BIOSECURITY NEW ZEALAND

Environmental Value Mapping

Supplementary information to MAF Biosecurity New Zealand Technical paper 2008/16

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Summary Report

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Contract Holder:	URS New Zealand Limited
Project Title	Environmental Value Mapping
Project Code	ZBS2005-03
Principal Investigator	National Institute of Water and Atmosphere Research Ltd (NIWA) (Alison MacDiarmid, Megan Oliver, Jennifer Beaumont)
Duration of Project	Start Date: April 2006 Completion Date: July 2008

Project Summary

MAF Biosecurity New Zealand (MAFBNZ) is developing a multi-disciplinary Marine Biosecurity Decision Support Tool to be used to manage the risk posed by incursions of new organisms to New Zealand's marine environment. The tool will be used for preventive purposes as well as incursion responses.

As the extent of the threat imposed by an actual or potential incursion of an alien marine species will vary depending on the species, available habitat(s) and the environment(s) that are threatened, information is required on the values of the marine environment that may be threatened, as well as the marine species that may present a threat to these values (the possible mechanisms for their introduction, likelihood of establishment and the likely impacts if they establish in New Zealand waters). This project – marine value mapping – aims to determine the value of the marine environment and the range of elements that are at risk. Four core values were identified for mapping: environmental, economic, social and cultural values.

This report documents the findings of the project to map the **environmental** values of New Zealand's marine environment.

A key feature of the mapping project is that the values are to be spatially displayed using a geographic information system (GIS), providing a visual representation of the underlying database of information. In order to quantify and map measures of environmental value, the coastline of New Zealand and offshore islands were subdivided into 300 coastal cell features. A value for each measure of environmental value has been assigned to each coastal cell.

Expert focus group meetings were held to identify potentially important subcomponents of environmental values and their associated datasets. Following discussion with MAFBNZ, a total of 8 subcomponents and 26 datasets were collated, purchased or modelled for use within this mapping project.

The following subcomponents of environmental value have been mapped: taxon specific diversity, overall biodiversity, non-indigenous species, at risk or threatened species, habitat area, primary productivity, marine mammal distribution, area of marine protected areas (MPAs), sanctuaries and restrictions.

A database has been compiled that contains qualitative measures of environmental value for each subcomponent to enable direct comparison between coastal cells or coastal areas around New Zealand. No attempt has been made to rank these values in terms of importance, as this will vary depending on the threat, species or habitat in question. Rather, using a GIS, the database can be used to identify areas particularly susceptible to marine incursion events, through the identification of specific values or species at risk.

The project has identified large areas of the New Zealand coastline that are data sparse and where future research efforts should be directed.

The database represents a snapshot of information held at the time of compilation. It is recommended that data are updated and supplemented in the future.

Objectives

The overall objective of the project was: *To determine the perceived environmental values of New Zealand's marine environment.*

Specific objectives were:

- *Identify the subcomponents of environmental value for New Zealand's marine systems. This may involve a workshop of relevant stakeholders (to be identified by BNZ).*
- *Determine the data holdings (e.g. databases) for the subcomponents of environmental value, and determine the data owner and cost of extracting data into 20 x 20 km^2 grid cells.*
- *Use a Delphic process to value the subcomponents identified in specific deliverables 1 and 2 for each grid area of New Zealand's marine environment*.

All of these objectives were met, with the exception of the presentation and spatial mapping of the data.

The original scope of the project was to apply data to a 20 x 20 km grid across the New Zealand coastline and estuarine areas to create a series of spatially explicit data layers. This grid system had been used by the Maritime New Zealand to map the New Zealand coastline in the development of an oil-spill response risk assessment framework. This grid system was initially to be used for all four of the value mapping projects (environmental, social, economic and cultural) to enable an overall estimate of value to be applied to each grid cell. However, as a result of the regular layout of the grids and the irregular coastline of New Zealand, there was great variation in the proportion of sea, coastline length and land within each grid. This variation made it very difficult to compare measures of environmental value between grids, and would have introduced additional complexity in trying to normalise data.

Following discussions with MAFBNZ, all four value mapping projects have adopted a mapping method to suit their particular data types. It was agreed that a grid system would be developed specifically for this environmental component of the project. The grid developed comprises approximately 300 "coastal cells", the inshore boundary of which is oriented with the coast, the offshore boundary being 20 km offshore or 250 m depth, whichever is the closest. On smooth sections of the coast, the cells are approximately 20 km x 20 km (as per the original grid). In more complex coastal areas (harbours, sounds, Fiordland areas), the cells were manually edited to form enclosed polygons.

Methods

IDENTIFICATION OF SUBCOMPONENTS

Searches of the international literature for studies engaged in valuing aspects of the marine environment were undertaken using standard literature searching tools. This revealed few attempts worldwide to value such a large area of the coastal marine environment. The Millennium Ecosystem Assessment, while of large spatial scale, focused on the ecosystem services provided by healthy functioning ecosystems, including marine ecosystems, rather than the wider subcomponents of value under consideration in this project. Other studies included some of the subcomponents of environmental value, including habitat distribution and biodiversity, but none were directly comparable with the objectives of this project.

In consultation with MAFBNZ and stakeholders, such as the Department of Conservation, a list of participants was approved to form the expert focus group for the project. Focus group meetings were held on 1-3 August 2006 to identify the environmental values and their respective subcomponents, and to source data required to underpin these subcomponents. Three focus groups were convened according to the three classes of environmental value:

- species diversity, richness and rarity;
- habitat distribution and characterisation; and
- areas of special biological or ecological significance.

Focus group attendees are listed in Appendix A. The focus group members suggested that 26 subcomponents of environmental value should be considered for inclusion in the project dependent on data availability. These subcomponents are listed in Appendix B. Seven subcomponents relate to species diversity, richness and rarity, thirteen relate to habitat distribution and characterisation and seven relate to areas of special biological or ecological significance.

As a result of undertaking subsequent searches for data to derive metrics for subcomponents, it was recommended that six subcomponents be removed from the analysis. These are shown in the light shading in Appendix B. The reasons for this are either there are no data available to support the subcomponent (in the case of un-named/cryptic diversity and pristineness) or the subcomponent is redundant as other subcomponents adequately cover the value (in the case of forested watersheds, land use, human density and stock units).

DETERMINE DATA HOLDINGS

Based on information provided at these meetings, the project team assembled a spreadsheet of data holdings and contacted all relevant data owners to determine the availability and costs of grooming and extracting the data. Seventy potential sources were initially suggested but subsequent investigation and searching found some of these had insufficient national coverage, were at scales that were too coarse or were not available in electronic format to be useful for this project. For these reasons data sets on zooplankton, for example, were not included in the project while a proxy for micro-algal distribution and abundance, chlorophyll-a concentration, is included.

Ultimately, a total of 37 datasets were identified as potential data holdings for use in this project. These are listed in Appendix C. The project team prioritised the data according to the degree of completeness, scientific integrity and availability within the time frame of this project. A detailed report outlining the contents of the prioritised databases, the associated

costs of grooming and extraction, and a criticality rating of High, Medium or Low for each dataset, was provided to MAFBNZ in December 2006[1].

Much of the data proposed for use by the focus groups remain in written form only or are highly incomplete in their electronic form. As a result, considerable time and costs would have been associated with grooming these data before being useful to the project.

