



New Zealand's Marine Economy

1997–2002

Environmental series

Acknowledgement

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Abbreviations

AES	Annual Enterprise Survey
ANZSIC	Australian and New Zealand Standard Industry Classification system
APEC	Asia-Pacific Economic Cooperation
CAE	Centre for Advanced Engineering
DoC	Department of Conservation
DPMC	Department of the Prime Minister and the Cabinet
EEZ	Exclusive economic zone
ESR	Institute of Environmental Science and Research Ltd
FTE	Full-time equivalent employees
GDP	Gross domestic product
GST	Goods and Services Tax
GVA	Gross value added
IVS	International Visitor Survey
LEED	Linked Employer-Employee Data
LINZ	Land Information New Zealand
MfE	Ministry for the Environment
Mfish	Ministry of Fisheries
MoRST	Ministry of Research Science and Technology
MPAs	Marine protected areas
NIWA	National Institute of Water and Atmospheric Research Ltd
NZDF	New Zealand Defence Force
PCE	Office of the Parliamentary Commissioner for the Environment
SNZ	Statistics New Zealand

1. Preface

Statistics New Zealand is working with a number of government and non-government agencies to produce a range of statistics about the interactions between the environment and the economy, where the environment is a provider of goods and services (ecosystem services) that support human activity.

This report provides information about economic activities that take place in, or use, the marine environment, or produce goods and services necessary for those activities, and make a direct contribution¹ to the national economy. The aim of this report is to enhance the understanding of how New Zealand's marine environment is utilised to generate economic activity (measured as contribution to gross domestic product (GDP)). Baseline information about the contribution New Zealand's marine environment makes to the national economy is useful for policy development relating to oceans (marine) management, such as New Zealand's Oceans Policy,² and for informing public debate.

Economic activity is traditionally measured within a framework known as the System of National Accounts, which parallel at a national level the accounts an individual business would compile. These accounts measure the value added, each year, from economically productive activity, the related expenditure on goods and services, and incomes earned.

In the System of National Accounts, productive activity is measured for each contributing industry – agriculture, mining, manufacturing, transport etc.

This report provides an alternative view by cutting across these traditional industry boundaries and using information from industries that specifically use the marine environment. The resulting information represents the marine economy's direct contribution to New Zealand's economy. It is acknowledged that this is a conservative view of the total value of New Zealand's marine economy. To supplement this, other information has been made available in order to paint a more complete picture.

Information included in this report has been compiled following international methodology and in consultation with the Ministry for the Environment (MfE). As this report represents a first step in developing these statistics and has been published to enhance public debate, feedback regarding methodology or content would be appreciated.

For more information on the wider environmental statistics framework produced by Statistics New Zealand, refer to the environment homepage of Statistics New Zealand's website:

<http://www.stats.govt.nz/environment/default.htm>

1 This report does not measure the indirect contribution of marine-based activities to the economy. For definitions please see the Glossary.

2 The Oceans Policy is a strategic review of New Zealand's marine management system. Development of the policy is a cross-government exercise led by the Ministry for the Environment. For further information please see:

<http://www.mfe.govt.nz/issues/oceans/>

2. Concepts and Definitions

First, it is important to note that this is a first estimate. Trends in the figures are deemed to be indicative. However the use of absolute figures requires care.

Information in this report was calculated by following best practice guidelines, developed or under development here and overseas, in consultation with the Ministry for the Environment. The majority of information in this report has been compiled from Statistics New Zealand's National Accounts data. Where supplementary data is included in the marine economy valuation it has been highlighted within the appropriate category and also included in the Appendix. All time series data in the report is presented in current prices, and the New Zealand marine economy is measured as a percentage of Total All Industries GDP in current prices.

All other data included in this report has been provided as background information only. This information helps show New Zealand's economic reliance on the marine environment. As an example, total earnings have been provided from the Linked Employer-Employee Data (LEED) database to show the cost of wages and salaries to marine-based industries.

Data confidence: Estimates of the economic contribution of the offshore minerals, fisheries and aquaculture, shipping, and government and defence categories are deemed to be relatively robust, due to the availability of data and the relative ease of deriving the marine component of that data. However, not all marine-based government and defence activity has been included. Where a government agency had marine- and land-based activities, for example the New Zealand Police, and the marine component could not be reliably estimated, that agency was excluded. The marine tourism and recreation and marine services categories are only partially represented, due to the difficulty in identifying the marine component of the industries that contribute to these categories. The final three categories, research and education, manufacturing, and marine construction, contain background information only. Further explanation of data limitations is provided in the Methodology.

Having noted that some of the marine categories of the report are underestimated and that others are only partially represented, the final figure for the New Zealand marine economy is deemed to be a conservative estimation. The marine economy cuts across a broad range of conventional industries and problems are incurred when attempting to isolate the marine component of industries without a clear land/marine split. For instance, fish retailing could not be included, as it is covered in an industrial classification that also includes fresh meat and poultry retailing. Statistics New Zealand produces a Tourism Satellite Account that measures tourism's contribution to the New Zealand economy, but we have not been able to assess the capacity of current data to reliably support an estimation of the marine component of tourism. Overall, it is expected that with the exception of the tourism sector the other industries that have been excluded due to inability to estimate a marine component would not have made a major difference to the overall estimate of the size of the marine economy.

Time series: While it would be preferable to provide these statistics over a longer time period, the data availability is limited by significant industry reclassification in 1996. This has restricted the report to analysis of the period from 1997 to 2002. The most recent set of complete National Accounts data for this work is for the year ended March 2002 and the total figure for the contribution of the marine economy to the national economy has been calculated to that date.

The **marine environment** is defined as the marine areas over which New Zealand has sovereignty or which it has sovereign rights to. This includes coastal waters, territorial sea, the exclusive economic zone (EEZ) and beyond to the continental shelf. It does not include the Ross Sea Zone.

The **marine economy** is a function of both industry and geography. It is the sum of the economic activities that take place in, or use, the marine environment, or produce goods and

services necessary for those activities, and make a direct contribution³ to the national economy.

All of the marine activities included in this report have been classified into nine categories following international studies in other Asia-Pacific Economic Cooperation (APEC) economies (McIlgorm, 2004). The Appendix lists the industries or sectors that fall within those nine categories for the purposes of valuing the marine economy. Industries or sectors have been placed in the appropriate category following international best practice and with regard to New Zealand's economic structure.

Using National Accounts data reduces the risk of double counting any economic activity. However, it must be recognised that the industrial classifications used by Statistics New Zealand to produce the National Accounts were not designed to separate marine- from land-based economic activity. Some industries were therefore not included, on the basis that the industrial classification used to measure that industry contained marine- and non-marine-based units. See the Appendix for a list of the industrial classifications that were used to measure the marine economy and those that were excluded. The nine categories are as follows:

- Offshore minerals
- Fisheries and aquaculture
- Shipping
- Government and defence
- Marine tourism and recreation
- Marine services
- Research and education
- Manufacturing
- Marine construction.

This report does not attempt to value natural capital, nor does it distinguish between marine based activities that are extractive or non-extractive, are use or non-use, or that enhance or degrade the marine environment.

2.1 Future developments

This report is a step towards developing a benchmark value of New Zealand's marine economy. The information in the report is deemed to be a good estimate of the marine economy in New Zealand and is comparable to the work produced by other economies in measuring the marine sector. It is recommended that future reports aim to develop some of the issues identified in this report, such as the difficulty in isolating the marine component of National Accounts data on the contribution of construction, manufacturing, and research and education. It is also advised that an extension of the available data be developed for any future report, especially in respect of tourism and recreation, and marine services. Finally, it is suggested that any subsequent report attempt to evaluate the indirect, as well as the direct, contribution of the marine economy to the national economy.

Statistics New Zealand welcomes feedback on this report and its future direction. For any questions, comments or responses, please contact:

environment@stats.govt.nz

³ This report does not measure the indirect contribution of marine-based activities to the economy. For definitions please see the Glossary.

