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# West Coast Natural Character and Landscape Assessment (Kawhia and Aotea Catchments)

**Submitted to:**

Environment Waikato; Waikato, Otorohanga, Waitomo  
District Councils & Department of Conservation

REPORT

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- Appendix A: Inventory of Land Units, Areas, Character and Rating.
- Appendix B: Report Limitations.



## Summary

### Overview

The West Coast Landscape and Natural Character Assessment (Kawhia and Aotea Catchments) technical report sets out the natural character and landscape values of Kawhia and Aotea Harbour catchments. This assessment was commissioned by the 'Shore Futures' project group which is a joint initiative between Otorohanga, Waikato, and Waitomo District Councils, Environment Waikato (EW), and the Department of Conservation (DoC).

The report identifies areas of particular landscape quality within the coastal and terrestrial areas and provides an indication of their relative value within the framework of the Resource Management Act 1991 (RMA) and the New Zealand Coastal Policy Statement 1994 (NZCPS). The assessment was undertaken with the understanding that the study results may form part of a future management strategy and has identified land units at a local level to assist this process.

This assessment partly fulfils the statutory responsibilities to provide for the preservation of the natural character of the coastal environment and the protection of outstanding natural features and landscapes, under sections 6 (a) and (b) of the RMA. It does not include heritage landscapes which are being assessed separately by the 'Shores Futures' group and stakeholder review.

The land units which underlie the assessment were determined by desktop study and field survey during November/December 2006. Their boundaries were recorded on aerial plans and transferred to GIS and topographical maps. A total of 275 land units were recorded.

In addition to defining the land unit boundaries, an assessment was undertaken of natural character and landscape values under the requirements of the RMA 'Matters of National Importance', section 6, (a) and (b). Landscapes of particular value may be identified as outstanding landscapes, outstanding natural features, and visual amenity landscape within the policy context of Regional and District Plans. A separate assessment of the natural character of the coastal land area and its boundary was undertaken with respect to Section 6 (a).

The assessment of landscape quality identified 22 land units as 'Outstanding' and 110 units were rated as meriting an assessment of 'Visual Amenity'. The assessment of natural character identified 31 coastal land units as containing high natural character. Of these, 9 were also included in the category of 'Outstanding' in the wider assessment of landscape quality (Table 1).

**Table 1: Summary of assessment results.**

Land Unit Identities	No rating	Visual Amenity Landscapes	Outstanding Landscapes	High Natural Character
Coastal Units (91 total)	27	55	9	31
Terrestrial Units (184 total)	116	55	13	0
All Units (275 total)	143	110	22	31 (separate assessment)

### Pressures on Natural and Landscape Character

The report identifies a range of existing (present) and potential pressures on landscape and natural character values. Mostly present pressures apply to the coastal margin and the elements of natural character rather than large scale activities and effects. Potential pressures relate both to extensions of existing land use and activity that is new to the catchments.

Present pressures on the natural character values of harbour margins and some inland areas include the impact of a range of exotic plant and feral pests on coastal vegetation, the effects of stock and recreational vehicle access on sensitive tidal areas, and rural runoff into the harbour water and subsequent effects on its ecology and marine plants and animals and the removal of native scrubland for pastoral production.



Potential pressures for Kawhia and Aotea include further coastal subdivision, the extension of dairy farming and forestry, and future applications for windfarm development. The possible pressures on landscape and natural character may include:

- Location of new structures in elevated and sensitive landscape areas.
- Introduction of houses on coastal rural land.
- A change in present land use.
- Removal of coastal forest cover.
- Establishment of new roads.
- Introduction of overhead utility structures and corridors.
- Pressures on harbour water quality.

Subdivision often favours elevated sites, and in remote rural coastal areas, that have little relationship to existing settlements. This pattern of development is visually prominent in the rural and coastal landscape and provides a precedent for further development. Dairy farming has a production cycle that requires building infrastructure and water on a scale and form that is not apparent in the lower areas of the catchments. These elements could be accommodated without large scale effects on landscape character but the potential effects on the natural character of the harbour environment would be difficult to contain – given the evidence of the wider Waikato region. Pine forests have a distinctive form and character that varies from the present pastoral landscape and also require road infrastructure. Large plantations established along the harbour edges would bring about a significant change in landscape character, both through visual effects, and the modification of the present pastoral pattern. Wind farms also bring potentially widespread visual effects, and requirements for transmission lines and vehicle access tracks, if not already in place.

Development does not automatically equate with adverse effects and the impact of any of these potential pressures is dependant on location, form of development and the planning measures that exist to provide for protection of landscape areas of value. There are areas within the catchments that would be able to absorb most of the effects listed if correctly sited. Other factors such as clean water accord programmes, including the dairy industry joint initiative and EW 'Clean Streams,' and the establishment of a clear baseline of harbour ecology and water quality may lessen potential impact. In this respect there is a strong correlation between ecological and landscape values.

### Landscape Strategy

In addition to statutory recognition of quality landscape areas in regional and district plans a possible approach to landscape management is suggested with priorities being:

- Protecting and enhancing the elements of natural character and ecology associated with the harbour tidal flats and implementing a monitored baseline of harbour water quality within the Regional Coastal Plan.
- Protecting and enhancing the coastal forest areas and those inland forest areas outside public owners.
- Discouraging any further subdivision in the coastal environment except in association with established settlement areas.
- Promoting rural activities as the main land use of the catchments rural environment.
- Managing Aotea Harbour as a landscape unit of high natural character and outstanding landscape.



### Conclusions

The assessment indicates significant areas of landscape value and coastal natural character in both catchments. The combination of rural landscape, coastal forest, volcanic forms and coastal setting provide many areas of landscape that rate highly within the RMA framework and will be difficult to maintain while actively developing the catchments' resources.