During the period March through June 2007, negotiations took place to confirm the work programme of the data extraction and grooming phase (a variation to the initial contract), including selection of the datasets, agreement on intellectual property (IP) provisions, and quality control documentation. MAF BNZ elected to fund extraction and grooming of data from 22 of the datasets with a high criticality rating. These are shown in bold in Appendix C.

DELPHIC PROCESS

The delphic process is a mechanism used to develop fact-based decisions and strategies, reflecting expert opinion, on well-defined issues. This process has been used previously in biological valuation in the marine environment and was a useful mechanism for feedback within this project.

Measures of environmental value and suitable methods to derive these measures were discussed at a focus group meeting in December 2007 (see Appendix A). Measures of environmental value had to be both useful and appropriate with respect to the scope of the project and be quantifiable in order to make comparisons between different coastal cells or areas.

Valuation methods were chosen to make best use of the available data, taking into account the patchiness of many of the datasets as well as great variation in sampling effort within datasets. Many of the datasets acquired for use in this study (particularly those within the taxon-specific diversity subcomponent) contained records that had been collated over time through a combination of detailed surveys and opportunistic collection of species of interest by scientists and members of the public. The inconsistencies inherent within such datasets, both in sampling methods, intensities and densities, created difficulties in the analysis of these data with respect to biodiversity measures. One of the greatest challenges was estimating the species richness for each coastal area from data that were both patchily distributed and inconsistently sampled

Following analysis, preliminary maps of environmental value for each subcomponent were created and were sent out to the participants of the December 2007 expert focus groups for comment. The experts reviewed the information on each map, in particular focusing on their own area of expertise as well as reviewing the habitat maps, e.g., the distribution of seagrass and biogenic reefs. Experts were asked to report back with information on outliers, unexpected results or with new data to enhance the database

The level of feedback received from experts varied greatly depending on the relevance of their individual expertise to the project. The majority of feedback related to the distribution maps rather than the mapped measures of taxonomic diversity. Valuable feedback was received on the known distributions of habitats such as seagrass and biogenic reefs as well as the presence of marine reserves and sanctuaries around New Zealand. An inconsistency between distribution maps and maps of taxonomic diversity was also picked up by several

[1] *Mapping the Environmental Values for New Zealand's Marine Ecosystem: Data availability, coverage, quality, cost and coverage*. 21 December 2006.

experts and has now been resolved. New data was provided as a result of the feedback process for both the bryozoa and seagrass datasets.

OVERLAPS WITH OTHER VALUES MAPPING PROJECTS

Meetings were held in November 2006 and December 2007 with key project members of all four value mapping projects. The aims of the meeting were to discuss progress and share learnings from other project tasks, to identify whether there were any overlaps of subcomponents across groups and if so, how to handle these. Although there were common themes between the projects, it was agreed that the emphasis of each project group was sufficiently different that each project would continue to value subcomponents independently.

For example, the location of sanctuaries and marine restricted areas will be mapped in the environmental project, yet some of these areas will also be identified in the social values mapping project, where these are areas important for tourism, visual appeal and/or conservation value. Therefore, it is necessary to value some subcomponents in multiple ways according to the quantitative and qualitative value systems of each mapping group.

These meetings also confirmed one of the initial tenets of the project, that it was not practical to compare values across and between the four values streams.

Results

- Measures of environmental value have been quantified and mapped for approximately 300 coastal cells covering the entire coastline and estuarine region of New Zealand (including the Three Kings, Kermadec, Chatham and sub-Antarctic Islands), up to 12 nm offshore or the 250 m depth profile.

- Eight subcomponents were identified:
  - Taxon specific diversity
  - Overall biodiversity
  - Non-indigenous species
  - At risk or threatened species
  - Habitat area within NZ region
  - Primary productivity
  - Marine mammal distribution
  - Area of MPAs, sanctuaries and restrictions

- For each subcomponent, a number of valuation measures were selected, including distributions of habitat as area within each coastal cell, as proportions of the total habitat area within New Zealand, occurring within the costal cell and as a normalised value for the physical characteristics of the coastal cell. Distributions of marine mammals and at risk species have also been mapped. For taxon-specific maps, values include diversity measures such as species richness, Average Taxonomic Distinctness (ATD), variation in ATD, species rarity, species composition, number of records, number of species.

- 232 spatially explicit data layers have been created within a Geographic Information System (GIS).

- All derived values and raw data have been provided to MAFBNZ with the exception of the raw data for the algal, mollusc and wading bird datasets. The intellectual property

rights for these remain with Te Papa (algae and molluscs) and the Ornithological Society of New Zealand (wading birds)

Conclusions

- The database contains qualitative measures of environmental value to enable direct comparison between coastal cells around New Zealand.

- Using a GIS, the database can be used to identify areas particularly susceptible to marine incursion events, through the identification of specific values or species at risk.

- No attempt has been made to rank these values in terms of importance as this will vary depending on the threat, species or habitat in question. The data will interface with the Decision Support Tool being developed by MAFBNZ.

- The project has identified large areas of the New Zealand coastline that are data- sparse and where future research efforts should be directed.

- The spatial distribution of many datasets in this project was highly heterogeneous, with high numbers of records in a few coastal cells and with very few or no records in most coastal cells. As a result, it was often necessary to join neighbouring coastal cells together into coastal areas in order to assign a value to all cells. Information on the total number of records per coastal cell for each taxon should be used to determine the confidence in the value assigned to each coastal cell or area.

- The database represents a snapshot of information held at the time of compilation. It is recommended that data are updated and supplemented in the future.

Publications

Valuing New Zealand's marine environment. Oral presentation at New Zealand Marine Sciences Society Conference, July 2008.

MacDiarmid, A.B. *Major gaps in New Zealand's marine biodiversity information; how do we plug them?* Oral presentation at New Zealand Marine Sciences Society Conference, July 2008.

Data Management

Data has been provided as follows:
DVD1: (*Environmental Value Mapping DVD 1/4*) – electronic database and raw data
DVD2: (*Environmental Value Mapping DVD 2/4*) – raw data (rocky reef fish data)
DVD3: (*Environmental Value Mapping DVD 4/4*) – raw data (vertical rocky wall data)
DVD4: (*Environmental Value Mapping DVD 4/4*) – Incidental cetacean sightings data (raw and derived)

A list of the electronic files contained on DVDs 1 and 4 (raw data files not listed) is contained in Appendix D.

A description of each dataset, including the grooming actions, modelling (where applicable) is contained in the proforma metadata records provided in Appendix I to the Technical Report.