3. Summary

The marine environment is intricately linked to New Zealand's society and economy. Geographically, New Zealand is an isolated, small island nation located in the South Pacific. Almost all of our imports and exports, both by value and volume, pass through the marine environment. The majority of oil and gas reserves are located offshore and New Zealand has a significant fishing industry. Yet there is limited understanding of how much these and other activities together contribute to New Zealand's economy.

Baseline information about the contribution New Zealand's marine environment makes to the national economy is useful for policy development relating to oceans (marine) management and for informing public debate. Information in this field has previously been provided through ad hoc projects with inconsistent methodologies. This report attempts to address this issue by using a methodology consistent across APEC economies to analyse nine broad categories of direct activities taking place in the marine environment (McIlgorm, 2004).

3.1 Highlights

In the March 2002 year:

- the marine economy contributed \$3.3 billion towards New Zealand's economy (almost 3 percent of total GDP)
- of this sum the shipping category was the largest contributor to the marine economy, at 27 percent
- the fisheries category contributed 26 percent
- 21,000 filled jobs existed in the New Zealand marine economy⁴
- 10,000 filled jobs existed within the shipping category.

For the 1997 to 2002 March years:

- growth in the marine economy increased at the same rate as GDP in total
- fisheries and aquacultures value added increased by over 50 percent
- the government and defence category contributed on average 22 percent of the marine economy
- there were over 270 building consents issued for wharves
- generally, coastal residential properties increased in value at substantially greater rates than the national average.

⁴ On average per quarter in the year ending March 2002, does not include government and defence employees.

4. Introduction

New Zealand is a maritime nation. From the arrival of the first Māori settlers after a long sea voyage, to the modern era fishing fleets, the marine environment has played a key role in defining the cultural and economic development of our nation. New Zealand's marine environment extends to the indicative legal continental shelf and is over 20 times larger than the terrestrial landmass.⁵ This includes coastal waters, territorial sea and the EEZ or 200-nautical mile limits, the fourth largest in the world. While there are no official international definitions for the marine economy, it is recognised that it is a function of geography and industry (Colgan, 2003). It is the sum of the economic activities that take place in, or use, the marine environment, or produce goods and services necessary for those activities, and make a direct contribution⁶ to the national economy.

The economic activities related to the marine environment are numerous, from international or coastal sea transport of goods, to fishing or oil and gas extraction, to boatbuilding or ship-registration services. These activities may take place directly in the marine environment, or utilise an ocean resource in their production process. They could also be located away from the marine environment, yet produce goods and services that are used in the marine environment.

This report is Statistics New Zealand's first attempt at establishing an estimate for New Zealand's marine economy. Information included in the report will enable informed public and policy debate about the use and management of New Zealand's marine environment.

Other marine economies which have been valued internationally include those of Australia, Canada, the United Kingdom and the United States. These countries have marine economies that directly contribute between one and five percent of their respective total GDP. It has been estimated that the indirect contribution has normally been double that of the direct figure (Allen, 2004; RASCL, 2003; Colgan, 2004; Pugh and Skinner, 2002). Most international marine economies have been growing. Australia has for some time had a marine economy that has been developing at twice the rate of the national economy (DPMC, 2001).

⁵ The outer limits of New Zealand's continental shelf are not yet finalised. Useful links for further information on New Zealand's marine environment boundaries and the continental shelf project are:

www.mfe.govt.nz/issues/oceans/what/jurisdictional.html and <http://www.unclosnz.org.nz/>

⁶ This report does not measure the indirect contribution of marine-based activities to the economy. For definitions please see the Glossary.

5. Results

5.1 The New Zealand marine economy

The marine economy increased at the same rate as the national economy

In the March 2002 year, New Zealand's marine economy contributed almost 3 percent (\$3.3 billion) of the national economy as measured by GDP (\$115 billion). For the 1997 to 2002 March years, the marine economy's value added increased by 28 percent (\$720 million), which matches growth in the national economy for the same period.

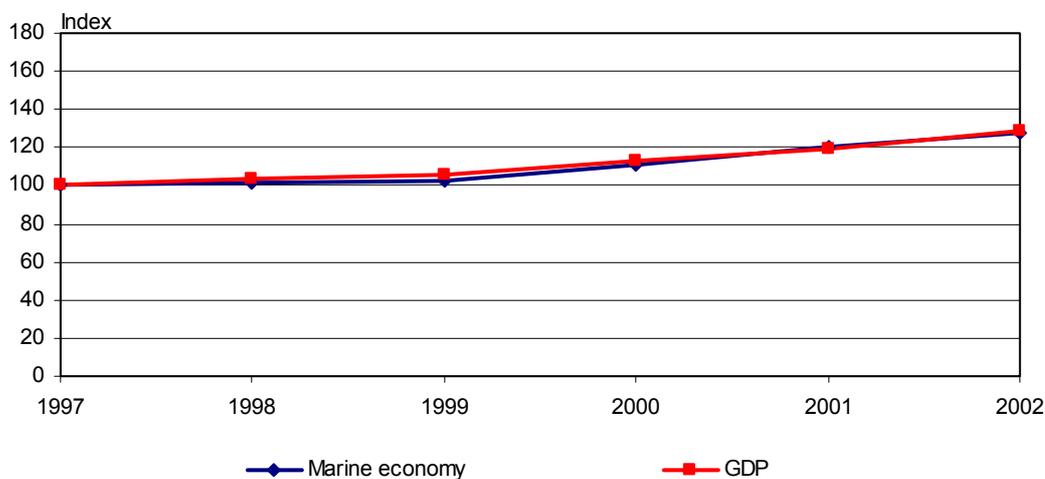
Of New Zealand's total marine economy, the shipping and fisheries and aquaculture categories were the largest contributing categories, at 27 percent and 26 percent, respectively. This was followed by offshore minerals, at 23 percent, and government and defence, at 22 percent. Other measured categories made up around 2 percent of the total marine economy. In the March 2002 year, 21,000 filled jobs existed within the New Zealand marine economy, with a total earnings (before tax) contribution of \$867 million.

For the period 1997 to 2002 fisheries and aquaculture's contribution increased by 54 percent, with offshore minerals, shipping, and government and defence up by 26 percent, 24 percent and 3 percent, respectively.

It is important to note that the methodology used was not able to capture some activities that take place in the marine environment. This means these figures underestimate the total contribution the marine environment makes to the marine economy.

Figure 1

Marine Economy Versus GDP Index
(1997=100)



5.2 Offshore minerals

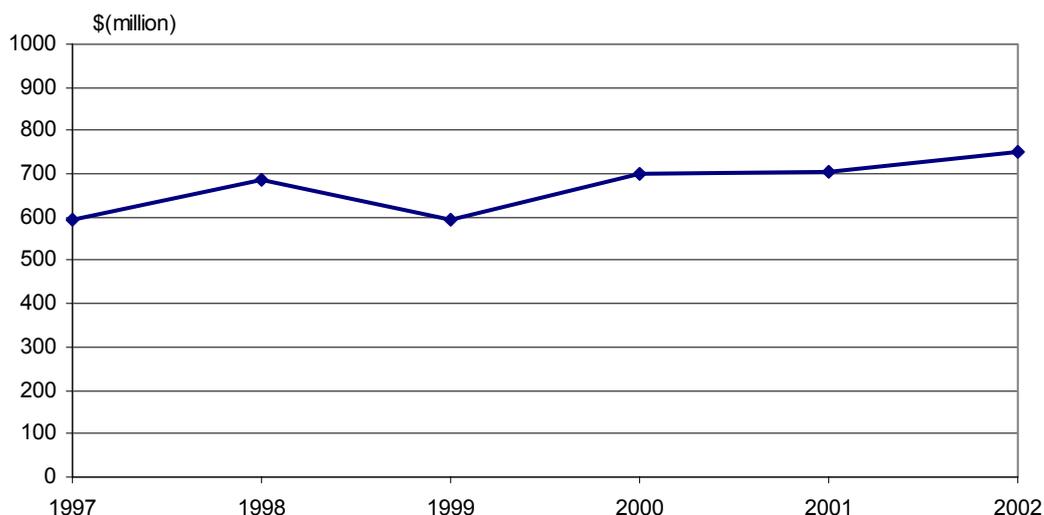
Offshore minerals⁷ contributed over 20 percent of the marine economy

New Zealand has one of the most complex seabeds in the world, containing numerous utilisable resources (CAE, 2004). These resources are likely to be extensive, but there is uncertainty around the exact quantities, as only 3 percent of the seabed area under New Zealand's jurisdiction has been surveyed (LINZ, 2004). The Oceans Survey 20/20⁸ project and other marine research will, over time, increase knowledge about the seabed and the potential resources it holds. Interestingly, approximately 75 percent of New Zealand's oil and gas production is situated offshore, which is in contrast to the rest of the world where offshore production only accounts for around 25 percent of oil and gas production (CAE, 2004).

