An aerial photograph of a rugged coastline. A large, forested mountain peak dominates the left side of the frame. The forest is dense and green. To the right, the mountain slopes down to a rocky coastline with a small bay. The ocean is visible, with white surf breaking against the rocks. A large, semi-transparent, stylized number '6' is overlaid on the right side of the image, partially covering the coastline and the ocean. The sky is overcast and grey.

Natural Character Assessment of the Bay of Plenty Coastal Environment

March 2013

Document Quality Assurance

This report has been prepared in accordance with Boffa Miskell quality assurance procedures, and has been reviewed and approved for release as set out below.

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Cover photograph: Moutuhora (Whale Island), Rebecca Ryder, January 2012

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Executive Summary

This report is an assessment of natural character for the Bay of Plenty Coastal Environment and has been undertaken in order to meet the requirements of newly released New Zealand Coastal Policy Statement (‘NZCPS’). Policy 13 of the NZCPS 2010 gives effect to Section 6(b) of the Resource Management Act 1991.

The methodology for assessment of natural character has been developed from an extensive background of natural character assessment methodologies and workshops within and between organisations. Both ecological and landscape expertise were utilised within this assessment of natural character.

The focus for the Bay of Plenty Regional Council is to identify and map those areas with High and Outstanding Natural Character, in order to give effect to Policy 13 of the NZCPS. The purpose of identification of areas of high and outstanding natural character is for inclusion of the mapped areas and associated policies into a variation to the Regional Policy Statement, 2010.

Extending from Orokawa Bay to just beyond Cape Runaway the coastline is some 260km in length and comprises two large harbours, a number of estuaries and eight large rivers. Very little of the coastal environment remains unmodified through built development, urbanisation or agricultural land use. As a result there are very few areas within the coastal environment that are considered to be areas of Outstanding Natural Character, with many of the Outstanding Natural Character areas being off shore islands.

Assessment of the coastal environment identified 28 coastal sectors. The sectors were assessed broadly for their natural character values and then where unique features were identified, sub sectors, or features, within the broader sector were identified. Some 26 areas of High Natural Character, 11 areas of Very High Natural Character and 8 areas of Outstanding Natural Character were identified.

Below: Tuhua (Mayor Island)



The Coastal Environment

The Bay of Plenty coastline forms a large indentation in the north eastern coast of New Zealand. Extending from Orokawa Bay to just beyond Cape Runaway the coastline is some 260km in length. It comprises two large harbours a number of significant estuaries and eight large rivers that traverse the coast.

The coastline is separated into two parts; the northern part comprising sandy embayments with extensive dune lands enclosed by rocky headlands anchoring; and the southern or eastern part comprising a distinctive rocky coastline with dramatic headlands and a rocky shoreline.

A number of large islands extend along the coastline which are mostly volcanic, both active and inactive. Of these Whakaari (White Island) is the most active volcanic island followed by Moutuhora (Whale Island) and Tuhua (Mayor Island) is also a reknown volcanic island.

Unique to the coastline are the harbours and the large barrier island of Matakana Island. Matakana is a unique feature and is the largest of its kind in New Zealand. Matakana Island, along with Rangiwaea, Motuhua, Motiti and Ohakana Islands comprise small settlements of residential and rural development.

Very little of the coastal environment remains unmodified as a result of historical forest clearance, settlement patterns, rural farming practices and infrastructure. Pockets of unmodified areas are largely a result of inaccessibility or difficult terrain restricting the ability to develop the land.

Significant efforts have been made at local and regional levels to rehabilitate the coastal dune environment along with the rocky coastline. Orokawa Bay is an example of regenerating bush, where some 60 years earlier the headland was void of vegetation.

The dynamic processes of the coastal environment provide the ability for the natural character values to change over a period of time. The evaluation of Natural Character is taken at this point in time and it is expected to change over time and reevaluation in the future will be required to monitor the extent of change.