APPENDIX A Focus Group Participants

A1: WORKSHOP TO IDENTIFICATION OF ENVIRONMENTAL SUBCOMPONENTS, AUGUST 2006

Focus group 1- species diversity, richness and rarity	Focus group 2- habitat distribution and characterization	Focus group 3 - areas of special biological / ecological significance
Aug 1st, 2006	Aug 3rd, 2006	Aug 2nd, 2006
Alison MacDiarmid NIWA, coordinator	Alison MacDiarmid NIWA, coordinator	Alison MacDiarmid NIWA, coordinator
Megan Oliver NIWA, coordinator	Megan Oliver NIWA, coordinator	Megan Oliver NIWA, coordinator vent, seep & seamount fauna
Daniel Kluza MAFBNZ	Daniel Kluza MAFBNZ	
Andrew Bell MAFBNZ	Andrew Bell MAFBNZ	Andrew Bell MAFBNZ
Ashley Rowden NIWA, shelf biodiversity measurement	Mark Morrison NIWA, harbour classification	Graeme Inglis NIWA, measures of rarity & invasive species
Graeme Inglis NIWA, measures of rarity & invasive species	Terry Hume NIWA, estuarine classification	Dennis Gordon NIWA, bryozoa and marine invertebrate fauna
Kevin Burns VUW, terrestrial biodiversity measures	Matt Pinkerton NIWA, remote sensing of sediment/ Io productivity	Wendy Nelson NIWA, marine algae
Nick Shears Consultant, coastal biodiversity measures	Richard Taylor University of Auckland, marine habitat mapping	David Thompson NIWA, seabirds
Malcolm Francis NIWA, coastal fishes and elasmobranches	Ann McCrone DoC, coastal habitats	Nick Shears Consultant, marine algal and invertebrate fauna
Sean Cooper DoC, marine biodiversity		Malcolm Francis NIWA, coastal fishes and elasmobranches
		Janet Grieve NIWA, zooplankton
		Jonathan Gardner VUW, genetics, cryptic species
		Sean Cooper DoC, MPAs

A2: WORKSHOP TO DETERMINE MEASUREMENT METHOD OF ENVIRONMENTAL SUBCOMPONENTS, DECEMBER 2007

Focus group 1- species diversity, richness and rarity Monday Dec 3rd 2007	Focus group 2- habitat distribution and characterisation & areas of special biological/ecological significance Tuesday Dec 4th 2007
Alison MacDiarmid NIWA, coordinator Jenny Beaumont, NIWA coordinator Andrew Bell MAFBNZ	Alison MacDiarmid NIWA, coordinator Jenny Beaumont, NIWA coordinator Andrew Bell MAFBNZ Sara Clarke URS
Graeme Inglis NIWA, measures of rarity & invasive species Judi Hewitt NIWA, harbour & estuarine biodiversity measures Kevin Burns VUW, terrestrial biodiversity measures James Sturman NIWA, GIS Adam Smith NIWA modeller Debbie Freeman DoC, marine biodiversity Edward Abraham Dragonfly Fred Wei Database management Micah Kemp NIWA GIS technician	Micah Kemp NIWA, GIS applications James Sturman NIWA, GIS Matt Pinkerton NIWA, remote sensing of sediment/ Io productivity Richard Taylor Uni of Auck, marine habitat mapping Ann McCrone DoC, coastal habitats Debbie Freeman DoC, MPA's Dennis Gordon NIWA, bryozoa and marine invertebrate fauna Wendy Nelson NIWA, marine algae Janet Grieve NIWA, zooplankton

APPENDIX B List of Environmental Subcomponents from August 2006 focus groups

Note: The subcomponents shown in light shade text were subsequently removed from the analysis as no data was available to support the subcomponent or the subcomponent was adequately covered by other subcomponents.

Three classes of environmental value and their subcomponents		
Species diversity, richness and rarity	*Habitat distribution and characterisation*	*Areas of special biological / ecological significance*
Overall marine biodiversity Estimated proportion of total number of NZ named [or known] marine species found within a grid square	**Habitat area within NZ region** Area of specific biological habitat (mangroves, seagrass, biogenic reefs) and physical habitat categories (DoC and/or MEC) present within a grid square as a proportion of total habitat area within NZ region	Proportion of NZ wide total number of pupping, calving, spawning, roosting or feeding grounds/areas for a specified species occurring within a grid square.
Taxon specific diversity Relative diversity of specific groups e.g. macro-algae, bryozoans, polychaetes, fish etc within grid area. This would be measured as proportion of national total specific group occurring within a grid square.	**Habitat area within bioregion** Area of specific biological habitat (mangroves, seagrass, biogenic reefs) and physical habitat categories (DoC and/or MEC) present within a grid square as a proportion of total habitat area within a biogeographic region	Proportion of NZ wide total area of pupping, calving, spawning, roosting or feeding grounds/areas for a specified species occurring within a grid square.
Average Taxonomic Distinctness (ATD) &/or other biodiversity metrics in grid square as a proportion of national total	**Biological habitat diversity** Total number of different specific biological habitats and physical habitat categories occurring with a grid square scaled 0-100 and normalized to the total number of habitats	Proportion of NZ wide area of fully protected marine areas (marine reserves, cableways etc) occurring within grid square
Species rarity Rarity measure for grid square	**Forested watersheds** Proportion of national total of coastline with forested watersheds occurring within a grid square	Proportion of NZ total area of sanctuary type (e.g. whale sanctuary) occurring within a grid square
Un-named/cryptic diversity Proportion of national total of un-named or cryptic species occurring within a grid square	**Land use** Percentage of watershed of grid square that is forested, farmed, urban etc	**Pristineness** Measures of degree of pristineness
Invasive Species Proportion of national total of invasive marine species found within grid square	**Primary productivity** Annual average near-surface chlorophyll *a* concentration within a grid square normalized/scaled to the range 0-100 using the highest concentration for all grid squares	Proportion of known relevant marine information recorded for grid square
At-risk or threatened marine species Proportion of national total of at-risk or threatened marine species occurring within a grid square	**Total fluvial sediment input** Total fluvial sediment input to a grid square scaled/normalized to the largest input in NZ.	
	Standardised Total fluvial sediment input Total fluvial sediment input to a grid square scaled/normalized to the largest input in NZ and taking account the trapping efficiency of estuaries.	

Three classes of environmental value and their subcomponents		
Species diversity, richness and rarity	*Habitat distribution and characterisation*	*Areas of special biological / ecological significance*
	Suspended sediment loading Average concentration of total suspended sediment in a grid square scaled/normalized to the highest concentration in NZ.	
	Estuarine flushing Ratio of tidal prism to total volume of an estuary as a crude measure of flushing.	
	Human density Density of human population occurring within the watershed that contributes to fluvial input to a grid square	
	Stock units Number of animal stock units occurring within the watershed that contributes to fluvial input to a grid square	
	Fishing Total fishing effort and/or catch (commercial and recreational) per grid square normalised to maximum fishing effort	

APPENDIX C Summary of relevant datasets identified during Objective 2 of project

Datasets that were obtained for analysis in the project are shown in bold.