In the March 2002 year, the offshore minerals category contributed over \$750 million towards the national economy as measured by GDP (23 percent of the marine economy and 0.7 percent of the national economy). Over 95 percent of this category is attributed to oil and gas extraction. On average in the March 2002 year, there were 450 filled jobs within the offshore minerals category, with a total earnings (before tax) contribution of \$43 million. During the 1997 to 2002 March years this category's value added has increased by 26 percent, from \$594 million to \$751 million.

Figure 2

Offshore Minerals Value Added



7 Offshore minerals includes petroleum exploration, petroleum exploration services and oil and gas extraction. Based on advice from Crown Minerals the marine total of each ANZSIC used is 75 percent of the national total provided by the National Accounts. Filled jobs and total earnings are given for the total ANZSIC.

8 The following links are useful for more information:

http://www.linz.govt.nz/rcs/linz/pub/web/root/supportinginfo/News/NewsArchive/next_era_1603/index.jsp
<http://www.mfe.govt.nz/publications/oceans/getting-priorities-right-jun05/html/page6.html>

5.3 Fisheries and aquaculture

Fisheries and aquaculture⁹ increased at greater rates than the national economy

New Zealand's commercial fisheries are made up of 300 different fish species, ten of which make up 80 percent of the total catch (hoki, rock lobster, snapper, orange roughy, pāua, squid, ling, hake, oreo dorie, and tarakihi). Of this total catch, approximately 90 percent leaves the country in a processed state. In 2001, it was estimated that there were 1,400 New Zealand fishing vessels and 230 foreign vessels operating in the New Zealand marine environment (DPMC, 2001).

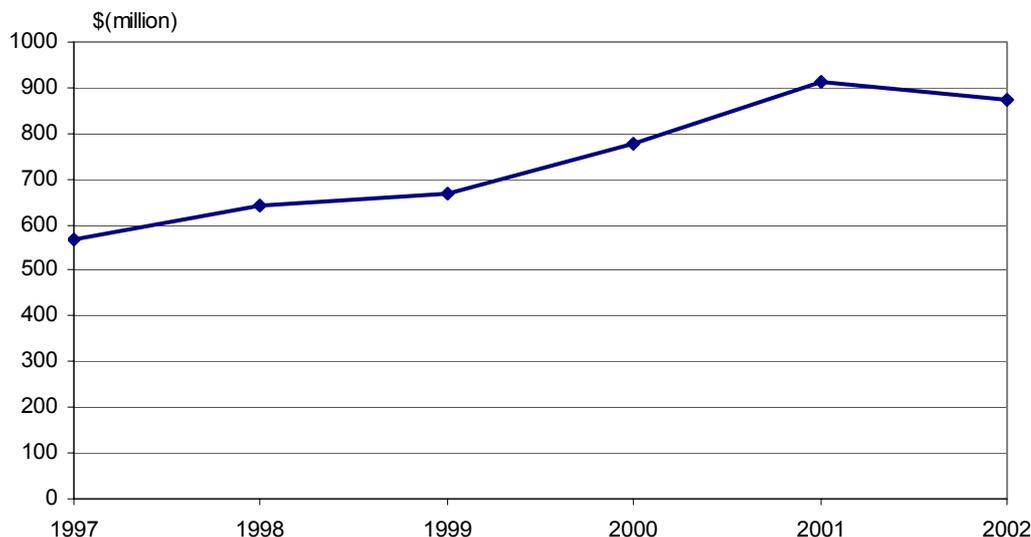
Aquaculture in New Zealand is a rapidly growing industry, with exports increasing by over 230 percent for the period 1991 to 2001 (Mfish, 2002). Of the 2001 export value figure, green-lipped mussels and quinnat salmon accounted for 68 percent and 25 percent, respectively.

In the March 2002 year, the fisheries and aquaculture category contributed \$875 million towards the national economy as measured by GDP (26 percent of the marine economy and 0.6 percent of the national economy). Almost 60 percent of this category is attributed to seafood processing, followed by finfish trawling, aquaculture, and fish wholesaling, making up 12 percent, 8 percent and 7 percent, respectively. On average in the March 2002 year, there were 9,400 filled jobs within the fisheries and aquaculture category, with a total earnings (before tax) contribution of \$326 million.

For the 1997 to 2002 March years fisheries and aquaculture's total value added increased by 54 percent, from \$567 million to \$875 million, which is greater than the increases in both the total marine economy and the national economy. This increase reflected seafood processing almost doubling in value added.¹⁰

Figure 3

Fisheries and Aquaculture Value Added



9 Fisheries and aquaculture includes seafood processing, fish wholesaling, other marine fishing activities, rock lobster fishing, finfish trawling, squid jigging, line fishing, and aquaculture.

10 All figures are in current prices.

5.4 Shipping

Shipping¹¹ contributed over 25 percent of the marine economy

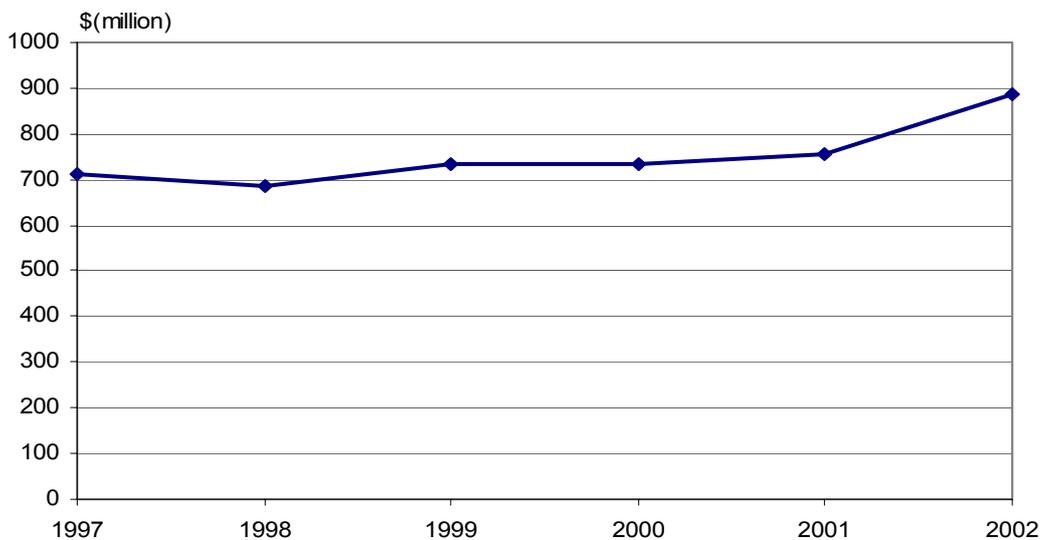
Almost 99 percent of all New Zealand's exports and imports by volume are transported by sea, making New Zealand's 13 major commercial ports and shipping lanes vital to the economy. On average, New Zealand receives around 3,300 calls annually from international trading ships (Maritime Safety Authority, 2003), with merchant vessel visits increasing by 10 percent per annum in the four years to 2004 (Hewitt et al, 2004). New Zealand also has a significant boatbuilding industry, with a large proportion of the industry's sales being exports.