Natural elements provide the framework for Kawhia and Aotea but the overall character of the landscapes are rural and maintaining rural activities is a way of protecting present values. This principle particularly applies to the coastal environment where most land is in pastoral production or contains extensive native forest to the harbour edges. Apart from Kawhia Township there are few formal settlements within the two harbours and the majority of these are located within inlets and valleys. Maintaining this pattern of isolated but visually contained settlements will protect and maintain many of the areas of the harbour areas identified as being of high landscape and natural character value.

The areas of outstanding landscape all reflected high levels of naturalness, although not all areas lie within the coastal environment. The areas rated as outstanding either contained large areas of indigenous (native) coastal forest in association with distinctive landform patterns, or were located on the harbour margins and included natural geological and coastal features.

The protection of areas of landscape value within statutory plans is a priority while the inclusion of landscape policy within the Regional Policy Statement will assist in maintaining the landscape and natural character values of the coastal environment by providing direction to this protection.

Coastal subdivision is an accepted development activity within the RMA and provision is required to indicate areas where this may be undertaken. There are several existing settlement areas within the catchments which could sustain further development without adversely affecting existing natural and landscape character values, and development around these areas should be encouraged rather than extending settlement along rural coastline. Low lying topography, and extended water views available in some harbour areas, makes the inner coastal margins vulnerable to development, and particularly on ridgelines. Ridgeline and upper slope areas provide coastal vistas and a sense of uniqueness that is attractive for subdivision. Large development of rural sheds and structures pose similar visual pressures on existing landscape values, but do not imply a change of land ownership or, necessarily, user pattern.

The 'Shore Futures' group intended to adopt an integrated catchment management plan approach to developing planning objectives for Kawhia and Aotea catchments and a strategic approach to be taken to the landscape values. It is hoped to maintain the high natural character and landscape values of many parts of Kawhia and Aotea catchment while providing for the development of natural resources in a sustainable manner.

The findings of this assessment support this approach.



## 1.0 STUDY BACKGROUND

### 1.1 'Shore Futures' Project Group

This study has been undertaken on behalf of Environment Waikato, the Waikato, Otorohanga and Waitomo District Councils, and the Department of Conservation (DoC) who have collectively initiated the 'Shore Futures' project to consider policy development for these West Coast areas of the Waikato region. The need for an assessment of the natural character, landscape types and values of the Kawhia and Aotea catchments of the West Coast has been identified as part of a planning exercise to effect changes to the relevant District and Regional Plans, and potentially the Regional Policy Statement. The results are intended to assist in the adoption of an integrated catchment management approach to Kawhia and Aotea. A full list of all landscape units identified is attached as Appendix A.

This report is subject to Golder Associates (NZ) Limited standard report limitations. These are attached as Appendix B.

### 1.2 Objectives

The assessment was required to consider the natural character, landscape character, and the visual amenity of the coastal and terrestrial land areas of Kawhia and Aotea catchment and is in response to the requirements of the Resource Management Act 1991 (RMA) and the New Zealand Coastal Policy Statement (1994) (NZCPS) (Figure 1).

Provisions of the RMA relate to the protection of outstanding natural features and landscapes and the preservation of natural character of the coastal environment, wetlands, lakes, rivers and their margins, and other aspects of amenity value. The NZCPS outlines the preservation of the natural character of the coastal environment as a national priority; with such character defined by ecological, physical, spiritual or aesthetic aspects.

### 1.3 Study Brief

The Study Brief included the following:

- An overview discussion of landscape and natural character assessment philosophies and methodologies.
- Identification and discussion of current/existing threats to landscape and natural character values within the study area.
- Identification and discussion of current and potential methods/opportunities for protection of landscape and natural character values within the study area.
- Identification of any outstanding landscapes within the harbours' catchments, including provision of statements in relation to each of the "Wakatipu criteria" that apply to each feature or landscape.
- Identification of the extent of the coastal environment for the Kawhia and Aotea Harbours, with an explanation of the theoretical basis for such determination.
- Identification of other water bodies and their margins within the wider catchments.
- Identification of the elements of the natural character of the coastal environment for each catchment.
- Identification description of the different landscape types in the study catchments.
- Ranking of areas in respect of their landscape and natural character values.



This technical report is in fulfilment of the Brief and includes:

- A discussion of naturalness and natural and landscape character within the frameworks of the RMA and NZCPS.
- Review of the natural character attributes of Kawhia and Aotea catchments and present and potential pressures on them.
- Review of current 'best practice' approaches to coastal landscape planning.
- Policy directions applicable to an integrated management approach.
- A discussion of current assessment methods and their application in New Zealand.
- A description of the method used in the assessment.
- Identification of the boundaries of the landscape units forming the wider catchment areas of Kawhia and Aotea.
- Identification of the extent of the coastal environment and its boundary in both catchments.
- A ranking of all land units in respect of landscape quality.
- Identification of areas of 'outstanding landscape', 'visual amenity landscapes', and 'areas that do not require specific resource management for landscape values' as described within the RMA.
- Identification of coastal land units assessed as containing high natural character.

### 1.4 Consultation

Following a draft issue of the assessment report in March 2007 EW officers held a series of public meetings in both Kawhia and Aotea catchments to present and discuss the initial results. The feed back will be incorporated into the next stage of the 'Shore Futures' management process.



## 2.0 LEGISLATION AND STRATEGIC GUIDELINES

### 2.1 Overview

Since October 1991, the RMA has been the primary empowering Act of Parliament for resource and land use management in New Zealand. In this role, it has been supported by the New Zealand Coastal Policy Statement 1994 (NZCPS). These two statutory documents and subsequent Environment Court interpretation of their contents guide landscape assessment and the incorporation of landscape objectives, policies and rules in regional and territorial plans.