Subcomponent of environmental value	Potential data sources	Data owners	Data type	Data coverage	Data storage	Data quality	Spatial scale	Criticality rating
1. Overall marine biodiversity	SW Pacific Regional OBIS Node	NIWA	Numerical presence	National	Electronic	High	<1km2	HIGH 2
	Vertical rock wall communities dataset	Franz Smith	Numerical presence	National	Electronic	High	<1km2	HIGH 4
	Rocky reef invertebrate communities dataset	DoC/ Nick Shears	Numerical counts	National	Electronic	High but needs grooming	<1km2	HIGH 3
	Algal database (KEmu)	Te Papa	Numerical presence	National	Electronic	High but needs grooming	<1km2	HIGH 1
	Rocky reef fish dataset	DoC	Numerical counts	National	Electronic	High	<1km2	HIGH 5
	Demersal fish dataset ~300 species	MFish/ NIWA	Presence/ absence	National	Electronic	High	<1km2	MEDIUM-LOW
	Diadromous fish (15 sp) data set on FBIS	NIWA	Numerical presence	National	Electronic	High	<1km2	HIGH 6
	Incidental cetacean sightings dataset	Martin Cawthorn	Presence	National	Paper	High	<1km2	HIGH 7
2. Taxon specific diversity	Sponges dataset	NIWA	Numerical presence	National	Electronic	High	<1km2	HIGH 16
	Asteroids/ Ophiuroids (seastars, snakestars)	NIWA	Numerical presence	National	Electronic	High	<1km2	MEDIUM
	Bryozoans dataset	NIWA	Numerical presence	National	Electronic	High	<1km2	HIGH 17
	Polychaetes (marine bristle worms) dataset	NIWA	Numerical presence	National	Electronic	High	<1km2	HIGH 19
	Corals dataset	NIWA	Numerical presence	National	Electronic	High	<1km2	MEDIUM
	Molluscs (shellfish, snails etc) dataset	Te Papa/ NIWA	Numerical presence	National	Electronic	High	<1km2	HIGH 18
	Bangiales (red algae)	NIWA	Presence	National	Electronic	High	<1km2	
	Corallines (coralline algae) dataset	NIWA/ Te Papa/ MFish	Presence	National	Electronic	High	<1km2	

Subcomponent of environmental value	Potential data sources	Data owners	Data type	Data coverage	Data storage	Data quality	Spatial scale	Criticality rating
	Gigartinales (red algae) dataset	NIWA/ Te Papa	Presence	National	Electronic	High	<1km2	HIGH 15
	Ulvacae (green algae) dataset	NIWA/ Te Papa/ BNZ	Presence	National	Electronic	High	<1km2	
3. Average Taxonomic Distinctness	Derived measure							
4. Species rarity	Derived measure							
5. Un-named/ cryptic diversity								Withdrawn
6. Invasive species	BIODS Port Surveys database	BNZ	Numerical presence	Selected harbours	Electronic	High	<1km2	HIGH 20
	BIODS Surveillance database	BNZ	Presence/ absence	Selected harbours	Electronic	High	<1km2	HIGH 21
7. At-risk or threatened marine species	NZ Threat Classification System	DoC	Presence/ absence	National	Needs to be digitised	High	DoC conservancy	HIGH 24
8. Habitat area within NZ region	Rocky reef (inter-tidal proxy) dataset	LINZ	GIS	National	Electronic	High	<1km2	HIGH 9
	Seagrass data	NIWA	Expert knowledge	National	Needs to be digitised	Medium	10km2	HIGH 10
	Mangroves dataset (EEC)	NIWA	GIS	North Island	Electronic	High	<1km2	HIGH 11
	Biogenic reefs dataset	WWF	TIF files	National	Need to be digitised	Medium	100km2	HIGH 12
	MEC Physical habitat categories	NIWA	GIS	National	Electronic	High	1km2 cells	HIGH 8
9. Habitat area within Bioregion								
10. Biological habitat diversity								
11. Forested watersheds								Withdrawn
12. Land use								Withdrawn
13. Primary productivity	MEC Version 2	NIWA	GIS	National	Electronic	High	1km2 cells	HIGH 22

Subcomponent of environmental value	Potential data sources	Data owners	Data type	Data coverage	Data storage	Data quality	Spatial scale	Criticality rating
14. Total fluvial sediment input 15. Standardised total fluvial sediment input 16. Suspended sediment loading	REC EEC	NIWA	GIS	National	Electronic	High	1km2 cells	MEDIUM
17. Estuarine flushing	EEC	NIWA	GIS	National	Electronic	High	1km2 cells	LOW
18. Human density								Withdrawn
19. Stock units								Withdrawn
20. Fishing	Catch/effort database (commercial)	MFish	Numerical database	National	Electronic	High	<1km2	MEDIUM
	Recreational fishing database	MFish	Ramp & aerial surveys	National	Electronic	High	<1km2	MEDIUM
	Mussel production Oyster production	NZMIC NZOFA	Regional production	National	Electronic	High	regional	HIGH 23
21. Number of pupping, calving, spawning, roosting or feeding grounds	Te Ara distribution maps for whales, dolphins and pinnipeds	Te Ara – Min. Culture and Heritage	TIF files	National	Electronic	Medium	pinnipeds <1km2 whales 20km dolphins 200km	HIGH 26
	OSNZ Wader bird counts	OSNZ	Raw counts	National	Electronic	High	150 estuaries	HIGH 25
Re-named as: Marine Mammal Distribition	Re-located to taxon specific diversity subcomponent							
	NABIS Seabird distribution maps	MFish	Digitised maps	National	Electronic	High	1km2	MEDIUM-HIGH
	Demersal fishes, pelagic fish & invertebrates data	NIWA	Paper maps in reports	National	paper	High		MEDIUM-HIGH
22. Area of pupping, calving, spawning, roosting or feeding grounds	Te Ara distribution maps for whales, dolphins and pinnipeds	Te Ara – Min. Culture and Heritage	TIF files	National	Electronic	Medium	pinnipeds <1km2 whales 20km dolphins 200km	HIGH 26
Re-named as Marine Mammal	OSNZ Wader bird counts	OSNZ	Raw counts	National	Electronic	High	150 estuaries	HIGH 25

Subcomponent of environmental value	Potential data sources	Data owners	Data type	Data coverage	Data storage	Data quality	Spatial scale	Criticality rating
Distribution	Re-located to taxon specific diversity subcomponent							
	NABIS Seabird distribution maps	MFish	Digitised maps	National	Electronic	High	1km2	MEDIUM-HIGH
	Demersal fishes, pelagic fish & invertebrates data	NIWA	Paper maps in reports	National	paper	High		MEDIUM-HIGH
23. Area of MPA's	Area based restrictions in the marine environment report	DoC	Digitised maps	National	Electronic	High	1km2	HIGH 13
24. Area of sanctuaries	As above (no. 23)							HIGH 14
25. Pristineness								Withdrawn
26. Sum of information								