In the March 2002 year, the shipping category contributed \$885 million towards the national economy as measured by GDP (27 percent of the marine economy and 0.8 percent of the national economy). Over 45 percent of this category is attributed to port operators, followed by boatbuilding and coastal water transport, at 22 percent and 14 percent, respectively. On average in the March 2002 year, there were 10,000 filled jobs within the shipping category, with a total earnings (before tax) contribution of \$458 million.

For the 1997 to 2002 March years shipping's total value added increased by 24 percent, from \$713 million to \$885 million.

Figure 4

Shipping Value Added



11 Shipping includes shipbuilding, boatbuilding, international sea transport, coastal water transport, stevedoring, port operations, and water transport terminals.

5.5 Government and defence

Government and defence¹² contributed over 20 percent of the marine economy

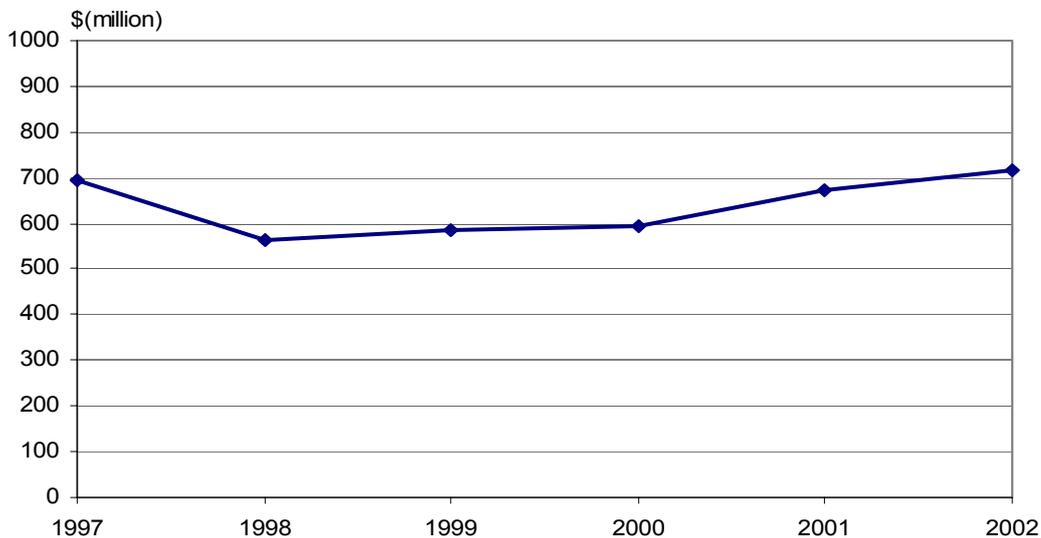
New Zealand has jurisdiction over a large marine area, and therefore the responsibilities of its management and protection. Both of these responsibilities generate a contribution to the economy through direct employment, capital spending, and operations and maintenance spending. The government and defence category includes activities carried out in the marine environment to protect that environment, and contribute to the wider goal of protecting the nation's sovereignty.

In the March 2002 year, government and defence contributed \$718 million towards the national economy as measured by GDP¹³ (22 percent of the marine economy and 0.8 percent of the national economy).

For the 1997 to 2002 March years government and defence value added increased by 3 percent, from \$694 million to \$718 million.

Figure 5

Government and Defence Value Added



12 Government and defence includes specific output classes from NZDF, DoC, Maritime New Zealand and Mfish.

13 It was not possible to draw this data out of National Accounts and therefore a different methodology was applied to obtain the information. These estimates are drawn directly from government financial accounts and are consistent with National Accounts. This information under-represents this category's contribution to the marine economy, as an agency was excluded where the marine component could not be reliably estimated.

5.6 Marine tourism and recreation

Marine tourism and recreation,¹⁴ as measured, contributed over \$50 million to the marine economy in 2002

The scope for the marine tourism and recreation category included recreational fishing, coastal and marine tourism, cruise ships, leisure craft services, marinas, and marine equipment retailing. It was also within the scope to capture the contribution of restaurants, lodgings, and recreation services that were dependent on the marine environment for their operations.

It was not possible to isolate all marine components of the tourism and recreation category from the National Accounts, as the marine component of the industries could not be reliably identified. For example, the industrial classification travel agency services includes units engaged in retailing or wholesaling tours and travel, but it does not split this activity into the land-, sea- and air-based components. In cases where the marine component of a classification could not be isolated from its non-marine component, that activity was excluded from the analysis.

Marine equipment retailing was the only classification able to be included in this category, as it contains only marine-based units. This resulted in a significant undercount in the value of the marine tourism and recreation category. It is recognised that there are many other tourism and recreational activities that occur in New Zealand's marine environment and the exclusion of these activities should be taken into consideration when using this information.

Other international studies have addressed this undercount by allocating a percentage of the country's total tourism value to the marine environment. For example, in Australia a fixed share of the total tourism value has been allocated to marine tourism. At present, data is not considered sufficiently robust to produce such an estimate for New Zealand.

Given this recognised undercount, in the March 2002 year marine tourism and recreation, as measured, contributed \$50 million towards New Zealand's total GDP (2 percent of the marine economy). On average in the March 2002 year, there were 660 filled jobs within the marine tourism and recreation (marine equipment retailing only) category, with a total earnings (before tax) contribution of \$23 million.

5.7 Marine services

Marine services,¹⁵ as measured, contributed over \$30 million to the marine economy in 2002

The scope for this category included marine surveying/mapping and marine business/consulting services, in addition to services to water transport. This category is under-represented as a contribution to the marine economy in this report, as only one industry classification, services to water transport, was available from the National Accounts. The information that was extracted from the National Accounts on services to water transport is presented below.

The industries that were not included in this category, mapping/surveying and business/consulting services, are likely to have made a relatively minor contribution to the category and as such this category is not considered to be greatly underestimated.

Internationally, the results for this category have been varied. Australia and the United States did not present any data for this category, while the United Kingdom and Canada have sourced data on consulting and business services.

In the March 2002 year, marine services contributed \$32 million towards New Zealand's total GDP (1 percent of the marine economy). On average in the March 2002 year, there were 310

14 See the Appendix of this report for a list of the activities that were in scope for this category and those that were able to be measured.

15 Above, n 14.

filled jobs within the marine services (services to water transport only) category, with a total earnings (before tax) contribution of \$16 million.

5.8 Research and education

The marine component of the industries making up this category could not be isolated from the non-marine component. Other information has been provided in order to show the nature of activity in this category and/or any changes over time. This information has not been used to calculate the final figure for the marine economy.

Research and development

Optimal management, utilisation and sustainable development are underpinned by accurate information. Currently, the majority of marine research in New Zealand is funded by the Government (Chapman and Lough, 2003).

Statistics New Zealand has conducted a Research and Development Survey (2005) that reported gross expenditure on research increasing by over 50 percent, from \$890 million to \$1,400 million, for the period 1996 to 2002. The survey states that in 2002 the total number of full-time employees (FTEs) employed in research and development was 17,768. Unfortunately the survey does not differentiate between marine and terrestrial research and development in New Zealand. However, studies conducted by Chapman and Lough (2003) estimate expenditure on marine research in New Zealand to have been approximately \$52 million in 2002, increasing to \$73 million in 2003.

Education and training

Marine education is provided both at polytechnics (technical colleges) and universities in New Zealand. The Universities of Auckland, Victoria, Canterbury and Otago all have marine laboratories (Leigh, Wellington, Kaikoura and Portobello respectively). Aoraki (Timaru), Otago, Nelson, Hutt Valley, Bay of Plenty, and Tairāwhiti (Gisborne) Polytechnics all offer maritime training programmes, as do many private training establishments. In the March 2002 year, the education industry as a whole contributed \$4,910 million to GDP in current prices.

5.9 Manufacturing

The marine component of the industries making up this category could not be isolated from the non-marine component. Other information has been provided in order to show the nature of activity in this category and/or any changes over time. This information has not been used to calculate the final figure for the marine economy.

Manufacturing, as defined for the marine economy, includes marine equipment manufacture and marine biotechnology.¹⁶ Biotechnology is defined as the application of science and technology to living organisms, as well as parts, products and models thereof, to alter living or non-living materials for the production of knowledge, goods and services (MoRST, 2006).