### 2.2 Resource Management Act 1991

The RMA addresses landscape in Part 2 - "Purpose and Principles". Under section 5 of Part 2, the Act states its purpose as promoting "... the sustainable management of natural and physical resources". Natural and physical resources are defined by the Act as including "land, water, air, soil, minerals, and energy, all forms of plants, animals (whether native to New Zealand or introduced), and all structures". Landscape is a combination of these components and has become considered a resource in itself and provision for its management is required within statutory plans.

In section 5 (2) "Sustainable management" is defined as:

*"managing the use, development, and protection of natural and physical resources in a way or at a rate, which enables people and communities to provide for their social, economic and cultural wellbeing and for their health and safety while:*

- a) *sustaining the potential of natural and physical resources (excluding minerals) to meet the reasonably foreseeable needs of future generations;*
- b) *safe guarding the life-supporting capacity of air, water, soil, and ecosystems; and*
- c) *avoiding, remedying, or mitigating any adverse effects of activities on the environment".*

The Act's definition of "environment" incorporates landscape which is further defined in section 6.

Section 6, "Matters of national importance", stipulates that persons exercising functions and powers under the Act shall recognise and provide for matters of national importance. Including the following matters:

- a) *the preservation of the natural character of the coastal environment (including the coastal marine area), wetlands, and lakes and rivers and their margins, and the protection of them from inappropriate subdivision, use, and development;*
- b) *the protection of outstanding natural features and landscapes from inappropriate subdivision, use, and development; and*
- c) *the protection of areas of significant indigenous vegetation and significant habitats of indigenous fauna.*

Section 7, "Other Matters", requires those exercising functions and powers under the Act to have particular regard to:

- (a) *Kaitiakitanga.*
- (b) *The efficient use and development of natural and physical resources.*
- (c) *The maintenance and enhancement of amenity values.*
- (d) *Intrinsic values of ecosystems.*
- (f) *Maintenance and enhancement of the quality of the environment.*
- (g) *Any finite characteristics of natural and physical resources.*

Within the provisions of sections 5, 6 and 7 the RMA requires the recognition and management of landscape as a resource. Management includes examining the natural character of coastal environments and identifying outstanding landscapes and natural features and making provision for them within regional and district plan policy context. These requirements are further reinforced by the NZCPS.



### 2.3 New Zealand Coastal Policy Statement (1994)

The NZCPS contains a number of principles that apply to the management of landscape within the coastal environment. Regional policy statements, regional plans and district plans are required to give effect to these principles. They include:

- Encouraging appropriate subdivision, use or development in areas where the natural character has already been compromised and avoiding sprawling or sporadic subdivision, use or development in the coastal environment (Policy 1.1.1 (a)).
- Avoiding cumulative adverse effects of subdivision, use and development in the coastal environment (Policy 1.1.1 (c)).
- It is a national priority to protect the following features, which in themselves or in combination, are essential or important elements of the natural character of the coastal environment:
  - (a) Landscapes, seascapes and landforms, including:
    - (i) Significant representative examples of each landform which provide the variety in each region.
    - (ii) Visually or scientifically significant geological features.
    - (iii) The collective characteristics which give the coastal environment its natural character including wild and scenic areas (Policy 1.1.3(a)), protecting characteristics of special spiritual, historical or cultural significance to Maori identified in accordance with tikanga Maori (Policy 1.1.3(b)).
- Protecting significant places or areas of historic or cultural significance (Policy 1.1.3(c)).
- Adverse effects of subdivision, use or development in the coastal environment should as far as practicable be avoided. Where complete avoidance is not practicable, the adverse effects should be mitigated and provision made for remedying those effects, to the extent practicable (Policy 3.2.2).
- Provision should be made to ensure that the cumulative effects of activities, collectively, in the coastal environment are not adverse to a significant degree (Policy 3.2.4).

In addition, the NZCPS indicates that policy statements and plans should:

- Identify (in the coastal environment) those scenic, recreational and historic areas, areas of spiritual or cultural significance, and those scientific and landscape features, which are important to the region or district and which should therefore be given special protection; and that policy statements and plans should give them appropriate protection (Policy 3.1.2).
- Define what form of subdivision, use and development would be appropriate in the coastal environment, and where it would be appropriate (Policy 3.2.1).

The NZCPS restates many of the broader principles of the RMA and gives direction to areas of importance that should be given protection by policy statement and plans.

### 2.4 Statutory Landscape Assessment

Environment Court decisions have established a base line that has set out the policy areas which territorial authorities should consider within statutory plans. Identification of landscape of particular quality for resource management purposes is a requirement and the Court has provided direction with respect to the definition of landscape and the types of landscape that should be assessed for the purpose of management. Where adequate provision has not been included in district plans the Environment Court has directed councils to develop appropriate policy. Subsequent to recent amendment to the RMA regional authorities will in future be increasingly involved in providing a strategic overview of regional landscape issues.

Similarly, direction has been given to the professional approach that should be taken in landscape assessments. Landscape assessments should be methodical and not rely on a subjective aesthetic



judgement. In addition, the Environment Court has indicated its preference for community involvement to confirm assessment findings. 'Shore Futures' group has undertaken consultation on the draft issue of this report.

### 2.5 Naturalness and Natural Character

The concept of naturalness is mostly applied to assessment of the coastal environment under the RMA but this area is also considered to include the marginal areas of significant water bodies such as wetlands, inland lakes and rivers. The 'naturalness' of an area is a reflection of the degree of presence of those elements of natural character that might be considered to occur as a consequence of natural processes.