APPENDIX D List of electronic files supplied in database

Subcomponent of environmental value	Data sources within each subcomponent	Data layers provided
Taxon Specific Diversity	1 Sponge dataset	NZ_VMEn_Sponge_cur.xls NZ_VMEn_Sponge_cur.dbf NZ_VMEn_Sponge_cur.prj NZ_VMEn_Sponge_cur.sbn NZ_VMEn_Sponge_cur.sbx NZ_VMEn_Sponge_cur.shp.xml NZ_VMEn_Sponge_cur.shx
	2 Bryozoan dataset (OBIS)	NZ_VMEn_Bryozoan_cur.csv NZ_VMEn_Bryozoan_cur.dbf NZ_VMEn_Bryozoan_cur.prj NZ_VMEn_Bryozoan_cur.sbn NZ_VMEn_Bryozoan_cur.sbx NZ_VMEn_Bryozoan_cur.shp NZ_VMEn_Bryozoan_cur.shp.xml NZ_VMEn_Bryozoan_cur.shx
	3 Polychaete dataset (OBIS)	NZ_VMEn_ASB_cur.csv NZ_VMEn_ASB_cur.dbf NZ_VMEn_ASB_cur.prj NZ_VMEn_ASB_cur.sbn NZ_VMEn_ASB_cur.sbx NZ_VMEn_ASB_cur.shp NZ_VMEn_ASB_cur.shp.xml NZ_VMEn_ASB_cur.shx
	4 Mollusc dataset	NZ_VMEn_Mollusc_cur.dbf NZ_VMEn_Mollusc_cur.prj NZ_VMEn_Mollusc_cur.sbn NZ_VMEn_Mollusc_cur.sbx NZ_VMEn_Mollusc_cur.shp NZ_VMEn_Mollusc_cur.shp.xml NZ_VMEn_Mollusc_cur.shx
	5 Echinoderm dataset (OBIS)	NZ_VMEn_Echinoderm_cur.csv NZ_VMEn_Echinoderm_cur.dbf NZ_VMEn_Echinoderm_cur.prj NZ_VMEn_Echinoderm_cur.sbn NZ_VMEn_Echinoderm_cur.sbx NZ_VMEn_Echinoderm_cur.shp NZ_VMEn_Echinoderm_cur.shp.xml NZ_VMEn_Echinoderm_cur.shx
	6 Arthropod dataset (OBIS)	NZ_VMEn_Arthropod_cur.csv NZ_VMEn_Arthropod_cur.dbf NZ_VMEn_Arthropod_cur.prj NZ_VMEn_Arthropod_cur.sbn NZ_VMEn_Arthropod_cur.sbx NZ_VMEn_Arthropod_cur.shp NZ_VMEn_Arthropod_cur.shp.xml NZ_VMEn_Arthropod_cur.shx
	7 Algal database (EKmu)	NZ_VMEn_Algae_cur.dbf NZ_VMEn_Algae_cur.prj NZ_VMEn_Algae_cur.sbn NZ_VMEn_Algae_cur.sbx

Subcomponent of environmental value	Data sources within each subcomponent	Data layers provided
		NZ_VMEn_Algae_cur.shp NZ_VMEn_Algae_cur.shp.xml NZ_VMEn_Algae_cur.shx
	8 Diadromous fish dataset (FBIS)	ni_native, si_native, all in ESRI shape file format. NZ_VMEn_DiadromousFish_cur.xls NZ_VMEn_NINative07_cur.dbf NZ_VMEn_NINative07_cur.sbn NZ_VMEn_NINative07_cur.sbx NZ_VMEn_NINative07_cur.shp NZ_VMEn_NINative07_cur.shp.xml NZ_VMEn_NINative07_cur.shx NZ_VMEn_SINative07_cur.dbf NZ_VMEn_SINative07_cur.prj NZ_VMEn_SINative07_cur.sbn NZ_VMEn_SINative07_cur.sbx NZ_VMEn_SINative07_cur.shp NZ_VMEn_SINative07_cur.shp.xml NZ_VMEn_SINative07_cur.shx NZ_VMEn_DiadromousFish_cur.dbf NZ_VMEn_DiadromousFish_cur.prj NZ_VMEn_DiadromousFish_cur.sbn NZ_VMEn_DiadromousFish_cur.sbx NZ_VMEn_DiadromousFish_cur.shp NZ_VMEn_DiadromousFish_cur.shp.xml NZ_VMEn_DiadromousFish_cur.shx
	9 OSNZ Wader bird counts	NZ_VMEn_WadingBirds_cur.dbf NZ_VMEn_WadingBirds_cur.prj NZ_VMEn_WadingBirds_cur.sbn NZ_VMEn_WadingBirds_cur.sbx NZ_VMEn_WadingBirds_cur.shp NZ_VMEn_WadingBirds_cur.shp.xml NZ_VMEn_WadingBirds_cur.shx
Overall biodiversity (Modelled/interpolated data and derived values)	10 Rocky reef fish dataset	NZ_VMEn_README_cur.doc NZ_VMEn_RRFSRichStat_cur.dbf NZ_VMEn_RRFSR.aux NZ_VMEn_RRFSR.rrd NZ_VMEn_RRFSRich_cur.dbf NZ_VMEn_RRFSRich_cur.prj NZ_VMEn_RRFSRich_cur.sbn NZ_VMEn_RRFSRich_cur.sbx NZ_VMEn_RRFSRich_cur.shp NZ_VMEn_RRFSRich_cur.shp.xml NZ_VMEn_RRFSRich_cur.shx
	11 Rocky reef invertebrate communities	NZ_VMEn_RRIAnotrichium_cur.dbf NZ_VMEn_RRIAnotrichium_cur.prj NZ_VMEn_RRIAnotrichium_cur.sbn NZ_VMEn_RRIAnotrichium_cur.sbx NZ_VMEn_RRIAnotrichium_cur.shp. NZ_VMEn_RRIAnotrichium_cur.shp.xml NZ_VMEn_RRIAnotrichium_cur.shx NZ_VMEn_RRIBryozoans_cur.dbf NZ_VMEn_RRIBryozoans_cur.prj NZ_VMEn_RRIBryozoans_cur.sbn

Subcomponent of environmental value	Data sources within each subcomponent	Data layers provided
		NZ_VMEn_RRIBryozoans_cur.sbx NZ_VMEn_RRIBryozoans_cur.shp NZ_VMEn_RRIBryozoans_cur.shp.xml NZ_VMEn_RRIBryozoans_cur.shx NZ_VMEn_RRICca_cur.dbf NZ_VMEn_RRICca_cur.prj NZ_VMEn_RRICca_cur.sbn NZ_VMEn_RRICca_cur.sbx NZ_VMEn_RRICca_cur.shp NZ_VMEn_RRICca_cur.shp.xml NZ_VMEn_RRICca_cur.shx NZ_VMEn_RRICodium_cur.dbf NZ_VMEn_RRICodium_cur.prj NZ_VMEn_RRICodium_cur.sbn NZ_VMEn_RRICodium_cur.sbx NZ_VMEn_RRICodium_cur.shp NZ_VMEn_RRICodium_cur.shp.xml NZ_VMEn_RRICodium_cur.shx NZ_VMEn_RRICookia_cur.dbf NZ_VMEn_RRICookia_cur.prj NZ_VMEn_RRICookia_cur.sbn NZ_VMEn_RRICookia_cur.sbx NZ_VMEn_RRICookia_cur.shp NZ_VMEn_RRICookia_cur.shp.xml NZ_VMEn_RRICookia_cur.shx NZ_VMEn_RRIEcklonia_cur.dbf NZ_VMEn_RRIEcklonia_cur.prj NZ_VMEn_RRIEcklonia_cur.sbn NZ_VMEn_RRIEcklonia_cur.sbx NZ_VMEn_RRIEcklonia_cur.shp.xml NZ_VMEn_RRIEcklonia_cur.shx NZ_VMEn_RRIEvechinus_cur.dbf NZ_VMEn_RRIEvechinus_cur.prj NZ_VMEn_RRIEvechinus_cur.sbn NZ_VMEn_RRIEvechinus_cur.sbx NZ_VMEn_RRIEvechinus_cur.shp NZ_VMEn_RRIEvechinus_cur.shp.xml NZ_VMEn_RRIEvechinus_cur.shx NZ_VMEn_RRIFlexuosum_cur.dbf NZ_VMEn_RRIFlexuosum_cur.prj NZ_VMEn_RRIFlexuosum_cur.sbn NZ_VMEn_RRIFlexuosum_cur.sbx NZ_VMEn_RRIFlexuosum_cur.shp NZ_VMEn_RRIFlexuosum_cur.shp.xml NZ_VMEn_RRIFlexuosum_cur.shx NZ_VMEn_RRILessonia_cur.dbf NZ_VMEn_RRILessonia_cur.prj NZ_VMEn_RRILessonia_cur.sbn NZ_VMEn_RRILessonia_cur.sbx NZ_VMEn_RRILessonia_cur.shp NZ_VMEn_RRILessonia_cur.shp.xml NZ_VMEn_RRILessonia_cur.shx NZ_VMEn_RRIMacAlgRich_cur.dbf NZ_VMEn_RRIMacAlgRich_cur.prj NZ_VMEn_RRIMacAlgRich_cur.sbn NZ_VMEn_RRIMacAlgRich_cur.sbx NZ_VMEn_RRIMacAlgRich_cur.shp NZ_VMEn_RRIMacAlgRich_cur.shp.xml NZ_VMEn_RRIMacAlgRich_cur.shx NZ_VMEn_RRIPatiriella_cur.dbf