Marine biotechnology

New Zealand has in its marine environment a fertile source of genetic information and natural compounds (NZ Biotech, 2005). The New Zealand Government, as part of its Growth and Innovation Framework, has identified biotechnology as one of four industries that have high growth potential. Nationally, the exploitation of this market is at a development phase from which expansion is expected, especially as the continental shelf is at present largely untapped. As an example of a product which is currently under research and development and may be manufactured in the future, a consortium including NIWA, Victoria University and Altex Coatings has been exploring the commercial potential of using toxic microalgal species as an active ingredient in marine anti-fouling paint (ESR, 2002; NIWA, 2003).

¹⁶ Other industries normally associated with manufacturing are captured under other categories. For instance, the manufacturing of boats is captured in the shipping category. For a full list of industries refer to the Appendix.

5.10 Marine construction

The marine component of the industries making up this category could not be isolated from the non-marine component. Other information has been provided in order to show the nature of activity in this category and/or any changes over time. This information has not been used to calculate the final figure for the marine economy.

Marine construction consists of the construction of wharves and like structures, coastal defences, restoration and enhancement and construction in the marine environment for industry, dredging and submarine cabling. The marine construction category has not had extensive coverage in international reports.

Building consents data on wharves have been used as an indicator of activity in this category. This data is supplied to Statistics New Zealand on a monthly basis from territorial authorities across the country. During the 1997 to 2002 March years there were a total 271 consents¹⁷ issued for wharves nationally, with an average value of \$410,551.¹⁸

The Marlborough region had the greatest number of consents over the period, followed by Auckland. On a national basis, the greatest number of consents were issued in 1999, and the highest total value of construction consents was in 1998. Over the 1997 to 2002 March years the highest average value of consents was in Northland, followed by Auckland.

17 It should be noted that building consents are indicators of future building activity and value, not an absolute record.

18 There is no coverage of building consents issued for less than \$5,000. This reduces the amount of data entry required by both territorial authorities and Statistics New Zealand, without significantly impacting on data quality.

6. International Comparisons

New Zealand's estimated marine economy makes a larger contribution to GDP than that of the United States or Canada

In the March 2002 year, the marine economy made up 2.9 percent of New Zealand's total economy (based on calculations from available data). This percentage is higher than that of the marine economies of Canada or the United States (1.5 and 1.2 percent, respectively) and lower than that of the United Kingdom and Australia (4.9 and 3.6 percent, respectively).

This places the New Zealand marine economy estimate in the expected range, considering the differences in the available resources and economic structure of the other economies. The United Kingdom is similar in size to New Zealand, but has a substantial offshore oil and gas industry which in 1999–2000 contributed 39 percent of the United Kingdom marine economy (Pugh and Skinner, 2002). Offshore oil and gas is also a major industry in Australia, contributing 41.8 percent to the Australian marine economy in the 2002–03 year (Allen, 2004). The huge United States economy is less reliant on international trade and has a comparatively smaller amount of coastline.

When making these international comparisons, it is also important to note that each country has slightly different methodologies due to available data. For example, Australia has used a different methodology than New Zealand to estimate their marine tourism category. As a result, marine tourism in Australia was the largest marine industry, at 42.3 percent of total marine industry value added, in the 2002–03 year. Investigation into the development of a similar methodology for estimating marine tourism in New Zealand could be included in the scope of any future report on New Zealand's marine economy.

As noted in section two of this report, some of the marine categories are underestimated and others are only partially represented, due to the difficulty in isolating the marine component of an industry. Other economies also encountered similar problems. McIlgorm (2005) compares the classifications used to measure the different marine economies and notes gaps in the coverage of naval operations and marine-based tourism, leisure, construction, manufacturing and government services.

Table 1

International Comparisons

Country	Author	Date of study	Date of data in study	Marine sector GDP/GVA ¹ (billions)	Percentage of value added ²
USA	Colgan	2004	2000	US\$118.0	1.2% GDP
Canada	RASCL	2004	1988–2000	C\$22.7	1.5% GDP
NZ	SNZ	2006	1997–2002	NZ\$3.3³	2.9% GDP³
Australia	Allen	2004	1996–2003	A\$26.7	3.6% GVA
UK	Pugh and Skinner	2002	1999–2000	£39.0	4.9% GDP

(1) The Australian data is gross value added (GVA).

(2) As a percentage of GVA or GDP.

(3) The New Zealand figures in this table are Total All Industries GDP, for the year ended 2002.

7. Case Studies

There are many economic activities that take place in the marine environment and make a direct and/or indirect contribution to the national economy for which data cannot be obtained from the National Accounts. To provide a more complete picture of the economic activities taking place in the marine environment we have included case studies for marine reserves, the America's Cup, coastal real estate, submarine cabling, and international visitor numbers.

7.1 Marine reserves

New Zealand's first marine reserve now attracts over 300,000 visitors a year

In this report marine protected areas, or MPAs, is a collective term given to marine reserves,¹⁹ marine parks²⁰ and protected seamounts.²¹ MPAs collectively cover just over three percent of New Zealand's marine environment. Some of the marine reserves and parks have a high-use tourism and recreation utilisation.

The direct contribution of MPAs to New Zealand's economy is difficult to measure. One reason for this is the difficulty in calculating the potential loss of economic value, for example the loss of trawling revenue from establishing a marine reserve. Other difficulties include measuring the use of the MPA, especially when it is often a non-extractive use such as sailing.

The creation of Cape Rodney-Oakakari Point marine reserve, commonly known as Leigh or Goat Island, has been informally accredited as the catalyst for a lot of economic development in the area. In less than 10 years, the reserve has grown into a popular attraction which now attracts over 300,000 people a year to the district. This increased tourist and recreation traffic is attributed to increasing economic investment in the area. In 2003, the Rodney Economic Development Trust estimated the marine reserve pumped \$12 million into the local economy (DoC, 2006a).

The Department of Conservation (DoC) recently commissioned a report into the economic impacts of the Abel Tasman National Park. Although it is not a marine park, the tracks follow the coast and the proximity of the water has immense appeal to visitors. The report stated that the direct economic activity associated with DoC operations in Abel Tasman National Park, including Totaranui, has an annual value added of \$1 million. In 2004 alone, this national park attracted around 150,000 visitors, including 75,000 day visitors using the tracks, 29,000 kayakers, 10,000 boat users who did not stay overnight or use the tracks, 24,000 overnight campers using the DOC camp sites and huts and 10,000 staying at Totaranui (a beach campsite).

19 Marine reserves areas are considered to be in the national interest. There are currently 28 reserves protected under the Marine Reserves Act 1971 within New Zealand waters, with a further five under application. These reserves collectively protect 7.6 percent of New Zealand's territorial sea and 0.3 percent of New Zealand's total marine environment.

20 New Zealand currently has three marine parks which are protected by the Fisheries and Harbours Acts or under their own special legislation.

21 Nineteen seamounts in New Zealand's EEZ are currently closed to fisheries trawling.

7.2 *America's Cup*

The 2003 America's Cup generates almost \$530 million in total value added

The America's Cup is yachting's oldest trophy. New Zealand hosted two defences of the trophy on Auckland's Hauraki Gulf, in 2000 and then again in 2003. Both of the events generated significant economic and employment benefits for New Zealand and in particular the Auckland region. In addition to raising awareness of New Zealand as a destination for tourists, the events helped to strengthen the standing of New Zealand's marine sector in the international community.

The economic impact of these two regattas were assessed by McDermott Fairgray Group and Ernst and Young (2000) for the 2000 America's Cup and by Market Economics Ltd (2003) for the 2003 America's Cup. Both studies estimated the direct and indirect economic impacts²² of the regattas by calculating net additional expenditure and total value added. On comparison, the 2003 event was shown to generate a larger economic impact in New Zealand.