Right : Waihi Estuary, Little Waihi and Maketu Headland

Study Background Coastal Zones

In November 2010 the Bay of Plenty Regional Council (BOPRC) engaged Boffa Miskell Ltd to undertake an assessment of the natural character of the coastal environment for the region. The request for mapping of Natural Character within the region is a direct response to the New Zealand Coastal Policy Statement 2010, in particular Policy 13.

The Coastal Environment was determined in a separate study undertaken in 2010 for the region. It is this coastal environment which has been assessed for its natural character values.

The Coastal Environment assessed for the region comprised two zones being the Zone of Coastal Dominance and Zone of Coastal Influence. The Region has mapped the Coastal Dominance Zone as the Coastal Environment which also includes the Coastal Marine Area and all islands, in their entirety.

The objective of the assessment of natural character was: *to assess the entire coastal environment and identify areas of high and outstanding natural character.*

In order to identify these areas the entire coastal environment was assessed and evaluated as being either, Very Low, Low, Moderate, High and Very High, with Outstanding re-evaluating those areas that were Very High.

In order to describe and analyse the coastal environment several zones are identified. The Regional Council has mapped the *Zone of Coastal Dominance (Zone B)* where it applies to the landward extent of the coastal environment. Seaward of this exists the *Active Coastal Zone (Zone A)* which comprises the Coastal Marine Area (CMA) and the Active Coastal Interface. This mainly comprises the sea, rocks and part of the beach up to mean high water springs (MHWS) and up to the CMA boundaries where they reach upstream on rivers. Both of these zones form the Coastal Environment for the purposes of this assessment. *(Refer to Table 1 and Figure 1)*

The *Zone of Coastal Influence* or *Coastal Context Zone* is an area where coastal processes are not significant but form part of the coastal landscape. Together all of these zones are referred to as the *Coastal Landscape*. The table below and diagram across, detail the coastal environment in which natural character has been assessed.

The diversity of the coastal environment and the extent of development along the coast provides a number of examples of the different types of coastal environments. Whilst the Coastal Environment is mapped as being the landward extent and the Coastal Dominance Zone, the Natural Character mapping undertaken has given regard to the adjoining zones.

Zone A

This **Active Coastal Zone** includes the CMA and the Active Coastal Interface (ACI). The CMA includes the sea, rocks and part of the beach up to the mean high water spring (MHWS) mark and extends out to sea for twelve nautical miles. The ACI is where the sea is the dominant element and is the primary or significant influence on landform, vegetation, and perception. The ACI varies in width, but generally extends inland of the MHWS mark and comprises the inter-tidal area above MHWS, beaches, lagoons, estuaries and their margins, rocky peninsulas and coastal cliffs.

Zone B

The **Coastal Dominance Zone** generally includes the land up to the first coastal ridge or escarpment (with the width varying generally between 100m to 500m from the back of the beach within flat to gently undulating environments, although will extend further inland where the landscape becomes more complex, such as the Ohiwa harbour where this zone may extend inland for several kilometres). This zone is where coastal processes are dominant or significant and may include inland cliffs, settled (or modified) dune lands, farm land and coastal forests. Both zones contain and exhibit coastal processes, influences and qualities that are significant/dominant.

Zone C

Coastal Context Zone: This zone is where coastal processes inland of the Coastal Environment have an influencing presence on the landscape and would include developed back-dunes which no longer exhibit significant coastal processes, coastal plains, and containing hill-slopes. This zone generally extends some 1.5 to 2km inland (or where coastal influences have sufficiently diminished). It is also recognised that some activities occurring within this zone can significantly affect the coastal environment (Zones A and B) either perceptually or physically to varying degrees. The inland extent of Zone C is not mapped, as it falls outside of the Coastal Environment.

