METOC

dti

TECHNICAL REPORT ON THE OTHER USERS OF THE SEA 7 AREA

FINAL REPORT

Metoc plc
Exchange House
Liphook
Hants GU30 7DW
United Kingdom

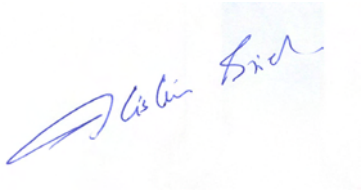
Tel: +44 (0) 1428 727800
Fax: +44 (0) 1428 727122

E-mail: info@metoc.co.uk
Web Site: www.metoc.co.uk

REPORT RELEASE FORM

Title:	TECHNICAL REPORT ON THE OTHER USERS OF THE SEA 7 AREA
	FINAL REPORT
Client:	DTI
Metoc Report No:	1509
Date of Issue:	October 2006
Level of Issue:	FINAL

Distribution:	DTI	No:
	Metoc plc	No:
Prepared By:	Richard Stocks, Jillian Hobbs	
File Reference:	QMAR58 - 1509 - FINAL	
Project No:	P818	

Project Manager:	Authoriser:
	
Richard Stocks	Alistair Bird

COPY NUMBER:

This document was produced as part of the UK Department of Trade and Industry's offshore energy Strategic Environmental Assessment programme. The SEA programme is funded and managed by the DTI and coordinated on their behalf by Geotek Ltd and Hartley Anderson Ltd.

SUMMARY

The purpose of this report is to provide an initial assessment of what is termed the "Other Users" of the SEA 7 area. These other users include those significant human activities and infrastructure occurring in the marine and coastal zone, and not addressed by other SEA 7 data reports. Fisheries and maritime archaeology (wrecks) are therefore excluded. The report summarises current activity in the area, and where possible discusses likely future trends. It also summarises the relevance of each activity to any future proposed oil and gas activity. Where appropriate, comment is made about the potential sensitivity of an "Other User" to oil and gas development, or the potential restrictions to oil and gas development presented by existing users.

The SEA 7 area covers the sea area to the west of Scotland and includes a section of the north coast of Northern Ireland. It extends west into the Atlantic to Rockall and beyond as far as 24° west. Although inshore waters within the bay enclosure lines will not be included in offshore oil and gas licensing, they are included in this assessment because they may be subject to related impacts. This section provides a brief summary of the activities covered in the report and its conclusions. Figure 1.1 summarises to spatial extent and distribution of "Other Users" described. For further details please refer to the appropriate section of this report.

COASTAL POPULATIONS

The vast majority of the SEA 7 area is rural in nature with scattered, low density populated areas. The largest settlements are relatively small towns and villages. Demographically the area comprises an older population than elsewhere in Scotland and Northern Ireland. The population is predicted to age further over the next 10 years in the Western Isles. Agriculture, forestry and fishing along with tourism, whilst not representing a dominant proportion of industry, are significantly above the national averages and are important parts of the SEA 7 economy.

PORTS AND SHIPPING

Ports in SEA 7 area are generally not of high significance in terms of cargo tonnage handled, and there are no significant ports in Northern Ireland within the SEA 7 area. Fishing activity and fishing ports are important on the Scottish west coast despite the general decline in fishing. Passenger links to and between islands are also important.

Overall shipping density throughout SEA 7 is low to moderate. It is highest in the waters between the mainland and Western Isles (The Minches) and from the southern tip of the Western Isles running south east to the North Channel, where a traffic separation scheme is in place (see Figure 1.1).

Following the Braer tanker oil spill it was recommended that areas of high environmental sensitivity, which are also at risk from shipping, should be identified and established around the UK coast. Five Marine Environmental High Risk Areas (MEHRA's) have been established in the SEA 7 area. There is already some oil and gas related shipping in the SEA 7 area with laden tankers generally using the Deep Water Route to the west of the Western Isles. Any future development of oil and gas resources in SEA 7 would need to consider the impact of associated increases in oil and gas related shipping.

OIL AND GAS ENERGY

Despite interest in Atlantic Frontier (waters off the north and west coasts of Scotland) there has been little oil and gas activity in the SEA 7 area. Atlantic Frontier developments have so far focussed on areas west of the Shetland Isles. A small number of blocks have previously been licensed and two areas to the north of the SEA 7 area (north of the Western Isles) within quadrants 164 and 154 are currently under licence. However, there is currently no oil or gas production in SEA 7 area and limited exploration activity. There has been one gas discovery in Block 154/1 on the continental slope called the Benbecula prospect. Drilling of an appraisal well began in July 2006 to assess the size of the resource. If deemed to be commercially viable, Benbecula could become a subsea to beach development with a gas pipeline likely to run around the north of Scotland. This would constitute the first hydrocarbon production in the SEA7 area. At the time of writing, the results of the appraisal well are not known.

Future development of oil and gas in the SEA 7 area and wider Atlantic Frontier would rejuvenate the economy of western Scotland, but would also alter the social fabric and untouched nature of the SEA 7 area.

RENEWABLE ENERGY

At present there is little development of offshore renewables in the SEA 7 area but there is huge potential from wind, wave and tidal resources. Development of offshore renewables in the area is limited by the low capacity of the existing grid system. Expense and technological constraints are also factors, particularly for wave and tidal projects.

Despite this, there is considerable political will to develop renewable energy in the region, particularly wave and tidal schemes. A Strategic Environmental Assessment (SEA) for the development of marine wave and tidal renewables is currently underway and the world's first commercially operational wave-power station has been installed on the Scottish island of Islay.

The arrival of large scale marine renewables in the SEA 7 area is likely to be a number of years away, particularly given the infancy of large scale wave and tidal technologies. However, the industry may compete with oil and gas for sea areas at some point in the future.

CABLES

Cables in the SEA 7 area include four international telecom cables of which three are active and one is out of service. There are numerous smaller coastal cables, including power cables between islands and the mainland. The drive for renewable energy generation in Scotland has highlighted the current inadequacies in the grid for connecting in new generating capacity. It is likely that new interconnectors associated with renewable energy developments within the SEA7 area will take place in the future, although their general routing cannot be stated at this time. Submarine cables would prevent oil and gas activity in their immediate vicinity, but would not restrict the industry at the scale of licensing and the SEA 7 area.

MILITARY ACTIVITY

There is considerable military activity to the west of Scotland and almost the entire inshore area is designated as military practice and exercise areas (PEXA). Waters between the Scottish mainland and the Western Isles, and south to include the sea area off the coast of Northern Ireland are used for Naval exercises. The Royal Air Force (RAF) conducts air combat training in an area towards the northern extent of the study area. Larger PEXAs extend beyond the Western Isles into the Northeast Atlantic, used by the Navy and the MOD Procurement Executive. These include a missile firing range associated with the South Uist Missile Range, run by QinetiQ on behalf of the Ministry of Defence, which fires westwards out to sea.

The spatial extent of the military exercise areas in the SEA 7 area means that any future oil and gas development is likely to occur in areas designated for use by the armed forces. Provided there is sufficient planning and consultation between the oil and gas industry and the MOD the presence of a PEXA does not necessarily preclude other activities. However, issues such as the missile testing range will require further consideration and may restrict future oil and gas development.

DREDGING AND AGGREGATE EXTRACTION

There are currently no licensed marine aggregate extraction areas in the SEA 7 area. Some navigational dredging takes place periodically in and around the relatively small ports and harbours in the region and is disposed of at licensed marine disposal sites.

MARINE WASTE DISPOSAL (INCLUDING ORDNANCE)

The dumping of most types of industrial waste and sewage sludge at sea is now prohibited and material from port and navigation channel excavation and coastal engineering works constitutes the majority of material disposed of at sea. Disposal licences are granted annually and new applications are made periodically when navigational dredging is required at local ports and harbours. There are no large ports or harbours in the SEA 7 area so the majority of disposal sites are only licensed every few years. At the time of writing, 3 sites (Campbeltown, Bruichladdich and Port Ellen) have current disposal licences but are not expected to renew later in 2006. A number of other disposal sites exist in the SEA 7 area that have been used in the past and for which new licences may be granted in the future.

Disposal sites that are active or have potential to be re-licensed would constitute a restriction on oil and gas development in the immediate vicinity. However, the nearshore location of these disposal sites would indicate that they are unlikely to restrict proposed increase in oil and gas activity as a result of SEA 7 licensing.

There are 5 known munitions dump sites in the SEA 7 area. Conventional munitions were disposed of at two inshore sites and the three remaining offshore sites contain chemical weapons. The recovery of dumped munitions is not considered to be technically feasible at present and munitions have been shown to be present outside of the boundaries of known dump sites. The presence of munitions would, at present, prevent oil and gas operations at these 5 locations. Oil and gas exploration and production undertaken in the vicinity of munitions disposal sites in the SEA 7 area should be subject to a full seabed survey assessment of the potential risk prior to the approval.

MARICULTURE

Mariculture is the cultivation of marine species in coastal waters. The west coast and the Western Isles are the focus of the mariculture industry in Scotland, making an important contribution to the economy of rural and island communities. Mariculture is also important in Northern Ireland, but is concentrated in five sea lochs (loughs in Northern Ireland) that are located outside of the SEA 7 study area.

Mariculture operations and management areas are located in the numerous sheltered sea lochs along the Scottish west coast, but the industry has grown to such an extent over the last 20 years that there are now few suitable coastal sites that do not have some production operations present. Marine fish farming can have negative impacts on the seabed, water quality and wild fish populations, and concern about the environmental impacts of mariculture has encouraged the development of sustainable management initiatives. However, the finite number of suitable inshore sites may lead operators to move further offshore if expansion of the industry is to take place.

Any increasing oil and gas activity and development to the west of Scotland would be likely to meet with opposition from the mariculture industry following the Braer spill which had severe impacts on mariculture in the Shetland Islands. However, the nearshore location of mariculture operations is, at present, unlikely to restrict oil and gas development in SEA 7 and economic and technical constraints mean that it is unlikely to move sufficiently far from the coast to coincide with many oil and gas sector activities.

TOURISM AND RECREATION

The coastline within the SEA 7 area is characterised by unspoilt and spectacular coastal scenery with few large population centres. It appeals to people who want to 'get away from it all' and enjoy nature. Outdoor activities including nature watching, walking, sailing and fishing are popular reasons to visit the region. This makes an important contribution to regional economies with around 10% of people employed in the tourism sector in some areas. The relative remoteness of the Northern Highlands and Western Isles means that they receive fewer tourists than southwest Scotland and the coast of Northern Ireland.

The north coast of Northern Ireland has a developed tourist infrastructure and a number of coastal attractions. The Causeway Coast Way, for example, takes in attractions like the Giant's Causeway, Dunluce Castle ruins, and the Carrick-a-rede Rope Bridge. Beaches are used in the summer months, most of which are rural in nature. Ballycastle, on the coast of County Antrim is the only significant resort beach in the SEA 7 area and held a Blue Flag award in 2005.

Sailing and yachting is popular in the more sheltered coastal waters, bays and sea lochs, and in addition particular routes are used to traverse among the Scottish west coast, Northern Ireland and between islands. There are 13 Royal Yachting Association (RYA) clubs in the region and a number of associated training areas, cruising routes and sailing areas. Other popular coastal recreational activities include golf, sea angling, swimming, surfing, canoeing, windsurfing and scuba diving.

Scenery, wild landscapes, unspoilt environment, nature and wildlife together comprise four out of the top five qualities attributed to Scotland and these are particularly important characteristics of the SEA 7 area coastline. Given their link to tourism in the region, future oil and gas development in the area should avoid negative impacts on the natural environment and coastal landscape.

OTHER LOCALLY IMPORTANT ACTIVITIES

The rural nature, low population density and the absence of large settlements and heavy industry in the SEA 7 coastal area is reflected in the number of people employed in agriculture, forestry and fishing which is significantly higher than the national averages for Scotland and Northern Ireland. Mining, quarrying and construction is important at some locations, including the Glensanda superquarry. However, these activities are unlikely to pose a significant restriction to any future oil and gas activity in the SEA 7 area.

COASTAL AND MARINE MANAGEMENT INITIATIVES

A diverse management framework exists to monitor, influence and regulate activities in the marine and coastal zone. These range from development plans that regulate coastal developments, Shoreline Management Plans for coastal protection, coastal water quality initiatives, nature conservation initiatives, and integrated coastal zone management initiatives.

Many of these area terrestrial or coastal in nature and would only be directly relevant to coastal infrastructure associated with offshore oil and gas activity. For example, the EC Water Framework Directive (WFD) which will eventually integrate or replace existing water quality initiatives. It is applied out to 3 nautical miles from the coast and is therefore unlikely to be relevant to most offshore activity. Offshore operations are more likely to be restricted by moves to designate offshore nature conservation sites out to the limit of the UK continental shelf under the EC Habitats and Birds Directives (Natura 2000).

CONCLUSIONS

Significant industries in the SEA 7 area are ports and shipping, mariculture and coastal tourism. These sectors are concentrated the coastal zone and waters within the 3 nautical mile limit, where development planning and environmental constraints are greatest. The scenic value and pristine nature of the coastal environment is also a valued feature of the region. Given that the majority of any oil and gas development in SEA 7 is likely to be in offshore areas, significant conflict with inshore activities would be largely avoided. Where inshore activities do present restrictions, they will be to the development of coastal infrastructure associated with offshore oil and gas such as refineries, pipeline landfalls, terminals and logistic support facilities.

Existing activities beyond 3 nautical miles with potential to restrict offshore oil and gas development in some areas include shipping, military activity, submarine cables and marine waste disposal sites, particularly munitions dumps. The amount of military activity along the west coast of Scotland is considerable and operations like missile firing out to sea would be an issue to future development requiring discussions with the MOD. Figure 1.1 summarises offshore activities in the SEA 7 area. There is also interest in developing marine renewables in SEA 7, but technological restrictions will limit the sector to coastal waters for the foreseeable future.

CONTENTS

TABLES

FIGURES

1 INTRODUCTION

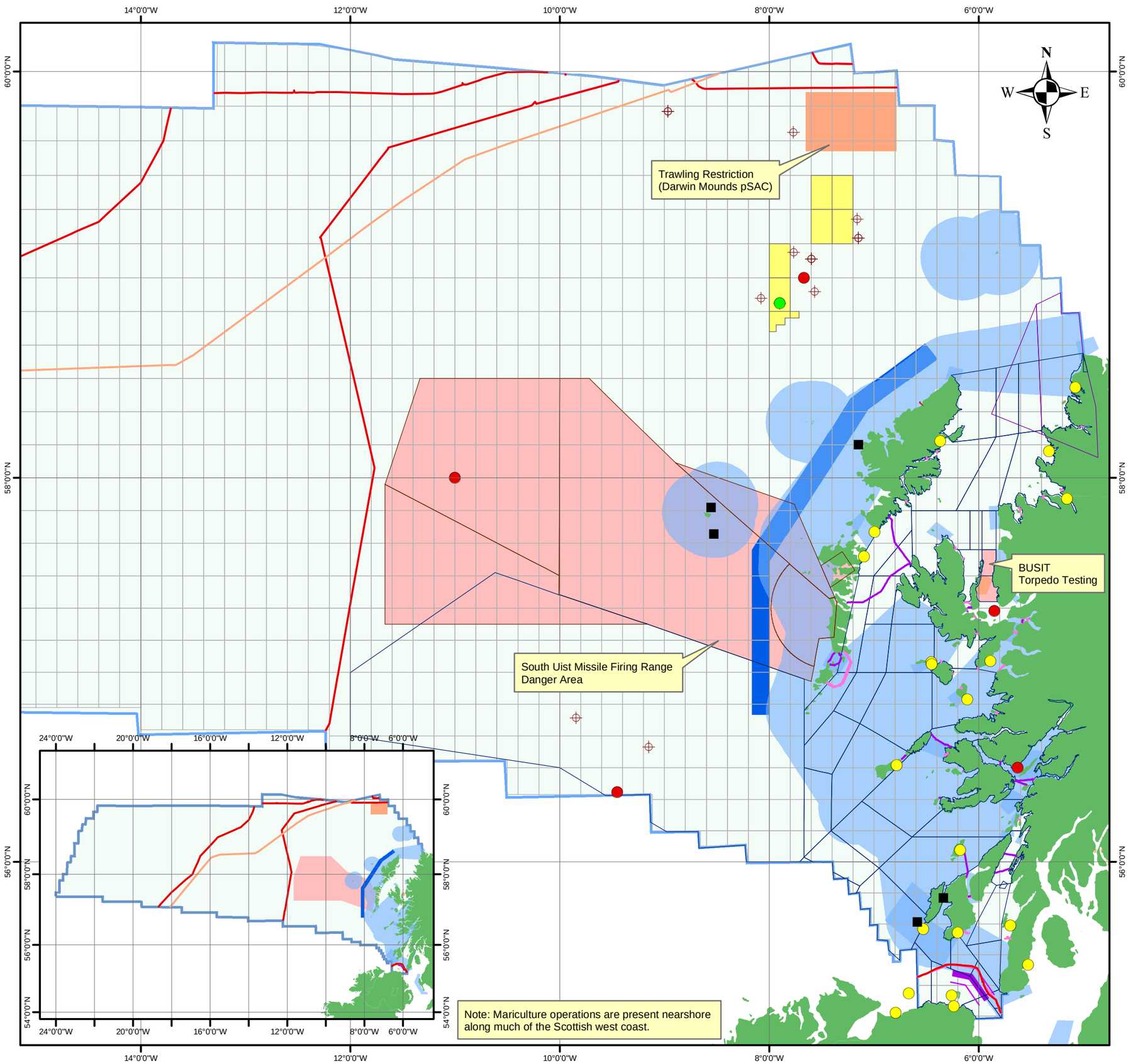
The SEA 7 area incorporates the complex coastline of Western Scotland, a small section of the north coast of Northern Ireland, and extends into the Atlantic to approximately 24° west, representing by far the largest region of all the SEA areas. The coast comprises numerous islands, channels, lochs and estuaries and has a low population density. This report describes the human use of the SEA 7 area and examines the importance of these industries and activities in the region, the main management issues and initiatives which affect them, and any implications for oil and gas licensing of the SEA 7 area.

The following subject areas will be addressed:

- Coastal Populations
- Ports and Shipping
- Energy
- Cables
- Military Activity
- Dredging and Aggregate Extraction
- Marine Waste Disposal (including Ordnance)
- Mariculture
- Tourism and Recreation
- Other Locally Important Activities
- Coastal and Marine Management Initiatives
- Topic Areas Not Included

Where appropriate, comment is made about the potential sensitivity of an “Other Users” to oil and gas development, or the potential restrictions to oil and gas development presented by existing users.

Figure 1-1 shows the full extent of the SEA 7 area and summarises offshore activities of relevance to oil and gas development. Coastal and inshore activities are numerous and are mapped in the relevant sections of this report. The inshore area within the bay enclosure lines would not for part of the licensing of offshore areas for oil and gas development. However, it is included because impacts on Other Users in inshore areas should also be considered.



SEA 7 - Technical report on other users of the area

Figure 1.1 : Summary of key offshore features and activites in SEA7 area

LEGEND

- SEA7 area

Oil and Gas

- Benbecula gas discovery
- Wells
- Oil and gas licencing blocks
- Current licenced area

Disposal Sites

- Disposal Sites
- Munitions disposal sites

Submarine Cables

- Telecom Status: Active
- Telecom Status: Out of Service
- Power cables
- Other cables

Shipping

- MEHRA locations
- Deep water route
- Traffic separation zone
- Restricted Area

Military Activity

- MOD (Procurement Executive)
- RAF
- Navy Department
- Army Department
- Firing Range Danger Area

Renewable Energy

- Strategic Resource Area

Date	October 2006	
Projection	World Mercator	
Spheroid	WGS84	
Datum	WGS84	
Data Source	SeaZone Solutions Ltd, UKdeal, DETR,Kingfisher charts, DTI	
File Reference	P818/GIS/MXD/Final Report/ Figure 1_1 Summary.mxd	
Checked	RS	GIS Specialist
	RS	Project Manager

dti

METOC

2 COASTAL POPULATIONS

2.1 INTRODUCTION

The vast majority of the SEA 7 area is rural in nature with scattered, low density populated areas. The largest settlements are relatively small towns and villages. Demographically the area comprises a slightly older population than Scotland and Northern Ireland a whole.

Broadly, SEA 7 area enjoys economic activity comparable with the national averages although wages are generally lower. In contrast to the national average, the coastal regions of SEA 7 area have more self employed people and fewer students. The greatest proportion of employees, are made up of managers and professionals and skilled workers. Tourism, agriculture and fishing and mining and construction, are of greater importance to the SEA 7 area than the rest of Scotland and Northern Ireland.

2.2 DEMOGRAPHICS AND SOCIO-ECONOMICS

2.2.1 Population

The coastal region of SEA 7 lies within the Scottish council areas of Argyll and Bute, Eilean Siar (the Western Isles) and Highland and the Northern Ireland council area of Moyle. The total population of these administrative areas was 342,655 at the 2001 census. However the Highland council area includes a large area outside SEA 7.

The Scottish Coastal Socio-Economic Scoping Study, 2002, which looks specifically at coastal areas, divides Scotland up into coastal regions. SEA 7 covers most of the west coast region, all of the Western Isles region and a small part of the Caithness and Sutherland region. Combining the 2001 census results for the Western Isles and Moyle with the populations of the west coast and Caithness and Sutherland coastal regions from this study, the total population is 134,646.

Table 2-1: Population in the SEA 7 area

Council Area	1991	2001	% Change	Area (km2)	Density (persons/km^2)
Argyll & Bute	92,025	91,306	-0.78	6,909	13
Eilean Siar	29,600	26,502	-10.47	3,071	9
Highland	204,004	208,914	2.41	25,659	8
West coast*	-	73,823		17,044	4
Caithness and Sutherland*	-	18,388	-	942	19
Scotland	4,998,567	5,062,011	1.27	77,924.5	65
Moyle	14,789	15,933	7.74	479.76	33
Northern Ireland	1,577,836	1,685,267	6.81	14,135.4	119

* 2000 figures (Scottish Coastal Socio-Economic Scoping Study, 2002)

The population density of the SEA 7 area is very low in comparison to the general figure for Scotland and extremely low in comparison to Northern Ireland's population density.

2.2.2 Coastal Settlements

The coastal region of the SEA 7 area is generally rural in nature with a number of relatively small settlements. The largest settlements are the small towns of Fort William (4% of Highland population), Stornoway on the Isle of Lewis in the Eilean Siar (33% of Eilean Siar population); Oban in the Argyll and Bute council area (9% of Argyll and Bute population) and Ballycastle in Northern Ireland (32% of the Moyle population). There are no significantly sized settlements in the area of Caithness and Sutherland within the SEA 7 area. The location of coastal settlements and their populations are illustrated in Figure 2-1.

Table 2-2: Major settlements in the SEA 7 area 2000

SEA 7 Region	Settlement	Population
Argyll & Bute	Oban	8,360
	Tobermory	880
	Bowmore	870
	Port Ellen	870
Eilean Siar	Steornabhagh (Stornoway)	8,780
	Col	1,490
	Ness	1,390
Highland (West Coast)	Fort William	9,320
	Portree	2,000
	Ullapool	1,370
	Kinlochleven	1,110
Moyle*	Ballycastle	5,089
	Bushmills	1,319

* 2001 figures

2.2.3 Age structure

The age structure for the Scottish region of SEA7 area is similar to Scotland although the population is slightly older. Eilean Siar is most notable in its difference to Scotland with a smaller number of people in the 16-29 age group and larger number in the over 65s. The age structure of Moyle is similar to Northern Ireland although it also has a slightly older population. This is however younger than the population of Scotland as a whole (see Table 2-3).

Table 2-3: Age structure of the population in the SEA 7 area, 2001

Council area	Population	0-15	16-29	30-64	>65	Mean age
Argyll & Bute	91,306	18.7	14.3	48.6	18.4	41
Eilean Siar	26,502	18.9	13.8	47.6	19.8	42
Highland	208,914	19.6	14.6	49.1	16.6	40
Scotland	5,062,011	19.2	17.5	47.4	15.9	38
Moyle	15,933	23.7	17.7	44.1	14.5	37
Northern Ireland	1,685,267	23.6	19.4	43.8	13.3	36

2.2.4 Economic activity

The economic activity for the SEA 7 area is described below in Table 2-4. It can be seen that for the Scottish regions unemployment is slightly above the national average whilst the percentage of economically inactive people is slightly below the average for Scotland. In Moyle the percentage of unemployed and economically inactive people is slightly higher than Northern Ireland in general. A notable difference between all the SEA 7 regions and their national counterparts is a significantly higher number of self employed people.

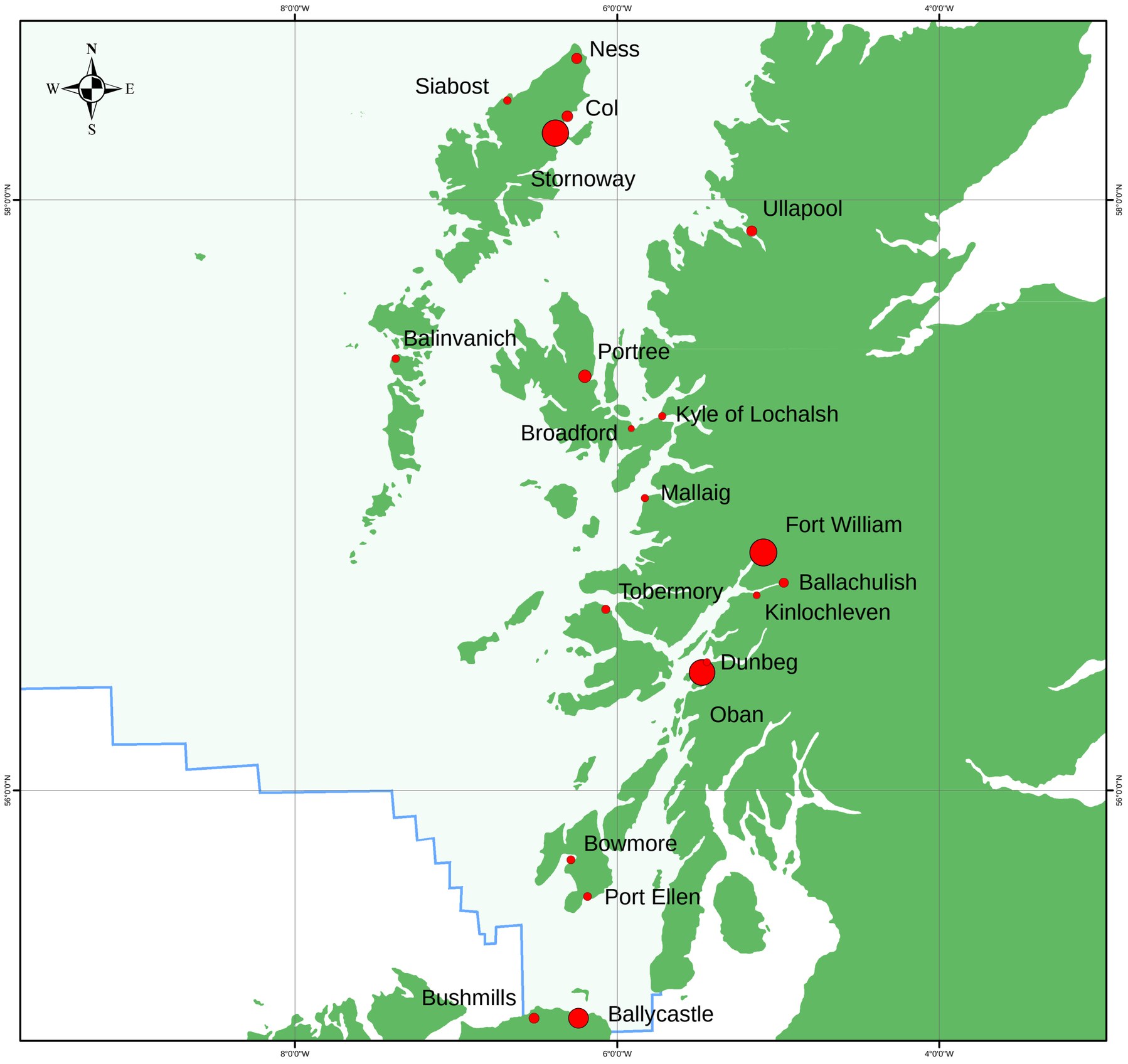
Table 2-4: Economic activity in the SEA 7 area, 2001

Percentage of economically active people aged 16-74							
Council area	All people aged 16-74	Part-time	Full-time	Self-employed	Un-employed	Full-time student	Economically inactive
Argyll & Bute	66,506	11.9	37.7	11.5	4.0	1.7	31.9
Eilean Siar	18,949	13.0	36.4	9.7	5.0	1.8	34
Highland	152,684	12.9	38.9	10.2	4.3	1.8	31.9
Scotland	3,731,079	11.1	40.3	6.6	4	3	35
Moyle	11,073	8.7	30.8	13.0	4.8	1.4	41.3
Northern Ireland	1,187,079	9.9	37.6	8.3	4.1	2.4	37.7

2.2.5 Industry of employment

Despite the general decline in the fishing industry, fishing remains an important part of the coastal economy in Scotland. The significance of the industry varies by region, with sea fishing being particularly important in the Western Isles.