Subcomponent of environmental value	Data sources within each subcomponent	Data layers provided
		NZ_VMEn_RRIPatiriella_cur.prj NZ_VMEn_RRIPatiriella_cur.sbn NZ_VMEn_RRIPatiriella_cur.sbx NZ_VMEn_RRIPatiriella_cur.shp NZ_VMEn_RRIPatiriella_cur.shp.xml NZ_VMEn_RRIPatiriella_cur.shp NZ_VMEn_RRIPc1_29fg_cur.dbf NZ_VMEn_RRIPc1_29fg_cur.prj NZ_VMEn_RRIPc1_29fg_cur.sbn NZ_VMEn_RRIPc1_29fg_cur.sbx NZ_VMEn_RRIPc1_29fg_cur.shp NZ_VMEn_RRIPc1_29fg_cur.shp.xml NZ_VMEn_RRIPc1_29fg_cur.shx NZ_VMEn_RRIPc1_41spp_cur.dbf NZ_VMEn_RRIPc1_41spp_cur.prj NZ_VMEn_RRIPc1_41spp_cur.sbn NZ_VMEn_RRIPc1_41spp_cur.sbx NZ_VMEn_RRIPc1_41spp_cur.shp NZ_VMEn_RRIPc1_41spp_cur.shp.xml NZ_VMEn_RRIPc1_41spp_cur.shx NZ_VMEn_RRIPc1_106spp_cur.dbf NZ_VMEn_RRIPc1_106spp_cur.prj NZ_VMEn_RRIPc1_106spp_cur.sbn NZ_VMEn_RRIPc1_106spp_cur.sbx NZ_VMEn_RRIPc1_106spp_cur.shp NZ_VMEn_RRIPc1_106spp_cur.shp.xml NZ_VMEn_RRIPc1_106spp_cur.shx NZ_VMEn_RRIPterocladia_cur.dbf NZ_VMEn_RRIPterocladia_cur.prj NZ_VMEn_RRIPterocladia_cur.sbn NZ_VMEn_RRIPterocladia_cur.sbx NZ_VMEn_RRIPterocladia_cur.shp NZ_VMEn_RRIPterocladia_cur.shp.xml NZ_VMEn_RRIPterocladia_cur.shx NZ_VMEn_RRIRedfolAlgae_cur.dbf NZ_VMEn_RRIRedfolAlgae_cur.prj NZ_VMEn_RRIRedfolAlgae_cur.sbn NZ_VMEn_RRIRedfolAlgae_cur.sbx NZ_VMEn_RRIRedfolAlgae_cur.shp NZ_VMEn_RRIRedfolAlgae_cur.shp.xml NZ_VMEn_RRIRedfolAlgae_cur.shx NZ_VMEn_RRISmlBroAlgae_cur.dbf NZ_VMEn_RRISmlBroAlgae_cur.prj NZ_VMEn_RRISmlBroAlgae_cur.sbn NZ_VMEn_RRISmlBroAlgae_cur.sbx NZ_VMEn_RRISmlBroAlgae_cur.shp NZ_VMEn_RRISmlBroAlgae_cur.shp.xml NZ_VMEn_RRISmlBroAlgae_cur.shx NZ_VMEn_RRISponges_cur.dbf NZ_VMEn_RRISponges_cur.prj NZ_VMEn_RRISponges_cur.sbn NZ_VMEn_RRISponges_cur.sbx NZ_VMEn_RRISponges_cur.shp NZ_VMEn_RRISponges_cur.shp.xml NZ_VMEn_RRISponges_cur.shx NZ_VMEn_RRIStichopus_cur.dbf NZ_VMEn_RRIStichopus_cur.prj NZ_VMEn_RRIStichopus_cur.sbn NZ_VMEn_RRIStichopus_cur.sbx NZ_VMEn_RRIStichopus_cur.shp

Subcomponent of environmental value	Data sources within each subcomponent	Data layers provided
		NZ_VMEn_RRIStichopus_cur.shp.xml NZ_VMEn_RRIStichopus_cur.shx NZ_VMEn_RRIXiphophora_cur.dbf NZ_VMEn_RRIXiphophora_cur.prj NZ_VMEn_RRIXiphophora_cur.sbn NZ_VMEn_RRIXiphophora_cur.sbx NZ_VMEn_RRIXiphophora_cur.shp NZ_VMEn_RRIXiphophora_cur.shp.xml NZ_VMEn_RRIXiphophora_cur.shx NZ_VMEn_RRIXiphophora_cur.
	12 Vertical rock wall communities	NZ_VMEn_VRWActinaria_cur.dbf NZ_VMEn_VRWActinaria_cur.prj NZ_VMEn_VRWActinaria_cur.sbn NZ_VMEn_VRWActinaria_cur.sbx NZ_VMEn_VRWActinaria_cur.shp NZ_VMEn_VRWActinaria_cur.shp.xml NZ_VMEn_VRWActinaria_cur.shx NZ_VMEn_VRWAscidiacea_cur.dbf NZ_VMEn_VRWAscidiacea_cur.prj NZ_VMEn_VRWAscidiacea_cur.sbn NZ_VMEn_VRWAscidiacea_cur.sbx NZ_VMEn_VRWAscidiacea_cur.shp NZ_VMEn_VRWAscidiacea_cur.shp.xml NZ_VMEn_VRWAscidiacea_cur.shx NZ_VMEn_VRWBryozoans_cur.dbf NZ_VMEn_VRWBryozoans_cur.prj NZ_VMEn_VRWBryozoans_cur.sbn NZ_VMEn_VRWBryozoans_cur.sbx NZ_VMEn_VRWBryozoans_cur.shp NZ_VMEn_VRWBryozoans_cur.shp.xml NZ_VMEn_VRWBryozoans_cur.shx NZ_VMEn_VRWEsSpRich_cur.dbf NZ_VMEn_VRWEsSpRich_cur.prj NZ_VMEn_VRWEsSpRich_cur.sbn NZ_VMEn_VRWEsSpRich_cur.sbx NZ_VMEn_VRWEsSpRich_cur.shp NZ_VMEn_VRWEsSpRich_cur.shp.xml NZ_VMEn_VRWEsSpRich_cur.shx NZ_VMEn_VRWPc1inc_cur.dbf NZ_VMEn_VRWPc1inc_cur.prj NZ_VMEn_VRWPc1inc_cur.sbn NZ_VMEn_VRWPc1inc_cur.sbx NZ_VMEn_VRWPc1inc_cur.shp NZ_VMEn_VRWPc1inc_cur.shp.xml NZ_VMEn_VRWPc1inc_cur.shx NZ_VMEn_VRWPc1prop_cur.dbf NZ_VMEn_VRWPc1prop_cur.prj NZ_VMEn_VRWPc1prop_cur.sbn NZ_VMEn_VRWPc1prop_cur.sbx NZ_VMEn_VRWPc1prop_cur.shp NZ_VMEn_VRWPc1prop_cur.shp.xml NZ_VMEn_VRWPc1prop_cur.shx NZ_VMEn_VRWPorifera_cur.dbf NZ_VMEn_VRWPorifera_cur.prj NZ_VMEn_VRWPorifera_cur.sbn NZ_VMEn_VRWPorifera_cur.sbx NZ_VMEn_VRWPorifera_cur.shp NZ_VMEn_VRWPorifera_cur.shp.xml NZ_VMEn_VRWPorifera_cur.shx