Nationally, the 2000 event generated net additional expenditure of almost \$474 million.²³ There was a direct value added figure of \$195 million and total value added effects of \$495 million. In comparison, the 2003 event generated a net additional expenditure figure of \$523 million, \$213 million of direct value added and almost \$529 million in total value added.

The Auckland region was the main beneficiary of this economic activity. The Auckland region received 80 percent of national total value added expenditure from the 2000 regatta and this figure increased to 85 percent for the 2003 event. In 2000 the event generated net additional expenditure of almost \$432 million, a direct value added figure of \$177 million and total value added effects of \$396.5 million, while the 2003 event generated a net additional expenditure of almost \$497 million, \$201 million of direct value added and almost \$450 million in total value added.

Nationally, the 2000 event generated direct employment of 4,500 (4,090 in Auckland) FTEs and total employment of 8,690 FTEs (7,120 in Auckland), while the 2003 event supported direct employment of 5,010 FTEs (4,770 in Auckland) and total employment of 9,360 FTEs (8,180 Auckland).

There was a shift in sectoral outcomes between the two events. In 2000, the construction sector accounted for over 14 percent of total direct expenditure. This sector's share of total direct expenditure dropped to four percent during the 2003 event (from \$66 million to \$21 million). However, boatbuilding and related activities increased their share from 13 percent in 2000 to 24 percent in 2003 (from \$63 million to \$129 million).

22 See the Glossary for definitions of all economic terminology used in this section.

23 The direct and total value added figures differ from those reported originally in the 2000 Ernst and Young and McDermott Fairgray Economic impact assessment. For an explanation please see: <http://www.trcnz.govt.nz/NR/rdonlyres/FFEBA34F-00E6-427C-987D-3CD98D6D2D2B/4015/resac20002003comparison.pdf>

7.3 Coastal residential real estate

The value of selected coastal properties increase twice as fast as the national average

Housing provides employment and livelihood for a variety of trades. In a market-based property-owning economy, housing is the main area of investment for many (SNZ, 2004). Reserve Bank governor Alan Bollard stated in 2003 that the New Zealand housing market is “one of the factors behind our strong domestic economy” (Bollard, 2003).

Many New Zealanders are moving towards the sun, the sea, and the sand. This is part of a worldwide trend that is increasing property prices, putting pressure on coastal land, and creating added demand for infrastructure and services in the coastal vicinity (Ansley, 2004). The low New Zealand dollar (up until 2002) and the comparative affordability of coastal properties in New Zealand contributes significantly to the demand for coastal and lakeside properties (Freeman et al, 2004). Gerald Rundie (2005) also asserts that waterfront property has experienced strong value growth, which has recently exceeded that of the rest of the residential property market (see Table 2, below, for examples). Two trends were noted: a growing move towards beachfront property being used for a home as opposed to a holiday destination, and the emergence of managed apartments in prime waterfront locations, allowing investors to procure a regular return from their apartment.

Communities around New Zealand have expressed concern over the amount of coastal development occurring in New Zealand and its impact on the character of the coastal environment and local settlements. These concerns have prompted Conservation Minister Chris Carter to call for a board of enquiry to review issues around coastal development and the New Zealand Coastal Policy Statement (DoC, 2006b).

Coastal properties in locations such as Nelson, the Marlborough Sounds and the coasts north of Auckland have been highly priced for some time. Other coastal areas are being ‘discovered’ by the property market and are experiencing rapid property price increases (Table 2, below). Freeman et al (2004) found that coastal properties in small settlements on the lower North Island’s west coast and the lower South Island’s east coast increased by greater amounts than the national average, and especially when compared to the near-urban centres of Levin and the South and East Otago districts.

Table 2

Property Price Comparisons

Location	1999	2000	2001	2002	2003	2004	Five-year change
Himitangi Beach	52,500	45,000	45,000	69,000	92,500	113,500	+116%
Waitarere	57,750	75,500	92,000	110,000	136,000	182,500	+216%
Foxton Beach	62,760	60,000	65,000	83,000	107,000	154,000	+145%
Kaka Point	50,000	70,000	73,900	89,000	130,000	140,000	+180%
Karitane	47,000	61,000	59,000	68,000	86,000	160,000	+240%
Moeraki	125,500	97,000	70,000	175,000	162,000	282,500	+125%
Levin	85,700	99,000	83,000	89,000	99,000	123,500	+44%
South Otago	58,000	54,000	60,500	56,300	65,850	92,350	+59%
East Otago	74,200	85,000	64,750	68,700	85,000	147,187	+98%
New Zealand	169,000	172,000	175,000	186,500	212,000	247,500	+46%

Source: Freeman, Cheyne, Ding, Ellery and Williams, 2004

7.4 Submarine cabling

New Zealand has a number of cables in the marine environment, carrying in total 90 percent of our international telecommunications (MfE, 2005a). The existence of these cables allows us to communicate with each other and with the rest of the world. The installation, maintenance, and protection of these communications (and power cables) make a contribution to the economy, and the pipeline protection areas created to protect the cables limit other activities in those zones. Measuring the contribution to GDP of submarine cables using the National Accounts is not possible at this time and to date no attempt has been made to assess the economic impact of zone changes (ie when fishing is prohibited in a pipeline protection area).

The market for submarine cables has grown considerably since the development and application of fibre-optic cables (Foresight, 1997). The placement, maintenance and management of submarine cables involve considerable expense. For example, the Telstra Saturn fibre-optic cable running from Auckland to Christchurch via Wellington was installed at a cost of around \$100 million. The cable stretches 750 kilometres on the sea floor and runs for another 250 kilometres on land (Mason and Philpott, 2001). Another example is the Southern Cross Cable Network, which provides international bandwidth from Australia, New Zealand and Hawaii to the west coast of the United States. The 29,000 km cable was placed into service in November 2000, originally delivering 120 gigabits per second and now upgraded to 240-gigabit capacity. It took 19 months to lay the cable using seven cable-laying ships, at a cost of approximately US\$1.3 billion, including project management, financing costs and the 2003 upgrade to 240-gigabit capacity. Southern Cross Cable Limited is owned by Telecom New Zealand (50%), Optus (40%) and MCI (10%) (Southern Cross Cable, 2006).

Because of the importance of submarine cables to our economy and society, the Submarine Cables and Pipelines Protection Act 1996 was drafted to protect cables and pipelines. This Act, administered by the Ministry of Transport, ensures that New Zealand adheres to its obligations in respect of international conventions relating to submarine cables. Under the Act pipeline protection areas are set up within which it is an offence for a vessel to anchor or fish, except in the case of specified research and maintenance purposes (DOC, 2004). The Act also sets up a regime of liabilities and penalties for offences, which may include a vessel being ordered to leave a protected area or the seizure of fishing equipment (Maritime New Zealand, 2006; Parliamentary Counsel Office, 2006).

7.5 Marine-based tourist activities

Tourism is an important component of the New Zealand economy, and directly contributed \$6.2 billion, or 4.9 percent, of New Zealand's GDP in the year ended March 2004 (SNZ, 2005). Once the indirect flow-on effects are also included (these occur when tourism industry providers such as transport firms, hotels and restaurants purchase goods and services from their suppliers), a further \$5.8 billion of indirect value added (4.5 percent of GDP) was generated, making the total value added attributable to tourism demand 9.4 percent as a percentage of GDP.

Images used in marketing and branding New Zealand to potential international tourists commonly feature iconic coastal scenes such as the Moeraki Boulders or Marlborough Sounds. New Zealand's marine wildlife also provides significant benefits to the tourist industry – benefits which depend on the continued existence of this wildlife for tourists to view and, as with dolphins in the Bay of Islands, swim with. An example of one of New Zealand's most successful tourism ventures is Whale Watch Kaikoura which, since relatively small beginnings in 1987, has grown to the point where it earned around \$30 million in income in 1999 and has won several national and international awards for environmental tourism (PCE, 1999).

Table 3, below, provides a breakdown of the numbers of international visitors participating in a marine based activity while in New Zealand. The numbers are derived from the International Visitor Survey (IVS) run by Tourism New Zealand. The IVS measures the travel patterns and expenditure of international visitors to New Zealand. The survey draws on a sample of between 5,000 and 6,000 departing international visitors per year to represent the behaviour of all international visitors to New Zealand. Most marine-based activities/attractions are showing increases over time.