The main sources of income in Moyle district, Northern Island are farming, tourism and a little light industry. The absence of any heavy industry is ensured by strict planning policy regulations in-force to protect the many “Areas of Outstanding Beauty” which cover most of Moyle.



SEA 7 - Technical report on other users of the area

Figure 2.1 : Population of major settlements in SEA7 area

Legend

- 1,000
- 5,000
- 10,000
- SEA7 area

Date	October 2006	
Projection	World Mercator	
Spheroid	WGS84	
Datum	WGS84	
Data Source	General Register Office for Scotland 2000, NISRA, 2001	
File Reference	P818/GIS/MXD/FinalReport/ Figure 2_1 Population.mxd	
Checked	JH	GIS Specialist
	RS	Project Manager

METOC

Table 2-5 highlights the main industries of employment in the SEA 7 area. Generally agriculture, hunting, forestry and fishing; mining, quarrying and construction; and tourism are much more important in SEA 7 than in Scotland and Northern Ireland as a whole. Of particular note is the significantly higher percentage employed in public admin and defence in Argyll and Bute compared with all other areas in the SEA 7 area and Scotland and Northern Ireland in general. Additionally mining and quarrying is much higher in Moyle than in Northern Ireland or Scotland as a whole.

Table 2-5: Percentage of people aged between 16-74 by industry of employment in the SEA 7 area, 2001

Council area / country	Argyll & Bute	Eilean Siar	Highland	Scotland	Moyle	Northern Ireland
All people aged 16-74 in employment	41,599	11,511	97,190	2,261,281	5,949	686,644
Percentage of workforce (16-74) employed by industry						
Agriculture, hunting, forestry & fishing	6.3	7.3	5.2	2.4	7.73	3.02
Mining & quarrying and construction	7.9	11.7	10.5	8.7	16.8	9.4
Manufacturing	7.0	9.0	9.1	13.2	10.29	14.18
Electricity, gas & water supply	0.9	0.9	1.0	1.0	0.7	0.7
Whole-sale & retail trade	12.4	11.7	14.7	14.4	13.4	16.7
Hotels & catering	8.6	5.8	9.3	5.7	6.2	4.5
Transport, storage & communication	7.0	8.1	7.1	6.7	4.5	5.4
Business activities	8.6	7.6	9.9	11.2	5.9	7.8
Public admin & defence	16.4	8.5	6.8	7	5.5	9.3
Education	6.3	8.1	6.6	7.3	9.8	8.8
Health & social work	11.9	15.1	12.4	12.4	12.7	12.7
Other	6.7	6.2	7.4	10.0	6.5	7.5

2.2.6 Occupation groups

The spread of occupational groups amongst industry employees in the SEA 7 area is summarised in Table 2-6 below. The percentage of people employed as managers and professionals, except for Argyll and Bute is slightly lower than the national averages. The most marked difference between the SEA 7 area and the national averages is the number of people employed in skilled trades. Skilled trades are of greatest importance in Eilean Siar and Moyle.

Table 2-6: Occupation groups in SEA 7, 2001

Percentage groups in the SEA 7 area, 2001						
Council area / country	Argyll & Bute	Eilean Siar	Highland	Scotland	Moyle	Northern Ireland
Managers & Professional	24.3	19.4	21.6	23	18.9	21.2
Associate professional & technical	16.4	11.9	12.7	14	18.9	21.2
Admin & secretarial	10.6	9.7	10.5	12.7	10.5	14.58
Skilled trades	14.9	20.4	16.5	12.2	24.8	15.57
Personal service	7.3	9.3	8.2	7.1	8.4	6.67
Sales & customer service	7	6.2	8	8.6	5.2	7.3
Process, plant & machine operatives	7	10.1	9	9.7	10.3	10.4
Elementary	12.5	13.1	13.5	12.7	12.2	11.8

2.3 MAIN ISSUES AFFECTING SEA 7 AREA

Overall the populations within SEA 7 area are slightly older than the national averages. The Scottish Coastal Socio-Economic Scoping Study, 2002, found that coastal populations along with Scotland as a whole are predicted to experience a population decline. In the SEA 7 area this is predicted to be most extreme in the Western Isles where projections indicated a loss of around 17.4% over the period to 2016. However, other external factors such as the increase in the use of broadband since this study within the area, bringing about improved communications could result in a population increase.

Economic activity compares favourably with the national average with slightly higher percentages, although this is in part due to fewer full time students within the area.

Coastal areas have relatively low income levels and whilst there has been a decline in the number of registered unemployed people, the disparity between rural incomes and prices is on the increase.

The different regions within SEA 7 area exhibit distinct mixes of industry and occupational groups. Overall managers, professional and skilled trades are the most important occupation groups. Wholesale and retail trade along with health and social work are the most important industries of employment in the area followed by mining, quarrying and construction. Agriculture, forestry and fishing along with tourism, whilst not representing a dominant proportion of industry, are significantly above the national averages and are important parts of the SEA 7 economy.

2.4 RELEVANCE FOR SEA 7

There is little oil and gas activity in SEA 7 at present. Should commercially viable reserves of hydrocarbons be discovered in SEA 7 this would boost the economy, with associated population increases to locations servicing the oil and gas sector. This would no doubt be welcomed by many, but a significant change to the socio-economics of the area would change its characteristics, particularly where new industry and economic immigration to the area might occur. This could impact some of the qualities that define the SEA 7 region and would, therefore, be opposed by some.

2.5 SOURCES OF INFORMATION

General register office for Scotland. Scotland's 2001 census. Available at:

http://www.gro-scotland.gov.uk/statistics/census/censushm/index.html

General register office for Scotland. *Key Statistics for Settlements and Localities Scotland.* Available at:http://www.gro-scotland.gov.uk/statistics/census/censushm/scotcen/scotcen2/scotcen8.html

General register office for Scotland. *Scottish settlements urban & rural areas in Scotland.* Available at:

http://www.gro-scotland.gov.uk/statistics/geography/scosett/tables.html

Scotland's Census Results Online (SCROL) website. Available at:

http://www.scrol.gov.uk/scrol/common/home.jsp

Northern Ireland Statistics & Research Agency: Northern Ireland Census Access. Available at: http://www.nicensus2001.gov.uk

Northern Ireland Statistics & Research Agency. *Census 2001 Population Report.* Available at:

http://www.nisranew.nisra.gov.uk/census/pdf/Census2001PopRep.pdf

Northern Ireland Statistics & Research Agency. *Northern Ireland Census 2001 Key Statistics Tables.* Available at:

http://www.nisranew.nisra.gov.uk/census/pdf/Key%20Statistics%20ReportTables.pdf

Northern Ireland Statistics & Research Agency. *1991 Census Tables.* Available at:

http://www.nisranew.nisra.gov.uk/Census/censusstatistics/1991/pdf/Populationbyarea.pdf

Moyle District Local Strategy Partnership. *Integrated Local Strategy 2001- 2006.* Available at:

http://www.moyle-council.org/chiefexecutive/forms/moylelspstrategy.pdf:

Moyle Council. Moyle Area Summary. Available at:

http://www.moyle-council.org/moylearea/moylearea.htm

Scottish Executive Social Research (2002). *Scottish Coastal Socio-Economic Scoping Study.*

3 PORTS AND SHIPPING

3.1 INTRODUCTION

Shipping and maritime trade are vital to the economy of the UK and it is estimated that 95 percent by volume and 75 percent by value of the UK's international trade is transported by sea. Whilst many of the largest ports in Scotland are found along the east coast, there is one significant port in the SEA 7 area. Glensanda was ranked the 20th largest port in 1999 in the UK by tonnage handled.

Ports in SEA 7 area are generally not of high significance in terms of cargo tonnage handled, and there are no significant ports in Northern Ireland within the SEA 7 area. In Scotland within SEA 7 fishing ports are important despite the general decline in fishing. Important fishing ports include Mallaig, Kinlochbervie, and Ullapool on the mainland, and Stornoway on the Isle of Lewis.

Shipping within SEA 7 is largely characterised by the many passenger links to and between Scotland's west coast islands. Ballycastle in Northern Ireland provides a passenger service to Rathlin Island. Ports and shipping in SEA 7 area therefore combine commercial and social roles.

3.2 ACTIVITY IN THE SEA 7 AREA

3.2.1 Major ports

In Scotland there are a number of ports that handle significant quantities of domestic and foreign traffic. These are largely confined to the east coast outside of SEA 7. In the SEA 7 area, in the west of Scotland there is one significant cargo port, Glensanda.

Glensanda is the UK's largest port for traffic in minerals and aggregates. Situated on Loch Linnhe in the west of Scotland, the port serves a quarry complex with its sole traffic being crushed granite destined either for export or for other UK ports. The port handled 5.2 million tonnes in 2004, which was almost entirely outward. From its beginning in the late 1980s, traffic at Glensanda had reached almost 6 million tonnes by 2000 and in 2004 it made up 24% of Scotland's west coast traffic.

3.2.2 Fishing ports

In 2004 70 per cent of all landings by the UK fleet were caught in sea areas around Scotland, namely the West of Scotland (ICES area VIa), and the Northern and Central North Sea (ICES areas IVa and IVb respectively). Largely for this reason, the Scottish fishing ports handle the bulk of the UK's marine fish landings. The SEA 7 area is within ICES fishing areas Via (West of Scotland) and VIb (Rockall), both of which are exploited by the UK fishing fleet. In terms of tonnage, more fish are caught in the West of Scotland area than any other around the

UK, and the value of those landings is second only the Northern North Sea (see Table 3-1).

Table 3-1 Landings (all species) by the UK Fleet by sea area of capture in 2004

ICES Fishing Area	Quantity ('000 tonnes)	Value (£ million)	Ranking (by tonnage	Ranking (by value)
West of Scotland VIa	210.3	117.8	1	2
Northern North Sea IVa	192.4	138.7	2	1
Central North Sea IVb	52.4	64.6	3	3
English Channel VIId/e	50.7	57.6	4	4
Southern North Sea IVc	26.4	20.5	5	6
Irish Sea VIIa	25.1	24.0	6	5
Rockall VIb	7.0	9.3	7	7

The value of fisheries in and around the SEA 7 area is reflected in the presence of a number of significant fishing ports in the region. According to latest 2004 figures, four of the top 14 UK fishing ports are within the SEA 7 area in terms of both landed tonnage and value. These are listed in Table 3-2 below and are highlighted in Figure 3-1. There are no significant Northern Irish fishing ports in the SEA 7 area.

Table 3-2 Fish landings by UK fleet into major ports in the SEA 7 area 2004

Fishing port	Quantity ('000 tonnes)	Value (£ million)	UK Ranking (by tonnage)	UK Ranking (by value)
Kinlochbervie	6.0	7.6	10	11
Mallaig	5.8	6.8	11	13
Ullapool	5.3	10.5	12	8
Lochinver	4.4	7.9	14	10
Stornoway	1.6	2.5	30	26
Loch Scridian (Mull)	0.9	1.3	40	40
SEA 7 port total	24.0	36.6	-	-
Scotland total	337.2	260.5	-	-
UK total	461.5	405.6	-	-

High concentrations of fishing vessel traffic will occur in the vicinity of productive fishing grounds (outside the scope of this document) and in the vicinity of landing ports.

3.2.3 Ferry routes

Scotland's coastal shipping consists of an extensive ferry system connecting the mainland with the Western Isles and inter-island, ferry services. Domestic ferry services in Scotland provide vital economic and social links. In the west of Scotland, 6.6 million passengers travelled on services provided by Caledonian MacBrayne and Western Ferries in 2004. Whilst the ferry industry is important in Northern

Ireland as a whole, the only ferry service within SEA 7 area is between Ballycastle and Rathlin Island.

3.2.4 Shipping density and routeing

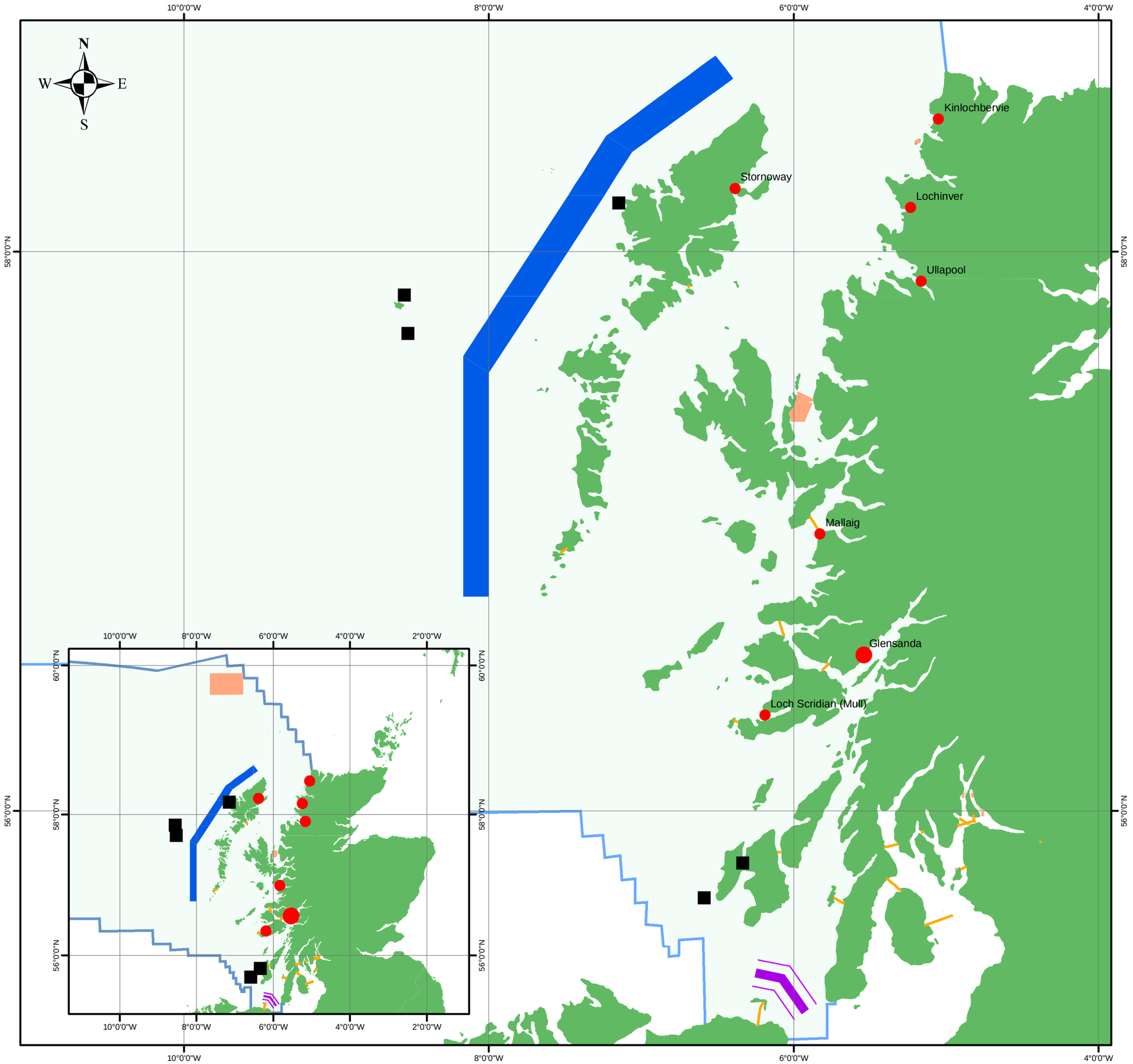
For the purpose of this high level report, shipping density and routeing have been derived from the DETR *Identification of Marine Environment High Risk Areas in the UK, 1999* report. This document utilises shipping density and routeing in UK waters from the COAST database developed and maintained by Safetec on behalf of DETR. The main data sources for the COAST database are:

- Port Callings Data
- Offshore Traffic Surveys carried out by Standby Vessels (>200 surveys)
- Platform and Coastal based Radar Systems
- Information from Offshore Operators (Standby/Supply/Shuttle Tanker details)
- Information from Ferry Operators
- Vessel Passage Plans
- Deep Sea Pilot Route Details

Information contained in the COAST database includes port of departure/destination, route waypoints, number of vessels per year, and distribution by type, size, age and speed. Types of vessel included in the COAST database are summarised below in Table 3.3. It should be noted that the database does not include “non-routine” traffic, such naval vessels, fishing vessels, pleasure craft and offshore traffic to mobile drilling units.

Table 3-3 Vessel types included in the updated COAST database

Type	Subtypes included
Bulk	Bulk carrier, bulk/containership, cement carrier, ore carrier, wood-chip carrier, bulk/oil carrier, ore/oil carrier
Cargo	Cargo/training, general cargoship, multipurpose cargoship, refrigerated cargoship, livestock carrier, containership, refrigerated containership
Ferry	-
Liquefied gas tanker	LPG carrier, LNG carrier, LNG/LPG carrier
Ro-Ro	Ro-Ro ship, Ro-Ro/containership, vehicle carrier, passenger Ro-Ro
Standby vessel	-
Supply vessel	-
Chemical tanker	-
Oil tanker	-
Shuttle tanker	-



SEA 7 - Technical report on other users of the area

Figure 3.1 : Ports and shipping in SEA7 area

Legend

- MEHRA Locations
- Fishing ports
- Cargo port
- Ferry routes
- Traffic separation scheme boundary
- Traffic separation zone
- Deep water route
- Restricted area
- SEA7 area

Date	October 2006	
Projection	World Mercator	
Spheroid	WGS84	
Datum	WGS84	
Data Source	SeaZone Solutions Ltd, DETR	
File Reference	P818/GIS/MXD/Final Report/ Figure 3_1 Shipping.mxd	
Checked	JH	GIS Specialist
	RS	Project Manager

dti

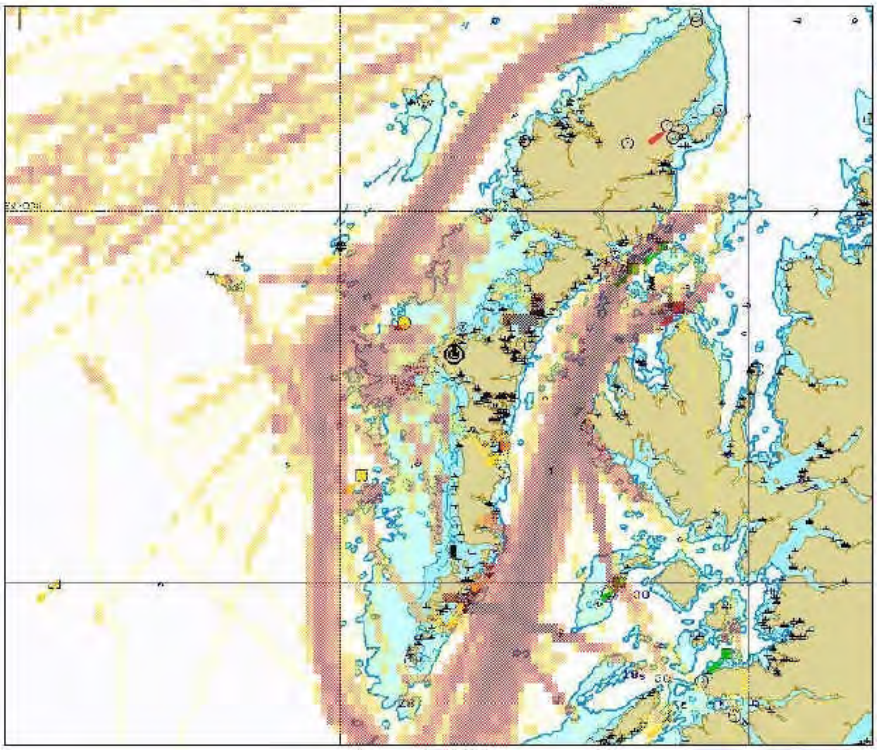
METOC

The database provides a general indication of shipping density and routeing rather than an authoritative assessment of actual vessel numbers. Given the strategic level of this report, shipping density and routeing in the SEA 7 area are described in broad terms (see Figure 3-1). However, the COAST database can provide information on a project specific basis.

Overall shipping density throughout SEA 7 area is low to moderate (<1,000 to 1,000 – 5,000 ships per year). Moderate shipping density occurs in coastal waters between the mainland and Western Isles and from the southern tip of the Western Isles running south east to the North Channel between Northern Ireland and west Scotland.

The highest density of shipping traffic occurs in the North Channel of the Irish Sea. Where the channel narrows between Rathlin Island and Mull of Kintyre a traffic separation scheme is in place to control this traffic. Shipping in the Minches comprises cargo vessels and ferries linking the west coast of Scotland to the Western Isles. Oil and chemical tankers run between operations in the North Sea and the west coast of Wales and laden takers generally comply with IMO routeing recommendations by tracking along the Deep Water Route to the west of the Western Isles (see Section 3.3.1.2). However, the average number of vessels overall using the Deep Water Route per day is low when compared to the figures for the Minches (Marico Marine Ltd, 2005). A small but significant number of vessels pass northwest of St Kilda on transatlantic routes (Figure 3-2).

Figure 3-2: Shipping Density around the Western Isles (Darker colours indicate higher density) (Marico Marine Ltd, 2005).



3.3 MANAGEMENT ISSUES AND INITIATIVES

The coastal region of SEA 7 area is recognised for its natural beauty and environmental sensitivity. As such one of the main issues relating to ports and shipping in the area is the risk of marine pollution from shipping activity. Whilst shipping density is generally relatively low (<1,000 vessels per year) a number of initiatives have been or are being put in place to reduce this risk.

3.3.1 Routeing measures

Any navigational controls applying to ships exercising their rights to free passage have to be agreed by the International Maritime Organisation (IMO). IMO routeing measures are based on safety considerations and on protection of the marine environment and can apply within and beyond the territorial waters.

IMO routeing measures include traffic separation schemes, areas to be avoided, precautionary areas and deep water routes. Those found in SEA 7 area are described in Sections 3.3.1.1 and 3.3.1.2 below.

3.3.1.1 Traffic separation schemes

A traffic separation scheme details specific routes for traffic, to reduce the risk of collision in congested and/or converging areas by separating traffic moving in opposite, or nearly opposite, directions. There is one traffic separation scheme in SEA 7 area between Rathlin Island and the Mull of Kintyre.

3.3.1.2 Deep water routes

A deep water route west of the Hebrides was established by the Maritime Safety Committee in 1996. The route lies between the Outer Hebrides and to the east of St Kilda and the Flannan Isles within the SEA7 area. Water depths within the route are no less than 28.5 m, as confirmed by detailed hydrographic surveys. In 1993 the government proposed that laden tankers of over 10,000 gross tonnage carrying oil, weather permitting, should use the IMO designated deep-water route in preference to sailing through the restricted, and environmentally sensitive waters of the Minches. A recent survey confirmed that laden tankers generally tracked along the Deep Water Route and remained within its boundaries (during the summer months). In this respect the Deep Water Route was found to be working as intended within the study period (Marico Marine Ltd, 2005).

3.3.2 Marine Environmental High Risk Areas (MEHRAs)

The establishment of Marine Environmental High Risk Areas (MEHRAs) followed recommendations made by the late Lord Donaldson in his report Safer Ships, Cleaner Seas 1994, following the Braer tanker oil spill disaster off the Shetland Islands in January 1993. Lord Donaldson recommended that a comparatively limited number of areas of high

environmental sensitivity, which are also at risk from shipping, should be identified and established around the UK coast.

On 13th February 2006 the Government unveiled 32 locations around the UK coast that have been identified as MEHRAs (Government News Network, 2006). The primary purpose of MEHRAs is to inform mariners of areas of high environmental sensitivity where there is a realistic risk of pollution from shipping. Identification of MEHRAs in the UK involved separating UK waters into cells and classifying them in terms of environmental sensitivity, risk from shipping activity and other environmental protection measures already in place at each location. The study was conducted by Safetec on behalf of the DETR.

Five MEHRAs have been identified in SEA 7, shown in Figure 3-1, including:

- Gallan Head on the Isle of Lewis,
- Two cells at West Islay, Agryll and Bute,
- Two further cells at North St Kilda and South St Kilda.

MEHRAs are notified by a Marine Guidance Note to mariners and are marked onto admiralty charts to encourage mariners to take extra care in those areas.

The Minches, according to the Safetec study, are among the few sea areas in the UK ranked as having very high environmental sensitivity. However, a lack of shipping traffic posing a significant risk meant that most coastal cells within the Minches have been classified as having low or very low risk and there are no MEHRAs in the area.

This can be attributed to the voluntary use of the Deep Water Route by laden tankers. The area is on the preferred navigational route from Shetland or Norway to Milford Haven and can be used as a short cut by vessels rather than taking the deep water route, particularly in poor weather. There are no IMO adopted traffic separation schemes, though there are recommended routes to separate traffic at points in the Minches marked on hydrographic charts. There is also an emergency towing vessel stationed to cover the area. In summary, it should be noted that some environmental risk to the Minches remains and local pressure to restrict the use of the Minches continues.