Subcomponent of environmental value	Data sources within each subcomponent	Data layers provided
		NZ_VMEn_VRWRarity_cur.dbf NZ_VMEn_VRWRarity_cur.prj NZ_VMEn_VRWRarity_cur.sbn NZ_VMEn_VRWRarity_cur.sbx NZ_VMEn_VRWRarity_cur.shp NZ_VMEn_VRWRarity_cur.shp.xml NZ_VMEn_VRWRarity_cur.shx NZ_VMEn_VRWSpdensity_cur.dbf NZ_VMEn_VRWSpdensity_cur.prj NZ_VMEn_VRWSpdensity_cur.sbn NZ_VMEn_VRWSpdensity_cur.sbx NZ_VMEn_VRWSpdensity_cur.shp NZ_VMEn_VRWSpdensity_cur.shp.xml NZ_VMEn_VRWSpdensity_cur.shx NZ_VMEn_VRWTurnover_cur.dbf NZ_VMEn_VRWTurnover_cur.prj NZ_VMEn_VRWTurnover_cur.sbn NZ_VMEn_VRWTurnover_cur.sbx NZ_VMEn_VRWTurnover_cur.shp NZ_VMEn_VRWTurnover_cur.shp.xml NZ_VMEn_VRWTurnover_cur.shx NZ_VMEn_VRWVariation_cur.dbf NZ_VMEn_VRWVariation_cur.prj NZ_VMEn_VRWVariation_cur.sbn NZ_VMEn_VRWVariation_cur.sbx NZ_VMEn_VRWVariation_cur.shp NZ_VMEn_VRWVariation_cur.shp.xml NZ_VMEn_VRWVariation_cur.shx
	Derived value of overall invertebrate diversity (mean values of sponge, bryozoan, polychaete, mollusc, echinoderm and arthropod datasets)	NZ_VMEn_OverallInvert_cur.dbf NZ_VMEn_OverallInvert_cur.prj NZ_VMEn_OverallInvert_cur.sbn NZ_VMEn_OverallInvert_cur.sbx NZ_VMEn_OverallInvert_cur.shp NZ_VMEn_OverallInvert_cur.shp.xml NZ_VMEn_OverallInvert_cur.shx
Non-indigenous species	13 BIODS Port Surveys database 14 BIODS Surveillance database	NZ_VMEn_NonIndigenous_cur.dbf NZ_VMEn_NonIndigenous_cur.prj NZ_VMEn_NonIndigenous_cur.sbn NZ_VMEn_NonIndigenous_cur.sbx NZ_VMEn_NonIndigenous_cur.shp NZ_VMEn_NonIndigenous_cur.shp.xml NZ_VMEn_NonIndigenous_cur.shx
At risk or threatened species	15 NZ Threat Classification system 16 Te Ara/NABIS bird and mammal distribution data	NZ_VMEn_Birds_cur.dbf NZ_VMEn_Birds_cur.prj NZ_VMEn_Birds_cur.sbn NZ_VMEn_Birds_cur.sbx NZ_VMEn_Birds_cur.shp NZ_VMEn_Birds_cur.shp.xml NZ_VMEn_Birds_cur.shx NZ_VMEn_Invertebrates_cur.dbf NZ_VMEn_Invertebrates_cur.prj NZ_VMEn_Invertebrates_cur.sbn NZ_VMEn_Invertebrates_cur.sbx NZ_VMEn_Invertebrates_cur.shp

Subcomponent of environmental value	Data sources within each subcomponent	Data layers provided
		NZ_VMEn_Invertebrates_cur.shp.xml NZ_VMEn_Invertebrates_cur.shx NZ_VMEn_MarineMammals_cur.dbf NZ_VMEn_MarineMammals_cur.prj NZ_VMEn_MarineMammals_cur.sbn NZ_VMEn_MarineMammals_cur.sbx NZ_VMEn_MarineMammals_cur.shp NZ_VMEn_MarineMammals_cur.shp.xml NZ_VMEn_MarineMammals_cur.shx
Habitat area within NZ region	17 Intertidal rocky reef	NZ_VMEn_IntRockyReefs_cur.dbf NZ_VMEn_IntRockyReefs_cur.prj NZ_VMEn_IntRockyReefs_cur.sbn NZ_VMEn_IntRockyReefs_cur.sbx NZ_VMEn_IntRockyReefs_cur.shp NZ_VMEn_IntRockyReefs_cur.shp.xml NZ_VMEn_IntRockyReefs_cur.shx
	18 Subtidal rocky reef	NZ_VMEn_SubRockyReefs_cur.dbf NZ_VMEn_SubRockyReefs_cur.prj NZ_VMEn_SubRockyReefs_cur.sbn NZ_VMEn_SubRockyReefs_cur.sbx NZ_VMEn_SubRockyReefs_cur.shp NZ_VMEn_SubRockyReefs_cur.shp.xml NZ_VMEn_SubRockyReefs_cur.shx
	19 Seagrass data	NZ_VMEn_Seagrass_cur.dbf NZ_VMEn_Seagrass_cur.prj NZ_VMEn_Seagrass_cur.sbn NZ_VMEn_Seagrass_cur.sbx NZ_VMEn_Seagrass_cur.shp NZ_VMEn_Seagrass_cur.shp.xml NZ_VMEn_Seagrass_cur.shx
	20 Mangrove data	NZ_VMEn_Mangrove_cur.dbf NZ_VMEn_Mangrove_cur.prj NZ_VMEn_Mangrove_cur.sbn NZ_VMEn_Mangrove_cur.sbx NZ_VMEn_Mangrove_cur.shp NZ_VMEn_Mangrove_cur.shp.xml NZ_VMEn_Mangrove_cur.shx
	21 Biogenic reefs dataset	NZ_VMEn_BiogenicReefs_cur.dbf NZ_VMEn_BiogenicReefs_cur.prj NZ_VMEn_BiogenicReefs_cur.sbn NZ_VMEn_BiogenicReefs_cur.sbx NZ_VMEn_BiogenicReefs_cur.shp NZ_VMEn_BiogenicReefs_cur.shp.xml NZ_VMEn_BiogenicReefs_cur.shx
	22 MEC Physical habitat categories	NZ_VMEn_MEC_cur.dbf NZ_VMEn_MEC_cur.prj NZ_VMEn_MEC_cur.sbn NZ_VMEn_MEC_cur.sbx NZ_VMEn_MEC_cur.shp NZ_VMEn_MEC_cur.shp.xml NZ_VMEn_MEC_cur.shx