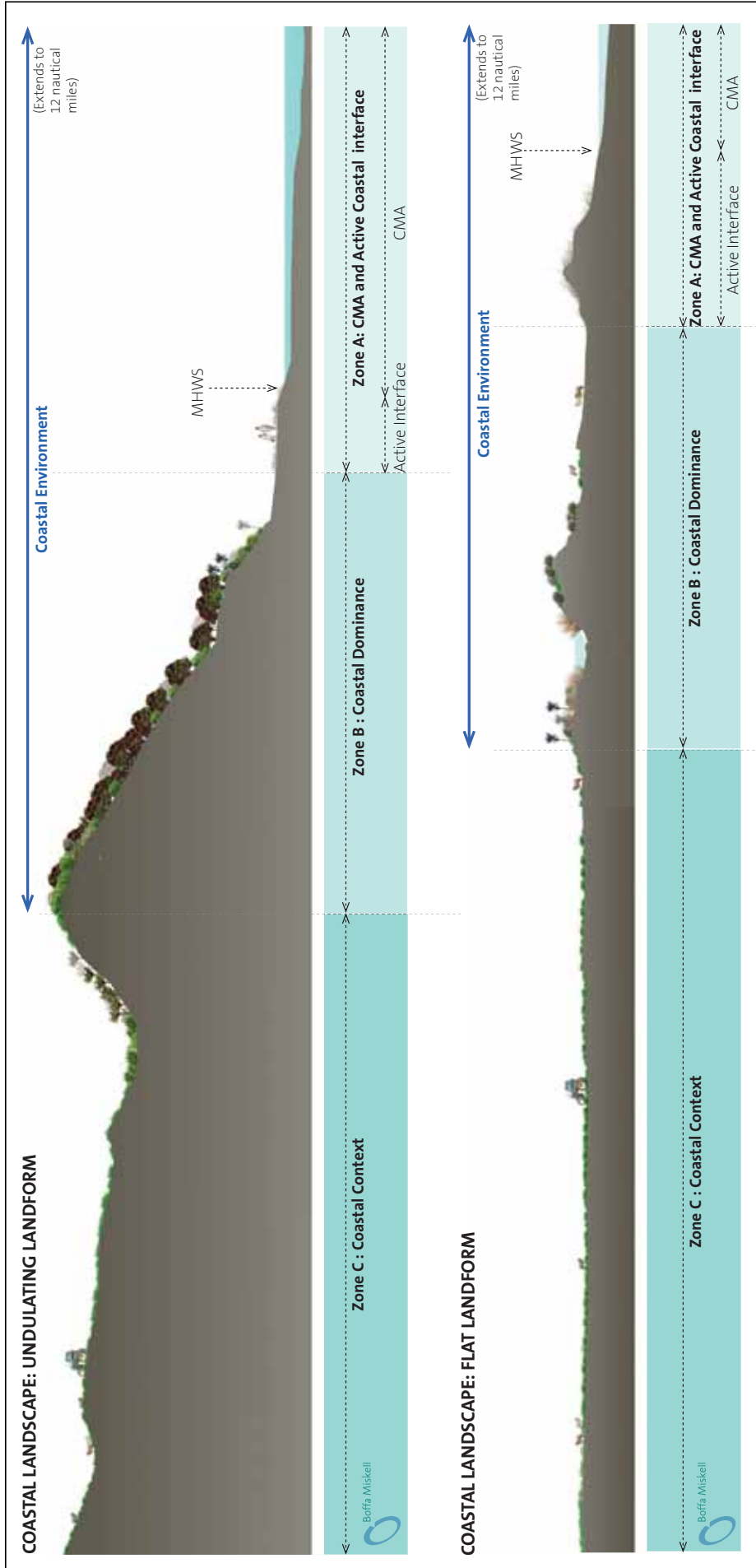


Figure 1 - Coastal Environment Zone Cross Section

Natural Character

This assessment is in response to the requirements of the New Zealand Coastal Policy Statement (NZCPS) 2010, which gives effect to Section 6(a) of the Resource Management Act 1991.

Section 6(a) states: *The preservation of natural character of the coastal environment....and the protection of them from inappropriate subdivision, use and development.*

The environments with the greatest natural character are those devoid of human modification and are therefore entirely composed of natural elements appearing in natural patterns and underpinned by natural processes.