3.3.3 National contingency plan

The Maritime and Coastguard Agency (MCA) which is the competent UK authority on response to pollution from shipping and offshore installations, published the “National Contingency Plan for Maritime Pollution from Shipping and Offshore Installations” (NCP) in 2000. The NCP provides a comprehensive response procedure to deal with any emergency at sea that causes pollution, or threatens to cause pollution.

In order to assess the risks to the UK coastline from the transport of oil and hazardous chemicals by shipping the MCA continuously monitors the movements of maritime traffic and potentially polluting substances within the UK’s pollution control zone.

The 2001 “Review of Emergency Towing Vessel (ETV) Provision Around the Coast of the UK” identified the need for ETV’s in four areas around the UK including the Minches. The MCA has tugs in these areas on stand-by 24 hours a day, 365 days a year to respond to shipping incidents in their area.

3.3.4 International initiatives

The legal basis for marine pollution contingency planning comes from the following International legislation:

- UN Convention on the Law of the Sea (UNCLOS), the UK has an obligation to protect and preserve the marine environment.
- Merchant Shipping Act 1995, as amended by the Merchant Shipping and Maritime Security Act 1997, provides the secretary of state for transport, local government and the regions the function of taking measures to reduce and minimise the effects of marine pollution.
- The International Convention on Oil Pollution Preparedness, Response and Co-operation 1990 (the OPRC Convention). The Convention requires signatories to inspect ships, maintain a national contingency plan for responding to oil pollution incidents and provide technical assistance to other signatories in the event of such incidents. The Merchant Shipping (Oil Pollution Preparedness, Response and Co-operation Convention) Regulations 1998 implement the obligations of the Convention in the UK.
- The International Convention for the Prevention of Pollution from Ships (the “MARPOL Convention”) is the main international convention covering prevention of pollution of the marine environment by ships from operational or accidental causes. Under this Convention signatories must inspect ships in port and at sea, trace and prosecute polluting ships and ensure there are adequate port facilities for receiving waste from ships.

3.4 RELEVANCE FOR SEA 7

A variety of shipping vessels are used during oil and gas exploration and production at different stages of the process. Types of vessels involved include survey vessels, dive support vessels, pipeline and laying barges, drilling ships and supply vessels. Most are of a non-routine nature and given the generally low shipping density within the area at present any oil and gas activity is not likely to have a significant impact on shipping traffic in SEA 7 area. An increase in vessels transporting hydrocarbons might be expected, particularly if oil and/or condensates are discovered. In such a situation, the deep water route should continue to be used. Particular attention would need to be given to the North Channel between Rathlin Island and Mull of Kintyre, and impacts to the restricted waters of the Minches and the five identified MEHRAs avoided (see Figure 3-1).

3.5 SOURCES OF INFORMATION

DEFRA, 2005. United Kingdom Sea Fisheries Statistics 2004. Marine Fisheries Agency. Available at:

http://statistics.defra.gov.uk/esg/publications/fishstat/2004/default.asp

DETR, 1999. *Identification of Marine Environmental High Risk Areas (MEHRA's) in the UK*. Report produced by Safetec Ltd.

Department for Transport. Transport Statistics Report, Maritime Statistics 2004. Available at:

http://www.dft.gov.uk/stellent/groups/dft_transstats/documents/downloadable/dft_transstats_610135.pdf

Department for Transport. Transport Statistics. Available at:

http://www.dft.gov.uk/stellent/groups/dft_transstats/documents/downloadable/dft_transstats_611028.pdf

Department for Transport. *Establishment of Marine Environmental High Risk Areas (MEHRAs)*. Available at:

http://www.dft.gov.uk/stellent/groups/dft_shipping/documents/page/dft_shipping_611167.hcsp

Department for Transport. *Focus on Ports 2006.* Available at

http://www.dft.gov.uk/stellent/groups/dft_transstats/documents/downloadable/dft_transstats_035417.pdf

Department for Transport. *Focus on Ports 2000.* Available at:

http://www.dft.gov.uk/stellent/groups/dft_transstats/documents/page/dft_transstats_035416.hcsp

Department for Transport. Government News Network, 2006. Available at:

http://www.gnn.gov.uk/environment/fullDetail.asp?ReleaseID=187285&NewsAreaID=2&NavigatedFromDepartment=False

Marico Marine Ltd. 2005. Maritime Traffic Survey – 2004. The Hebrides and St Kilda Report. Prepared for the maritime and Coastguard Agency. Report Number: 03NR344/G

Scottish Coastal Forum, October 2002. *A Strategy for Scotland's Coasts and Inshore Waters – Ports and Marine Transportation Task Group*.

4 OIL AND GAS INDUSTRY

4.1 INTRODUCTION

The oil and gas industry has played a key role in the UK economy since the 1960's and although production is beginning to decline it continues to contribute a major proportion (approximately 85%) towards the UK's total primary energy production (Scottish Coastal Forum, 2003). The UK offshore oil and gas industry produced 86.8 million tonnes of oil and 100,844 million m^3 of gas in 2004 (www.og.dti.gov.uk, 2006).

The majority of oil and gas activity in the UK Continental Shelf (UKCS) has come from the North Sea. In the late 1990's oil and gas activity expanded to the Atlantic Frontier (off the North and West Coasts of Scotland) with production from two fields, Schiehallion and Foinaven (180 km and 190 km, west of the Shetland Isles respectively).

Since then the latest substantial development, on the UKCS, the Claire Field has also been within the Atlantic Frontier, situated 45 miles (72 km) west of Shetland. Discovered during the 1970's, it is only now that technology has advanced sufficiently to allow development of this site (Scottish Coastal Forum, 2003).

4.2 ACTIVITY IN THE SEA 7 AREA

There are no existing oil or gas fields in production or under development in the SEA 7 area (see Figure 4-1). A small number of blocks have previously been licensed, and two areas within quadrants 164 and 154 are currently under licence. In the year 2000, Enterprise Oil made a gas discovery in Block 154/1, on the continental slope some 90 km northwest of the Western Isles, called the Benbecula prospect.

Shell now operates the licence area after taking over Enterprise in 2002. An appraisal well was spudded in July 2006 to assess the size of the discovery. If deemed to be commercially viable, Benbecula could become a subsea to beach development with a gas pipeline likely to run around the north of Scotland (DTI *pers. comm*.). This would constitute the first hydrocarbon production in the SEA7 area. At the time of writing, the results of the appraisal well are not known.

4.3 MANAGEMENT ISSUES AND INITIATIVES

In the Atlantic Margin oil province of which SEA 7 is a part, oil industry operators and government have taken a coordinated, strategic approach to environmental management. Not only are oil companies working together within the province, they are working with the government, regulatory authorities, the academic research community and are developing a dialogue with local communities and interested parties. They have been able to take a coordinated, strategic approach to environmental management in the region by:

- describing and understanding the existing environment

- identifying key sensitivities
- monitoring and developing protection measures

This has been achieved by the development of working groups which are briefly described below.

4.3.1 Atlantic Frontier Environmental Network (AFEN)

In 1994 an initial working group of eight oil and gas operators teamed up to address the environmental issues of the Atlantic Margin together. This has evolved into what is now known as the Atlantic Frontier Environmental Network (AFEN) which currently has 15 members including the Department of Trade and Industry (DTI), the Scottish Executive Environment and Rural Affairs Department (SEERAD) and the Joint Nature Conservation Committee (JNCC) as well as being closely affiliated with UKOOA (www.ukooa.co.uk, 2006).

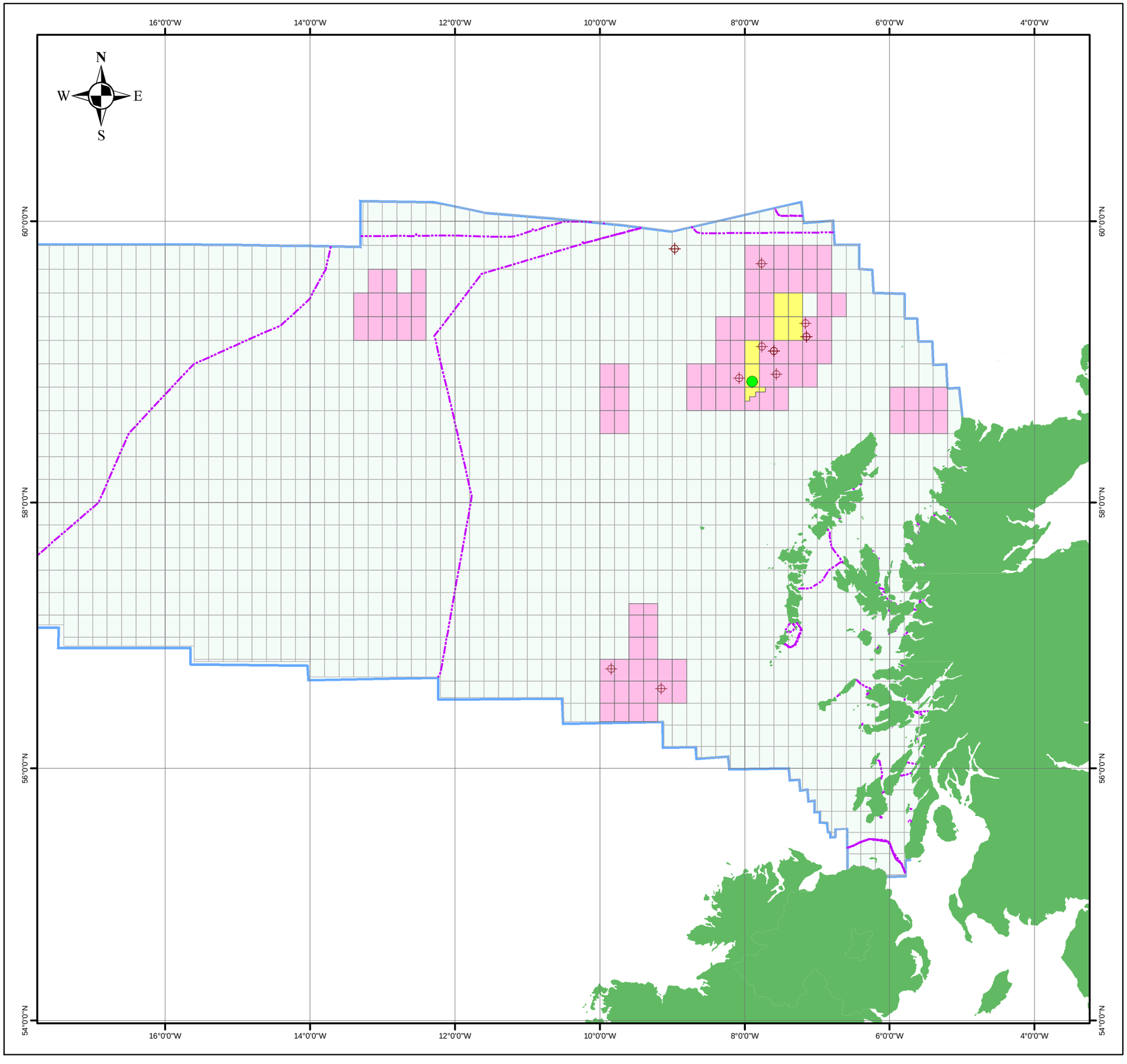
The main objective of the network is to understand the environment better and establish an environmental baseline for licensed areas. AFEN has focused on a range of regional studies in parallel with operators' more localised studies, allowing much better data to be obtained. The four main areas of study are:

- Seabed surveys
- Monitoring seabirds
- Monitoring marine mammals
- Coastal protection strategies

Details of the work undertaken by AFEN can be found on the UKOOA website (http://www.ukooa.co.uk/issues/Afen/index.htm).

4.3.2 Atlantic Frontier Environmental Forum (AFEF)

The Atlantic Frontier Environmental Forum (AFEF) was established in 1995 to ensure the results of the studies reached as wide an audience as possible and also to ensure AFEN address matters of importance to local communities near the Atlantic Margin. It has an independent Chairman, and has representatives from local authorities, wildlife and other conservation bodies, central government, government agencies, academia and the oil and gas industry via AFEN.



SEA 7 - Technical report on other users of the area

Figure 4.1 : Oil and gas activity in SEA7 area

Legend

- Wells
- Gas discovery in 2000
- Pipelines
- Current licenced area
- Previously licenced blocks
- Oil and gas licencing blocks
- SEA7 area

Date	October 2006	
Projection	World Mercator	
Spheroid	WGS84	
Datum	WGS84	
Data Source	UKDeal, SeaZone Solutions Ltd, DTI	
File Reference	P818/GIS/MXD/FinalReport/ Figure 4_1 Oil and gas.mxd	
Checked	JH	GIS Specialist
	RS	Project Manager

METOC

4.4 RELEVANCE TO SEA 7

The oil and gas activity in the Atlantic Margin is not only of significance nationally, but is especially important to the local economy of the Western Isles and Highland regions within the SEA 7 area. It is estimated that nationally over 10,000 jobs are supported by the Atlantic Margin activities alone (www.ukooa.co.uk, 2006). Any new oil and gas activity within SEA 7 area would not only help to stop decline of the industry in the UK, it would bring new employment prospects to the area along with possible population growth.

Whilst it is clear that oil and gas activity would benefit the economies of the west of Scotland and Northern Ireland, this could bring profound alterations to the social fabric and untouched nature of the SEA 7 area. The coastal region of SEA 7 is one of the least industrialised and most pristine areas in the UK and is recognised for its extensive natural beauty and scientific interest. At the moment the area does not have oil and gas activity. Any future oil and gas development would therefore need to sensitive to the natural qualities of the area.

4.5 SOURCES OF INFORMATION

DTI. Oil & Gas UK production data release June 2005. Available at:

http://164.36.45.6/information/info_strategy/index.htm

DTI. Oil and Gas Information. Available at:

http://www.og.dti.gov.uk/information/maps.htm

Scottish Coastal Forum, 2003. *A Strategy for Scotland's Coasts and Inshore Water – Oil and Gas Industry Task-Group*.

UKOOA, Atlantic Frontier Environmental Network. Available at:

http://www.ukooa.co.uk/issues/Afen/index.htm

5 RENEWABLE ENERGY

5.1 INTRODUCTION

Renewable energy provides a clean, sustainable, alternative source of energy to the fossil fuel sources of coal, oil and gas, which produce greenhouse gas emissions, particularly carbon dioxide, believed to be contributing to global warming and climate change.

The Kyoto Protocol, which was adopted in 1997 and came into force in February 2005, is the treaty established to address the growing concerns of greenhouse gas emissions and global climate change. Under this protocol the UK committed to reduce greenhouse gas emissions by 12.5% below 1990 levels by 2008-12 and set a national goal to move towards a 20% reduction in carbon dioxide emissions relative to 1990 levels by 2010.

The EU Directive "The Promotion of Electricity from Renewable Energy Sources in the Internal Electricity Market" (2001/77/EC), known as the Renewables Directive aims, in addition to combating climate change, to include security and diversification of energy supply, environmental protection and social and economic cohesion. Under this Directive, Member States are required to adopt national targets that are consistent with reaching a target of 22% of electricity from renewables by 2010. The indicative target for the UK is 10% of electricity by that date.

In the Energy White Paper "Our energy future – creating a low carbon economy, 2003" the Government sets out how the UK can achieve its long term goals to reduce carbon emissions. Although there is a strong emphasis on the need to increase energy efficiency, the white paper identifies that renewable energy is integral to achieving a 60% reduction in carbon dioxide by 2050. Fossil fuel production in the UK is in decline and the UK, a former energy exporter, is set to become a net energy importer. By investing in renewable energy and harnessing the UK's natural resources, renewable energy can play an important role in both reducing carbon emissions, while strengthening the security of energy supply.

The promotion of renewable energy in Scotland is executively devolved. While much of UK energy policy is relevant to Scotland, this means Scotland can set its own targets. Scotland's geography and climate offers enormous potential for further development of renewable energy resources and the Scottish Executive has proposed a target for renewable energy of 18% by 2010. More recently Scottish Executive's Partnership Agreement "Partnership For a Better Scotland" confirmed a target of 40% by 2020.

5.2 ACTIVITY IN THE SEA 7 AREA

Scotland is already leading the way in renewable energy generation in the UK with most of its 12% of renewable energy generation coming from well established hydro schemes and onshore windfarms. To meet the target of 40% by 2020, it has been recognised that diversification of renewable energy sources is required. Offshore renewables can provide an important contribution to meeting this target.

Scotland has an enormous offshore renewable energy resource. According to the Scottish Executive report "Scotland's renewable Resource 2001", the combined offshore renewable energy capacity for wind, wave and tidal amounts to 46.5 GW – 25GW offshore wind, 14 GW offshore wave and 7.5 GW tidal. Put into context the entire UK installed capacity (including all methods of energy generation) in 2000 was 79 GW.

More recent work for wet renewables has been carried out by the Forum for Marine Energy Generation in Scotland (FREDS), Marine Energy Group (MEG). MEG took the resource assessment for wet renewables on a stage further than the "Scotland's renewable Resource 2001", specifically considering the opportunities associated with wet renewables in relation to the 2020 target mentioned above. The MEG report "Harnessing Scotland's Marine Energy Potential" concluded that 1300 MW of marine energy capacity could be installed in Scottish waters by 2020 at a rate of 100MW per year.

At present there is little development of offshore renewables in SEA 7 area or indeed Scotland.

5.2.1 Wind

The UK has the largest wind resource in Europe and Scotland alone is reputedly said to have 1/5 of Europe's resource. Onshore wind energy generation is one of the most developed and cost-effective renewable energy technologies. Whilst offshore wind energy generation is a young technology, the potential in Scotland is vast with the potential generating capacity based on the available offshore wind resource estimated to be approximately 54 % of the total marine renewable energy generating capacity (some 46.5 GW) (Scottish Executive, 2001).

So far there are no offshore wind farms in SEA 7 area or Scotland as a whole. The first offshore wind farm site in Scotland, Robin Rigg, in the Solway Firth, is under development having been granted consent in 2003. Challenges to offshore wind farm development in Scotland include:

- A severe limitation of capacity on the existing grid system
- The seabed shelves away too quickly in most areas to make shallow water projects viable
- Development challenges in deep and difficult North Sea waters

- It is a young and more expensive technology than the already established onshore wind farm technology

Never the less, plans are underway to develop the world's largest offshore wind farm in deeper waters, (up to 45 m deep) next to the Beatrice Field, approximately 25 km off the north east coast of the Moray Firth, Scotland. This flagship demonstrator project is being led by Talisman Energy and Scottish and Southern Energy. It will use two of the largest turbines installed anywhere in the world to test the technical and economic feasibility of deepwater wind farms. The wind farm will have up to 200 turbines capable of generating enough renewable energy to power a city the size of Aberdeen.

The former oil fabrication yard at Arnish on the outskirts of Stornoway, Lewis has once again become a site of manufacturing activity since wind turbine towers and offshore pile manufacturers, Camcal, moved to the island. In late 2004 the Highlands and Islands Enterprise (HIE) network agreed terms with Camcal, to lease the former oil fabrication yard at Arnish bringing about 80 jobs to the island. This development is hoped to establish the Western Isles as the renewable energy manufacturing centre and act as a catalyst to attract more industries to Arnish.

The potential of offshore wind energy generation in Scotland and Europe can be met if the technical challenges of distant deep water developments can be overcome. The north east of Scotland offshore oil and gas industry are uniquely placed to contribute experience and expertise to further the development of wind energy in deep offshore waters.

5.2.2 Wave and Tidal

The UK, most notably Scotland, has the best wave and tidal resource in Europe and it is estimated that up to 1300 MW of wave and tidal energy could be generated from the waters around Scotland by 2020 (Scottish Executive, 2004). Some of the best resources are located off the north-west coast and northern tip of Scotland within the SEA 7 area (see Figure 5-1). However, they currently have the least connectivity to the mainland presenting a significant constraint on the development of renewable energy generation in these regions (Scottish Executive, 2004).

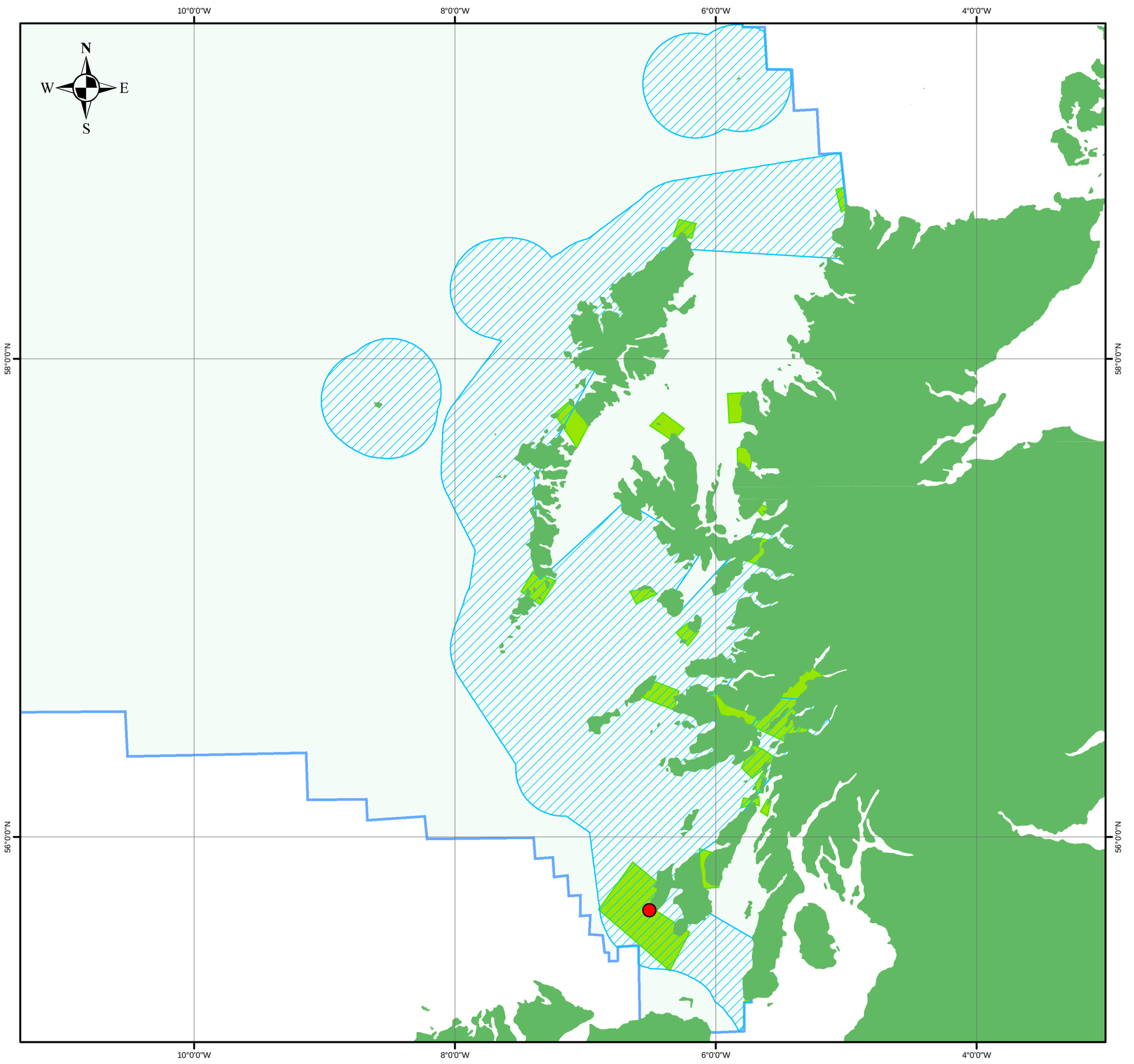
Whilst the potential for wave generated energy in Scotland is vast, the development of wave technology is currently at the same level as the wind industry was some 10 years ago. There are only a few wave devices which have been deployed and tested.

The world's first commercially operational wave-power station, the LIMPET (Land Installed Marine Powered Energy Transformer) device is located on the Scottish island of Islay within SEA 7 area. The LIMPET is a 500KW generating device, positioned in shallow waters with the depth of entry at 7m. The LIMPET's design makes it easy to build and install and its low profile means it has a limited impact on coastal landscapes and views (DTI, 2005).

The Pelamis project at the Orkney test centre, is the first deep water wave energy, grid-connected trial of a full-size wave power generator in the world. The 750KW device could generate the same amount of power as a wind turbine and a 'wave farm' of these devices covering a square kilometre of ocean could provide a power output of 30MW, equivalent to electricity for 20,000 homes.

Tidal power is variable but it is reliable and predictable and can make a valuable contribution to the diversity and security of electricity supply. At present the technology needed to harness tidal energy is expensive and is still in its infancy. The world's first large scale tidal stream generator system, Stingray, was deployed in Yell Sound off the Shetland coast in 2002 for preliminary testing and completed the third phase of testing in 2003. However, the developer of Stingray was unable to rapidly, or profitably make Stingray a commercial reality.

Although there are no tidal projects currently contributing to electricity supplies in the UK, a number of developers have successfully deployed and tested prototype or demonstrator tidal devices in UK waters. Additionally EMEC are currently in the final stages of installing a tidal energy test centre in the Fall of Warness in Orkney. The centre will be able to accommodate up to four devices at any one time.



SEA 7 - Technical report on other users of the area

Figure 5.1 : Renewable energy in SEA7 area

Legend

- SEA outline wave resource area
- SEA outline tidal resource area
- LIMPET wave power station
- SEA7 area

*Note: These areas are taken from the Scottish marine renewables SEA scoping report. It is expected that these areas will be refined in the assessment phase of the renewables SEA.

Date	October 2006	
Projection	World Mercator	
Spheroid	WGS84	
Datum	WGS84	
Data Source	Metoc & Faber Maunsell	
File Reference	P818/GIS/MXD/Final Report/ Figure 5_1 Renewables.mxd	
Checked	JH	GIS Specialist
	RS	Project Manager

dti

METOC

5.3 MANAGEMENT ISSUES AND INITIATIVES

Management issues and initiatives have already been addressed in SEA 4 existing users report, issued in 2003 and so will not be repeated here. However, details for new or updated management issues and initiatives of relevance to SEA 7 area are included.

5.3.1 Energy Act 2004

The Energy Act 2004 provides a comprehensive legal framework for offshore renewable energy beyond the UK's territorial waters. The Act establishes a Renewable Energy Zone (REZ), adjacent to the UK's territorial waters, within which renewable energy installations can be established.

5.3.2 Renewables Obligations

The Renewables Obligations Scotland (ROS) is the market enabling mechanism, identical to the Renewables Obligation covering England and Wales. Together the Great Britain Renewables Obligations (GBROs) place an obligation on licensed electricity suppliers to purchase a specified proportion, increasing yearly, of electricity generated from renewable sources.

The Renewables Obligations Scotland was enforced by the Renewables Obligations Order 2004. Under this order generating stations of qualifying renewables sources receive a minimum of one Renewables Obligation Certificate (ROC) for each MWh of renewables electricity generated (additional ROCs are available for commercial wave and tidal developments to help advance this sector). These certificates can then be sold and traded amongst suppliers. Licensed suppliers in Scotland were required to supply 10.4% of electricity from renewables by 2010.