Table 3

Number of International Visitors Participating in Marine Activities

Numbers of international visitors who took part in marine activities	1998	1999	2000	2001	2002
Beaches	239,590	300,242	303,874	331,603	373,352
Scenic boat cruise	309,662	296,051	317,798	348,309	280,347
Seal colony	44,756	40,630	48,809	51,398	48,492
Dolphin watching/swimming	47,270	54,215	63,207	72,398	97,640
Penguins	32,983	41,572	55,088	64,205	59,607
Whale watching	56,455	55,414	54,883	64,372	67,947
Kayaking sea	21,099	23,879	30,080	44,016	45,135
Fishing sea/coastal	34,607	30,948	28,653	35,049	39,987
Sailing	36,475	26,854	33,066	26,479	30,733
Total number of visitors	1,319,458	1,364,409	1,481,144	1,633,402	1,694,933

8. Methodology

8.1 Principles

Reports by Colgan (2003), Allen (2004) and McIlgorm (2004) highlighted the four principles for developing a methodology:

- (i) comparability across industries and space
- (ii) comparability across time
- (iii) theoretical and accounting consistency
- (iv) ability to be replicated.

8.2 Methods

The approach taken in this study, to produce an estimate of the marine economy, was to compile data on those industries identified as engaged in marine-based economic activities according to the definition of the marine economy accepted for this study. This is also known as a supply-side or production-based approach.

Categories following international best practice were adopted in order to categorise the industries identified as engaged in marine-based economic activities. These nine categories were based on international studies in other APEC economies (McIlgorm, 2004). After identifying and categorising the industries, the industrial classifications that contained these industries were identified based on the Australian and New Zealand Standard Industrial Classification (ANZSIC) 1996 Version 4.1. Data was then acquired from Statistics New Zealand National Accounts to determine the value-added contribution of the individual industrial classifications. These were aggregated up to the category level and summed to produce an overall estimate of the New Zealand marine economy and its contribution to national GDP.

8.3 Data limitations

This report only measures direct activities that occur in the marine environment and contribute to GDP. This is consistent with comparable studies in Canada, Australia and the United Kingdom.

Data for these measures was obtained from Statistics New Zealand's National Accounts, which in turn is sourced from the Annual Enterprise Survey (AES). There are issues which must be taken into consideration when analysing this report:

- (i) Every effort has been made to evaluate the accuracy of the time series estimates included in this report. While trends in the figures are deemed to be indicative, the use of absolute figures requires care.
- (ii) This report has erred on the side of caution when activity boundaries are not clear. In most cases where the marine component of an activity could not be isolated from its non-marine component that activity was excluded from the analysis.

The only non-National Accounts data used to calculate the marine economy were the figures used to estimate the government and defence category. Data could not be sourced from National Accounts, as it was not possible to isolate the marine component of the ANZSICs that contained government and defence activity. Government financial accounts were used to derive estimates for this category. Including this non-National Accounts data in the final figure did not compromise the integrity of this report, as these estimates are drawn directly from government financial accounts and are consistent with National Accounts.

Employment information was drawn from the Linked Employee-Employer Database (LEED). These official quarterly statistics measure labour market dynamics. The term jobs refers to a unique employer-employee pair present on an Employer Monthly Schedule in the reference quarter. It should be noted that self-employed individuals are not included in these figures. The values presented are total earnings (before tax) paid in the reference quarter. LEED information in this report is presented for the year ending March 2002. For further information on LEED see:

www.stats.govt.nz/leed

9. Glossary

The **contiguous zone** extends 24 nautical miles from the coast. New Zealand has jurisdiction to prevent or punish infringement of customs, fiscal, immigration or sanitary laws.

The **continental shelf** extends to the extent of the continental margin. New Zealand has sovereign rights over the management of the resources of the seabed but not the water column. New Zealand also has jurisdiction in respect of construction of artificial islands and drilling on the continental shelf, subject to the rights of other states, including freedoms of navigation, overflight, laying of submarine cables and revenue sharing. The outer limits of the New Zealand extended continental shelf remain subject to consideration by the United Nations Commission on the Limits of the Continental Shelf and to boundary negotiations with Fiji and Tonga.

Direct economic impacts result from the flow of money between an organisation and its stakeholders. This also describes the **direct contribution to the economy** when this flow of money is estimated at industry level. It also refers to the initial spending flow through the economy as the result of an event like the America's Cup.

The **exclusive economic zone (EEZ)** extends 200 nautical miles from coast. New Zealand has sovereign rights over the management of the resources of the seabed and water column. New Zealand also has jurisdiction in respect of construction of artificial islands, marine scientific research, and protection and preservation of the marine environment, subject to the rights of other states, including freedoms of navigation, overflight, and laying of submarine cables.

Gross domestic product (GDP) equals the sum of value added for all producers, plus taxes on production and imports.

Indirect impacts are the extent to which industries that experience direct economic impacts stimulate production and employment in other industries (for example, how businesses selling goods and services directly to America's Cup participants and spectators in turn increase their own purchases of goods and services). Indirect impacts have not been included in this report.

Internal waters and the territorial sea extend 12 nautical miles from the coast. New Zealand has sovereignty over these waters – they are part of the territory of New Zealand, subject to the right of innocent passage for all vessels.

Marine contribution to the economy is measured as a percentage of Total All Industries GDP in current prices.

Net additional expenditure is the extra spending that occurred in the economy which is attributable to an event. The net additional expenditure therefore excludes expenditure that would have occurred irrespective of the event, counts only once the flows of direct expenditure between organisations involved in the event, and counts only a share of total spending by visitors for whom the event was only one reason for visiting New Zealand or (in the case of the America's Cup) Auckland.

Total All Industries GDP is total gross domestic product less GST on production, import duties and other taxes on production.

Value added If all production was added together considerable duplication would occur, because many goods and services provided by one producer are purchased by another for use in subsequent production. As a result, the value of some goods and services becomes incorporated in the value of other goods and services. One purpose of the national accounting process is to remove the value of intermediate consumption and so arrive at a value of production free of duplication. This is the concept of value added, or GDP.

For industries, value added equals the value of total output (sales adjusted for inventories of finished goods and work in progress) less the cost of goods and services used in production (intermediate consumption). This measures the producers' contribution to GDP.

Total value added or the **total economic effect** is the sum of the direct, indirect and induced effects.