Natural character is not defined in the RMA or in the NZCPS 2010. There are various working definitions of the concept which are broadly similar and have been used in a number of Environment Court cases. Many are variations of a working definition of natural character that was developed by a number of landscape architects and other resource management practitioners for the Ministry for the Environment (MfE). This definition has commonly been considered useful and workable. This definition, which is used to describe the natural character of all coastal and riverine/ wetland environments states:

The degree or level of natural character within an area

depends on:

1. *The extent to which natural elements, patterns and processes occur, and*
2. *The nature and extent of modifications to the ecosystems and landscape/seascape.*

The highest degree of natural character (greatest naturalness) occurs where there is least modification. The effect of different types of modification upon the natural character of an area varies with the context, and may be perceived differently by different parts of the community.'

This interpretation is referenced to varying degrees in Policy 13 of the NZCPS 2010 and, in a recent workshop convened by the Department of Conservation (DOC), it was agreed that it is still relevant.

Within the 'Long Bay' Environment Court decision, the court built upon the 'Outstanding Natural Features and Landscape' definition of naturalness outlined within the 'Wakatipu Environmental Society Incorporated v Queenstown Lakes District Council'. Although specifically relating to 'natural' under Section 6b (of outstanding natural landscapes), paragraph 135 of the Long Bay decision states the following definition of 'natural':

"The absence or compromised presence of one or more of

Below: Coastline towards Potikirua Point



these criteria does not mean that the landscape or coastal environment is non-natural, just that it is less natural.

There is a spectrum of naturalness from a pristine natural landscape to a cityscape, and a 'cultured nature' landscape may still be an outstanding natural landscape.'

- 'relatively unmodified and legible physical landform and relief;
- the landscape being uncluttered by structures and/or obvious human influence;
- the presence of water (lake, river, sea);
- the presence of vegetation (especially native vegetation) and other ecological patterns.'

Since the development of the MFE definition, and the 'Long Bay' decision, the NZCPS 2010 has come into effect which states (Policy 13) *that natural character may include:*

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

Recognising a lack of guidance for the implementation/interpretation of the NZCPS 2010, BML held a two-day in-house workshop in early 2011 to develop a consistent approach to natural character assessment and interpretation of NZCPS 2010 terms. At the BML 2011 workshop it was evident that ecologists' and landscape architects' views of 'natural' and 'naturalness' are complementary yet sufficiently different to warrant further clarification.

Ecologists interpret natural character in terms of indigenous attributes, whereas landscape architects take a broader view that can encompass both indigenous and exotic natural attributes. Accordingly, the thresholds differ and a refined definition of 'naturalness' was agreed as being:

A measure of the degree of human modification of a landscape/ seascape or ecosystem expressed in terms of:

- i) *Ecological naturalness (indigenous nature); and*
- ii) *Landscape naturalness (perceptions of nature).'*

The identification of natural character may require the views of terrestrial and marine ecologists or other natural scientists, as well as the views of landscape architects (planners).

Finally natural character occurs on a modification continuum and describes the expression of natural elements, patterns and processes (or the 'naturalness') in a landscape where the degree of 'naturalness' depends on:

- *The extent to which natural elements, patterns and processes occur and are legible;*
- *The nature and extent of human (or cultural) modifications to the landscape, seascape and ecosystems;*
- *The highest degree of natural character (greatest naturalness) occurs where there is least modification; and*
- *The degree of natural character is fluid and can change over time.*

Outstanding Natural Character

Under RMA s6(a) it is necessary to determine the existing attributes and extent of natural character and assess how these will be affected by a specific proposal. This approach is also required under the NZCPS 2010. However Policy 13 of the NZCPS 2010 also specifically requires that an evaluation is made as to whether the natural character in the existing coastal environment is outstanding or not (in order to determine whether Policy 13(1)(a) or 13(1)(b) is triggered). Policy 13(1) of the NZCPS 2010 states:

“(1) To preserve the natural character of the coastal environment and to protect it from inappropriate subdivision, use and development:

(a) avoid adverse effects of activities on natural character in areas of the coastal environment with outstanding natural character; and

(b) avoid significant adverse effects and avoid, remedy or mitigate other adverse effects of activities on natural character in all other areas of the coastal environment.”