5.3.3 Scottish Marine Renewables SEA

A Strategic Environmental Assessment (SEA) for the development of marine wave and tidal renewables off the coast of Scotland is currently underway. It is being carried out to assess, at a high level, the potential environmental effects that the development of marine renewables (wave and tidal devices) off the coast of Scotland will have on the environment. The results will be used by the Scottish Executive to inform the development of marine renewables on the environment. The area being covered includes the west coast of Scotland (including the Inner Isles, Western Isles and Argyll and Bute), Pentland Firth and the Northern Isles (Orkney and Shetland). SEA 7 therefore falls partially within this study area. Figure 5.1 shows wave and tidal resource areas identified to the west of Scotland by the marine renewables SEA.

5.4 RELEVANCE TO SEA 7

Offshore renewables, whilst having enormous potential are still in their infancy as an industry and at present there is only one commercial

renewable device in SEA 7 area. Whether the vast renewable resources of Scotland can be harnessed depends on continued financial support and the ability to overcome the limitations of connectivity to the mainland grid and the technological difficulties of developing devises in both shallow and deep waters. An increase in marine renewables in SEA 7 area is therefore likely to be a number of years away and development of oil and gas in the area is unlikely to be restricted by the renewables industry as presently defined.

5.5 SOURCES OF INFORMATION

Beatrice Windfarm Demonstrator Project. Available at: www.beatrice.co.uk

British Wind Energy Association (BWEA). Marine Resource. Available at: http://www.bwea.com/marine/resource.html

DTI Energy White Paper, 2003: *Our energy future – creating a low carbon economy.*

DTI, 2002. *Future Offshore: A Strategic Framework for the Offshore Wind Industry.*

DTI, 2001. *Offshore Wind Energy. Wind Energy Fact Sheet 1.*

DTI. Renewable Energy. Available at: http://www.dti.gov.uk/renewables/

Highlands and Island Enterprise, 2002. "Arnish renewable energy project set to create 65 jobs". Available at:

http://www.hie.co.uk/Default.aspx.LocID-0finewc78.RefLocID-0fihiesv500b00d.Lang-EN.htm

Scottish Coastal Forum, 2002. A Strategy for Scotland's Coasts and Inshore Waters. Power Generation Task Group.

Scottish Executive Consultations, 2005. Available at:

http://www.scotland.gov.uk/consultations/enterprise/renewables.pdf

Scottish Executive, 2006. *Scottish Marine Renewables SEA Scoping Study Report*. Faber Maunsell & Metoc plc.

Scottish Executive, 2004. *Harnessing Scotland's Marine Energy Potential. Forum for Renewable Energy development in Scotland, Marine Energy Group*.

Scottish Executive, 2001. *Scotland's Renewable Resource*. © Garrad Hassan and Parners Ltd.

Scottish Executive (2003). Securing a Renewable Future: Scotland's Renewable Energy. Available at:

http://www.scotland.gov.uk/library5/environment/srfe.pdf

Scottish Executive Publications (2005). Forum for Renewable Energy Development in Scotland: *Scotland's Renewable Energy Potential:*

Realising the 2020 Target - Future Generation Group Report. Available at:

http://www.scotland.gov.uk/Publications/2005/09/09144010/40120#14

Talisman Energy (UK) Ltd (2004). *Beatrice Wind Farm Demonstrator Project – Environmental Statement.*

6 CABLES

6.1 INTRODUCTION

Globally submarine cables play a key role in facilitating modern day life. Telecommunication cables form the backbone of the communications network including the vastly expanding internet. Submarine power cables have enabled the bulk import and export of electric power for both commercial and domestic use. Submarine cable numbers are increasing as a result of this increased traffic with many now crossing the North Sea to link the UK with mainland Europe, as well as connecting Europe to North America.

6.2 ACTIVITY IN SEA 7

Cables in the SEA 7 area include four international telecom cables which are listed in the Kingfisher awareness charts. Of these, three are active and one is out of service (see Figure 6-1).

There are numerous smaller coastal power cables and telecommunications cables linking islands to the mainland including power cables from Vaternish on the Isle of Skye to the Western Isles. These appear on admiralty charts but their status is unknown. Table 6-1 provides details of the international telecom cables which pass through SEA7. Additionally there is a proposed submarine power cable which, if it goes ahead, will connect Rathlin Island with County Antrim on mainland Northern Ireland.

Table 6-1 Telecommunications cables in the SEA 7 area

Cable	Landfall	Operator	Status
Atlantic Crossing 1	Mainland Europe	Global Crossing	Active
TAT 14	Mainland Europe	BT	Active
Hibernia A	Southport	CVC Hibernia	Active
TAT 10B	Mainland Europe	T-systems International	Out of service

Future marine renewable energy development (wind, wave and tidal) in the SEA7 study area and large wind farm developments (e.g. on the Western Isles) will require significant upgrades to the electrical grid system. This may involve the development of interconnector cables linking islands to the mainland or Scotland to England. There have been a number of recent studies into potential electricity interconnectors in the SEA7 area and some specific studies in the SEA4 and SEA6 areas. Currently there is no information available on the potential number of interconnectors or routes, but as projects develop such information is likely to become available via project developers.

6.3 RELEVANCE FOR SEA 7

The locations of telecommunications and power cables in the SEA7 area are charted on Admiralty charts and Kingfisher Awareness Charts.

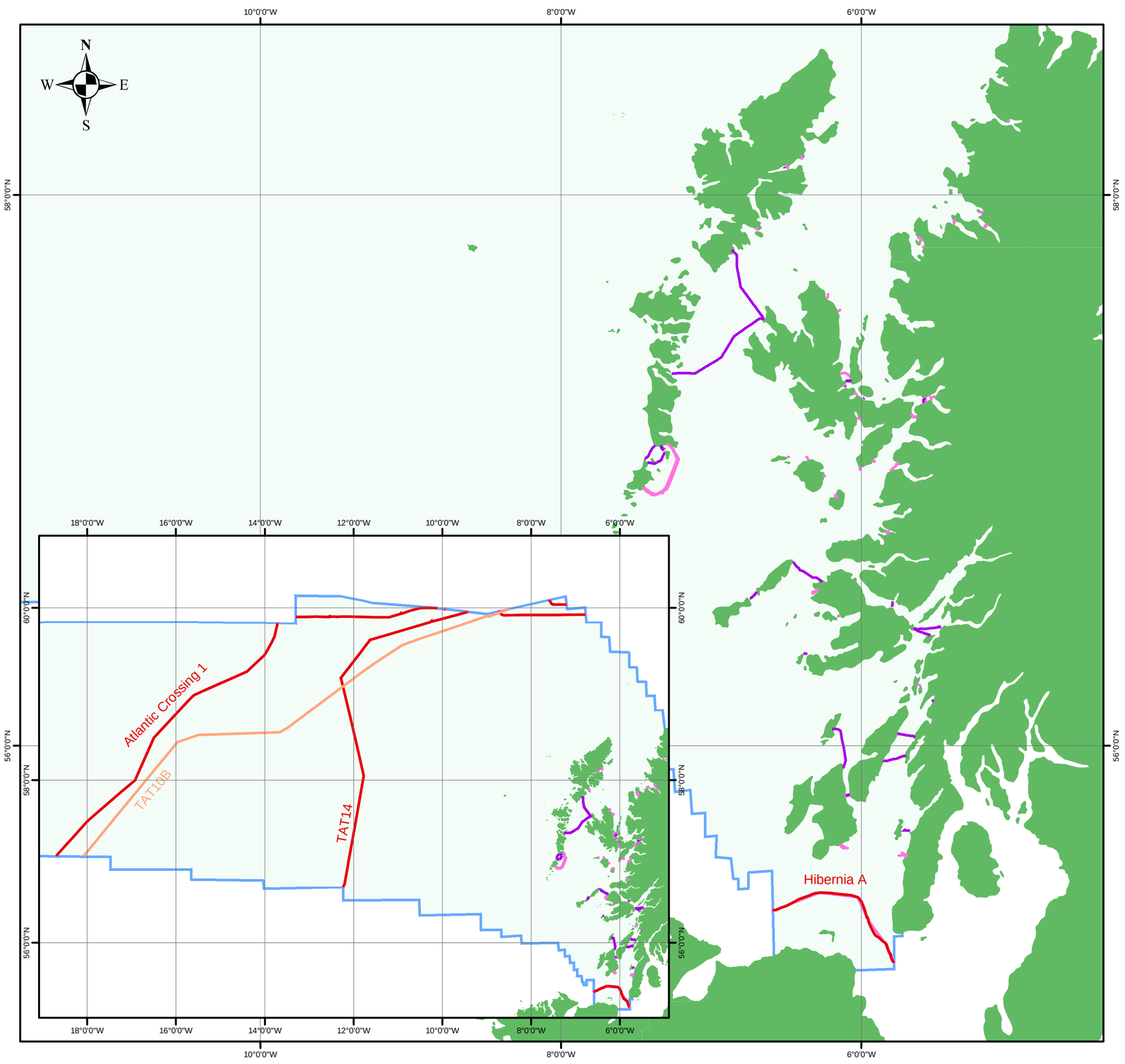
Cables are unlikely to interfere with oil and gas activities given that their location would be identified early on in screening stage of an oil and gas project and the appropriate measures to avoid or cross the cables would be taken.

6.4 SOURCES OF INFORMATION

International Cable Protection Committee website. Available at: www.iscpc.org

Kingfisher Cable Awareness Charts: Irish Sea & North Sea – North & West.

Figure 6.1 : Cables in SEA7 area



Legend

Submarine telecom cables

- Status: Active
- Status: Out of Service

Submarine cables, status unknown

- Power cables
- Other cables

SEA7 area

Date	October 2006	
Projection	World Mercator	
Spheroid	WGS84	
Datum	WGS84	
Data Source	SeaZone Solutions Ltd, Kingfisher Cable Awareness Charts	
File Reference	P818/GIS/MXD/Final Report / Figure 6_1 Cables.mxd	
Checked	JH	GIS Specialist
	RS	Project Manager

dti

METOC

7 MILITARY ACTIVITY

7.1 INTRODUCTION

The assessment of military activities in the SEA 7 area is informed by the distribution and classification of practice and exercise areas (PEXA). This information, which is produced by the UK Hydrographic Office, shows areas around the UK which are in use or available for use by the Ministry of Defence for practice and exercise with or without the use of live ammunition. The data include military vessel exercise areas, firing and bombing ranges.

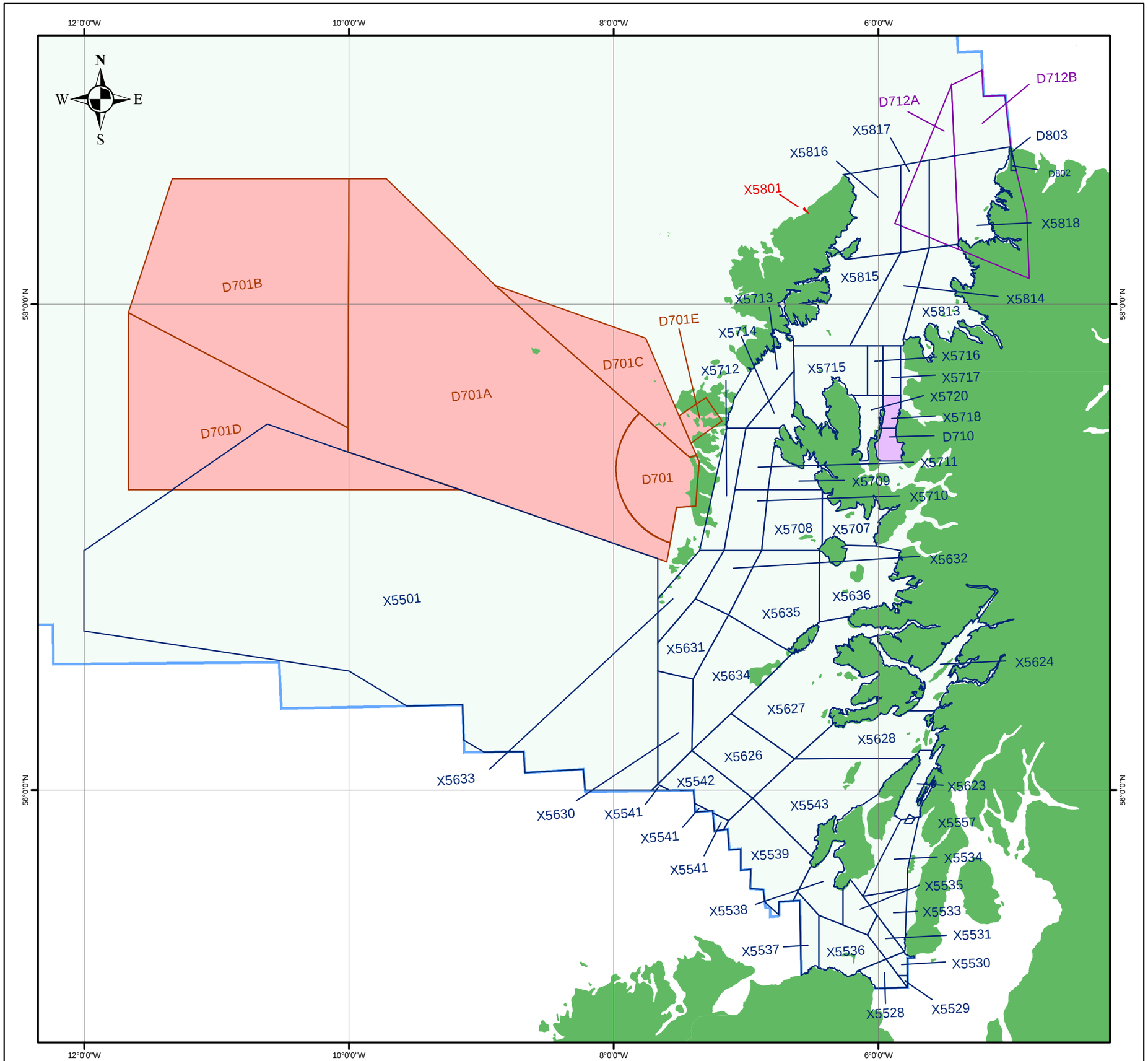
7.2 ACTIVITY IN THE SEA 7 AREA

The amount of military activity in western Scotland is considerable and large areas are designated as military activity areas. These are used by the Royal Air Force (RAF), the Navy and the Army (see Figure 7-1).

The waters off the West Coast of Scotland and the Inner Hebrides are the Royal Navy's Scottish Exercise Areas (SXAs), which are controlled and directed from the Marine Operations Centre at HM Naval Base Clyde. The SXAs are routinely patrolled and used for operational sea training and exercises. The Royal Navy and Royal Air Force also run Joint Maritime Courses (JMCs), usually 3 times per year, during which collective training for ships, submarines and maritime aircraft takes place, mainly the shallow waters between mainland Scotland and the Isles. A typical JMC will involve dozens of ships and aircraft and many thousands of personnel from a number of NATO member states and aims to put all units through a complex programme of warfare training in the maritime, land and air environments.

The Royal Air Force (RAF) conducts air combat training in an area towards the northern extent of the study area. There is also a torpedo testing area (PEXA D710) associated with the MOD British Underwater Test and Evaluation Centre (BUTEC) located in the Sound of Raasay which represents a danger to shipping (see Figure 7-1) (Parsons *et al.* 2000). An army firing range is located on the northwest coast of the Isle of Lewis, Western Isles (X5801).

Larger PEXAs extend beyond the Western Isles into the Northeast Atlantic. These include the navy exercise area X5501, used for miscellaneous fleet exercises, and a number of MOD Procurement Executive Areas used for anti-aircraft firing practice using anti-aircraft missile and pilotless aircraft as targets. Ordnance originates from the South Uist Missile Range, run by QinetiQ on behalf of the Ministry of Defence, which fires westwards out to sea. The danger area comprises of the linked areas D701 and D701A/B/C/D/E (see Figure 7-1) (QinetiQ, 2006).



SEA 7 - Technical report on other users of the area

Figure 7.1: Military Practice and Exercise Areas in SEA 7 area

Legend

- RAF
- Army Department
- Navy Department
- MOD (Procurement Executive)
- SEA7 area
- South Uist Missile Firing Range Danger Area
- BUTEC Torpedo Testing Area

Date	October 2006	
Projection	World Mercator	
Spheroid	WGS84	
Datum	WGS84	
Data Source	SeaZone Solutions Ltd (UKHO)	
File Reference	P818/GIS/MXD/Final Report/ Figure 7_1.mxd	
Checked	JH	GIS Specialist
	RS	Project Manager

dti

METOC

Information about the general activities conducted in each PEXA within the SEA 7 area is provided in Table 7-1 below.

Table 7-1: Military Activity areas (PEXAs) in the SEA 7 area

Serial Number*	Name	Activities
Army		
X5801	Barvas	Rifle, High and low angle gunnery (Light)
Ministry of Defence (MOD) Procurement Executive		
D701	Hebrides	Missile Firing, Pilotless Target Aircraft
D701A		Missile Firing, Pilotless Target Aircraft
D701B		Missile Firing, Pilotless Target Aircraft
D701C		Missile Firing, Pilotless Target Aircraft
D701D		Missile Firing, Pilotless Target Aircraft
D701E		Pilotless Target Aircraft
Navy		
D710	Raasay	Torpedo from Aircraft
D802	Cape Wrath (South East)	High and low angle gunnery, Torpedo from ships or shore, Anti Submarine Practice, Aircraft, Air to sea or ground firing, Live bombing, Torpedo from aircraft, Naval gunfire support, Pilotless Target Aircraft
D803	Gravie Island	Rocket projectile, Practice bombing, Live bombing, Air to sea or ground firing
X5501	Fleet Exercise Area	Miscellaneous Fleet Exercises
X5528	Torr	Submarine exercises, Aircraft, HM Ships
X5529	Mermaid	Submarine exercises, Aircraft, HM Ships
X5530	Sanda	Submarine exercises, Aircraft, HM Ships
X5531	Kintyre	Submarine exercises, Aircraft, HM Ships
X5533	Earadale	Submarine exercises, Aircraft, HM Ships
X5534	Gigha	Submarine exercises, Aircraft, HM Ships
X5535	Otter	Submarine exercises, Aircraft, HM Ships
X5536	Rathlin	Submarine exercises, Aircraft, HM Ships
X5537	Skerries	Submarine exercises, Aircraft, HM Ships
X5538	Islay	Submarine exercises, Aircraft, HM Ships
X5539	Orsay	Submarine exercises, Aircraft, HM Ships
X5541	Place	Submarine exercises, Aircraft, HM Ships
X5542	Blackstone	Submarine exercises, Aircraft, HM Ships
X5543	Colonsay	Submarine exercises, Aircraft, HM Ships
X5557	Jura Sound Deep Field (N)	Minelaying
X5623	Jura Sound	Transit
X5624	Linnhe	Submarine exercises, HM Ships
X5626	Mackenzie	Submarine exercises, Aircraft, HM Ships
X5627	Staffa	Submarine exercises, Aircraft, HM Ships
X5628	Mull	Submarine exercises, Aircraft, HM Ships
X5630	Ford	Submarine exercises, Aircraft, HM Ships

Serial Number*	Name	Activities
X5631	Hebrides South	Submarine exercises, Aircraft, HM Ships
X5632	Hebrides Central	Submarine exercises, Aircraft, HM Ships
X5633	Barra	Submarine exercises, Aircraft, HM Ships
X5634	Tiree	Submarine exercises, Aircraft, HM Ships
X5635	Hawes	Submarine exercises, Aircraft, HM Ships
X5636	Eigg	Submarine exercises, Aircraft, HM Ships
X5707	Rhum	Submarine exercises, Aircraft, HM Ships
X5708	Canna	Submarine exercises, Aircraft, HM Ships
X5709	Bracadale	Submarine exercises, Aircraft, HM Ships
X5710	Hebrides North	Submarine exercises, Aircraft, HM Ships
X5711	Neist	Submarine exercises, Aircraft, HM Ships
X5712	Ushenish	Submarine exercises, Aircraft, HM Ships
X5713	Lochmaddy	Submarine exercises, Aircraft, HM Ships
X5714	Dunvegan	Submarine exercises, Aircraft, HM Ships
X5715	Trodday	Submarine exercises, Aircraft, HM Ships
X5716	Rona West	Submarine exercises, Aircraft, HM Ships
X5717	Rona North	Submarine exercises, Aircraft, HM Ships
X5718	Ronna South	Noise Ranging
X5720	Portree	Submarine exercises, Aircraft, HM Ships
X5813	Ewe	Submarine exercises, Aircraft, HM Ships
X5814	Minch South	Submarine exercises, Aircraft, HM Ships
X5815	Shiant	Submarine exercises, Aircraft, HM Ships
X5816	Tiumpan	Submarine exercises, Aircraft, HM Ships
X5817	Minch North	Submarine exercises, Aircraft, HM Ships
X5818	Stoer	Submarine exercises, Aircraft, HM Ships
Air Force (RAF)		
D712A	Northern MDA	Air combat training
D712B	Northern MDA	Air combat training

* The prefix D (Danger) on the site serial number is used for areas that extend above ground/sea level, whilst the prefix X is used for areas in which the activities carried out are at surface or sub-surface level.

7.3 RELEVANCE FOR SEA 7

Given the number and extent of military exercise areas in the SEA 7 area, it is likely that any future oil and gas development will take place within areas used by the armed forces. There is, therefore, potential for interaction between the two activities.

Detailed information about military activities is not widely available. Therefore, dialogue with the MOD (Defence Estates) at the consenting stage for specific developments would be the most appropriate method of avoiding potential conflict. The existence of PEXAs has not necessarily precluded oil and gas development in other areas such as the North Sea and Irish Sea. However, there is considerable military activity to the west of Scotland and outside of the bay closing lines where oil and gas blocks will be made available for licence, the South

Uist missile firing range is of particular concern. Therefore, sufficient planning and consultation between the oil and gas industry and the MOD will be required to avoid conflict.

7.4 SOURCES OF INFORMATION

Parsons, E.C.M., Birks, I., Evans, P.G.H., Gordon, J.C.D., Shrimpton, J.H., and Pooley, S. 2000. The Possible Impacts of Military Activity on Cetaceans in West Scotland. *European Research on Cetaceans* **14***.*

QinetiQ (2006). Hebrides Operations. Available at QinetiQ website:

http://www.qinetiq.com/home/defence/test_and_evaluation/singlesitefacilities/hebrides_facilities/hebrides_operations.html

8 DREDGING AND AGGREGATE EXTRACTION

8.1 INTRODUCTION

Marine dredging in the UK takes two forms, the removal of sand and gravel from the seabed for use as a commercial resource and removal of accumulated sediment from navigation routes, usually within and around harbours.

Sand and gravel from marine sources makes an important contribution to meeting industrial demand for concrete, road construction, building, beach replenishment and coastal defence. In the UK, much of the sand and gravel used in the construction industry is quarried from the land but dredging of deposits on the seabed has involved fewer planning constraints and is perceived to have a less noticeable impact on the landscape. However, in recent years the assessment and licensing process has developed to incorporate broader and more rigorous assessment of environmental and socio-economic impacts.

8.2 ACTIVITY IN SEA 7 AREA

Commercial dredging areas for marine sand and gravel are restricted by the occurrence of suitable deposits as well as a number of other factors including economic viability, technical constraints, and distance from licence area to point of landing and commercial demand for the product. Scotland's western seaboard is characterised by rural communities and a low population density, and this is reflected in a low local demand for aggregates. Consequently the industry has focussed on other areas such as the English Channel, Bristol Channel and east coast of England where resources are closer to product demand.

There are currently no licensed areas for marine aggregate extraction in the SEA 7 region.

Navigation dredging is the responsibility of individual harbour authorities. However, a licence is required for the disposal of dredged material at offshore sites, usually located in the vicinity of ports in the region. Disposal sites in the SEA 7 area are discussed in Section 8.

8.3 RELEVANCE TO SEA 7

There are no marine aggregate licence areas in the SEA 7 area and no immediate prospect of activity in the future. There is therefore no potential for conflict with any proposed oil and as development in the region.

9 MARINE WASTE DISPOSAL (INCLUDING ORDNANCE)

9.1 INTRODUCTION

Anyone wishing to deposit anything in the sea or under the seabed in UK waters requires a licence under Part II of the Food and Environment Protection Act 1985 (FEPA).

For the majority of deposits in the waters adjacent to Scotland, licence determination, the description of licence conditions, licence issue, and the requirement for monitoring and any enforcement activity are undertaken by Fisheries Research Services (FRS) on behalf of the Scottish Ministers. Policy responsibility lies with the Marine Protection Team of SEERAD. In Northern Ireland the licensing authority is the Water Management Unit of the Environment and Heritage Service.

A number of statutory changes governing the types of waste that can be disposed of at sea have occurred over recent years. Since 1994, the dumping of most types of industrial waste has been prohibited and the disposal of sewage sludge was phased out at the end of 1998 under the Urban Waste Water Treatment Directive (91/271/EEC). Dredged material from port and navigation channel excavation and coastal engineering works now constitutes the majority of material that remains eligible for disposal at sea.