Naturalness can encompass any of the following:

- Maintenance of original landform.
- Vegetation cover, particularly indigenous vegetation, and other ecological patterns.
- Water bodies.
- Lack of built elements and human influences.
- Remoteness.

The assessment of natural character is considered on the basis of these elements of 'naturalness' and an assessment of natural character refers to the extent of their presence rather than the degree of modification of a landscape from its original natural state. A landscape can therefore increase in natural character through natural process or specific resource management.

In determining what contributes to natural character, the Environment Court has accepted landscape areas that have evolved, or grown, from natural processes as having high natural character and being outstanding. A landscape does not need to contain features and elements that are of unmodified or pristine form to gain acknowledgement. This approach identifies both the composition of the landscape and the trends of development that may be evident.

*"The word 'natural' does not necessarily equate with the word 'pristine' except in so far as landscape in a pristine state is probably rarer and of more value than landscape in a natural state. The word 'natural' is a word indicating a product of nature and can include such things as pasture, exotic tree species (pine), wildlife ... and many other things of that ilk as opposed to man made structures, roads, machinery." (Harrison v Tasman District Council, p.197)*

*"The absence or compromised presence of one or more of these criteria does not mean that the landscape is non natural just that it is less natural. There is a spectrum of naturalness from a pristine natural landscape to a cityscape." (Wakatipu Environmental Society, p.52)*

In February 2002 the Ministry for the Environment (MfE) hosted a workshop on natural character values. The following indicators were subject to general agreement and have subsequently been used throughout New Zealand:

- Abiotic factors (landform).
- Vegetation type (native/endemic and exotic vegetation).
- Vegetation cover and patterns (quality of vegetation and evident relationship to landform, climate, mature historic land use and ecological factors).
- Land uses/activities: buildings and structures (their presence/absence).
- Seascapes and water areas.
- Natural processes.



These criteria are used to assess the present levels of natural character in the coastal environment of Kawhia and Aotea. They provide a method of grouping elements of naturalness at a micro level as well as the context of broader natural character elements.

In addition experiential values, such as the perception of 'wildness', 'wilderness' and 'remoteness' derived from Policy 1.1.3 (a) (iii) of the NZCPS, are applicable to areas that lie within the visual influence of the sea, lakes, and rivers. There are many landscape features and areas within the harbour margins that exhibit these qualities in addition to active harbour processes (Figure 2).

### 2.6 Wakatipu Criteria

In the case 'Wakatipu Environmental Society Inc v Queenstown Lakes District Council', the Environment Court discussed and considered the definitions of landscape, amenity values and environment and provided a judgement that has become the currently understood definition of landscape. This is a positive description of landscape:

- Landscape can be considered as a large subset of the 'environment'.
- Landscape involves a combination of natural and physical resources which have a value by themselves and also factors relating to the viewer and their perception of those resources such as unity, visual amenity, and cultural significance.
- Landscape is a link between specific physical resources and the environment in a holistic sense. It comprises both a grouping of natural and physical resources and an emotional response to the grouping of physical/natural components influenced by social, economic, aesthetic and cultural values/conditions.
- An important aspect of definitions of landscape is their degree of comprehensiveness and the interaction between landscape values with other values that are included, such as natural character, indigenous vegetation, amenity, etc.

The Environment Court then restated a definition of the elements that might comprise a landscape although not all may be present in each area. These elements are often collectively known and referred to as the Wakatipu criteria. Landscape may contain and be considered with respect to:

- Natural science factors, geological, topographical, ecological and dynamic components of the landscape.
- Aesthetic values including memorability and naturalness.
- Expressiveness and legibility: 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.
- The degree to which values are shared and recognised.
- Value to tangata whenua.
- Historical associations.

Within this framework the setting of a landscape, its formative processes and natural patterns, ecological structure, and cultural and historical values are all relevant to its resource management, in addition to traditional visual aesthetic values.



### 3.0 OVERVIEW – KAWHIA AND AOTEA

#### 3.1 Landscape Setting

Kawhia and Aotea Harbour catchments are located on the West Coast of the Waikato region. They are part of a series of three harbour catchments which include Raglan Harbour to the immediate north. The catchments are separated from the Waikato plains by ridgelines that are connected to the two remnant cones of Mt Karioi and Mt Pirongia. Collectively the catchments extend along the coastline for some 60 km and extend to approximately 24 km deep from the West Coast ocean boundary in the case of Kawhia catchment.

Both catchments reflect the effects of volcanism which have included eruption, folding, uplift and the submergence of previous river valley systems. The upper slopes of the cones are prominent features in the catchment landscapes and wreathed in mist on a daily basis (Figure 3).

Kawhia is the larger catchment and wraps around the eastern boundary of Aotea catchment which is mostly centred on Aotea Harbour (492.24 km<sup>2</sup> vs. 181km<sup>2</sup>) (Figure 4). A small wharf is located at Kawhia Township and a wider range of fishing and tourist activities use this location. Kawhia Township sits below the harbour headland and has a wide vantage over the wider Kawhia east harbour and distant catchment ridgeline.

Aotea Harbour is hidden from most outside views and is separated from Kawhia Harbour by an isthmus of low hills and gentle slopes (Figure 5). There are few structures of any kind visible in the wider harbour landscape with farm houses and marae located within coastal bays, inlets, forested headland areas or facing the open sea within Aotea Village. A subdivision development is being established on the south side of the harbour entrance and a further development is being sold in the north-west headland ridge which breaks this pattern.

Harbour views are an important element of the experience of both catchments, although more available in Kawhia due to the route of the harbour side road and absence of harbour side forest. Birds are evident on the harbour tidal flats for many months of the year and are an every day indication of the many natural processes in these areas of the catchment landscapes.