An area with outstanding natural character may be an area within the coastal environment that is considered to have high or very high levels of natural character, although it is important to note that the high or very high ratings do not necessarily equate in themselves as ‘outstanding’.

The following definitions were established and agreed at the BML 2011 internal workshop:

- *‘Outstanding’ is a comparative evaluative term meaning; to stand out, exceptional, pre-eminent, clearly superior to others in the same group or category.*
- *‘Outstanding Natural Character’: The coastal environment may be outstanding where it has high or very high levels of natural character.*

Outstanding natural character is assessed separately. An assessment to establish whether a sector of the coastal environment contains outstanding natural character is undertaken only when all or part of the coastal sector, is initially assessed as containing ‘high’ or ‘very high’ levels of natural character.

For a coastal sector with ‘high’ or ‘very high’ levels of natural character to be considered ‘outstanding’ it must exhibit a combination of indigenous elements, patterns and processes that are exceptional in their extent, intactness, integrity, and a lack of built structures and other modifications compared to other areas in the Bay of Plenty Region.

In terms of mapping coastal areas of High, Very High and Outstanding Natural Character, some of these have been identified by their extent and may not necessarily conform to the whole coastal sector.

Below: Moturiki Island (Foreground) and Motutau Island



Method

The assessment of natural character within the region involved following a number of steps as below:

1. Collation of relevant GIS data, technical research, aerial photography. (Refer to Appendices for relevant data)
2. Desktop analysis to determine the broad coastal sectors and broad natural character attributes based on desktop data.
3. Low level aerial reconnaissance and photography of the entire coastline and islands.
4. Refinement of coastal sectors and identification of outstanding natural character areas and features with high or very high ratings.
5. Project team assessment workshop and notation to determine the degree of natural character for each sector and area.
6. Mapping of boundaries.
7. Drafting of the assessment report.

To define areas of natural character the Coastal Dominance Zone was defined into 28 sectors, within which a number of sub-sectors were identified. Generally within these broader sectors the coastal environment is largely of a similar landscape type, i.e. sandy coastline or rocky shoreline between key features.

For the harbours within the region, these have been identified as separate areas recognising the extensive saltmarsh, mangrove and small island habitats that exist. The open coast has been mapped within sectors to provide a 200m offshore buffer to take into account the intertidal coastline including sandy beaches and rocky coastlines.

Where there is a correlation between mapping features and no discernible boundary both the Significant Natural Areas or Outstanding Natural Landscapes or Features have been aligned to.

The following section of this report provides the detail on the degree of natural character for broad sectors whilst identifying highlighted features where the values are high, very high or areas that are outstanding.

The assessment of natural character along the coastal environment was completed on a five point scale with the extent of modification as being a key determinant of natural character:



Above: Volcanic crevasse Moutohora Island (Whale Island)

- Very High (lowest amount of modification)
- High
- Moderate
- Low
- Very Low (greatest amount of modification)

Whilst Policy 13 requires at least areas of high natural character will be mapped, all five levels of natural character within the coastal sectors have been mapped, as well as the extent of Outstanding Natural Character Areas.

Scale

Natural character assessment is scale related, so that the coastal environment can be perceived as having different levels of natural character at different scales. For the purposes of this assessment, the scale assessed is at the regional level with a refinement in areas where the information has allowed. The mapping scale for the sectors are at 1:50,000 scale with features identified at 1:10,000 scale and mapped on high resolution aerial photographs.

Attributes

In identifying the extent and level of modification to the natural elements, processes and patterns, key attributes have been considered. These attributes have been agreed upon with the Bay of Plenty Region and are identified to other Natural Character Studies including a pilot study for the Department of Conservation, undertaken for the Marlborough Region.