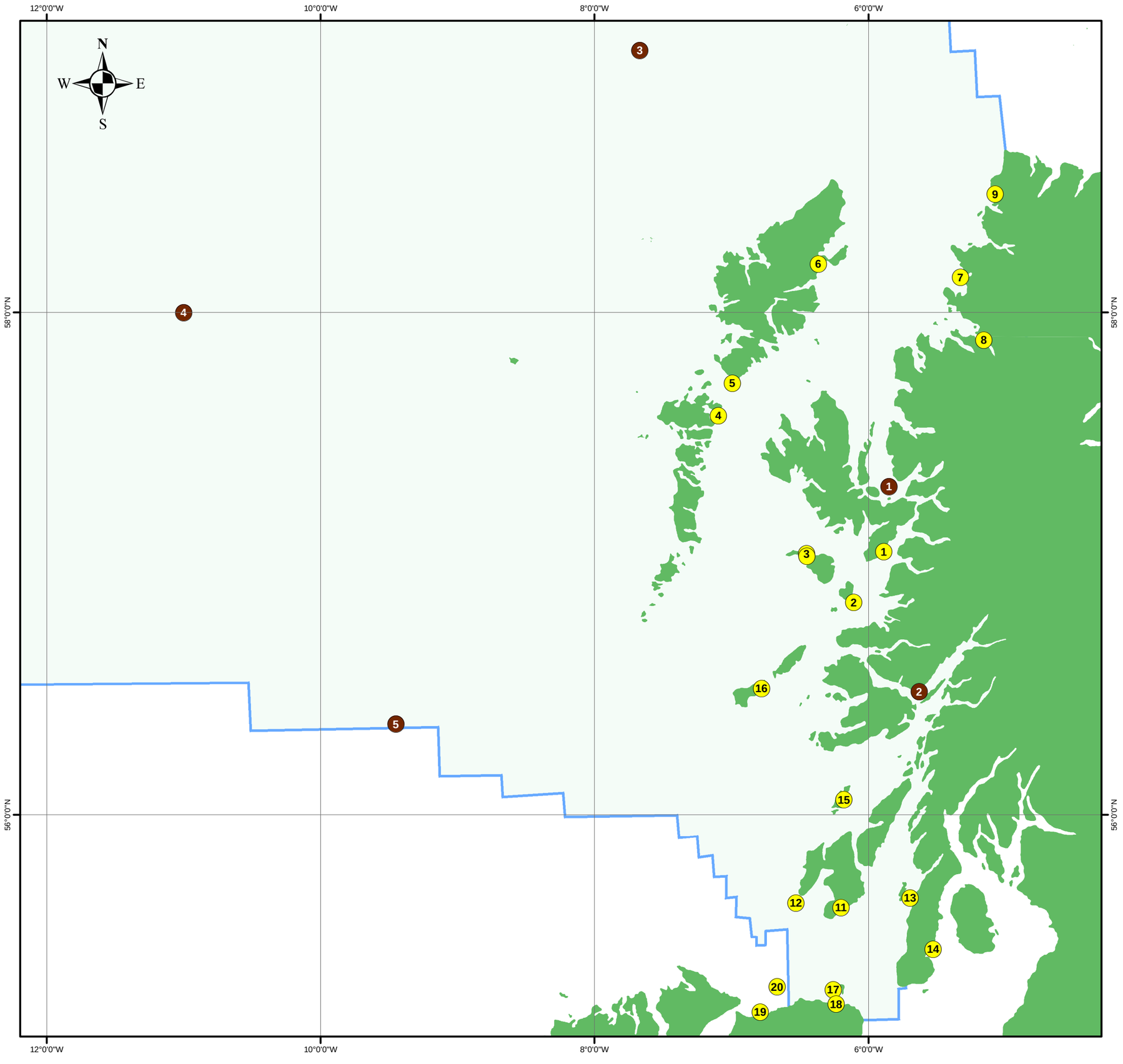
In addition to this, areas around the UK coast have been used as dumping grounds for waste munitions and more recently for disposal of chemical weapons.

9.2 ACTIVITY IN THE SEA 7 AREA

9.2.1 Marine disposal sites

Waste disposal licences are granted annually and new applications are made periodically, determined primarily by the need to dispose of material from dredging operations. At the time of writing, Campbeltown, Bruichladdich and Port Ellen have current disposal licences but are not expected to renew later in 2006 (Pers. Comm. James McKie, FRS). No Northern Ireland sites are currently active in the SEA 7 area. Two major disposal sites, Portstewart Bay and Portstewart Bay B, are located just west of the study area and have been licensed for most of the last decade.

There are a number of other disposal sites in the SEA 7 area that have been used in the past and for which new licences may be granted. These are illustrated in Figure 9-1.



SEA 7 - Technical report on other users of the area

Figure 9.1 : Waste and munitions disposal sites in SEA7 area

Legend

- Disposal sites
- Munitions disposal sites
- SEA7 area

Date	October 2006	
Projection	World Mercator	
Spheroid	WGS84	
Datum	WGS84	
Data Source	Fisheries Research Services, DoENI, OSPAR Commission 2005	
File Reference	P818/GIS/MXD/Final Report/ Figure 9_1 Waste disposal.mxd	
Checked	JH	GIS Specialist
	RS	Project Manager

dti

METOC

Table 9-1 summarises all disposal sites in the study area and their use over the last 10 years.

Table 9-1: Marine disposal sites in the SEA 7 area and use over the last 10 years

Map Ref.	Site Name	OSPAR Code	Licensed Years	Returned Tonnage	Material
Scotland					
1	Isle of Eigg	HE020	2000	10,365	Sand and gravel
			2001	16,136	Sand and gravel
			2003	46,088	Sand and gravel
2	Sound of Canna	HE025	2000	17,427	Sand, gravel and silt
			2001	10,773	Sand, gravel and silt
3	Lochmaddy	HE030			
4	Leverburgh	HE033	1996	1,820	Sand, clay and rock
			1997	16,604	Sand, clay and rock
5	Stornoway	HE035	1995	44,244	Silt and sand
			2002	18,795	Silt and sand
			2003	2,386	Silt and sand
6	Lochinver	HE040	2004	193	Silt and sand
7	Ullapool	HE050	2003	5,058	Silt and sand
8	Loch Inchard	HE060	1997	27,451	Silt and sand
9	Armadale	HE070	2004	10,576	Silt, sand and gravel
10	Port Mor Isle of Muck	HE080	2003	831	Sand, gravel and rock
11	Port Ellen	MA030	2002	9,922	Silt and sand
			2005	TBC	-
12	Portnahaven/Bruichladdich	MA035	2005	TBC	Silt, sand and gravel
13	Tayinloan	MA040			-
14	Campbeltown	MA060	1997	25,801	Silt and sand
			2005	12,168	Silt and sand
15	Loch Staosnaig	MA070			-
16	Tiree	MA080			-
Northern Ireland					
17	Rathlin Island C	MA565	1996	1,822	Silt and sand
			1997	9,440	Silt and sand
18	Ballycastle Bay B	MA571	1999	14,095	Silt & sand
19	Portstewart Bay*	MA520	1996	65,000	Silt and sand
			1997	53,000	Silt and sand
			1998	22,800	Silt and sand
20	Portstewart Bay B*	MA545	1996-99 2001-05	661,029 in total	Silt and sand

* Outside of SEA 7 area

There are no historical sewage sludge disposal sites in the SEA 7 area. The closest site is Garroch Head, located to the southeast of the area in the Firth of Clyde and last used in 1998.

9.2.2 Munitions disposal sites

Dumping of chemical weapons and munitions at sea has been carried out since the end of the First World War. Under the OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic which entered into force in 1998, countries that have ratified the Convention have supplied available information to determine the location and extent of dumped weapons. Unfortunately the full extent of munitions on the seabed will never be known due mainly to inadequate documentation of operations at the time of dumping and the subsequent loss or destruction of records that may have been taken.

Munitions and chemical weapons can be disturbed by activities such as fishing, sand and gravel extraction and the drilling and placement of offshore structures by the oil and gas industry and other marine industries. It is therefore essential that the location and extent of dump sites and areas where munitions have been detected are recorded and maintained. Known munitions dump sites are charted, but surveys have found that discarded munitions can be discarded over a wide area and outside of charted areas (FRS, 1996).

There are 5 munitions dump sites in the SEA 7 area. Conventional munitions were disposed of at the two coastal sites and the three offshore sites contain chemical weapons (see Table 9-2 and Figure 9-1).

Table 9-2: Marine munitions dump sites in the SEA 7 area

Map Ref.	Latitude	Longitude	Type and description	Licence Block
1	57.32 N	5.85 W	Conventional munitions. Inner Sound of Raasay. Two minelighters with torpedoes ex-German U-Boats (1945) plus munitions from HMS Port Napier, which sank nearby in 1940.	146/21
2	56.5 N	5.63 W	Conventional munitions. Loch Linnhe.	136/12 136/17
3	59 N	7.67 W	Chemical weapons	154/2 164/27
4	58 N	11.0 W	Chemical weapons	150/30 151/26 140/5 141/1
5	56.37 N	9.45 W	Chemical weapons	132/18

Source: OSPAR Commission (2005).

9.3 RELEVANCE TO SEA 7

9.3.1 Marine disposal sites

Marine disposal sites in the Sea 7 area are all in nearshore areas. There are no sewage sludge dump sites and most disposal is of

sediment from port and harbour maintenance dredging operations. These sediments may contain levels of contamination above background levels that could be mobilised by any oil and gas activity in the vicinity, with subsequent impacts on marine biota. This possibility would need to be assessed prior to the approval of such activities.

In principle any disposal site that has potential to be re-licensed in the future would constitute a restriction on oil and gas development in the immediate vicinity. However, the location of these disposal sites and nature of the material deposited on the seabed means that they are unlikely to have a direct effect on any proposed increase in oil and gas activity as a result of SEA 7 licensing.

9.3.2 Munitions disposal sites

It is a widely held view that recovery of dumped munitions is not technically feasible at present. There are also serious concerns over the safety of personnel who may be involved in any such operations (OSPAR Commission, 2005). At present oil and gas activity at munitions dump sites is not possible. Oil and gas exploration and production undertaken in the vicinity of the five munitions disposal sites in the SEA 7 area should be subject to a full seabed survey and assessment of the potential risk prior to the approval.

9.4 SOURCES OF INFORMATION

FRS (1996). *Surveys of the Beaufort's Dyke Explosives Disposal Site, November 1995 – July 1996*. Fisheries Research Services Report No. 15/96.

OSPAR Commission (2005). *Overview of Past Dumping at Sea of Chemical Weapons and Munitions in the OSPAR Maritime Area*.

Personal communication, James McKie, Senior Environmental Advisor, Environment Protection Group, Fisheries Research Services

10 MARICULTURE

10.1 INTRODUCTION

Mariculture is the cultivation of marine species in coastal waters. It is significant in Scotland and Northern Ireland and has grown over the last 20 years from a relatively small crofter-based industry to a substantial food provider in a world market.

There are 2 general types of mariculture practiced in Scotland and Northern Ireland involving the culture of:

- Finfish in cages, or land-based tanks with pumped seawater
- Shellfish either on trestles on the seabed, attached to vertical 'dropper' ropes suspended from horizontal longlines or rafts, or grown directly on the seabed without equipment

Scottish salmon in particular is perceived internationally as a quality product and its farming is now a significant industry.

As landlord for much of the seabed around the Scottish coast, the Crown Estate currently has responsibility for authorising marine aquaculture developments and monitors marine fish farm operations to ensure compliance with lease conditions. The Crown Estate acts as the non-statutory planning authority for aquaculture development and local authorities have the lead role in advising the Crown Estate on marine fish farm proposals. This will change when formal planning powers are given to local authorities by the Scottish Executive some time in 2006. In Northern Ireland, registration and licensing of fish farms is carried the Department of Agriculture and Rural Development (DARDNI).

10.2 MARICULTURE IN THE SEA 7 AREA

The focus of mariculture in Scotland is located along its western seaboard in the Inner and Outer Hebrides and in the Northern Isles where the most favourable conditions exist. The SEA 7 area encompasses the majority of mariculture sites in Scotland that are not located in the Orkney or Shetland Isles. Mariculture in Northern Ireland is concentrated in five sea loughs, namely Carlingford Lough, Strangford Lough, Belfast Lough, Larne Lough and Lough Foyle. None of these are located within the SEA 7 area and there are no mariculture sites along the Northern Ireland coastline that are within the study area (Pers. Comm. Tom Cowan, DARD).

10.2.1 Finfish

At the time of writing there are 302 registered Scottish marine finfish farms in SEA area 7, of which 182 are currently active. Almost all of these sites are involved in the production of Atlantic salmon, but an increasing number of operations are farming other marine species.

10.2.1.1 Atlantic salmon (*Salmo salar*)

Farmed salmon is Scotland's most important aquaculture species and the single most important economic development in the Highlands and Islands for the past 30 years. The industry contributed £150 million (nearly 40%) to Scottish food exports in 1999 and has key markets in France, the United States, Japan and other EU countries. Intensive rearing of salmon to meet demand has lead to concerns about the quality of the product and environmental impacts on the marine environment and wild salmon populations.

The three Scottish regions that most closely match the SEA 7 area are North West, South West and Western Isles. These are based on old local authority areas. Annual figures for Atlantic salmon show that the SEA 7 area contributes a significant proportion of total Scottish production (see Table 10-1).

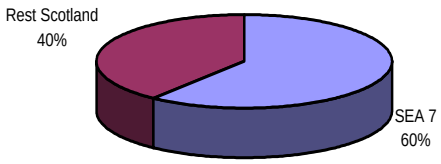
Table 10-1: Production of farmed Atlantic salmon in Scotland and SEA 7

Region	2003	2004
North West (Highland region)	12,204	14,792
South West (Argyll region)	15,847	14,346
Western Isles	2,899	14,408
SEA 7	30,950	43,546
Scotland Total[1]	73,255	71,988

Note: [1]Total includes values for Orkney and Shetland

In 2004, farmed salmon production in SEA 7 contributed 60% of the Scottish total (see Figure 10-1). Almost all or the remainder was produced in the Orkney and Shetland Isles.

Figure 10-1: Production of mature Atlantic salmon in the SEA 7 area and Scotland in 2004



Suitable conditions for finfish mariculture occur frequently along the entire coastline encompassed by the SEA 7 area and the distribution of production sites reflects this (see Figure 10-2).

Most Scottish farmed salmon is now produced by large companies with relatively few small-scale, independent companies remaining. The industry is economically important in many geographically remote rural areas where alternative employment opportunities are limited and coastal areas of western Scotland and the SEA 7 area are a good example of this.

Table 10-2: Regional employment in the shellfish farming industry in 2004

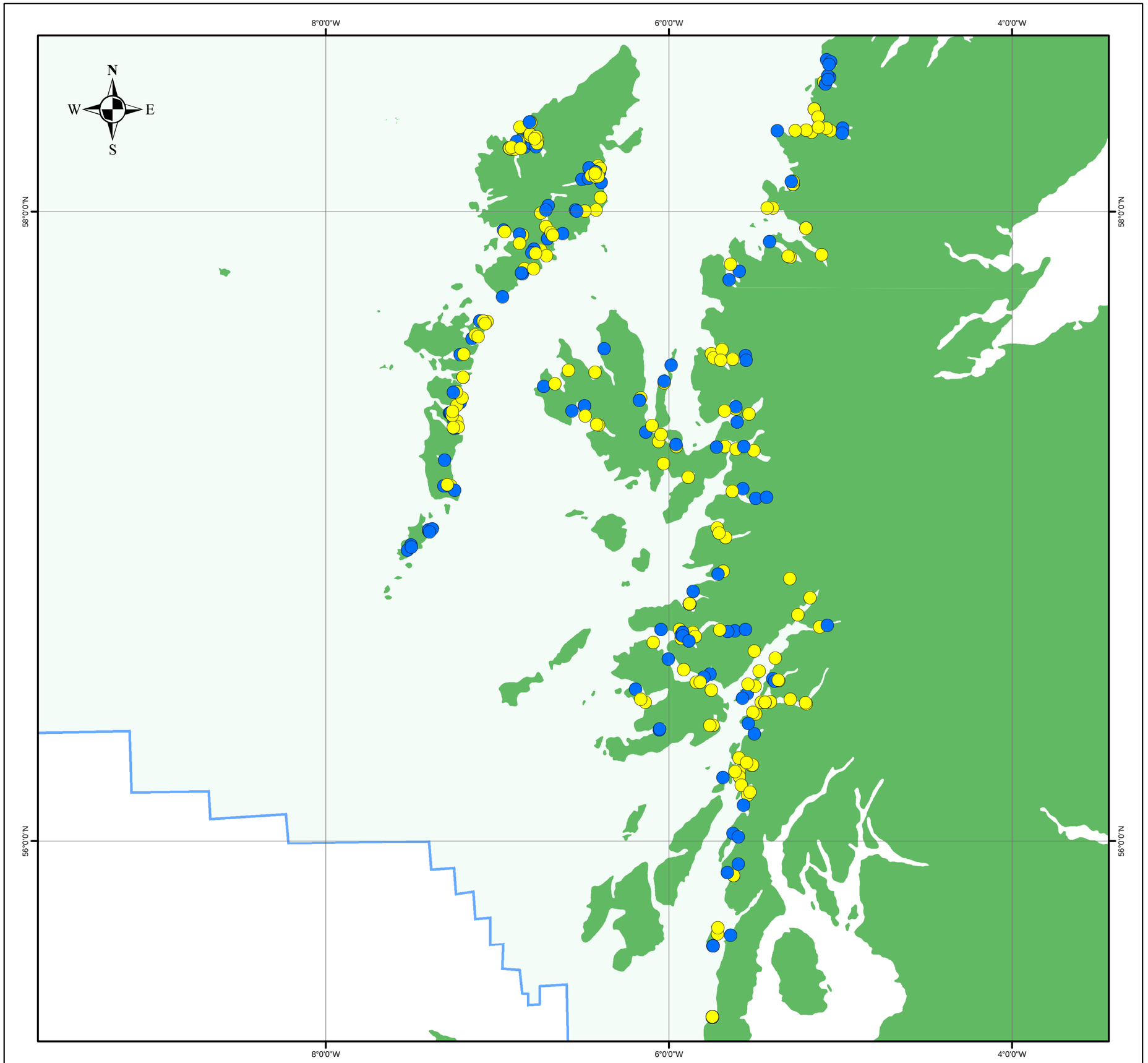
	Full time	Part time
North West (Highland region)	321	38
South West (Argyll region)	219	34
Western Isles	226	33
SEA 7	766	105
All Scotland	1019	142

10.2.1.2 Other species

The other main finfish species farmed commercially in Scottish waters is the rainbow trout (*Oncorhynchus mykiss*). Most Scottish trout production takes place in freshwater. However, a small number of marine sites, which enable the trout to grow larger, are engaged in production.

There is also a growing interest in farming other species including brown/sea trout, Arctic char, cod and halibut. All these species are currently being commercially farmed in Scotland but at low levels compared to salmon and shellfish species. The most recent assessment of aquaculture production in Scotland observed a decrease in the tonnages of cod, halibut and brown trout between 2003 and 2004. However, significant increases in production were anticipated for 2005 (see Table 10-3).

Figure 10.2: Mariculture: Finfish sites in SEA7 area



Legend

Marine fin fish sites

- Active sites
- Inactive sites
- SEA7 area

Date	October 2006	
Projection	World Mercator	
Spheroid	WGS84	
Datum	WGS84	
Data Source	Fisheries Research Services	
File Reference	P818/GIS/MXD/Final Report/ Figure 10_2 Finfish sites.mxd	
Checked	JH	GIS Specialist
	RS	Project Manager

dti

METOC

Table 10-3: Production of "other" species in Scotland (tonnes)

Species	2003	2004	2005[1]
Arctic Charr	3.1	3.25	10.5
Brown trout / Sea trout	198.3	167	172
Cod	82.1	8	355.5
Halibut	231.8	186.8	227

[1]Farmers' estimates based on stocks currently being on-grown.

10.2.2 Shellfish

Shellfish species cultivated in Scotland include:

- Common mussels *Mytilus edulis*
- Pacific oyster *Crassostrea gigas*
- Native oyster *Ostrea edulis*
- Scallop (King) *Pecten maximus*
- Queen scallop *Chlamys opercularis*

Shellfish farming remains largely characterised by smaller scale operations with an environmentally benign reputation because it depends solely on natural feed supplies from the ecosystem rather than feed from external sources.

Scotland's shellfish industry represented over 26% of the total value at first sale of the UK's farmed shellfish production in 2004. Of the species cultivated in Scotland, mussels (92.4%) and pacific oyster (6.1%) were the most significant (Table 10-4). Both continued an upward trend in production. Scotland was the only nation in the UK to farm scallops (King and Queen scallops).

Table 10-4: Production (tonnes) of farmed shellfish in the UK in 2004

	Scotland	England	Wales	Northern Ireland	UK total
Pacific Oyster	287	432	22	278	1,109
Native Oyster	8	106	-	4	118
Scallops	10	0	-	-	10
Queens	45	-	-	-	45
Mussels	4,233	3,263	14,814	4,311	26,611
Clams	-	7	-	11	18
Cockles	-	10	-	-	10
Estimated Value (£ million)	6.0	3.3	10.4	3.0	22.7

There are 475 registered shellfish cultivation sites in SEA area 7 of which 342 are currently active. Like finfish, shellfish mariculture is located in sheltered sea lochs and coastal waters (see Figure 10-3).

Within Scotland, shellfish mariculture in the area accounts for almost all national production of Pacific and native oyster, king and queen scallops. SEA 7 accounts for approximately half of national production of mussels and these are the only shellfish species farmed in the Western Isles (see Table 10-5 below).

Table 10-5: Production (thousands) of farmed shellfish in SEA 7 area, 2004

	Highland	Strathclyde	Western Isles	SEA 7	Scottish total[1]
Pacific Oyster	1717	4357	0	6074	6096
Native Oyster	3	102	0	105	105
Scallops	126	29	0	155	165
Queens	54	3001	0	3055	3518
Mussels	398	1208	483	2089	4284

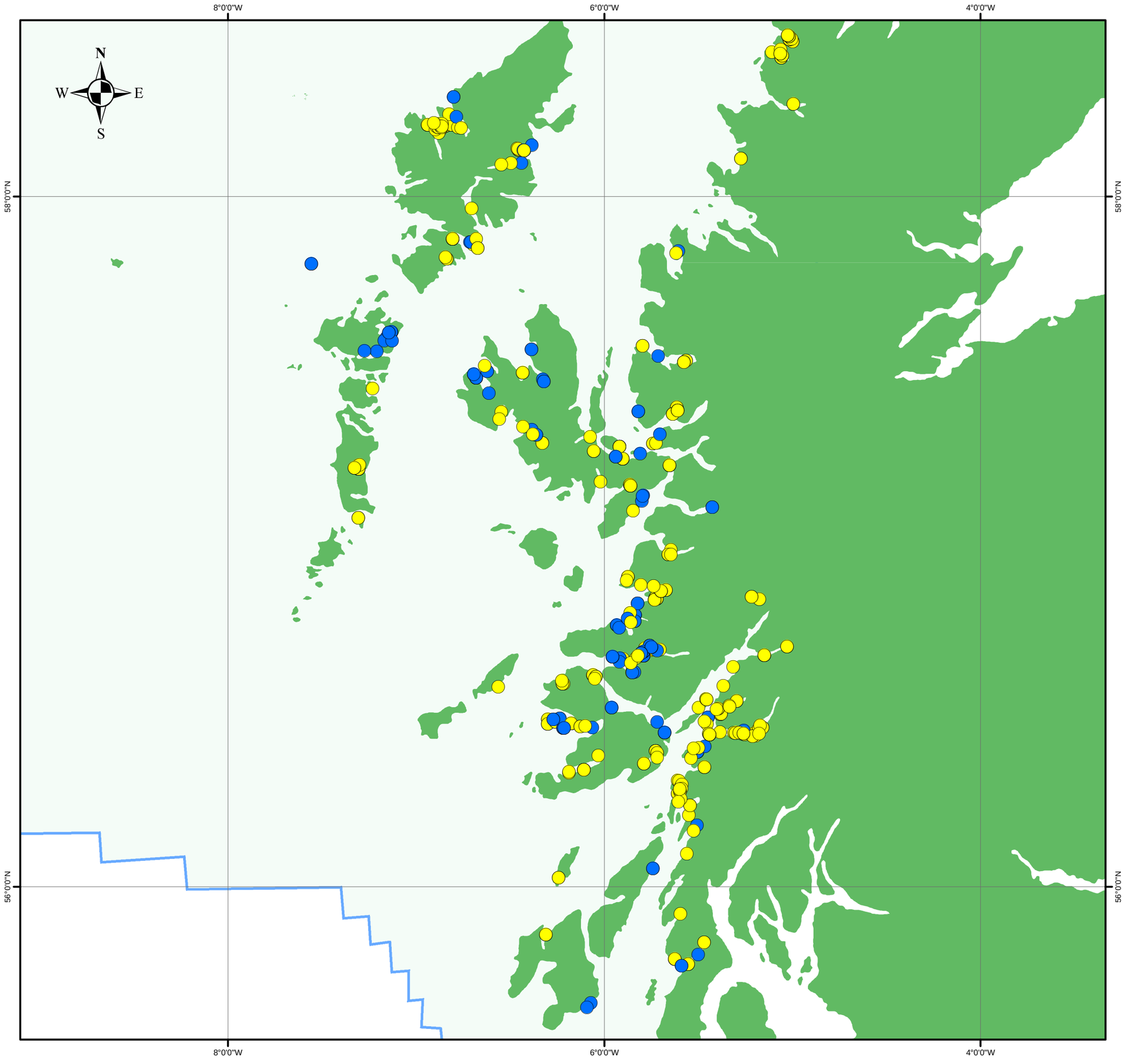
Note: [1]Total includes values for Orkney and Shetland

Through ease of access and its low tech nature shellfish farming offers alternative income and employment opportunities for those seeking a change of career or to supplement their income (see Table 10-6). Additional income benefits many small isolated communities with local shops and small businesses benefiting significantly from fish farms and their support requirements (Scottish Coastal Forum, 2002). These small operations are responsible for most Scottish shellfish production although a few large companies make a significant contribution to annual production of all species.

Table 10-6: Regional employment in the shellfish farming industry in 2004

	Full time	Part time	Casual
Highland	24	45	12
Strathclyde	70	50	30
Western Isles	10	13	14
SEA 7	104	108	56
All Scotland	149	170	83

Figure 10.3: Mariculture: Shellfish sites in SEA7 area



Legend

Marine shellfish sites

- Active sites
- Inactive sites
- SEA7 area

Date	October 2006	
Projection	World Mercator	
Spheroid	WGS84	
Datum	WGS84	
Data Source	Fisheries Research Services	
File Reference	P818/GIS/MXD/Final Report/ Figure 10_3 Shellfish sites.mxd	
Checked	JH	GIS Specialist
	RS	Project Manager

dti

METOC

10.3 MANAGEMENT ISSUES AND INITIATIVES

10.3.1 Scotland

The Strategic Framework for Scottish Aquaculture was published by the Scottish Executive in March 2003. The paper outlined a vision of an aquaculture industry guided by the principles of sustainable development, balancing economic progress with social justice and environmental responsibility.

Planning authorities are increasingly using non-statutory Aquaculture Framework Plans to guide the development of both finfish and shellfish farms. Typically these plans cover specific areas such as sea lochs, setting out an overall development strategy for the area and identifying environmental characteristics and development potential of specific sub-areas. Their purpose is to guide aquaculture development to appropriate locations and to help minimise conflicts of interest. Aquaculture Framework Plans are seen as one component of an increasingly comprehensive and integrated coastal planning system.

10.3.1.1 Finfish

Following a period of rapid expansion of the Scottish marine fish farm industry, growth has now slowed. There are few suitable coastal sites that do not have some production operations present and this has raised concerns about the environmental impacts of marine fish farming. Unlike shellfish cultivation, the stocking of fish at high densities requires significant inputs of feed that can lead to nutrient loading and negative impacts on the seabed and water quality. There is also concern about the effect of farmed salmon on the wild salmon stocks from sea-lice, genetically inferior escapes, and diseases such as salmon anaemia.

To inform the planning and authorisation process, SEERAD published the Policy Advice Notes *Locational guidelines for the authorisation of marine fish farms in Scottish waters*. It categorises areas on the basis of FRS predictive models to estimate environmental sensitivity to nutrient loading and associated benthic impact and is updated approximately every 3 months. From this assessment of environmental sensitivity, the following categories are applied to managing marine fish farm development:

- **Category 1:** where the development of new or the expansion of existing marine fish farms will only be acceptable in exceptional circumstances.
- **Category 2**: where the prospects for further substantial developments are likely to be limited although there may be potential for modifications of existing operations or limited expansion of existing sites particularly where proposals will result in an overall reduction in environmental effect, so enhancing the qualities of the area and hydrological conditions.