Subcomponent of environmental value	Data sources within each subcomponent	Data layers provided
	Derived value: habitat diversity	NZ_VMEn_Ratio_cur.dbf NZ_VMEn_Ratio_cur.prj NZ_VMEn_Ratio_cur.sbn NZ_VMEn_Ratio_cur.sbx NZ_VMEn_Ratio_cur.shp NZ_VMEn_Ratio_cur.shp.xml NZ_VMEn_Ratio_cur.shx
Primary Productivity	23 MEC V2 (chlorophyll data)	NZ_VMEn_ChlorophyllA_cur.dbf NZ_VMEn_ChlorophyllA_cur.prj NZ_VMEn_ChlorophyllA_cur.sbn NZ_VMEn_ChlorophyllA_cur.sbx NZ_VMEn_ChlorophyllA_cur.shp NZ_VMEn_ChlorophyllA_cur.shp.xml NZ_VMEn_ChlorophyllA_cur.shx
Marine Mammal Distribution	16 Te Ara/NABIS bird and mammal distribution data	NZ_VMEn_MarineMammals_cur.dbf NZ_VMEn_MarineMammals_cur.prj NZ_VMEn_MarineMammals_cur.sbn NZ_VMEn_MarineMammals_cur.sbx NZ_VMEn_MarineMammals_cur.shp NZ_VMEn_MarineMammals_cur.shp.xml NZ_VMEn_MarineMammals_cur.shx
	24 Incidental cetacean sighting	NZ_VMEn_CetaceanSighting_cur.dbf NZ_VMEn_CetaceanSighting_cur.prj NZ_VMEn_CetaceanSighting_cur.sbn NZ_VMEn_CetaceanSighting_cur.sbx NZ_VMEn_CetaceanSighting_cur.shp NZ_VMEn_CetaceanSighting_cur.shp.xml NZ_VMEn_CetaceanSighting_cur.shx
Area of MPAs, sanctuaries and restrictions	25 Area based restrictions in the marine environment	NZ_VMEn_AmRestr_cur.dbf NZ_VMEn_AmRestr_cur.prj NZ_VMEn_AmRestr_cur.sbn NZ_VMEn_AmRestr_cur.sbx NZ_VMEn_AmRestr_cur.shp NZ_VMEn_AmRestr_cur.shp.xml NZ_VMEn_AmRestr_cur.shx NZ_VMEn_AmRestrDescr_cur.dbf NZ_VMEn_AmRestrDescr_cur.prj NZ_VMEn_AmRestrDescr_cur.sbn NZ_VMEn_AmRestrDescr_cur.sbx NZ_VMEn_AmRestrDescr_cur.shp NZ_VMEn_AmRestrDescr_cur.shp.xml NZ_VMEn_AmRestrDescr_cur.shx NZ_VMEn_CommRestr_cur.dbf NZ_VMEn_CommRestr_cur.prj NZ_VMEn_CommRestr_cur.sbn NZ_VMEn_CommRestr_cur.sbx NZ_VMEn_CommRestr_cur.shp NZ_VMEn_CommRestr_cur.shp.xml NZ_VMEn_CommRestr_cur.shx NZ_VMEn_CommRestr2Descr_cur.dbf NZ_VMEn_CommRestr2Descr_cur.prj NZ_VMEn_CommRestr2Descr_cur.sbn NZ_VMEn_CommRestr2Descr_cur.sbx NZ_VMEn_CommRestr2Descr_cur.shp

Subcomponent of environmental value	Data sources within each subcomponent	Data layers provided
		NZ_VMEn_CommRestr2Descr_cur.shp.xml NZ_VMEn_CommRestr2Descr_cur.shx NZ_VMEn_CommRestrDescr_cur.dbf NZ_VMEn_CommRestrDescr_cur.prj NZ_VMEn_CommRestrDescr_cur.sbn NZ_VMEn_CommRestrDescr_cur.sbx NZ_VMEn_CommRestrDescr_cur.shp NZ_VMEn_CommRestrDescr_cur.shp.xml NZ_VMEn_CommRestrDescr_cur.shx NZ_VMEn_CommRestrDescr_cur.RegionID.atx
	26 Marine reserves	NZ_VMEn_Cables_cur.dbf NZ_VMEn_Cables_cur.prj NZ_VMEn_Cables_cur.sbn NZ_VMEn_Cables_cur.sbx NZ_VMEn_Cables_cur.shp NZ_VMEn_Cables_cur.shp.xml NZ_VMEn_Cables_cur.shx NZ_VMEn_MarMamSanct_cur.dbf NZ_VMEn_MarMamSanct_cur.prj NZ_VMEn_MarMamSanct_cur.sbn NZ_VMEn_MarMamSanct_cur.sbx NZ_VMEn_MarMamSanct_cur.shp NZ_VMEn_MarMamSanct_cur.shp.xml NZ_VMEn_MarMamSanct_cur.shx NZ_VMEn_MarParks_cur.dbf NZ_VMEn_MarParks_cur.prj NZ_VMEn_MarParks_cur.sbn NZ_VMEn_MarParks_cur.sbx NZ_VMEn_MarParks_cur.shp NZ_VMEn_MarParks_cur.shp.xml NZ_VMEn_MarParks_cur.shx NZ_VMEn_MarReserves_cur.dbf NZ_VMEn_MarReserves_cur.prj NZ_VMEn_MarReserves_cur.sbn NZ_VMEn_MarReserves_cur.sbx NZ_VMEn_MarReserves_cur.shp NZ_VMEn_MarReserves_cur.shp,xml NZ_VMEn_MarReserves_cur.shx NZ_VMEn_Mataitai_cur.dbf NZ_VMEn_Mataitai_cur.prj NZ_VMEn_Mataitai_cur.sbn NZ_VMEn_Mataitai_cur.sbx NZ_VMEn_Mataitai_cur.shp NZ_VMEn_Mataitai_cur.shp.xml NZ_VMEn_Mataitai_cur.shx NZ_VMEn_Taiapure_cur.dbf NZ_VMEn_Taiapure_cur.prj NZ_VMEn_Taiapure_cur.sbn NZ_VMEn_Taiapure_cur.sbx NZ_VMEn_Taiapure_cur.shp NZ_VMEn_Taiapure_cur.shp.xml NZ_VMEn_Taiapure_cur.shx
Cells data		NZ_VMEn_Cells_cur.dbf NZ_VMEn_Cells_cur.prj NZ_VMEn_Cells_cur.sbn NZ_VMEn_Cells_cur.sbx NZ_VMEn_Cells_cur.shp NZ_VMEn_Cells_cur.shp.xml NZ_VMEn_Cells_cur.shx

Subcomponent of environmental value	Data sources within each subcomponent	Data layers provided
Final map		NZ_VMEn_FinalMap_cur.mxd