Water

[Zone A]. Includes the water body of the CMA (including surf breaks) and landforms within the Active Coastal Interface and below MHWS (e.g. rocks, reefs, stacks, channels). Also includes habitats, biota and natural processes within Zone A. This excludes water-bodies above MHWS (or those contained within Zone B). Considers the degree of modification such as changed water courses, earthworks, presence of built structures, (moorings, jetties, marine farms, and navigation structures), and earthworks (dredging). This zone also includes any previously identified significant marine environments.

Abiotic Systems & Landform

[Zones A & B]. Abiotic systems, including the degree of activeness of the tide, waves and currents as well as wind and terrestrial coastal formation, erosion, river mouth processes including sedimentation.

Landform above MHWS mark, Geomorphology, identification of different types of landforms and landforming processes (e.g. dunes, wetlands) and the physical modifications to these natural landforms above MHWS such as built structures, road cuts, earthworks and reclamation works.

Perceptual & experiential

[Zones A & B]. Natural attributes regarding the experience in seeing/feeling and perceiving the coastal environment. This includes aromas, aesthetics, auditory, sense of wildness, remoteness, isolation. Includes ephemeral human activity (such as recreation, commercial activities, fishing, marine farm servicing, diving, vehicles, machinery, horses, people, dogs, boats and jet skis).

Terrestrial & aquatic (Biotic Systems)

[Zone B]. This attribute includes estuaries, wetlands and terrestrial areas in Zone B and is assessed on ecological factors. Expression/appearance of natural ecological processes ranging from dominant to nonexistent. Diversity of species, communities and habitat are also considered.

Land Cover & Land Use

[Zone B]. Land Cover and associated Land Use, including the composition, distribution, and condition of land cover including visible presence of indigenous/exotic species. Biotic systems are outlined in a further attribute below. This attribute also includes settlements, roads and other built forms.

The above attributes have been assessed for each coastal sector and feature and considered as part of the Coastal Landscape Matrix (*Refer to Table 2*). The degree of natural character for each coastal sector has been assessed based on an aggregation of the values.

Furthermore, Zone C has also been considered, acknowledging that elements within this zone can also affect the natural character of the coastal environment.

Below: Kaituna River and wetlands and Maketu Estuary



The Coastal Landscape Matrix

Degree of Natural Character	Zone A (CMA / Active Coastal interface)	Zones A and B CMA / Active Coastal Interface and Coastal Dominance Zone)		Zone B (Coastal Dominance Zone)		Zone C The Coastal Context Zone
	Natural Character Attributes					
	Water	Abiotic Systems / Landform	Perceptual / Experiential	Terrestrial Biotic Systems	Land Cover and Land Use	Descriptive text around elements that still may contain 'significant' aspects of the Coastal Environment but fall within the Coastal Context (Zone C)
Very High						
High						
Moderate						
Low						
Very Low						

Table 2 : Coastal Environment Matrix

The evaluation of natural character within the following section provides an overall assessment of broad sectors of the Coastal Dominance Zone. Assessment of features within a sector provides a further level of detail of more discrete components of the coastal environment that would otherwise be missed in a broadscale sector based approach. Commentary and recording of these features is only provided for those features where their overall rating is High, Very High or Outstanding. Individual features with a rating lower than High are not recorded.

For water bodies only the harbours and estuaries have been identified and assessed individually. The open coastal water has been broadly identified as being 'High'. Any modification to the open coastal waters with activities should consider the effects upon natural character with a consideration that the open coastal waters has high natural character.

The evaluation of each sector includes:

- A descriptor of each broad sector and some detail on specific elements within the feature,
- Evaluation of each of the attributes for the sector as a whole,
- Evaluation of attributes for the identified key features.
- Referencing of other relevant overlays relating to each broad sector comprising Outstanding Natural Features and Landscapes and Significant Ecological Areas.

Where no feature is recorded the term 'n/a = not applicable' is used.