Sheep, beef and dairy farming are undertaken with sheep farming being prevalent. Large dairy sheds and races, common to many areas of the Waikato, are not yet present in Kawhia or Aotea. Dry summer conditions and long transport links may partly explain this difference.

Forestry is established within south Kawhia and on half of the sand dune areas behind Kawhia township where replanting has recently taken place. Farm forest blocks are located to the north of Kawhia Harbour and further planting is being undertaken in some upper north-east valley areas of Kawhia.

Tourism is important and traditional tourist activities mix with environmental tours and seasonal events such as the annual kai moana festival. Kawhia Township is the focus for accommodation.

While there are several small villages throughout both catchments the population density is low and farm houses, small community groups and marae are spread throughout in association with farm roads, river valleys and coastal settlements. Most established dwellings are set low in the landscape and ridgeline dwellings are not common.

Maori have long settlement history in Kawhia and Aotea and are significant landholders. Marae are located throughout the coastal areas. Some farms also have long patterns of land ownership which relate to early European settlement in the area.

#### 3.2 Geological Setting

Four distinct geological rock types and sedimentary formations influence the topographical form and land cover of the catchments. These include volcanic formations, sandstone and limestone, siltstone conglomerate, and sand depositions. The varying degrees of resistance to erosion of these rock groups and their location have influenced the development of natural features forms and the variation in land cover that forms a dominant element of the character of both catchments (Figure 6).



Mt Pirongia volcanic outflows form the steep but broad ridges and upland pastoral areas of the inland valleys areas and uplands of north-east Kawhia Harbour. They overlie previous formations of siltstone until the boundary of the Oparau fault line. The volcanic rock and overlying tuff is not as susceptible to erosion as the sandstone and limestone areas and the slopes have been extensively developed for pastoral farming.

Sandstone and limestone groups underlie the sometimes sharply profiled ridgelines of both the east boundary of Aotea Harbour and the large alluvial valleys that extend back from the east coastline of Kawhia Harbour. These ridges have weathered rapidly compared to the volcanic and siltstone areas and contain striking rock pier formations. Stone fields are prominent within pasture areas.

Siltstone conglomerates form large valley areas of north-west Aotea valley and upland areas and the upland slopes of north Kawhia catchment. These areas are characterised by bowl shaped headlands, steep but rounded slopes and smooth ridge. The valleys are larger in scale and less indicative of erosion than other areas of Aotea and Kawhia. There are fewer native forest areas and the landscape has a more open and rolling character.

The large coastal sand depositions form the fourth distinct geological group within the catchments and are both evident along the western boundary at the sand spit and sand dune harbour headlands and in their broad and smooth ridge and slope forms in west Aotea Harbour.

A direct relationship between the geology of the catchments and land use can't be determined but erosion rates, land form and levels of fertility are affected by its underlying influence. These factors appear to have led to quite distinct patterns of land use with large areas of relatively gentle pasture land and an almost equal area of mature forest and rougher pasture areas.

Natural difficulties in establishing farm land may have reinforced the differences. The most stable and open landforms are those which have been provided with most road access and contain the majority of pastoral development and those landscapes which are more dynamic and have the greatest relief (elevation/slope) are least developed and have the most extensive areas of forest.

Natural geological features, as identified within the RMA framework, are found within the harbour and sea coastline. These include the Rakanui Inlet rock escarpments and pinnacles, Motutarakuao and Motutarakatua Point headlands and Potahi Point and Rauiri Head spit and sand dune formations.

### 3.3 Elevation and Landform and Landuse

Apart from ridge areas most land units are less than 250 m in elevation. When combined with the broadness of the catchments and the frequency of long and gradual ridgelines the effect is to limit visibility between adjacent valleys and sub catchments and increase the importance of road side views and the harbour landscape.

Three main ridgelines separate the catchments from Raglan Harbour and the wider Waikato to the north and east and south and contain continuous forest cover except for north and north-east Aotea (Figure 7 – Ridgelines 1, 2 and 3). These ridgelines join the cone remnants of Mount Karioi and Mount Pirongia.

Kawhia Harbour lies on a south-west to north-east axis and an area of low lying plains, coastal hills, and slopes extend from its north-east coastline for a further 5 to 9 km and for a width of 5 to 7 km. This land is divided north-south by the Kawhia Road ridge (Figure 7 – Ridgeline 8).

The broad valley and slopes areas north of Kawhia Road ridge contain Oparau River, Mangapapa and Okupata Stream valleys, which several other headwater streams flow into. There are two sealed roads which meet at the tops of the valleys. The valley forms are broad at the base and have rounded slopes that are steady but accessible for stock. Most land is well developed and intensively farmed.

The land south-east and south of Kawhia Road near the coast is less accessible and contains small coastal hill systems, an indented coastline and large alluvial valleys. The hills towards the north of the harbour often have a symmetrical conical form and these and other slopes screen the inland areas from harbour view (Figure 7 – Ridgeline 9).



The headland and coastal slope areas to the south-east of Kawhia Harbour reflect the increasing indented coastline. Many of the headlands descend to the small inlets in broad pastoral slopes where escarpment boundaries may contain coastal vegetation or transition through saltmarsh to the harbour tidal flats.

Several large alluvial valleys extend for up to 14 km inland behind the east harbour coastal hills and are bounded by low but sharply profiled ridgelines and eroded side streams and sub valleys before ascending to 400 m to 550 m at the catchment boundary. Forest cover meets pasture terraces in a clearly defined pattern and coastal estuaries contain saltmarsh wetlands.

The land surrounding the alluvial valleys and above them is often steep and broken in topography. While farming is actively undertaken throughout road access is limited and includes dead ends. A distinctive forest and pasture pattern extends across the mid to upper slopes of the east catchment ridgeline and continues north to meet the Kawhia Road ridgeline. The largest single forest area is associated with Awaroa River Valley/Owhiro Inlet ridge (Figure 7 – Ridgeline 10).

