding natural landscape values. It should be noted however, that some are within areas that have been recommended as Outstanding Natural Landscapes or Coastal Landscape and contribute to the overall natural values of these areas.

- Akatore Creek swamp
- Black swamp
- Blackcleugh Burn swamp
- Blair Fen
- Blair swamp
- Bungtown bog
- Cairn Road bog
- Camp Stream swamp
- Cannibal Bay Road swamp
- Catlins River wetland
- Cheetwood Road wetlands
- Clifton Hill marshes
- Clutha Matau wetlands
- Clutha River Mouth lagoon
- Coutts Gully Swamp

- Culcairn Oxbow marsh
- Dunvegan Fen Complex
- East Benhar swamp
- False Islet Wetland Management Area
- Finegand Lagoon Marsh
- Frasers Stream Headwaters Marsh Complex
- Glendhu Swamp
- Governors Point Swamp
- Harington Mill Road Swamp
- Hazeldale Fens
- Hukihuki Swamp
- Hungerford Point Saltmarsh
- John O'Groats Hill Fen
- Kuriwao Saddle Fen Complex
- Lake Tuakitoto wetland
- Lenz Reserve Wetlands
- Loch Loudon Fen Complex
- Loch Luella Fen Complex
- Macfarlane Road Oxbow Swamp
- Maclennan River Podocarp Swamp Complex
- Malones Dam margins
- Marana Swamp
- Measley Beach Wetland Complex
- Molyneux Bay Swamp
- Otanomomo Tuatiki Reserve
- Pomahaka River Oxbow Marsh (Dalvey School Road)
- Pomahaka River Oxbow Marsh (Koi Creek)
- Ratanui Swamp
- Rocky Hill Tidal Marshes
- Samson Hill Marshes
- Stirling Marsh Complex
- Stuarts Marsh
- Tahakopa Bay Podocarp Swamp
- Tahakopa Marsh Complex
- Tahakopa River bogs

- Tautuku River Mouth Marsh
- Three Stones Fen Complex
- Tokomairiro River Swamps
- Trig Y Bogs
- Two Stone Hill Stream Swamp
- Upper Tahakopa Swamps
- Waipori / Waihola Wetland Complex
- Wairepo Creek Marsh Complex
- Willowburn bog
- Kaitangata Bush
- Quoin Point
- Upper catchments of Big Creek and Bull Creek
- Measly Beach dunelands and wetland complex
- Taieri Mouth Bush
- Popotunoa Bush
- Fletts bush
- Bowlers Creek bush
- Black swamp
- Glendhu Forest remnant
- Craigellachie Forest remnant
- Bowlers Creek and Blacks Creek bush
- Devils Gorge
- Leithen Bush
- Dusky Gorge
- Upper Pomahaka River Beech forests and Olearia shrublands
- Shepherds Bush
- Morgans Bush
- Tunnel Rocks Reserve
- Sandy Bay
- Penguin Beach / Penguin Bay
- North Jacks Bay
- Cannibal Bay – Surat Bay
- Hayward Point and Jacks Bay
- Tahawaiki Island
- Tautuku Dune Ridges

- Wisp Range bush
- Skeleton Point / Rainbow Isles
- Papatowai Scenic Reserve
- Long Point and Chasm Island
- Falls Creek
- Waiparau Head
- Wallace Head
- Chaslands Mistake
- Purakanui Bay – Cosgrove Island
- Hinahina Cove
- Duff Islands – Castle Rock
- Waipati Beach
- Craig Rankin State Forest

Other features

Clutha River

The Clutha River is probably the most significant natural feature within the District and gives the District its name. It is a feature of awesome power responsible for the creation of many of the District landforms. Whilst it has intrinsic natural values, it is not included as an ONF here because the natural character of its margins is for the most part significantly modified and because with the exception of the Beaumont and Rongahere Gorge section, it is not recognized as an ONFL in the Otago Regional Plan: Water.

Pomahaka River

The Pomahaka River, a major tributary of the Clutha is also significant natural feature within the District. Whilst it has intrinsic natural values, it is not included as an ONF here because the natural character of its margins is for the most part significantly modified and because it is not recognized as an ONFL in the Otago Regional Plan: Water.

Scotsmans Bonnet (Owaka Valley)

This is a locally prominent landmark in the Owaka Valley in the form of a rocky outcrop with summit trees that resemble a Scotsman's bonnet. Whilst of local interest

it is not considered to have sufficient significance across the range of landscape assessment factors to justify ONF status.

Conclusion

This report recommends that Clutha District Council recognize and manage three areas as Outstanding Natural Landscapes and twenty four features as Outstanding Natural Features under Section 6(b) of the RMA. Value descriptions and reasons for making these recommendations are provided, along with draft proposed boundaries for the ONL's. Whilst these recommendations have factored in the comments of submitters from an earlier phase of consultation they are based largely on my professional assessment. It is anticipated that the areas, features and boundaries proposed will be further refined through consultation with stakeholders and through the submission process.

Mike Moore

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References

Bishop D G, Turnbull I M (1996) Geology of the Dunedin Area, Geological and Nuclear Sciences Ltd.

Boffa Miskell Ltd (undated) Investigations into Otago's Natural Character, Landscape and Significant Natural Areas (incomplete working document for Otago Regional Council)

Clutha District Council (1998) Clutha District Council District Plan

Department of Conservation (1998) Otago Conservancy Management Strategy

Department of Conservation (2013) Draft Conservation Management Strategy Otago 2014 – 2024.

Department of Conservation (2013) Draft Conservation Management Strategy Southland Murihiku 2014 – 2024.

Kai Tahu ki Otago (2005) Natural Resource Management Plan

Hayward B W and Kenny J A (1998) Inventory and Maps of important geological sites and landforms in the Otago Region. Geological Society of New Zealand Miscellaneous Publication No.99.

Leathwick J et al (2003) Land environments of New Zealand, Ministry for the Environment.

Moore M, Read M, Stewart B, Sanders M, Hilton M, Konlechner T (2015). Coastal Environment of Otago, natural character and outstanding natural features and landscapes assessment. Clutha District section report. Otago Regional Council and Clutha District Council.

Ngai Tahu ki Murihiku (2008) Natural Resource and Environmental Iwi Management Plan.

Otago Regional Council (2004) Regional Plan: Water for Otago

Otago Regional Council (2001) Regional Plan: Coast for Otago

Pearl R (2004) A place to stand. The protection of New Zealand's natural and cultural landscapes. Environmental Defence Society Inc.

Turnbull I M, Allibone A H (2003) Geology of the Murihiku Area, Geological and Nuclear Sciences Ltd.

Glossary – Maori terms used

Term	English meaning
Ara tawhito	Ancient trail
Kai moana	Seafood
Mahika kai	Place where resources including food were procured
Mauka	Important mountains
Pa / Kaika	Settlement, occupation site
Wahi taoka	Treasured area
Wahi tapu	Sacred places
Wahi tohu	Locators and their names within the landscape
Urupa	Human burial site