- **Category 3:** where there appear to be better prospects of satisfying environmental requirements, although the detailed circumstances will always need to be examined carefully.

Figure 10-4 shows the classification of finfish production areas at the end of 2005. Note that these management categories are applied to sea areas (usually lochs) but are represented as points for ease of presentation. At present, there is still scope for some further development in most areas but a number of sites in the Western Isles and the northwest Highlands, particularly in the Eddrachillis Bay area, are at or near to their carrying capacity.

At a regional level, voluntary Area Management Agreements promote co-operation between stakeholders in wild fisheries and the aquaculture industry. Fish farms that sign up to such agreements aim to minimise their impacts on the environment and wild fish stocks through their working practices.

Management of mariculture in Scotland is now well established. In the future, greater emphasis will be placed upon improving feed composition, parasite and disease treatments, and cage technology. Regional development plans as part of a wider ICZM policy.

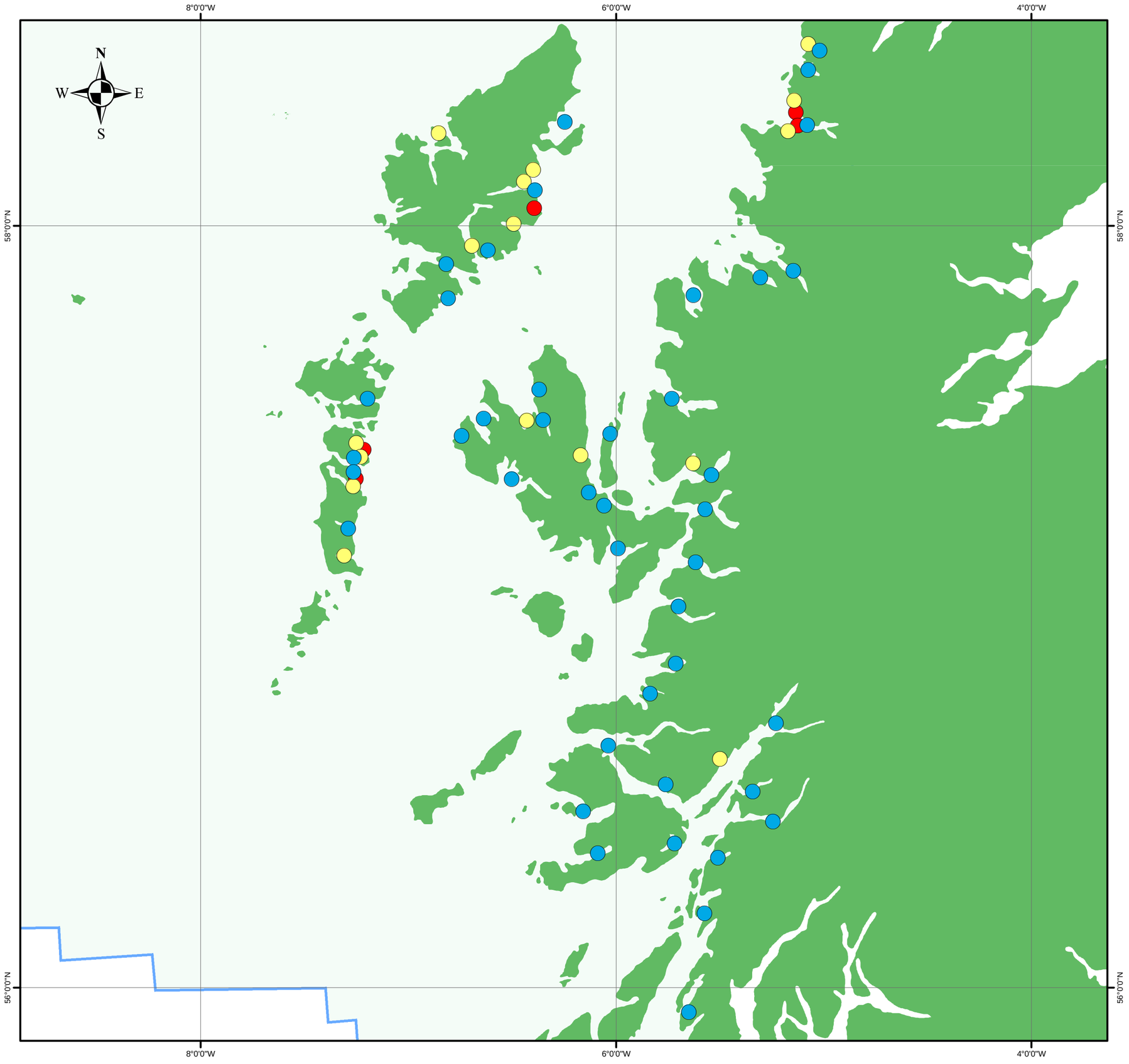
With a finite supply of available inshore sites, operators may look at offshore development if expansion of the industry is to take place. Movement offshore would also to mitigate some of the environmental effects associated with being located in inshore waters. Offshore development however, will be dependant on improved economics, safety considerations and technological development (Scottish Coastal Forum, 2002).

10.3.1.2 Shellfish

Shellfish cultivation is a low-tech industry that relies on the productivity of the existing marine ecosystem with shellfish filtering nutrients brought to them in currents. Any coastal pollution will have direct impacts on the quality of the product and its suitability for human consumption.

Environmental water quality standards for shellfish cultivation are prescribed by the EC Shellfish Waters Directive 79/923/EEC. The Scottish Executive is the competent authority but responsibility for sampling waters where shellfish are cultivated is designated to the Scottish Environmental Protection Agency (SEPA). This is to ensure they meet minimum standards necessary to support viable shellfish populations and the production of directly edible shellfish products. Areas managed in this way are designated **Shellfish Growing Waters.**

Contamination of shellfish themselves is regulated under the EC Shellfish Hygiene Directive 91/492/EEC and associated UK legislation (The Food Safety (Fishery Products and Live Shellfish) (Hygiene) Regulations (1998)). One of the responsibilities of the competent authority in each Member State is to classify shellfish production areas according to the degree of contamination by faecal indicator bacteria, namely *Escherichia coli*, in samples of shellfish flesh.



SEA 7 - Technical report on other users of the area

Figure 10.4: Mariculture: Finfish development areas in SEA7 area

Legend

Finfish development areas

Restriction category

- 1
- 2
- 3

SEA7 area

Date	October 2006	
Projection	World Mercator	
Spheroid	WGS84	
Datum	WGS84	
Data Source	Fisheries Research Services	
File Reference	P818/GIS/MXD/Final Report/ Figure 10_4 Finfish dev areas.mxd	
Checked	JH	GIS Specialist
	RS	Project Manager

dti

METOC

This classification system is shown in Table 10-7 below:

Table 10-7: Shellfish harvesting area classification categories and criteria

Classification	Level of E. coli	Treatment
A	Less than 230 *E.coli* 100 g^{-1} shellfish flesh	May go for human consumption if End Product Standard met*
B	More than 230, less than 4,600 *E.coli* 100 g^{-1} shellfish flesh in 90% of samples	Must be depurated, heat-treated or relayed to meet A Classification requirements.
C	More than 4,600, less than 46,000 *E.coli* 100 g^{-1} shellfish flesh	Must be relayed for long periods (at least two months) whether or not combined with purification, or after intensive purification to meet Classification A or B

Compliance is the responsibility of the Food Standards Agency Scotland. The degree of shellfish contamination determines the degree of depuration (purification) required before the produce may be commercially marketed.

In Scottish (and Northern Irish) shellfish beds that are being harvested commercially are managed to achieve Category A, B or C standards (ideally Category A). Managed shellfish beds are designated as **Shellfish Harvesting Areas**. In accordance with Annex II of the EU Hygiene Regulation 845/2004, the Food Standards Agency is required to establish the location and fix the boundaries of shellfish harvesting areas. These boundaries are set once a year following requests from fisherman and shellfish harvesters.

These are located within larger management areas called **Shellfish Production Areas**. These can be “any sea, estuarine or lagoon area, containing either natural beds of bivalve molluscs or sites used for the cultivation of bivalve molluscs, and from which live bivalve molluscs are taken" (EU Regulation 853/2004). Like shellfish harvesting areas, shellfish production areas are intended to meet the relevant statutory limits for either an A, B or C classification.

A single Production Area can contain one or more Shellfish Harvesting Areas, or sometimes none if commercial harvesting of a bed has occurred in the past but has now stopped. Figure 10-5 illustrates the distribution of designated shellfish areas in the SEA 7 area. Areas designated under the Shellfish Waters Directive and the Shellfish Hygiene Directive often coincide geographically and so for presentation purposes Figure 10-5 does not distinguish between the two. The large area between Barra at the southern end of the Western Isles and Tiree in the Inner Hebrides is a shellfish production area where wild razorfish (now exploited as an alternative to traditional fish species) have been contaminated by domoic acid (the cause of Amnesiac Shellfish Poisoning) caused by naturally occurring algal blooms. It should not restrict possible oil and gas activity.

Continued expansion of shellfish production is predicted over the next 25 years. This will be through a combination of more intensive use of

current sites (where practical, feasible and within the constraints of carrying capacity) as well as development of new in-shore sites freed up by a trend to move to more exposed areas by the fin-fish farming sector (Scottish Coastal Forum, 2002).

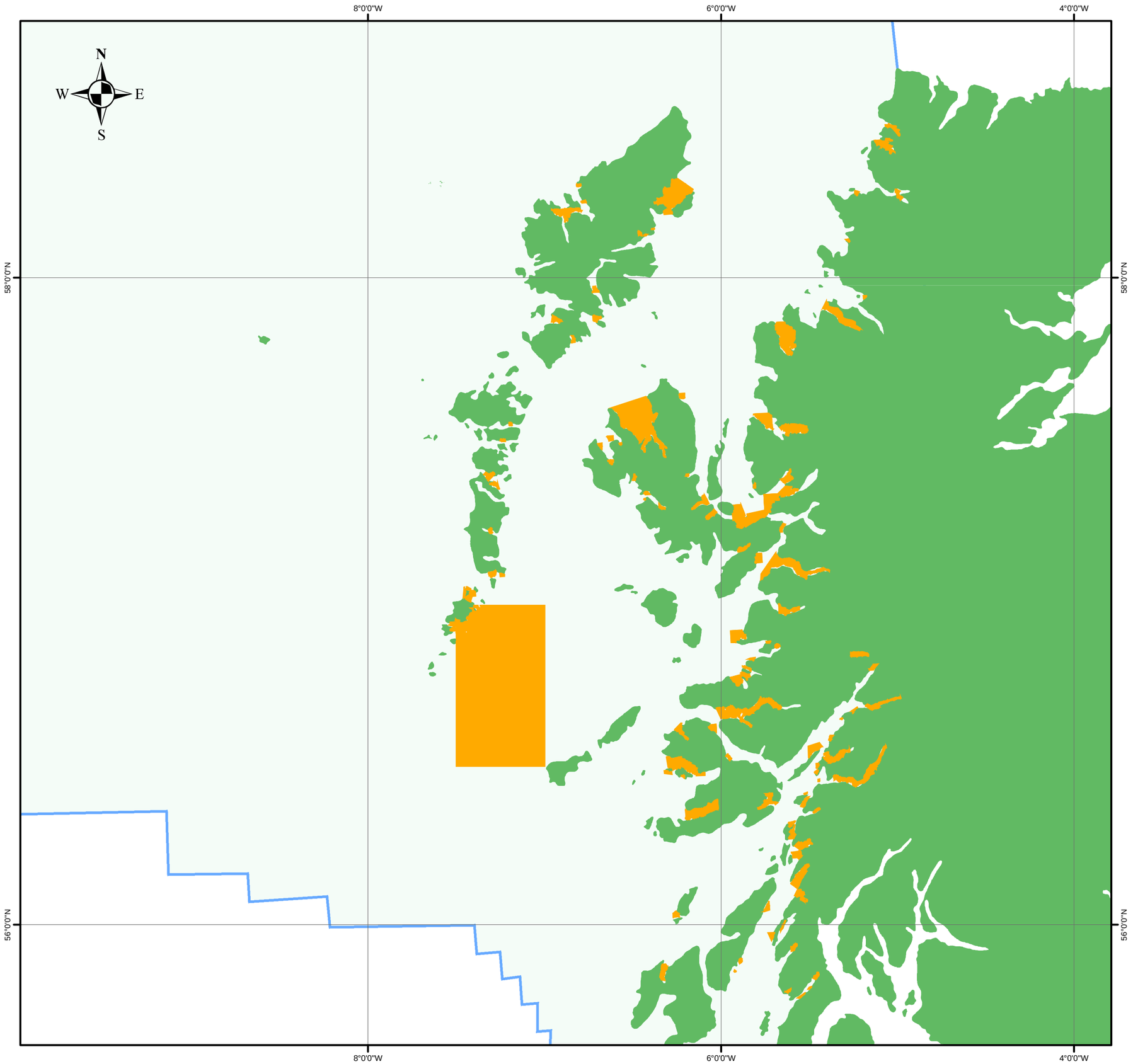
10.3.2 Northern Ireland

In Northern Ireland, DARD is currently developing a Northern Ireland Aquaculture Strategy in consultation with relevant stakeholders. A number of initiatives aimed at ensuring sustainable development of aquaculture have been announced. These include Co-ordinated Local Aquaculture Management Systems (CLAMS), the equivalent of Aquaculture Framework Plans in Scotland, and the Environmental Code of Conduct for Aquaculture Companies and Traders (ECOPACT).

DARD produced a Shellfish Aquaculture Management Plan in 2001 containing a number of strategic recommendations to promote a sustainable aquaculture industry. These include the development of an Environmental Risk Assessment package to assess aquaculture licence applications, a shellfish carrying capacity model and Code of Best Practise for shellfish farmers.

Carrying capacity models for Northern Ireland's five sea loughs (Foyle, Larne, Belfast, Strangford and Carlingford) have since been developed to predict and manage the quantity of farmed shellfish that may be produced without a negative impact on lough ecosystems (SMILE website).

The Environment and Heritage Service is responsible for monitoring shellfish waters under the EC Shellfish Waters Directive. The Food Standards Agency (NI) conducts a monitoring programme for *E. coli* in shellfish for the classification of harvesting sites.



SEA 7 - Technical report on other users of the area

Figure 10.5: Mariculture: Shellfish management areas in SEA7 area

Legend

- Shellfish management areas*
- SEA7 area

* Shellfish management areas include:
shellfish harvesting/production areas
shellfish growing waters

Date	October 2006	
Projection	World Mercator	
Spheroid	WGS84	
Datum	WGS84	
Data Source	Foof Standards Agency, Scottish Executive	
File Reference	P818/GIS/MXD/Final Report/ Figure 10_5 Shellfish man areas.mxd	
Checked	JH	GIS Specialist
	RS	Project Manager

dti

METOC

10.4 RELEVANCE FOR SEA 7

Mariculture is an important industry in the SEA 7 area and provides income and employment to coastal communities. At present developments are restricted to sheltered coastal waters and are unlikely to conflict with oil and gas developments in the study area.

However, it is possible that the industry will move into more exposed offshore locations in order to grow and relieve pressure on the finite number of inshore sites. This could conceivably lead to some conflict with proposed oil and gas activity in the SEA 7 area. In reality it is unlikely that mariculture production will move sufficiently far offshore in the foreseeable future to be a serious consideration.

Any increased risk of pollution associated with new oil and gas exploration, production, and transport in the area would be of concern the mariculture industry. For example, the Braer spill had severe impacts on the fish farming industry in the Shetland Islands.

10.5 SOURCES OF INFORMATION

Crown Estate website. *Marine fish farming*. http://www.crownestate.co.uk/53_fish_farming_04_02_07.htm

Fisheries Research Services. *Scottish Shellfish Farm Production Survey 2004*.

Fisheries Research Services. *Scottish Fish Farms Annual Production Survey 2004*.

Fisheries Research Services (2005). *Locational Guidelines for the Authorisation of Marine Fish Farms in Scottish Waters: Category 1, 2 and 3 areas designated on the basis of FRS predictive models to estimate environmental sensitivity of sea lochs.*

Personal Communication. Tom Cowan, Fisheries Officer, Department of Agriculture and Rural Development, Northern Ireland.

Scottish Coastal Forum (2002). *A strategy for Scotland's coasts and inshore waters: Position paper by the Aquaculture and Seabed Harvesting Task Group*.

Scottish Executive (1999). *Policy Guidance Note: Locational Guidelines for the Authorisation of Marine Fish Farms in Scottish Waters*. Available at:

http://www.scotland.gov.uk/library2/doc06/mff-00.htm

SMILE. Sustainable *Mariculture in Northern Irish Lough Ecosystems*. Available at:

http://www.ecowin.org/smile/index.htm

11 TOURISM AND RECREATION

11.1 INTRODUCTION

Tourism is one of Scotland's largest industries providing direct employment for 200,000 people and generating spending of more than £4 billion a year. The sector is also important in Northern Ireland, creating 20,000 full time equivalent jobs and generating spending of over £650 million (NITB, 2005). The recreational attractions of both Scotland's and Northern Ireland's coastal zones are an important and integral part of what the countries offer to visitors and residents alike.

Tourism plays an important role in the social, economic, environmental and cultural well-being of Scotland and Northern Ireland, and rural areas such as the coastal regions of SEA 7 depend on the industry for jobs and infrastructure.

There is a lack of reliable statistical information on coastal tourism and recreation. What statistics do exist tend to be national or for administrative regions which include information for inland areas. It is difficult to obtain participation figures for coastal recreational activities because of their informal nature, the range of sites used and the lack of affiliation of participants to clubs or governing bodies of sport. Accordingly the presented regional statistics about tourism and recreational activity and revenue should be treated with caution when applying them to the coastal and marine area.

11.2 ACTIVITY IN SEA 7 AREA

11.2.1 Tourism in Scotland

The Scottish coastline in the SEA 7 area is characterised by unspoilt and spectacular coastal scenery with few large population centres. It appeals to people who want to 'get away from it all' and enjoy nature and a quieter way of life. It is also popular with people who enjoy walking and other outdoor activities.

In the South, the picturesque and bustling fishing port of Oban is the unofficial capital of the West Highlands and gateway to the scattered islands of the Inner Hebrides, including the island of Mull. These offer remote beaches, wildlife and excellent opportunities for surfing and sailing. Further north is Fort William, a major touring centre for the West Highlands and the ferry-port of Mallaig with access to the small Isles and the island of Skye. The area is characterised by some of the most spectacular mountain scenery in Scotland including Britain's highest peak, Ben Nevis.

Spectacular mountains and coastal scenery continue into the north of the SEA 7 area, into Wester Ross and North West Sutherland, and the Western Isles where settlements become smaller and the sense of wilderness becomes greater. Tourism provides an important source of income for rural and island communities here. However their remoteness means that they prove difficult and costly to access for

many tourists and this is reflected in lower tourist numbers visiting these regions than areas in the south of the SEA 7 area.

Information about the activities undertaken within the SEA 7 regions is shown in Table 11-1. It demonstrates that nature watching, walking and fishing are particularly important in the region, along with visiting castles and monuments. A visitor survey in the Western Isles also showed outdoor activities and nature were important. The most commonly cited reasons for visiting were the natural environment (44% overall), and to a lesser extent the cultural environment (around 6% overall) (Macpherson Research, 2000). More than half of visitors took part in one or more sporting activity, most commonly walking and rambling of under 8 miles (51%), or hillwalking of more than 8 miles (20%). The next most popular sporting activities were cycling or mountain biking (10%), swimming (8%), fishing (8%) and sailing / boat trips (7%).

Table 11-1 Tourist activities in the SEA 7 regions compared to Scotland as a whole (2003 data).

Activity	UK			Overseas
	Holiday Trips %			Holiday Trips %*
	Highlands	Argyll and the Isles	Scotland	Overseas visitors to Scotland %
Visiting castles, monuments, churches, etc.	44	49	39	83
Visiting museums, galleries etc.	28	35	29	58
Watching performing arts/cinema	12	10	16	16
Field/nature study	28	24	17	9
Walking (more than two miles)**	45	40	33	39
Swimming	20	21	21	5
Golf	7	7	8	2
Watching any sport/sporting event	4	4	7	2
Fishing	10	12	6	1
Any 'activity' undertaken	95	93	91	85

*Based on 1996 data

Activities in bold are particularly popular in SEA 7 when compared to Scotland as a whole.

Sources: Visit Scotland. Tourism in Highlands of Scotland (HOST) 2003 and Visit Scotland. Tourism in Argyll, The Isles, Loch Lomond, Stirling and the Trossachs (AILLST) 2003.

11.2.1.1 Attractions

- **St Kilda** rises from the ocean 41 miles west of North Uist in the Western Isles. It comprises majestic scenery, the largest colony of seabirds in northern Europe, and a marine environment that has made St Kilda renowned as one of the foremost dive sites in Europe. A fragile community clung on for at least 4,000 years in this most remote of places, catching seabirds for food, feathers and oil, and farming some meagre crops. Now uninhabited by people, the Soay sheep remains, almost unchanged in 4,000

years and is one of the most primitive breeds in the world. The islands have been designated extensively for their natural, cultural and landscape features, and are Scotland's first natural World Heritage Site, a marine World Heritage Site, and since July 2005 one of only 24 'mixed' World Heritage Sites in the World.

- **Staffa** lies off the islands of Mull and Iona and formed from the same basalt columns that make up the Giant's Causeway across the water in Northern Ireland. Boat trip visit to site to explore the geology, Fingal's Cave, and the wildlife of the area.
- **Hebridean Whale and Dolphin Trust Marine Discovery Centre** (Tobermory, Mull) has displays, guided walks, children's activity days and illustrated talks about whales, dolphins and other Scottish marine life.

11.2.2 Tourism in Northern Ireland

The SEA 7 area intersects with the north coast of Northern Ireland within the Causeway Coast and Glens Regional Tourism Organisation region. This section of coastline holds significant potential for tourism and recreation with beautiful landscapes/seascapes and a number of attractions including the Giant's Causeway itself, an array of basalt columns set amid spectacular coastal scenery.

The region receives the second largest share of Northern Ireland's tourist revenue (23%), just behind the capital, Belfast (28%), and the majority of visitors to the region remain on the North coast. The Causeway Coast and Glens Tourism Management Plan (2004) has identified the coast and Giant's Causeway as key development areas. It aims to establish a major coastal tourist trail, to develop activities, events and heritage information in the area, and to develop Rathlin Island and Gobblins cliff path as tourist attractions.

11.2.2.1 Attractions

- **Giant's Causeway** – an array of basaltic columns extending into the sea formed as a result of volcanic activity. The feature is associated with the legend of Finn MacCool, the Irish giant who built the causeway to reach Scotland and challenge to Scottish giant on the other side. It is Ireland's only World Heritage Site.
- **Rathlin Island** lies just over 6 miles north of Ballycastle, County Antrim, and 14 miles from the Mull of Kintyre, Scotland. It is almost treeless and most of the coastline is cliff, much of it over 200ft high. Rathlin is popular with birdwatchers, geologists, walkers, botanists, divers and sea anglers.
- **Carrick-a-rede Rope Bridge** is one of Northern Ireland's best-loved attractions. It forms part of the Causeway Coastal Way and comprises a rocky island connected to the cliffs by a rope bridge. The area is a Site of Special Scientific Interest for its unique geology, flora and fauna and is fantastic for bird-watching.

Table 11-2 Domestic and international tourism visits and spending in the SEA 7 area, and wider context. 2003 Figures unless otherwise stated.

	Visits (million)	Spend (£million)	% employment (2002)
Scottish Highlands*	2.9	606	10.6
Argyll, The Isles, Loch Lomond, Stirling and the Trossachs*	2.4	461	9.9
Western Isles	0.2	39	-
Causeway Coast and Glens (2004)	0.8	100	-
SEA 7 Regions	6.3	1,206	-
Scotland	18.3	4,433	9.0
Northern Ireland (2002)	3.1	651	-
UK (2002)	191.5	38,317	-

* Includes substantial areas outside of the SEA 7

11.2.3 Recreational Activities

11.2.3.1 Beaches and bathing

The Scottish coastal area of the SEA 7 is developed for tourism in a small number of locations (such as Inveraray, Oban, Mull and Iona) leaving the rest of the coast undeveloped. Most beaches in the area are rural and the number of visitors is low, determined primarily by proximity to population centres, accessibility and facilities.

Beach tourism and leisure is more developed on Northern Ireland's north coast. Popular beaches include Ballycastle, Whitepark Bay, Murlough Bay, and Portballintrae near the Giant's Causeway.

The European Blue Flag Campaign awards 'Blue Flags' to resort bathing beaches that meet guideline standards of the EC Bathing Water Directive as well as other criteria on beach facilities, cleanliness and safety. There are no Blue Flag beaches in the Scottish SEA 7 area, not because bathing water quality is poor in the region, but because there are no significant beach resorts in the area. The resort beach at Ballycastle in the Northern Ireland part of the study area was awarded a Blue Flag in 2005. Portrush East Strand and Portrush White Rocks had Blue Flag awards in 2005, but are just outside the study area to the east.

11.2.3.2 Walking

Along with visiting cultural heritage sites, walking is the most popular activity undertaken by visitors to the SEA 7 region. It provides an opportunity to explore and appreciate the unspoilt and dramatic coastal landscapes, one of the primary reasons that people visit the area, and also the opportunity to view wildlife. Recognised Scottish coastal walks in the region include:

- West Side Coastal Walk – Lewis

- Glenbrittle coastal walk – Isle of Skye
- Old Man of Stoer – North of Lochinver
- Calanais Stones Walk – Lewis
- Leacanashie Circular, Lochcarron, Wester Ross, West Highlands
- Machrihanish, Kintyre peninsula
- Mingary Pier, Kilchoan, Ardnamurchan, West Highlands
- Rhenigidale Circular Walk, North Harris, Western Isles
- Rubha Reidh to Camas Mor, Wester Ross, West Highlands
- Samalaman – Smirisary, Sound of Arisaig, Moidart, West Highlands

In Northern Ireland the 33 mile (52km) Causeway Coast Way skirts much of the coastline within the SEA 7 area, from Portstewart to the west of the SEA 7 area to Ballycastle, within the Causeway Coast and Glens Area of Outstanding Natural Beauty. Highlights include World Heritage Site The Giants' Causeway, Dunluce Castle ruins, and the Carrick-a-rede Rope Bridge.