A broad wedge shaped and elevated ridgeline and valley formation extends north from Kawhia Harbour and separates the two catchments. Aotea Harbour forms the west boundary while Oparau River fault line ridge marks the east boundary (Figure 7 – Ridgelines 5 & 6). The Oparau slopes rise to 200 m and are widely visible to the north-east. Motutarakuao and Motutarakatua Points define the Kawhia Harbour end of this wedge (Figure 7 – Ridgeline 7). The upper areas of this ridge formation vary between rougher areas of coastal forest and smoother pasture land further inland and northwards.

Aotea Harbour and its surrounding slopes and stream valleys form a distinctly separate landscape from Kawhia Harbour. The large and smooth form of the pasture covered west headland is met by mainly forested slopes on north and east boundary ridges and slopes. Pasture begins again on the south-east slopes and ridge which run out to a low isthmus to its southern end (Figure 7 – Ridgeline 5).

Both Aotea and Kawhia Harbour are contained by the large sand deposit which forms the west coastal boundary (Figure 7 – Ridgeline 4). This underlying character is expressed at Rauiri Head, Aotea Harbour.

### 3.4 Land Cover

Pasture and native forest are the two dominant elements of land cover with pine forest production the third and much smaller commercial crop and land cover element (Figure 1). The main areas of pasture line the eastern boundaries of Kawhia harbour and continue to extend across the valley and uplands area of the catchment. These upland pasture areas then continue through north-east Aotea in the same pattern. Commercial pine plantations are mostly located along the ocean coastline, and immediate north-east of Kawhia Harbour, but planting is increasing inland in the upper north-east slopes and boundaries of Kawhia catchment.

Pasture is established on approximately 56% of combined catchment land area and some 37,778 ha. This coverage splits between coastal and terrestrial units as approximately 44% (2,863 ha) of coastal land units and 57% (34,915 ha) of terrestrial land units. A swath of pasture extends across the coastal hills of Kawhia from the steep coastal slopes above Te Waitere Headland, through north-east Kawhia valleys and uplands to join the pasture areas of north-east Aotea (Figure 1).

At present sheep farming is the main activity undertaken on pasture land with some beef production and limited numbers of dairy farms located near the saddle of SH3. The considerable increase in dairy returns may lead to an expansion of this industry, bringing building infrastructure and water resource requirements.

Pine plantations have been established to the south of Kawhia Harbour entrance, along Raukumara Beach, and on the headland to the immediate north of Kawarua Stream, north-east Kawhia Harbour. There are a number of smaller plantations in south-east Kawhia and further planting has been undertaken in upland areas. Returns for forest production have been low in recent years but the world shortage of primary products may bring an incentive to establish plantations on land areas presently in pastoral production.

Native coastal podocarp forest covers at least 40% of the land area of both catchments. The majority of Kawhia forest is located in the rough uplands to the east and south-east, and across and up long alluvial valley ridges, and in a broad swathe across the south harbour ridgeline. Native forest areas are less spread out within the Aotea catchment and are located either around the harbour edge or in the steep ridges that



parallel the harbour immediately inland and to the east. Forest species include kahikatea, kohekohe, puriri, tawa, rewarewa and rimu species, depending on the age of the forest and elevation. Some rare species are found in the Mt Pirongia Forest Park, which abuts north Kawhia, and on the rock piers within Te Kauri Stream Valley.

Native forest was cleared before European settlement but much also remained, and has been cleared since, as can be seen from the 1859 Dr Ferdinand von Hochstetter survey plan (Figure 7B). Large native forest areas, such as Te Kauri Scenic Reserve, Bridal Veil Falls Scenic Reserve, are in the public estate with the remainder in private ownership – approximately 50% (Figure 7C). The long term tenure pattern of the catchments, and the stewardship shown by owners, has preserved many areas, however comparison of the NZMS 260 series topographical maps and recent aerials indicates that there is a steady reduction in the forest area. At present there is no protection for these native forest areas, either for land clearance for present pastoral activity or any foreseeable use e.g. exotic carbon credit forest. Recommendations for protection are made in Sections 10.4 and 10.5 of this report.

### 3.5 Harbour Tidal Flats

Both harbours are shallow and their tidal flats are exposed for long periods each day and are an important landscape element. They are not easy to physically access in many parts which makes glanced views more valuable.

A survey and rating of the harbour margins and wetlands of both Kawhia and Aotea has been commissioned by EW which identifies the different areas of harbour ecological character and quality (Technical Reports 2005/42 and 2005/43). These indicate that there are a number of areas of high ecological quality in the harbours and others where run off, animal browse and vehicle access are compromising the coastal quality and the water quality of the harbour.

The harbour tidal flats contain many different margin conditions where they abut different geological areas and types of vegetation and land use. The resulting patterns often have a high landscape quality visible from the harbour roads (Figure 2). A technical description of the qualities of natural character is listed in Section 9.

### 3.6 Settlement Patterns

Kawhia Township and Aotea Village are the two main settlements within the catchments with Kawhia being the main service and commercial centre. Other village centres include Oparau and Te Waitere Village in North and South Kawhia Harbour. Aotea Village is mainly residential and tucked into the seacoast headland on the south side of Aotea Harbour entrance. Te Waitere coastal village is located in south Kawhia and is the focus of an inlet and headlands area that is screened from the remainder of Kawhia Harbour and has other areas of scattered coastal settlement associated with the adjacent bays.

The permanent population of the catchments is low relative to land area and settlements are small in scale and widely dispersed. Apart from the small headland village of Te Waitere and Oparau River Village, most houses occur in groups at different farms, or along rural corridors and access roads and reflect the rural economy of farms, forestry, and fishing.