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11. Appendix

Table 4

Australian and New Zealand Industrial Classifications

Categories reported	ANZSIC classifications included in category		Primary activities from ANZSIC 1996 V 4.1	General comments
Offshore minerals	B120000	Oil and Gas Extraction	Gas natural extraction, LNG production at wellhead, Oil shale mining, Liquefied petroleum gas production (not at refineries), Natural gas separation at the wellhead.	Activities included in the scope for this category were all offshore mineral resource extraction and exploration, aggregates (offshore extraction) and salt extraction and processing. Full coverage of the above activities was obtained for this category for oil, gas and petroleum. Limited amounts of offshore or coastal mining activity may be contained within the ANZSIC groups B131 Metal Ore Mining, B141 Construction Material Mining, B142 Mining nec and B151 Exploration, but the marine component could not be isolated. Based on advice from Crown Minerals the marine total of each ANZSIC used is 75 percent of the national total provided by the National Accounts.
	B151100	Petroleum Exploration (Own Account)	Own account exploration for petroleum and natural gas	
	B151200	Petroleum Exploration Services	Natural gas exploration on contract, Petroleum exploration on contract	
Fisheries and aquaculture	A041100	Rock Lobster Fishing	Crayfish saltwater fishing, Rock lobster fishing and processing (aboard vessel at sea), rock lobster fishing.	Activities included in the scope for this category were fisheries and aquaculture (including seaweed harvesting), and seafood processing, wholesaling and retailing. Full coverage of the above activities was obtained for this category with the exception of seafood retailing. Seafoods and/or fish retailing are included in ANZSIC G512100 Fresh Meat, Fish and Poultry Retailing and were not included as the fish retailing component could not be isolated from meat and poultry. ANZSIC F452300 Chemical Wholesaling was not included as the marine component could not be isolated. A small proportion of the activities captured in aquaculture may occur outside of the marine environment.
	A041300	Finfish Trawling	Finfish trawling	
	A041400	Squid Jigging	Squid jigging	
	A041500	Line Fishing	Line fishing	
	A041900	Marine Fishing nec	Abalone fishing, Oyster fishing (except from cultivated oyster beds), Seaweed (algae) harvesting, Marine water fishery products gathering, Pearling (except pearl oyster farming), Turtle hunting	
	A042000	Aquaculture	Crustacean breeding or farming, Fish hatchery operation, Molluscs breeding or farming, Pearl oyster farming, Trout farming, Fish breeding or farming, Fishing (freshwater) Oyster farming, Salmon farming, Yabbie fishing or farming	
	C217300	Seafood Processing	Crustaceans processed mfg (including cooked/ or frozen) nec, Fish fillet mfg, Fish paste mfg, Molluscs processed mfg (incl. shelled; except oysters), Scallops preserved mfg, Seafoods preserved mfg, Fish cleaning or filleting, Fish loaf or cake mfg, Fish pate mfg, Fish dried or smoked mfg, Oysters canned or frozen mfg, Seafoods canned mfg	
	F471400	Fish Wholesaling	Crustaceans wholesaling (incl processed, except canned), Molluscs wholesaling (incl processed, except canned), Fish wholesaling, Seafoods fresh or frozen wholesaling	
A041200	Prawn Fishing	Prawn fishing, Prawn fishing and processing (aboard vessel at sea)		

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Categories reported	ANZSIC classifications included in category		Primary activities from ANZSIC 1996 V 4.1	General comments
Shipping	C282100	Shipbuilding	Dry-dock operation, Ship repairing, Shipbuilding, Submarine constructing, Hull cleaning, Ship wrecking, Submarine components mfg nec	<p>Activities included in the scope for this category were all marine transport, shipbuilding, boatbuilding, port operations and stevedoring. Full coverage of the above activities was obtained for this category.</p> <p>International Sea Transport has been included in Shipping rather than Tourism and recreation because the majority of primary activities listed for the classification are for commercial industry rather than transport for recreational or tourism purposes. The same theory has been applied to Coastal Water Transport.</p> <p>Services to Water Transport nec (I662900) has been classified under Marine Services.</p> <p>ANZSIC L742200 Other Transport Equipment leasing may contain marine-based activity but as this component could not be isolated from the land based transport activity the ANZSIC was not included.</p> <p>The marine component of ANZSIC F461900 Machinery and Equipment Wholesaling nec, C255900 Rubber Product Manufacturing nec could not be isolated.</p> <p>ANZSIC I630300 Inland Water Transport was not included, as the marine component could not be isolated. This industry would have also fallen under the Tourism and Recreation category.</p>
	C282200	Boatbuilding	Boat repairing, Dinghy mfg, Yacht constructing, Boat building, Sailboat mfg	
	I630100	International Sea Transport	Freight transport service (international sea transport), Passenger transport service (international sea transport), Ocean cruise services (between domestic and foreign ports), Ship management service for international sea transport (ie operation of ships on behalf of owners)	
	I630200	Coastal Water Transport	Boat charter, lease or rental (with crew; for any period; for coastal water transport) Island ferry operation in coastal waters), Passenger transport service (coastal sea transport), Ship management service for coastal sea transport (ie operation of ships on behalf of owners), Freight transport services (coastal sea transport), Ocean cruise services (between domestic ports), Ship charter, lease or rental (with crew; for any period; for coastal sea transport), Vehicular ferry operation (in coastal waters)	
	I662100	Stevedoring	Ship loading or unloading service (provision of labour only), Stevedoring	
	I662200	Water Transport Terminals	Coal loader operation (sea transport), Freight terminal operation (sea transport), Passenger terminal operation (sea transport), Terminal operation (sea transport), Container terminal operation (marine cargo), Grain loader operation (sea transport), Ship mooring service	
	I662300	Port Operators	Port operation, Wharf provision, Wharf facility leasing	
Government and defence				<p>Activities included in the scope for this category were defence and naval operations, resource management agencies and other government marine-related services. These were not captured from the National Accounts because it was not possible to isolate the marine component of ANZSIC M811100 Central Government Administration, M811300 Local Government Administration or M820000 Defence.</p> <p>In order to estimate the value of this category specific output classes from NZDF, DoC, Maritime NZ and Mfish were used.</p> <p>The total expense of operating the Ministry of Fisheries and Maritime New Zealand was included. Selected output classes were included from the New Zealand Defence Force and the Department of Conservation. Other government departments and agencies had marine- or ocean-related responsibilities and expenses in output classes with non-marine activities, and therefore were not included.</p>

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Categories reported	ANZSIC classifications included in category		Primary activities from ANZSIC 1996 V 4.1	General comments
Marine tourism and recreation	G524500	Marine Equipment Retailing	Boat trailers retailing, Boats dealing, Marine accessories retailing nec, Sailing or nautical accessories retailing, Outboard motors retailing, Yacht broking	<p>Activities included in the scope for this category were recreational fishing, coastal and marine tourism (including marine reserves), cruise ships, leisure craft services, restaurants/lodging/recreation services, marinas, and boat dealers. These activities were not captured from the National Accounts with the exception of G524500 Marine Equipment Retailing.</p> <p>Extra information from the Tourism Satellite Account (Statistics New Zealand) and the International Visitor Survey (Tourism Research Council New Zealand) was used as a case study.</p> <p>The marine component for ANZSIC G524100 Sport and Camping Equipment Retailing, C294200 Toy and Sporting Good Manufacturing and P931900 Sports and Services to Sports nec could not be isolated, therefore these were not included.</p>
Marine services	I662900	Services to Water Transport	Distressed vessel towing service, Lift span bridge operation navigation service, Water transport, Port services nec, Ship registration service, Ships agency service, Tugboat operation, Harbour services, Lighterage service, Pilotage services, Salvage service – marine, Shipping agency service, Towboat operation, Waterways – navigable – operation	<p>Activities included in the scope for this category were surveying/mapping and business/consulting services in addition to Services to Water Transport. Services to Water Transport was captured from the National Accounts. Surveying /mapping and business/consulting services were not captured from the National Accounts because it was not possible to identify the marine component of ANZSIC L782200 Surveying Services or L782300 Consultant Engineering Services. It was also not possible to isolate marine insurance from K742200 General Insurance</p>
Research and education				<p>Activities included in the scope for this category were marine research and development, and marine education and training. These activities were not captured from the National Accounts because it was not possible to identify the marine component of ANZSIC L781000 Scientific Research, or N843100 Higher Education. No estimation of the contribution to the marine economy was made for this category.</p>
Manufacturing				<p>Activities included in the scope for this category were marine biotechnology and marine equipment manufacture. These were not captured from the National Accounts because it was not possible to identify the marine component of ANZSIC C283900 Professional and Scientific Equipment Manufacturing, C286900 Industrial Machinery and Equipment Manufacturing nec, C254300 Medicinal and Pharmaceutical Product Manufacturing, C222100 Made-Up Textile Product Manufacturing, C281200 Motor Vehicle Body Manufacturing, or F472100 Textile Product Wholesaling. No estimation of the contribution to the marine economy was made for this category.</p>
Marine construction				<p>Activities included in the scope for this category were marine structures and buildings, general marine works, and submarine cabling. These activities were not captured from the National Accounts because It was not possible to identify the units within ANZSIC E412200 Non-Building Construction that primarily dealt with marine construction, or submarine cabling from J712000 Telecommunication Services.</p> <p>Building consent information on wharves (building type code 860, name wharf/jetty) collected by Statistics NZ has been provided as background information. No estimation of the contribution to the marine economy was made for this category.</p>
<p>Key: nec not elsewhere classified mfg manufacturing NA National Accounts</p>				