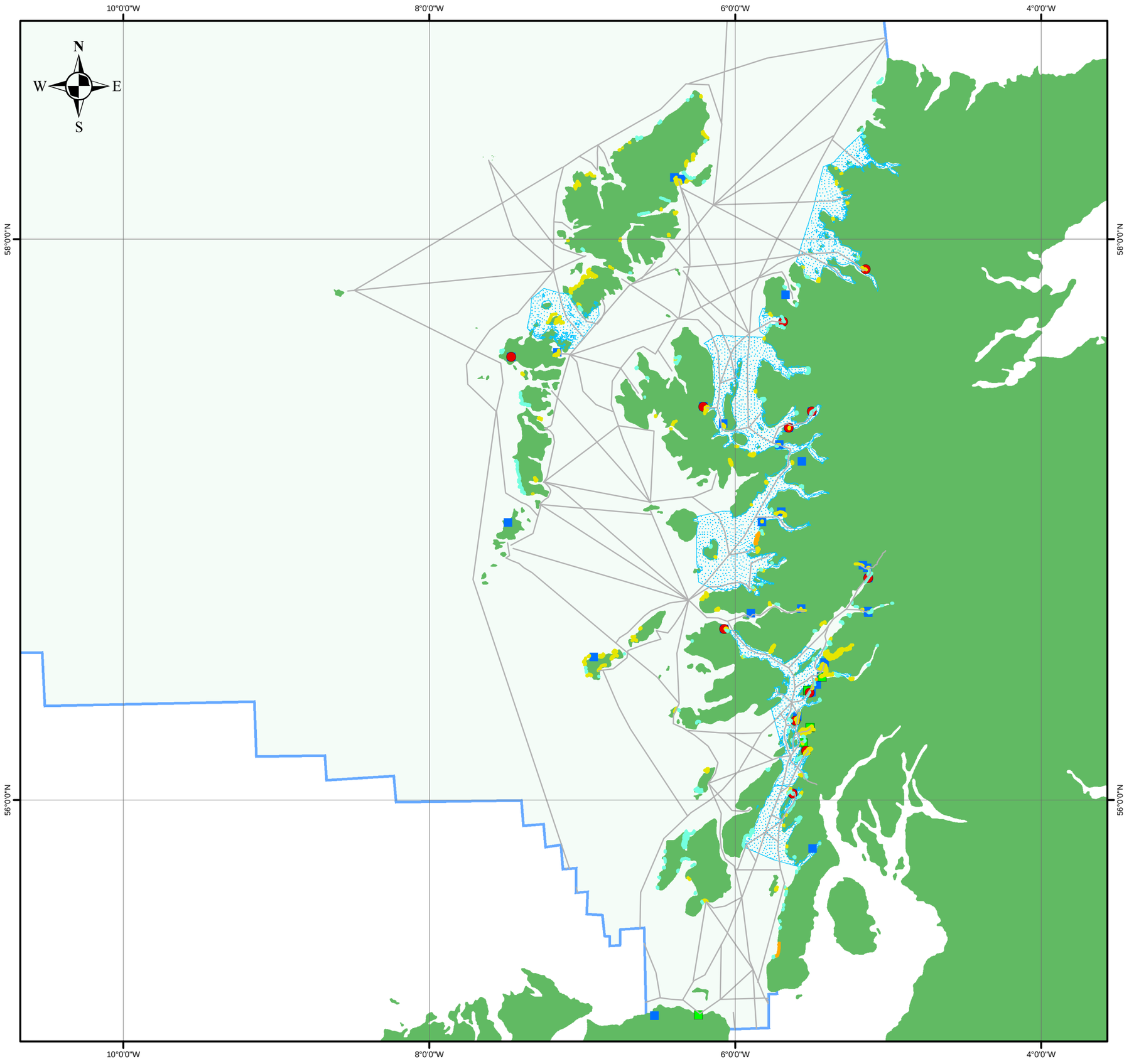
11.2.3.3 Sailing

The Scottish west coast lochs and islands are popular yachting and sailing areas and local fishing ports and sheltered sea lochs are regularly used by visiting leisure craft. However, due to the size of the region, the relatively low population density and distance between berthing facilities, activity is widely spread. Most activity occurs in the more sheltered coastal waters but particular routes are used to traverse between the west coast on Scotland, Northern Ireland and between islands. The Caledonian Canal, which links the Scottish Northeast coast to the west coast at Forth William, is a centre of activity in the region, as are the protected waters of the Minches.

On the North Antrim coast of Northern Ireland, Ballycastle marina, with 74 berths, offers excellent scope for marine travel around Ireland and to and from Scotland's island-studded western coast. The marina holds a Blue Flag award. Figure 11-1 summarises the distribution known recreational activities in the SEA 7 area including Royal Yachting Association activities, bathing waters and marinas.

11.2.3.4 Other Sports

Water-based leisure in the region is small in scale compared to areas with larger population centres. In addition to sailing, sports like sea angling, swimming, surfing, canoeing, windsurfing and scuba diving are important. There are also a number of coastal golf courses.



SEA 7 - Technical report on other users of the area

Figure 11.1: Tourism and recreation in SEA7 area

Legend

- RYA clubs
- Marinas
- RYA training areas
- RYA cruising routes
- Bathing waters*
- Shoreline waters~
- Recreational waters~
- RYA sailing areas
- SEA7 area

* Waters required to achieve more onerous guideline standards under the EC Bathing Waters Directive

~ Waters required to achieve mandatory standards under the EC Bathing Waters Directive

Date	October 2006	
Projection	World Mercator	
Spheroid	WGS84	
Datum	WGS84	
Data Source	RYA, SEPA	
File Reference	P818/GIS/MXD/Final Report/ Figure 11_1 Tourism.mxd	
Checked	JH	GIS Specialist
	RS	Project Manager

METOC

The Sea 7 area is known for its clear waters and diverse marine life. There is localised diving around the population centres in the region and some dive boat charters to more remote areas such as St Kilda. Diving in Northern Ireland takes place at a number of sites including Rathlin Island, Portmuck and Whitehead.

11.2.3.5 Wildlife Tourism

The unspoilt nature of the west Scotland coastline is reflected in its rich wildlife with many wildlife sites of national and international significance. Marine wildlife tourism generated £9.3million in direct income for the Highlands and Islands whilst supporting some 400 jobs (Marley *et al.*, 1998). The most significant proportion of wildlife tourism is whale tourism which generated £7.8 million in the western Highlands and Islands according to a 2001 report (Hebridean Whale and Dolphin Trust, 2001). In the Mull area alone, a 1999 study estimated that £650,000 of direct spend was generated and 22 jobs supported. This demonstrates how coastal and marine wildlife watching is important for many remote rural and island communities and businesses.

11.3 Relevance to SEA 7

The natural environment provides the biggest attraction for visitors to Scotland. Scenery, wild landscapes, unspoilt environment, nature and wildlife together comprise four out of the top five qualities attributed to Scotland (Tourism Attitudes Survey, 2001). It follows that protection and enhancement of the environment is necessary for sustainable tourism.

The pollution arising from the grounding of the "Braer" on Shetland's coast demonstrated the vulnerability of tourism to external incidents. Any future oil and gas development in the SEA 7 area should give due consideration to environmental impacts given, amongst other reasons, the link between the natural environment and tourism in the area. Furthermore, given the region's high landscape value, any visual impacts on the coastal landscape as a result of visible oil and gas infrastructure should be considered.

11.4 Sources of Information

Hebridean Whale and Dolphin Trust (2001). Whale-watching in West Scotland. Report to DEFRA, July 2001

Macpherson Research (2000). Western Isles Visitor Survey 1999. Prepared For Highlands and Islands Enterprise, Western Isles Enterprise, Comhairle nan Eilean Siar and Western Isles Tourist Board. Available at:

http://www.cne-siar.gov.uk/factfile/economy/Westernisles-visitorsurvey.pdf

Macpherson Research (2003). Western Isles Tourism Facts & Figures Update. Review of 2002 Season. Report for Western Isles Enterprise & Western Isles Tourist Board.

Marley, D., Nautilus Consultants and James Carter (1988). Marine Wildlife Tourism: Development of a Quality Approach in the Highlands and Islands. A report for the Tourism & Environment Initiative and Scottish Natural Heritage.

National Statistics Online. Tourism 1996 and 2002: Regional Trends 38. Available at:

http://www.statistics.gov.uk/STATBASE/ssdataset.asp?vlnk=7854

Northern Ireland Tourist Board (2005). Regional Tourism Estimates 2004. Available at: www.nitb.com

Northern Ireland Tourist Board (2004a). Causeway Coast and Glens Tourism Masterplan (2004).

Northern Ireland Tourist Board (2004b). A Strategic Framework for Action 2004-2007. Available at:

http://www.nitb.com/article.aspx?ArticleID=248

Tourism in Scotland 2003. Visit Scotland. Available at:

www.scotexchange.net/

Visit Scotland. *Tourism in Highlands of Scotland (HOST) 2003*. Available at:

www.scotexchange.net/know

Visit Scotland. Tourism in Argyll, The Isles, Loch Lomond, Stirling and the Trossachs (AILLST) 2003. Available at:

www.scotexchange.net/know

Visit Scotland and Scottish Natural Heritage (2002). Tourism Attitudes Survey 2001.

Visit Scotland website. Coastal walks in the SEA 7 area. Available at:

http://walking.visitscotland.com/walks/westhighlands/212854

Warburton, Parsons, Goodwin (1999). Marine Wildlife Tourism and Whale Watching off the Island of Mull. Report to the Hebridean Whale and Dolphin Trust.

12 OTHER LOCALLY IMPORTANT ACTIVITIES

12.1 INTRODUCTION

The number of people employed in agriculture, forestry and fishing in the SEA 7 coastal area is significantly higher than the national averages for Scotland and Northern Ireland because of its rural nature, low population density and the absence of large settlements and heavy industry. There are no nuclear power stations in the coastal area. Mining, quarrying and construction are important at some locations.

12.2 ACTIVITY IN SEA 7 AREA

12.2.1 Coastal quarrying

Coastal quarrying is carried out where large volumes of aggregates can be transported economically over long distances by sea to meet demand where traditional sources of aggregates are either exhausted or constrained. Government planning policy assumes the need for greater supplies of aggregates from sources other than traditional land-based quarries in the future.

Glensanda on the Morvern peninsula in the West Highlands is one of the largest quarry operations in the world. It provides granite for use in all types of civil engineering projects in the UK and across Europe, particularly in the southeast of England where granite was used to construct the Channel Tunnel. Glensanda's port facility exists for the export of stone for the adjacent quarry. Granite can be loaded onto ships at the rate 6,000 tonnes per hour, which means that a typical 75,000 tonne cargo can be loaded at the harbour in under 24 hours (Foster Yeoman website). The port handled 5.2 million tonnes in 2004, which was almost entirely outward, and constituted 24% of all traffic from west Scotland ports in 2004 (Focus on Ports, 2006). It is the most important port in the SEA 7 area. The quarry employed about 200 people in 2005 and brings millions of pounds into the local economy.

There are numerous smaller coastal quarries in the SEA 7 area. These include sand and gravel quarries along the western coast of the Western Isles, and near Oban, Fort William, The Klyle of Lochalsh (Skye) and Charlestown on the Scottish mainland coast. In addition to Glensanda, various coastal rock quarries are present in the Scottish sector at Charlestown, near Salen on the Isle of Mull, near Broadford on the Isle of Skye, and near Port Askaig on Islay. There are no coastal quarries in the Northern Ireland sector of SEA 7, although several quarries are present further inland (Careron *et al*. 2005).

12.2.2 Coastal Agriculture

Almost all of the coastal land in the west Highlands, Argyll and Bute and the Western Isles has poor agricultural value and this restricts farming

developments and agricultural intensification. Much of the coastal agricultural land is used for rough grazing, including sand dune and saltmarsh areas (Dunbar and Fowler, 1997). Crofting is the dominant agriculture in the region and crofters often supplement their income from other sources including mariculture (more typically shellfish) and tourism.

12.2.3 Seaweed collection

In the west of Scotland seaweed has been harvested since the early 18th century to the 1930s for use in glass and soap production and as a source of iodine. At this time the industry employed thousands of people. Since then it has been harvested as a source of alginate (used in the manufacture of products such as ice-cream, jelly, stamps, lipstick, medical dressings and beer). The industry's peak in recent years was in the 1970s but, although it is still harvested for alginates, the industry in Scotland has declined in recent years, partly due to competition from producers in Norway, Iceland, South Africa, Australia, and Chile.

Crofters in the Western Isles still collect dried kelp from the shore and stack it on drying racks until it is ready to be taken to the mainland. ISP Alginates manufacture alginates from seaweed at their plant in Girvan. The company buys small quantities of air-dried *Laminaria* from collectors in the Hebrides (Tiree and South Uist), but only in the order of a few hundred tonnes per year. This is only a fraction of previous levels representing a significant loss for some crofters. One other company, Tavay Organics, has been using seaweed in the manufacture of fertilizer at Keose on Lewis, buying knotted wrack from local collectors. However, the company is no longer believed to be active (Scottish Executive Central Research Unit, 2001).

12.3 Relevance to SEA 7

Both coastal quarrying and agricultural activity provide employment at a local scale. Transport of quarry products will contribute to shipping activity levels in the SEA area. However, these activities are unlikely to be a significant restriction on any future oil and gas development.

12.4 Sources and information

Cameron, D.G., Bartlett, E.L., Highley, D.E., Lott, G.K. and Hill, A.J. (2005). Directory of Mines and Quarries 2005: 7th Edition (Keyworth, Nottingham, British Geological Survey).

Department for Transport. *Focus on Ports 2006.* Available at:

http://www.dft.gov.uk/stellent/groups/dft_transstats/documents/downloadable/dft_transstats_035417.pdf

Dunbar, M. J. and Fowler, S.L. (1997) Land use. *In: Coasts and seas on the United Kingdom. Regions 15 & 16. North-west Scotland: the Western Isles and west Highland.* Ed. By J.H. Barne, C.F. Robson, S.S. Kaznowska, J.P. Doody, N.C. Davidson & A.L. Buck, 198-201.

Peterborough, Joint Nature Conservation Committee. (Coastal Directories Series).

Foster Yeoman website. Glensanda quarry. Available at:

http://www.foster-yeoman.co.uk/index.cfm?fuseaction=web.ObjectId.1581

Quarry Products Association Website. Available at:

http://www.qpa.org/new_iss.htm

Scottish Executive Central Research Unit (2001). Flora Celtica: Sustainable Development of Scottish Plants. Chapter 4: The Seaweed Industry. Available at:

http://www.scotland.gov.uk/cru/kd01/orange/sdsp-06.asp

13 COASTAL AND MARINE MANAGEMENT INITIATIVES

13.1 INTRODUCTION

The SEA 7 area includes a range of habitats and species and provides an important resource for a variety of different coastal and maritime users. A number of management initiatives and schemes seek to balance the environmental sensitivity of the coastal and marine area with its resource potential. These initiatives apply to a range of coastal users rather than the more specific management initiatives described previously. They include:

- Coastal planning initiatives
- Coastal water quality initiatives
- Coastal and marine nature conservation initiatives
- Integrated Coastal Zone Management initiatives

13.2 COASTAL DEVELOPMENT PLANNING

Decisions on whether to permit building on land or changes to its use are usually made by local authorities in the UK and are guided by development plans. These plans are based on National Guidelines.

13.2.1 Scotland

In Scotland National Planning Policy Guidelines (NPPG) 13 (1997) take account of recent and likely development pressures on the coast, new nature conservation designations, and the Government's commitment to sustainable development and other relevant Government policies.

The guidelines:

- set out how planning can contribute to achieving sustainable development and also maintaining and enhancing biodiversity on the coast
- highlight the need to distinguish between policies for the developed, undeveloped and isolated coast
- indicate how planning authorities should respond to the risk of erosion and flooding in the coastal zone
- outline policy guidance for developments which may require a coastal location
- identify the action to be taken by planning authorities in their development plans and in development control decisions.

NMPPG 13 has been transposed into strategic planning policy through the creation of development plans.

Development plans determine how much future development may take place in an area, where that development will be permitted and where it will be restricted. In the Scotland, as elsewhere in the UK, development plans have two components - the structure plan and the local plan. A structure plan for an area takes a broad, long term view of development and considers its likely scale and likely locations. It sets out the strategic framework for the use of land and shows the scale and direction of development required. The plan will balance the needs of the region for jobs, houses and services with a requirement to safeguard and enhance the environment. It incorporates changing circumstances and should reflect the current and future interests of the community. Local plans operate at a lower strategic level, setting out detailed policies and proposals to guide development, typically in smaller, more specific areas within the structure plan area.

Within the SEA 7 area there are 3 structure plans, one for each of the administrative regions of the Highlands, the Western Isles and Argyll and Bute, and a number of local Plans (see Table 13-1).

13.2.2 Northern Ireland

The Department of the Environment is responsible for planning control in Northern Ireland. The Planning Service, an Agency within the Department, administers its planning functions. It has published the Regional Development Strategy (RDS), 'Shaping Our Future', which is a strategy for the development of the whole of Northern Ireland up to 2025. It contains a spatial development strategy and related strategic planning guidelines.

The Department of the Environment, in conjunction with the Department of Regional Development, is currently working towards the production of a full suite of planning policy statements. These are gradually replacing the Planning Strategy for Rural Northern Ireland. They contain policies on landuse and other planning matters that apply to the whole of Northern Ireland and specifically address types of development and/or development considerations, e.g. Planning and Nature Conservation, Industrial Development and Planning, Archaeology and the Built Heritage.

In Northern Ireland, development plans may be in the form of area plans, local plans or subject plans. They apply the regional policies at the appropriate local level and are the equivalent of Local Plans in Scotland.

Table 13-1 Local planning documents in the SEA 7 area

	Local Authority	Adopted
Scotland		
Highland Structure Plan	The Highland Council	Mar 2001
Sutherland Local Plan*	The Highland Council	Nov 2007
Ross and Cromarty East Local Plan	The Highland Council	Pending
Lochaber Local Plan	The Highland Council	Feb 1999
Western Isles Structure Plan	Comhairle nan Eilean Siar Western Isles Council	Dec 2003
Western Isles Local Plan	Comhairle nan Eilean Siar Western Isles Council	Pending, adoption late 2006?
Argyll and Bute Structure Plan. Currently no local plan for the Loch Lomond and Trossachs National Park area. A national park plan is in the final drafting stages following consultation.	Argyll and Bute Council	Nov 2002
Argyll and Bute Local Plan (will replace several local plans included in Structure Plan)	Argyll and Bute Council	Pending
Northern Ireland		
Regional Development Strategy	Department of the Environment Northern Ireland (DOENI)	-
Northern Area Plan 2016	DOENI in consultation with	Draft Plan published May 2005

13.3 COASTAL PROTECTION

13.3.1 Shoreline Management Plans (SMPs)

SMPs provide large scale assessment of the risks associated with the coastal processes of erosion and flooding and present a policy framework to reduce these risks. They set out to define a strategy for coastal defence for a specified length of coast, taking account of natural coastal processes and human and other environmental influences and needs.

Shoreline management plans are well established throughout England and Wales, but have not been adopted extensively in Scotland and Northern Ireland. This is in part due to generally harder rock formations and indented coastline, meaning that erosion has not been a problem to the same degree as in other parts of the UK.

However, a number of reports were published in 2000 describing coastal cells in Scotland. Coastal cells are natural divisions of the coastline separated at points where there are breaks in the movement, alongshore, of beach material. Knowledge of these can be invaluable in the strategic planning of coastal defence initiatives and coastal

management, and also to provide an inventory of data required for the preparation of Shoreline Management Plans.

A shoreline coastal erosion assessment was conducted for the Western Isles Council in 1995 (HR Wallingford 1995), and an assessment of the Western Isles as a coastal cell was conducted in 2000 (HR Wallingford, 2000). However, these studies have not reached the status of a formal Shoreline Management Plan for the area. Other than these studies, there are no Shoreline Management Plans in SEA 7 area.

13.4 COASTAL WATER QUALITY INITIATIVES

The UK National Marine Monitoring Programme (NMMP) was established to provide a coordinated approach to environmental monitoring in coastal and estuarine areas and consists of 30 sites around the UK. The programme brings together the statutory marine monitoring agencies throughout the UK to provide reliable and comparable information for the UK coastal area.

The NMMP meets the UK's commitments to contribute to the Joint Assessment and Monitoring Programme of the Oslo and Paris Commission OSPAR/JAMP, and the need to carry out monitoring programmes to meet the requirements of a range of EC Directives, including:

- Dangerous Substances (76/464/EEC)
- Shellfish Waters (79/923/EEC)
- Shellfish Hygiene (91/492/EEC)
- Fisheries Products (91/493/EEC)

The Scottish Environmental Protection Agency (SEPA) in Scotland and the Environment and Heritage Service (EHS) in Northern Ireland operate their own classification schemes for estuarine and coastal waters. The Northern Ireland Estuarine and Coastal Waters Classification Scheme (NIECWCS) was introduced in 1996 and is based upon the Scottish Estuarine and Coastal Waters Classification Scheme. These monitoring schemes form part of the UK NMMP.

The two classification schemes have 4 class categories; Excellent, Good, Unsatisfactory and Seriously Polluted. For each of the four quality classes there are criteria covering aesthetic condition, biological condition and chemical condition.

In both Scotland and Northern Ireland, the aim is that all monitored waters should be Good (Class B) or better. Any waters achieving better than these targets currently shall have the higher target applied to them, with no downward movement between classes. For some estuarine and coastal waters impacted by port activities, like dredging of navigational channels, a specific derogation may be accepted in line with the ‘heavily modified water bodies’ proposed under the Water Framework Directive.

13.4.1 EC Water Framework Directive

The Water Framework Directive (2000/60/EC) (WFD) establishes a new legal framework for the protection, improvement and sustainable use of the water environment. It introduces new, broader ecological objectives designed to protect and where necessary restore the structure and function of aquatic ecosystems. It also introduces management at the river basin/catchment level, ensuring integration of freshwater, groundwater, transitional and coastal waters. The WFD defines coastal waters as those within 1 nautical mile of the coast. However, the UK has voluntarily expanded implementation of the Directive out to the 3nm limit.

In managing the water environment, UK agencies will assess the health of the aquatic environment as a whole. This means that, in addition to pollution monitoring, factors such as quality, quantity and physical structure, and ecological indicators such as health of animals and plants will be important.

The Directive was transposed into National Law through the following legislation:

- Scotland: Water Environment and Water Services (Scotland) Bill 2003
- Northern Ireland: Water Environment (Water Framework Directive) Regulations (Northern Ireland) 2003.

Existing assessment and monitoring programs will be amended and expanded where necessary to meet the new requirements of the WFD. A partnership of the UK environment and conservation agencies, the United Kingdom Technical Advisory Group (UKTAG) provides coordinated advice on technical aspects of the implementation of the Directive. Implementation is ongoing. Much work has been completed on designing protocols for identifying and characterising water bodies (including coastal and transitional waters) according to their physical characteristics and assessing the risk of these water bodies failing to achieve the WFD's environmental objectives. Work on a revised monitoring framework and environmental objectives are due for completion in 2006 (Table 13-2).

Table 13-2: Timetable for implementation of the Water Framework Directive requirements

Year	Requirement
2000	Directive entered into force (Article 22)
2003	Transpose Directive into domestic law (Article 24) River Basin Districts (RBDs) and International River Basin Districts (IRBDs) identified and the competent authorities that will be empowered to implement the Directive, appointed (Article 3)
2004	Complete characterisation and assessment of impacts of human activity RBDs (Article 5) Complete first economic analysis of water use Establish a register or registers of Protected Area in each River Basin District (Articles 6&7)

Year	Requirement
2006	Set up environmental monitoring programmes within each RBD (Article 8) Publish a work programme for producing the first RBMPs (Article 14) Establish environmental quality standards for priority substances and controls on principle sources (Article 16)
2007	Publish an interim overview of the significant water management issues in each RBD for consultation (Article 14)
2008	Publish full draft RBMPs for consultation (Article 14)
2009	Finalise and publish first RBMPs (Article 13) Finalise programme of measures to meet objectives (Article 11)
2012	Ensure programme of measures is fully operational (Article 11) Publish timetable and work programme for second RBMPs Report progress in implementing measures (Article 15)
2013	Review, for the first RBMP, characterisation and impact assessments and economic analysis of water use Publish, for consultation, an interim overview of the significant water management issues for second RBMP.
2014	Publish second draft RBMPs for consultation.
2015	Achieve environmental objectives set out in first RBMPs i.e. 'Good Status' achieved (Article 4). Finalise and publish second RBMP with revised Programme of Measures (Articles 13, 14 & 15).

Scotland is part of three River Basin Districts. The SEA 7 area incorporates part of the “Scotland RBD” which covers most of the country. Northern Ireland is also part of three River Basin Districts. SEA 7 falls within the North Eastern River Basin District. Once the first River Basin Management Plan is produced, an ongoing six year cycle of review, reassessment and revision will take place.

13.4.2 Other Water Quality Initiatives

A number of specific, targeted water quality initiatives exist in Scotland and Northern Ireland associated with European directives. These include:

- The Urban Wastewater Treatment Directive - deals with the general standards for collecting, treating and disposing of waste water into rivers, estuaries and coastal waters and requires secondary treatment of waste water into such waters.
- EC Bathing Waters Directive (76/160/EEC) - requires the identification, monitoring and reporting of compliance with the mandatory standards set by the EU for bathing waters. Bacteria are considered to be the main pollutant.
- EC Shellfish Waters Directive (76/923/EEC) - Coastal and brackish waters that support shellfish harvested for human consumption are designated and protected to maintain water quality standards. These waters are called Shellfish Harvesting Areas.

- The Nitrates Directive (91/676/EEC) - has the objectives of reducing water pollution caused or induced by nitrates from agricultural sources and preventing further such pollution. Nitrates are a health hazard in waters which are used as sources of drinking water and contribute to eutrophication, especially in coastal and marine waters.

The Water Framework Directive will eventually integrate or replace these Directives. It is unlikely that the WFD will have a significant effect on the oil and gas industries. Few wells have been drilled in the past within 3 nm of the coast and there are no current production installations within the 3nm. Development projects are already subject to stringent environmental standards, under the Offshore Petroleum Production and Pipelines (EIA) Regulations 1999.

13.5 COASTAL AND MARINE NATURE CONSERVATION INITIATIVES

Coastal and marine nature conservation is delivered primarily through the designation of areas for the protection of valued habitats and species. Designated sites usually have management plans to meet their nature conservation objectives. They may consider human use and involve community involvement. In the planning of new developments and activities, consideration must be given to any potential negative impacts on nature conservation sites.

13.5.1 The Natura 2000 Network

Natura 2000 is a European network of protected sites which contain valuable natural habitats and species which are rare, endangered or vulnerable in the European Community. Implemented under the 1992 EC Habitats Directive, the Natura 2000 network aims to conserve a number of good examples of European habitats and associated communities as well as endangered species. The Natura 2000 network will include two types of area, Special Areas of Conservation (SAC) and Special Protection Areas (SPA).

13.5.1.1 Candidate Special Areas of Conservation (cSACs)

Annexes I and II of the Habitats Directive respectively list the habitats and (non-bird) species for which SACs are selected. These include marine habitats and species and a number of SACs have been proposed in coastal areas, extending into inshore waters and potentially out to the limit of UK territorial seas. In addition, as a result of a UK court judgement in 1999, the UK Government is taking steps to implement the Habitats Directive in offshore waters from the 12 nautical mile territorial seas limit out to the limit of the UK Continental Shelf. This will lead to the identification of offshore sites.