Kawhia Township is spread along the east side of the north Kawhia peninsula and is a focal point within the wider harbour. It has a traditional main street, a number of well preserved colonial administrative buildings and a wharf. Small cottages line the tops of the coastal escarpments that run north and south of the town. Maketu Pa is located further to the south of Kawhia and adjacent to the burial place of Tainui canoe.

### 3.7 Road Network

The landscape experience of the Kawhia and Aotea catchments is closely tied to the road network, which is rural in character and frequently unsealed in the valley branch roads. The main coastal road follows the harbour boundaries and gives access to outside townships and the main farm valleys but it does not link the upper areas of either catchment and contains a number of dead ends. Outside road links are windy, relatively slow, and some times steep. Inland valley roads are steep in their upper areas and give wide



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views over forest covered ridgelines and upland pasture areas where stone fields are a common feature. Coastal roads follow rolling hill, cross alluvial inlets and river plains and provide rare strategic views over both harbours.

Future development plans may include upgrading or the forming of new roads. Road improvements would affect the present landscape character of the two catchments; particularly if the Aotea Harbour sections of the Kawhia/Raglan Road became more accessible. This potential is both an opportunity and a pressure as a considerable part the present natural character of Aotea is maintained by its simple landscape structure, lack of development, and remoteness.



## 4.0 LANDSCAPE ASSESSMENT – METHOD AND RESULTS

### 4.1 Introduction

Waikato Regional Council, Waitomo, Waikato and Otorohanga District Councils and DoC have sought this assessment of landscape and natural character for the Kawhia and Aotea catchments to inform the management of the landscape asset in fulfilment of statutory requirements.

Work has included the completion of a descriptive inventory of the physical landscape, the inclusion of ecological principles and the use of generalised public perception trends to assist assessment. Public consultation and review of the landscape ratings has not been part of this Brief but may inform the next stage of development of landscape policy by the 'Shore Futures' team.

The overview of the study has been undertaken by Stephen Brown, Stephen Brown Environments Ltd, in partnership with Kingett Mitchell Ltd and the study uses a survey method developed by Stephen Brown over the course of many regional and district landscape assessments. Landscape staff from Kingett Mitchell Ltd undertook the field work in October 2006 from public road and prepared this technical report. Subsequent to release of the first study draft, Kingett Mitchell Ltd became part of Golder Associates (NZ) Ltd.

### 4.2 Assessment Results

The ground survey identified 275 land character units (Figure 8). The size of the land units are smaller and increase in number adjacent to the harbour edges where there is a greater diversity of land cover and use.

The field survey mapped 91 coastal units (Figure 17) and 184 terrestrial units. Of these 275 units, 22 were assessed as 'outstanding landscapes' and 110 were assessed as 'visual amenity landscapes'. Within the assessment, the category 'visual amenity' was separated into 69 land units of 'medium visual amenity' and 41 land units of 'high visual amenity'. The two levels were evenly split between the coastal and terrestrial land units.

Within the assessment of the 91 coastal land units, 30 were assessed as containing 'high natural character' (Table 3). Of these land units, 12 were considered to have 'outstanding natural character'.

All land units and their scores and categories are set out in Appendix A. Full descriptions of the land units of outstanding, visual amenity, and units of no rating are set out in following Sections 6, 7 and 8.

### 4.3 Survey Method

The assessment used detailed aerial maps, supplied by Environment Waikato at 1:10,000 scales, to undertake a field survey of all catchment areas from public road. The boundaries of different land units were identified and later transcribed into GIS format. The land units were then sorted into character groups to assist with management and policy development and separate assessments of landscape quality and natural character were undertaken.

The land unit boundaries were determined on the basis of areas of common landscape character. Common character is derived from the combination of land use, vegetation cover, elevation, aspect and relationship with the sea or other water bodies. The edge of the unit occurs wherever significant change occurs.

Landscape quality was determined for each land unit on the basis of combined field observations and photographs (Table 2). These were used to determine ratings for all areas and to rank them within the categories of 'outstanding landscape and natural features', 'visual amenity landscape' and 'land with no resource management requirement'.

The boundaries of the coastal environment were then determined (Figure 17) and a second assessment of the elements of natural character for coastal areas, wetlands, lakes, rivers and their margins was undertaken. The coastal environment was considered to include all land areas between mean high water and the top of the first coastal ridgeline or the first significant change in character inland. The study area did not extend to the areas below MHW as are included in the full definition of the Coastal Management Area under the RMA.



## 4.4 Rating Method

The rating of landscape quality considered all land units within the catchment on the basis of their perceptual and physical aspects and a score was applied for the presence of each factor. Where there was an increased presence of the element being assessed, a greater score was applied. Once each element is rated by itself, the overall scores are combined (Table 2 – Column A1).

**Table 2: Example field sheet: Outstanding landscape/outstanding natural character.**

**C2: Rauiri Head to Te Hihi Stream**

*Extension of coastal sand dunes, native vegetation cover indicating establishment species and ecological succession, undulating land form reflecting base materials. Strong coastal influence and prominence.*

### Outstanding landscape/High natural character

**VALUES**

(v. low value ----- high value)

(v. low value ----- high value)

A1. Landscape				
<b>Perceptual</b>				
Naturalness				
Endemic /NZ/Native Values				
Visibility in Wider Landscape				
<b>Physical</b>				
Relief				
Patterns (vegetation & open land & water, ridges & valleys)				
Coherence/Unity				
<b>Rating: High/High</b>				

A2. Natural Character				
Abiotic factors (landform)				
Vegetation cover & patterns				
Vegetation type				
Water bodies				
Land uses/activities: buildings & structures				
Evident natural processes				
Ambience (wildness/wilderness/remoteness)				
<b>Rating: High/High</b>				

**Overall Values Rating: High / High**

Table 3 illustrates the potential spread of scores and the range of values required to reach the categories of 'outstanding' and 'visual amenity' within the assessment of landscape quality and 'high natural character' within the separate assessment of natural character. 'Landscape' (A1) applies to both terrestrial and coastal land units while 'natural character' (A2) applies only to those land units within the coastal environment.