13.5.1.2 Special Protection Areas (SPAs)

Where areas support significant numbers of wild birds and their habitats, they may become Special Protection Areas (SPA), classified under the EC Directive on the Conservation of Wild Birds (79/409/EEC), commonly known as the Birds Directive. The Directive requires the Member States of the European Community to identify and classify the most suitable territories, in size and number, for certain rare or vulnerable species (listed in Annex I of the Directive) and for regularly occurring migratory species. SPAs are intended to safeguard the habitats of the species for which they are selected and to protect the birds from significant disturbance.

To date, SPAs have been terrestrial and include intertidal areas. This protects breeding colonies of marine associated bird species but not feeding or overwintering areas in either inshore or offshore waters. There are current moves in the UK to develop marine SPAs to protect these important areas.

13.5.1.3 Natura 2000 sites in offshore waters

The Joint Nature Conservation Committee (JNCC) completed an assessment to inform the selection of Natura 2000 sites in offshore waters, published in their report *Natura 2000 in UK Offshore waters: Advice to support the implementation of the EC Habitats and Birds Directive in UK offshore waters* (Johnston *et al*., 2002). The identification of SACs in UK offshore waters is now part of JNCC's core work in collaboration with the regional agencies (Scottish Natural Heritage and The Environment and Heritage Service Northern Ireland).

In 2002, the JNCC formally recommended an area called the **Darwin Mounds** to the UK Government as an SAC. This area on the Wyville Thomson ridge to the extreme north of the SEA 7 area supports the best known example of the cold water coral *Lophelia pertusa* in UK waters. The area is currently classified as a “possible SAC”, meaning that it has been formally advised to UK Government, but not yet submitted to the European Commission. There are seven other draft offshore SACs in UK waters, but none in the SEA 7 area.

13.5.1.4 Management of Natura 2000 sites

The management strategies for marine and coastal SACs and SPAs are usually spatial plans which take account of a wide range of other marine and coastal interests. They require the involvement of local communities and stakeholders to meet conservation objectives.

Management measures are normally agreed on a voluntary basis, with legislation only used as a last resort. Terrestrial areas are usually designated as Sites of Special Scientific Interest (SSSI), a national conservation designation carrying its own legal protection. In most cases, spatial planning has been used to identify zones where specific activities may take place (perhaps with certain restrictions on timing or techniques), depending on the level of risk to the features of interest.

The Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001 ensure that the licensing of oil and gas activities on the UKCS and the granting of consents carried out under petroleum licences afford appropriate protection to habitats and species identified under the Habitats and Birds Directive. Proposed operations within or adjacent to a Natura 2000 site must undergo an Appropriate Assessment by the responsible authority. Consent will only be granted if it can be shown that the activity will not adversely affect the integrity of the site.

Current knowledge of the distribution and abundance of seabed communities and species is poor. New information is often provided as a result of survey work conducted in connection with offshore developments, including oil and gas. If habitats or species listed under the Habitats Directive are discovered during the course of these surveys, consent will not be given until the nature conservation agencies determine whether the features are of sufficient importance to designate the site. Therefore, future designation of offshore SACs will present one of the most significant restrictions to offshore oil and gas developments at the individual project level.

13.5.2 OSPAR Marine Protected Areas programme

The Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) was adopted in Paris in September 1992 and entered into force in March 1998. It replaced the Oslo and Paris Conventions, with the intention of addressing the problem of marine pollution. The convention also aims to conserve the ecosystems and biodiversity of the Northeast Atlantic and in 2003 the Biodiversity Committee published recommendations for a network of marine protected areas (MPAs) for adoption by the commission by 2010.

13.5.3 Other Protected Sites

Nature conservation sites in Scotland and Northern Ireland include a number of different types of designation. These do not extend below the low water mark, but can include a number of coastal habitats. Types of designated site include:

- **Site of Special Scientific Interest (SSSI)** – These are designated to protect sites that are considered 'special' for their plants, animals or habitats, their rocks or landforms, or a combination of such natural features.
- **National Nature Reserves (NNRs)** - Areas of land set aside for nature, where the main purpose of management is the conservation of habitats and species of national and international significance.
- **Ramsar sites** - designated under the Convention of Wetlands of International Importance, adopted in Ramsar, Iran, in 1971 and ratified by the UK Government in 1976. Ramsar sites are designated for the conservation and wise use of wetlands. They are often important areas for birds and include many coastal

areas including estuaries and intertidal mudflats. Further information about the Ramsar Convention can be found at the website, www.ramsar.org.

- **Local Nature Reserves** – set up to protect and manage areas of local natural interest.
- **Coastal & Marine National Parks** - In June 2005, the Scottish Executive announced their intention to create Scotland's first coastal & marine National Park during 2008. Work is currently ongoing to determine where and how a national park can be established.

13.5.4 Review of Marine Nature Conservation

Defra set up a Review of Marine Nature Conservation (RMNC) up in 1999 to examine the effectiveness of the UK system for protecting nature conservation in the marine environment. The Review's recommendations have been tested through the Irish Sea Pilot project. This looked at integrating nature conservation into key sectors, including oil and gas, at the regional seas scale, and at the existing framework for delivering effective marine nature conservation, identifying gaps and making recommendations for improvements. The outcomes of the pilot study have recently been published in a report available to download at the JNCC website (http://www.jncc.gov.uk/page-2767).

13.5.5 The Marine Bill

The need for a new approach to managing marine activities has been highlighted by a number of recent reports including the Marine Stewardship report in 2002 and the "Seas of Change" Government response in 2003. This new approach will help achieve the Government's vision of clean healthy, safe, productive and biologically diverse oceans and seas will require new legislation to implement it. This will take the form of the Marine Bill, currently being prepared by Defra. It will put in place a better system for delivering sustainable development of the marine and coastal environment and will address both the use and protection of our marine resources.

The Marine Bill consultation closed on the 23rd June 2006. The consultation covered the following areas:

- how to take forward Marine Nature Conservation proposals,
- possible reform of Marine Licensing regimes,
- what shape Marine Planning could take, and
- whether there is a case for a new Marine Management Organisation and if so, what functions it could undertake.

Introduction to Parliament will be dependent on the availability of Parliamentary time, but is expected to be sometime during 2007 (Defra website).

13.5.6 Other Coastal and Marine Nature Conservation Initiatives

13.5.6.1 Marine Environmental High Risk Areas (MEHRAs)

A number of marine and coastal areas of high environmental sensitivity, which are also at risk from shipping, have been identified around the UK coast. These were addressed in more detail in Section 3 of this report (Ports and Shipping).

13.5.6.2 Biodiversity Action Plans

The Convention on Biodiversity was signed by 159 governments at the Earth Summit in Rio de Janeiro, 1992. In response to the legal framework established by the Convention, the UK government created a UK Biodiversity Action Plan (UKBAP), comprising individual action plans for 391 species and 45 habitats under threat in the UK.

The national UKBAP is implemented at local level by Local Biodiversity Action Plans (LBAPs). LBAPs in the SEA 7 area include:

- Argyll and Bute
- Highlands
- Comhairle nan Eilean Siar (Western Isles)
- Antrim Biodiversity Action Plan (Northern Ireland)

Further details are available from the UK Biodiversity Action Plan website (http://www.ukbap.org.uk/default.aspx).

13.6 INTEGRATED COASTAL ZONE MANAGEMENT (ICZM)

The objective of Integrated Coastal Zone Management (ICZM) is to establish sustainable levels of economic and social activity in coastal areas while protecting the coastal environment. ICZM seeks to “join up” the different policies that have an effect on the coast whilst bringing together stakeholders to inform, support and implement these policies.

To date, coastal management policies and decisions in the UK have been made with reference to individual sectoral interests such as aquaculture, environment, waste management and tourism.

13.6.1 Scotland

The first coastal management initiatives in Scotland were developed in the 1980s in response to rapid growth in the mariculture industry, particularly on the west coast. Although crude by today’s standards, they were fit for purpose and considered all stakeholders, not just the mariculture industry, in the development of local management plans.

In the early 1990s local coastal management gained new impetus as a result of the Earth Summit in Rio and the UK’s commitment to develop integrated management strategies for a number of coastal areas by

1998. Between 1998 and 2001 seven strategies were published and now many have moved to an implementation phase. Some partnerships have also undergone a review of their achievements and role with due regard to the funding available.

13.6.1.1 Scottish Coastal Forum

In March 1996 the Government launched "Scotland's Coasts - a discussion paper". One of the proposals was to set up a national forum, and in response, the Scottish Coastal Forum was established by Government to encourage debate on coastal issues at a national level, to encourage formation of local coastal fora, and to coordinate and provide advice to national and local initiatives. Since then the SCF has produced a number of documents and research papers on national coastal issues.

13.6.1.2 Clean Coast Scotland

The Clean Coast Scotland campaign has been developed by a range of government and non-government organisations to promote the sustainable use and management of Scotland's coastline. One of the major goals of Clean Coast Scotland is to build on improvements carried out to waste water treatment networks by establishing pilot beach and bathing water management groups in line with proposals for the European Union Bathing Directive, currently being revised.

13.6.1.3 Coastal Zone Management Initiatives in the SEA 7 area

Coastal zone management initiatives in the SEA 7 area include:

- **Atlantic Coast (Wester Ross) project**

The Atlantic Coast (Wester Ross) Project is part of a wider European coastal planning and management project involving countries with Atlantic coasts (Spain, Portugal, France, Ireland, and England). It involves development of integrated coastal zone management (ICZM) programmes in order to manage their marine resources effectively and sustainably. A spatial plan for the management of the project area will be developed with input from all major stakeholders, and will be subject to full public consultation. This will be followed by a trial implementation period to assess the effectiveness both of the plan and the process.

- **The Minch Project**

The Minch Project is a collaborative venture, established by Scottish Natural Heritage, the Highland Council and Comhairle nan Eilean Siar (Western Isles Council) together with a number of other partners. The project aims to find ways of achieving more integrated and effective management of the marine and coastal environments in the Minch area. The Minch Project Forum was suspended in 1999.

- **Western Isles Coastal Zone Management Plan**

Currently in preparation by Comhairle nan Eilean Siar (Western Isles Council), there is also a proposal to establish a Coastal Zone Management Forum.

13.6.2 Northern Ireland

The planning framework currently in place in Northern Ireland reflects the sectoral nature of coastal management and is almost exclusively driven by central government Departments in contrast with the rest of the UK where local authorities represent local interests and concerns. The Department of Environment (DOE) is responsible for leading on integrated coastal zone management. At present the DOE is currently developing an integrated Coastal Strategy for Northern Ireland.

In November 2005, the DOE published a draft ICZM strategy document for public consultation entitled:

- **Towards an Integrated Coastal Zone Management Strategy for Northern Ireland - 2006-2026 Draft Strategy**

The document is intended to set out long-term objectives for achieving sustainable coastal management in Northern Ireland.

Northern Ireland does not yet have a Coastal Forum. However, a recent scoping study (2003) examined the potential establishment of such a body and made a series of recommendations regarding its structure, remit and funding (Cooper, 2003).

13.7 Sources of Information

Comhairle nan Eilean Siar (Western Isles Council). The Minch Project website. Available at: http://www.cne-siar.gov.uk/minch/minch.htm

Cooper, A. (2003) *Options for management of Northern Ireland's coastal zone: Scoping study examining potential establishment of a Northern Ireland Coastal Forum*. A Report to the Department of Environment.
http://www.ehsni.gov.uk/pubs/publications/final_scoping_study_Jan23.pdf

The Crown Estate. Marine Stewardship Fund. Available at: http://www.thecrownestate.co.uk/msf4_case_studies2

Defra website. The Marine Bill. Available at: http://www.defra.gov.uk/ENVIRONMENT/water/marine/uk/policy/marine-bill/index.htm

Environment and Heritage Service Northern Ireland website. http://www.ehsni.gov.uk/environment/waterManage/wfd/wfd.shtml

HR Wallingford, 2000. *Coastal Cells in Scotland. Cell 8 & 9 – The Western Isles*. Report to Scottish Natural Heritage, Scottish Office (Agriculture, Environment and Fisheries Dept.) and Historic Scotland. SNH RSM Report No. 150. Battleby.

HR Wallingford, 1995. *Survey of Coastal Erosion in the Western Isles*. Unpublished report to Scottish Natural Heritage, the Western Isles Islands Council and the Minch Project. HR Wallingford Report EX 3155. 1995.

Johnston, C.M., Turnbull, C.G. & Tasker, M.L., (2002), *Natura 2000 in UK Offshore Waters,* JNCC Report 325, ISSN 0963 8091. Available at: http://www.jncc.gov.uk/page-2412

Northern Ireland Department of the Environment Planning Service website. Available at: http://www.planningni.gov.uk/default.htm

Scottish Environmental Protection Agency (SEPA) website. Available at: http://www.sepa.org.uk/wfd/index.htm

Scottish Coastal Forum, 2004. *A Strategy for Scotland's Coast and Inshore Waters*. Available at the Scottish Executive website: http://www.scotland.gov.uk/library5/environment/ssciw-00.asp

Scottish Natural Heritage website. Available at: http://www.snh.org.uk/about/directives/ab-dir14.asp

Shaw Stone and Webster Consultants (2003). *Mini-Regulatory Impact Assessment: The effect of extending definition of seaward extent of coastal waters under the Water Framework Directive from one to three nautical miles*. Report to Defra. Available at Defra website: http://www.defra.gov.uk/corporate/consult/waterframe3/seawardria.pdf

UK TAG Water Framework Directive Site. Available at: http://www.wfduk.org/

14 REFERENCES

Beatrice Windfarm Demonstrator Project. Available at: www.beatrice.co.uk

British Wind Energy Association (BWEA). Marine Resource. Available at: http://www.bwea.com/marine/resource.html

Cameron, D.G., Bartlett, E.L., Highley, D.E., Lott, G.K. and Hill, A.J. (2005). Directory of Mines and Quarries 2005: 7th Edition (Keyworth, Nottingham, British Geological Survey).

Comhairle nan Eilean Siar (Western Isles Council). The Minch Project website. Available at: http://www.cne-siar.gov.uk/minch/minch.htm

Cooper, A. (2003) *Options for management of Northern Ireland's coastal zone: Scoping study examining potential establishment of a Northern Ireland Coastal Forum*. A Report to the Department of Environment.
http://www.ehsni.gov.uk/pubs/publications/final_scoping_study_Jan23.pdf

Crown Estate website. *Marine fish farming*.
http://www.crownestate.co.uk/53_fish_farming_04_02_07.htm

The Crown Estate. Marine Stewardship Fund. Available at: http://www.thecrownestate.co.uk/msf4_case_studies2

Defra (2005). United Kingdom Sea Fisheries Statistics 2004. Marine Fisheries Agency. Available at:

http://statistics.defra.gov.uk/esg/publications/fishstat/2004/default.asp

Defra website. The Marine Bill. Available at: http://www.defra.gov.uk/ENVIRONMENT/water/marine/uk/policy/marine-bill/index.htm

DETR (1999). Identification of Marine Environmental High Risk Areas (MEHRA's) in the UK.

DTI. Oil & Gas UK production data release June 2005. Available at:

http://164.36.45.6/information/info_strategy/index.htm

DTI. Oil and Gas Information. Available at:

http://www.og.dti.gov.uk/information/maps.htm

DTI Energy White Paper, 2003: *Our energy future – creating a low carbon economy.*

DTI (2002). *Future Offshore: A Strategic Framework for the Offshore Wind Industry.*

DTI (2001). *Offshore Wind Energy. Wind Energy Fact Sheet 1.*

DTI. Renewable Energy. Available at: http://www.dti.gov.uk/renewables/

Department for Transport. T*ransport Statistics Report, Maritime Statistics 2004*. Available at:

http://www.dft.gov.uk/stellent/groups/dft_transstats/documents/downloadable/dft_transstats_610135.pdf

Department for Transport. *Transport Statistics*. Available at:

http://www.dft.gov.uk/stellent/groups/dft_transstats/documents/downloadable/dft_transstats_611028.pdf

Department for Transport. *Establishment of Marine Environmental High Risk Areas (MEHRAs)*. Available at:

http://www.dft.gov.uk/stellent/groups/dft_shipping/documents/page/dft_shipping_611167.hcsp

Department for Transport. *Focus on Ports 2006.* Available at

http://www.dft.gov.uk/stellent/groups/dft_transstats/documents/downloadable/dft_transstats_035417.pdf

Department for Transport. *Focus on Ports 2000.* Available at:

http://www.dft.gov.uk/stellent/groups/dft_transstats/documents/page/dft_transstats_035416.hcsp

Department for Transport. Government News Network, 2006. Available at:

http://www.gnn.gov.uk/environment/fullDetail.asp?ReleaseID=187285&NewsAreaID=2&NavigatedFromDepartment=False

Dunbar, M. J. and Fowler, S.L. (1997) Land use. *In: Coasts and seas on the United Kingdom. Regions 15 & 16. North-west Scotland: the Western Isles and west Highland.* Ed. By J.H. Barne, C.F. Robson, S.S. Kaznowska, J.P. Doody, N.C. Davidson & A.L. Buck, 198-201. Peterborough, Joint Nature Conservation Committee. (Coastal Directories Series).

Environment and Heritage Service Northern Ireland website. http://www.ehsni.gov.uk/environment/waterManage/wfd/wfd.shtml

Fisheries Research Services (2005). *Locational Guidelines for the Authorisation of Marine Fish Farms in Scottish Waters: Category 1, 2 and 3 areas designated on the basis of FRS predictive models to estimate environmental sensitivity of sea lochs.*

Fisheries Research Services. *Scottish Shellfish Farm Production Survey 2004*.

Fisheries Research Services. *Scottish Fish Farms Annual Production Survey 2004*.

Fisheries Research Services (1996). *Surveys of the Beaufort's Dyke Explosives Disposal Site, November 1995 – July 1996*. Fisheries Research Services Report No. 15/96.

Foster Yeoman website. Glensanda quarry. Available at:

http://www.foster-yeoman.co.uk/index.cfm?fuseaction=web.ObjectId.1581

General Register Office for Scotland. Scotland's 2001 census. Available at:

http://www.gro-scotland.gov.uk/statistics/census/censushm/index.html

General Register Office for Scotland. *Key Statistics for Settlements and Localities Scotland.* Available at:http://www.gro-scotland.gov.uk/statistics/census/censushm/scotcen/scotcen2/scotcen8.html

General Register Office for Scotland. *Scottish settlements urban & rural areas in Scotland.* Available at:

http://www.gro-scotland.gov.uk/statistics/geography/scosett/tables.html

Hebridean Whale and Dolphin Trust (2001). Whale-watching in West Scotland. Report to DEFRA, July 2001.

Highlands and Island Enterprise, (2002). "*Arnish renewable energy project set to create 65 jobs*". Available at:

http://www.hie.co.uk/Default.aspx.LocID-0finewc78.RefLocID-0fihiesv500b00d.Lang-EN.htm

HR Wallingford, 2000. *Coastal Cells in Scotland. Cell 8 & 9 – The Western Isles*. Report to Scottish Natural Heritage, Scottish Office (Agriculture, Environment and Fisheries Dept.) and Historic Scotland. SNH RSM Report No. 150. Battleby.

HR Wallingford, 1995. *Survey of Coastal Erosion in the Western Isles*. Unpublished report to Scottish Natural Heritage, the Western Isles Islands Council and the Minch Project. HR Wallingford Report EX 3155. 1995.

International Cable Protection Committee: www.iscpc.org

Johnston, C.M., Turnbull, C.G. & Tasker, M.L., (2002), *Natura 2000 in UK Offshore Waters,* JNCC Report 325, ISSN 0963 8091. Available at: http://www.jncc.gov.uk/page-2412

Kingfisher Cable Awareness Charts: Irish Sea & North Sea – North & West.

Macpherson Research (2003). Western Isles Tourism Facts & Figures Update. Review of 2002 Season. Report for Western Isles Enterprise & Western Isles Tourist Board.

Macpherson Research (2000). Western Isles Visitor Survey 1999. Prepared For Highlands and Islands Enterprise, Western Isles Enterprise, Comhairle nan Eilean Siar and Western Isles Tourist Board. Available at:

http://www.cne-siar.gov.uk/factfile/economy/Westernisles-visitorsurvey.pdf

Marley, D., Nautilus Consultants and James Carter (1988). Marine Wildlife Tourism: Development of a Quality Approach in the Highlands and Islands. A report for the Tourism & Environment Initiative and Scottish Natural Heritage.

Marico Marine Ltd. 2005. Maritime Traffic Survey – 2004. The Hebrides and St Kilda Report. Prepared for the maritime and Coastguard Agency. Report Number: 03NR344/G

Moyle Council. Moyle Area Summary. Available at:

http://www.moyle-council.org/moylearea/moylearea.htm

Moyle District Local Strategy Partnership. *Integrated Local Strategy 2001- 2006.* Available at:

http://www.moyle-council.org/chiefexecutive/forms/moylelspstrategy.pdf

National Statistics Online. Tourism 1996 and 2002: Regional Trends 38. Available at:

http://www.statistics.gov.uk/STATBASE/ssdataset.asp?vlnk=7854

Northern Ireland Department of the Environment Planning Service website. Available at: http://www.planningni.gov.uk/default.htm

Northern Ireland Statistics & Research Agency: Northern Ireland Census Access. Available at: http://www.nicensus2001.gov.uk

Northern Ireland Statistics & Research Agency. *Census 2001 Population Report.* Available at:

http://www.nisranew.nisra.gov.uk/census/pdf/Census2001PopRep.pdf

Northern Ireland Statistics & Research Agency. *Northern Ireland Census 2001 Key Statistics Tables.* Available at:

http://www.nisranew.nisra.gov.uk/census/pdf/Key%20Statistics%20ReportTables.pdf

Northern Ireland Statistics & Research Agency. *1991 Census Tables.* Available at:

http://www.nisranew.nisra.gov.uk/Census/censusstatistics/1991/pdf/Populationbyarea.pdf

Northern Ireland Tourist Board (2005). Regional Tourism Estimates 2004. Available at: www.nitb.com

Northern Ireland Tourist Board (2004a). Causeway Coast and Glens Tourism Masterplan (2004).

Northern Ireland Tourist Board (2004b). A Strategic Framework for Action 2004-2007. Available at:

http://www.nitb.com/article.aspx?ArticleID=248

OSPAR Commission (2005). *Overview of Past Dumping at Sea of Chemical Weapons and Munitions in the OSPAR Maritime Area*.

Parsons, E.C.M., Birks, I., Evans, P.G.H., Gordon, J.C.D., Shrimpton, J.H., and Pooley, S. 2000. The Possible Impacts of Military Activity on Cetaceans in West Scotland. *European Research on Cetaceans* **14***.*

Personal communication, James McKie, Senior Environmental Advisor, Environment Protection Group, Fisheries Research Services.

Personal Communication. Tom Cowan, Fisheries Officer, Department of Agriculture and Rural Development, Northern Ireland.

QinetiQ (2006). Hebrides Operations. Available at QinetiQ website:

http://www.qinetiq.com/home/defence/test_and_evaluation/singlesitefacilities/hebrides_facilities/hebrides_operations.html

Quarry Products Association Website.

http://www.qpa.org/new_iss.htm

Scottish Coastal Forum (2004). *A Strategy for Scotland's Coast and Inshore Waters*. Available at the Scottish Executive website: http://www.scotland.gov.uk/library5/environment/ssciw-00.asp

Scottish Coastal Forum (2003). *A Strategy for Scotland's Coasts and Inshore Water* – Oil and Gas Industry Task-Group.

Scottish Coastal Forum, October 2002. *A Strategy for Scotland's Coasts and Inshore Waters* – Ports and Marine Transportation Task Group.

Scottish Coastal Forum (2002). *A Strategy for Scotland's Coasts and Inshore Waters*. Power Generation Task Group.

Scottish Coastal Forum (2002). *A strategy for Scotland's coasts and inshore waters: Position paper by the Aquaculture and Seabed Harvesting Task Group*.

Scottish Environmental Protection Agency (SEPA) website. Available at: http://www.sepa.org.uk/wfd/index.htm

Scottish Executive (2006). *Scottish Marine Renewables SEA Scoping Study Report*. Faber Maunsell & Metoc plc.

Scottish Executive Consultations (2005). Available at:

http://www.scotland.gov.uk/consultations/enterprise/renewables.pdf

Scottish Executive Publications (2005). Forum for Renewable Energy Development in Scotland: *Scotland's Renewable Energy Potential: Realising the 2020 Target - Future Generation Group Report.* Available at:

http://www.scotland.gov.uk/Publications/2005/09/09144010/40120#14

Scottish Executive (2004). *Harnessing Scotland's Marine Energy Potential*. Forum for Renewable Energy development in Scotland.

Scottish Executive (2003). *Securing a Renewable Future: Scotland's Renewable Energy*. Available at:

http://www.scotland.gov.uk/library5/environment/srfe.pdf

Scottish Executive Social Research (2002). *Scottish Coastal Socio-Economic Scoping Study.*

Scottish Executive (2001). *Scotland's Renewable Resource*. © Garrad Hassan and Parners Ltd.

Scottish Executive Central Research Unit (2001). Flora Celtica: Sustainable Development of Scottish Plants. Chapter 4: The Seaweed Industry. Available at:

http://www.scotland.gov.uk/cru/kd01/orange/sdsp-06.asp

Scottish Executive (1999). *Policy Guidance Note: Locational Guidelines for the Authorisation of Marine Fish Farms in Scottish Waters*. Available at:

http://www.scotland.gov.uk/library2/doc06/mff-00.htm

Shaw Stone and Webster Consultants (2003). *Mini-Regulatory Impact Assessment: The effect of extending definition of seaward extent of coastal waters under the Water Framework Directive from one to three nautical miles*. Report to Defra. Available at Defra website: http://www.defra.gov.uk/corporate/consult/waterframe3/seawardria.pdf

SMILE. Sustainable *Mariculture in Northern Irish Lough Ecosystems*. Available at:

http://www.ecowin.org/smile/index.htm

Scottish Natural Heritage (SNH) website. Available at: http://www.snh.org.uk/

Talisman Energy (UK) Ltd (2004). *Beatrice Wind Farm Demonstrator Project – Environmental Statement.*

UKOOA, Atlantic Frontier Environmental Network. Available at:

http://www.ukooa.co.uk/issues/Afen/index.htm

UK TAG Water Framework Directive Site. Available at: http://www.wfduk.org/

Visit Scotland. Tourism in Scotland 2003. Visit Scotland. Available at:

www.scotexchange.net/

Visit Scotland. Tourism in Highlands of Scotland (HOST) 2003. Available at:

www.scotexchange.net/know

Visit Scotland. Tourism in Argyll, The Isles, Loch Lomond, Stirling and the Trossachs (AILLST) 2003. Available at:

www.scotexchange.net/know

Visit Scotland and Scottish Natural Heritage (2002). Tourism Attitudes Survey 2001.

Visit Scotland website. Coastal walks in the SEA 7 area. Available at:

http://walking.visitscotland.com/walks/westhighlands/212854

Warburton, Parsons, Goodwin (1999). Marine Wildlife Tourism and Whale Watching off the Island of Mull. Report to the Hebridean Whale and Dolphin Trust.