The landscape assessment scores are based on formal approaches to analysing landscape and the Wakatipu criteria (Section 2.5) and reflect the presence of each aspect in the land unit (A1). The cultural elements of the landscapes were not assessed and these are being addressed separately by the 'Shore Futures' group.

The category of visual amenity applies to those land units within the scores 18 – 27 out of the possible range of 0 – 30. The visual amenity units were then split into 'medium' and 'high' categories. Those land units within the upper range of 28 – 30 were rated as outstanding.



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The rating of natural character was undertaken in a similar manner to the assessment of landscape character but was based on the presence of the separate elements considered to contribute to natural character (A1). The rating categories include coastal land units with low to medium levels (score rating of 0 – 26 out of a possible score of 0 - 35), those with high levels of natural character (score range of 27 – 32) and those considered to have outstanding levels of natural character (score range of 33 – 35).

The example field sheet (Table 2) represents a score of 29 for landscape and 35 for natural character, resulting in rating categories of outstanding landscape and outstanding natural character.

**Table 3: Gradient of landscape values.**

Landscape (A1)			Natural character (A2)		
	Gradient values	Rating Categories		Gradient values	Rating Categories
Low/Low	0-3	No rating	Low/Low	1-4	No rating
Low	4-6		Low	5-9	
Low/Moderate	7-9		Low/Moderate	10-13	
Moderate/Low	10-13		Moderate/Low	14-18	
Moderate	14-17		Moderate	19-23	
Moderate/High	18-21	Med V. Amenity	Moderate/High	24-26	
High/Moderate	22-24	Med V. Amenity	High/Moderate	27-29	High Natural Character
High	25-27	High V. Amenity	High	30-32	High Natural Character
High/High	28 – 30	Outstanding	High/High	33 -35	Outstanding Natural Character



### 5.0 LANDSCAPE CHARACTER

Following the identification of their boundaries, the individual land units were characterised by landscape type. This was undertaken on the basis of topography, land cover, land use, elevation and relationship to the harbour margins. Three general themes of coastal landscape; terrestrial forest and pasture areas were then divided into six character groups and mapped (Figure 9). The purpose of the categorisation is to indicate patterns of landscape development, in addition to rating landscape quality.

#### 5.1 Character Area Descriptions

**Coastal peninsula and sand dunes** (25 units) includes the large underlying sand formation that stretches south to north across both harbours. These land units include the ocean coastline from Te Maika Point, in the south, to the west headland of Aotea Harbour. The sand dunes are seen in a range of forms and use which include sand spits, sand dunes, pasture land, golf courses and forestry plantations. The dunes adjacent to Kawhia Township are between 0 – 50m asl in elevation (excluding Pukeatua rise of 145m) while the west Aotea Headland ridge is much steeper and reaches 190m asl. These effects of tide and wind are very evident and provide these land areas with a strong and recognisable character (Figure 10).

**Harbour estuary and coastal lowlands** (70 units) extend from below high water to include salt marsh, wetlands, river margins and low lying land areas adjacent to the coastline that lie between 0 – 50m asl. Units that directly abut harbour margins may also include native shrub and forest vegetation. The low lying pasture areas of south Aotea Harbour and east Kawhia have the most fluid boundaries with the harbours tidal edge, and include many saltmarsh and wetland areas. These often extend inland as streams and tidal channels join (Figure 11).

**Coastal slopes, hills and valleys** (36 units) include pastoral land and pine blocks within the 0 – 150 m range and extending back along tidal estuary areas. The harbour boundaries of these units are often marked by small clay banks and scarps and may include extended areas of establishing native coastal vegetation and abut some areas of salt marsh. These units also include the rough and steeper pasture areas, and the small coastal hills and ridges adjacent to the coastline in parts (Figure 12).

**Harbour native forest** (20) includes the many areas of native coastal forest that follow the coastlines of south-east and south Kawhia Harbour and all of Aotea Harbour boundaries, excepting the south and south-east coastline areas (Figure 13).

**Inland native forest** (17) includes those areas of coastal podocarp forest which are continuous across the middle to upper south-eastern and north-eastern catchment slopes. Extensive tongues of forest follow the ridge slopes of the main alluvial valleys in south-east Kawhia and join the main inner areas of forest (Figure 14).

**Hill country, forest and alluvial valleys** (40 units) are located within the sandstone and limestone areas of south -east Kawhia and above the Oparau River. Several large alluvial valleys run inland and open to wide headland pasture areas that lie up to 14km from Kawhia Harbour. Kahikatea grow along valley pasture flats and large rock piers are a feature of some valleys (Figure 15). Upper slope areas include pasture and native scrubland and bush in many of the areas of more difficult terrain and drainage.

**Upland pasture** (49 units): includes the lower alluvial flats and upland valleys and slopes of north-east Kawhia and river valleys and upper slopes of north-east Aotea and contain the most developed pastoral areas (Figure 16). Upland pasture units are actively managed rural land that is accessible to outside transport links. Some long views are available to the coastline from upland areas but the lower valleys are contained from outside view. Valleys contain streams lined with riparian vegetation which do not exhibit the erosion of south-east Kawhia. Native forest vegetation is found in some side gully areas and provides boundary areas adjacent to Kawhia Road ridgeline. Pines are established in upland areas.