8 USERS OF THE SEA AND COASTAL ENVIRONMENT

8.1 Introduction

The North Sea oil and gas industry has been particularly important in shaping the coastal development of the SEA 5 area over the last 30 years. In general, significant coastal development has centred upon the large firths which cut into the east coast; Inverness in the Moray Firth, Dundee on the Tay and Edinburgh and associated towns on the Firth of Forth. Outwith these areas much of the SEA 5 coast (with the exception of Aberdeen city) is rural in nature with little industrial development. The fishing industry, whilst generally in decline, remains a key industry for many small east coast fishing towns and villages as well as industry centres such as Lerwick, Peterhead and Fraserburgh.

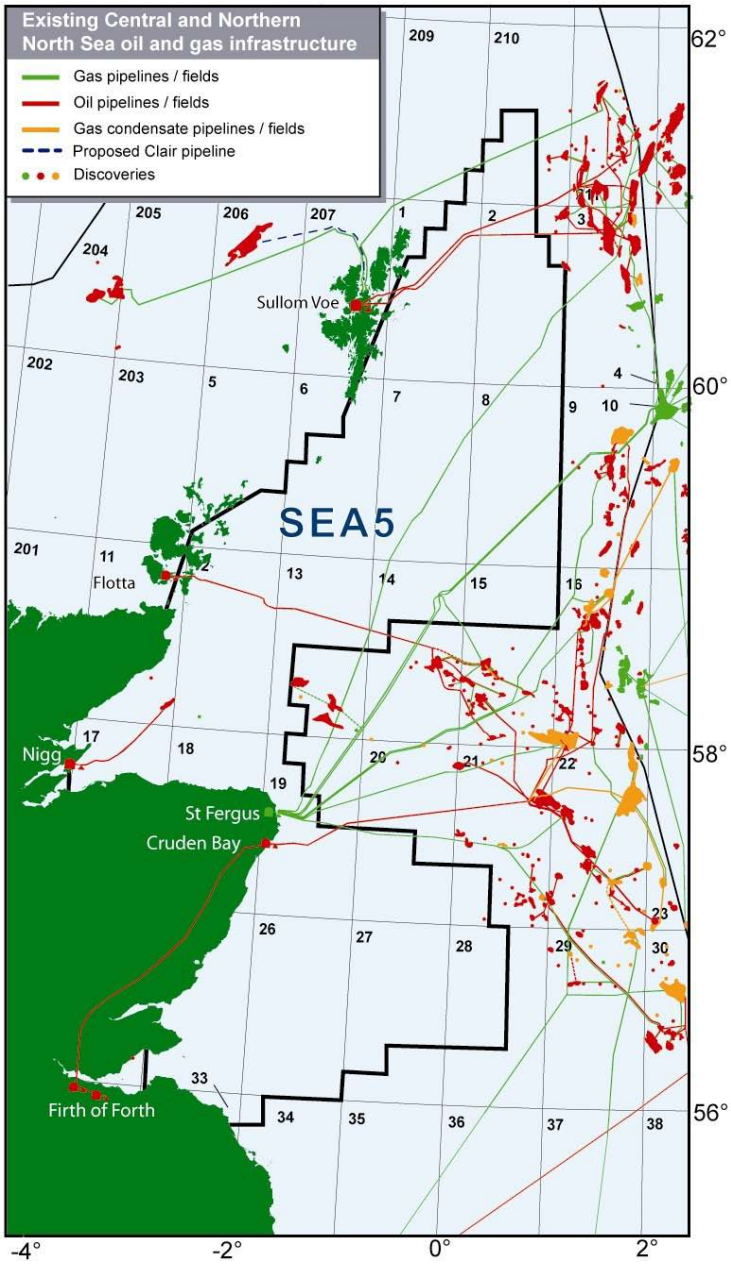
8.2 Oil and gas

8.2.1 Overview

Oil and gas activity in the North Sea has primarily centred on the oil and gas fields of the northern and central North Sea and the gas fields of the southern North Sea. To date, a number of exploration and development wells have been drilled within the SEA 5 area although at present the Beatrice development in the Moray Firth remains the only operational field.

A number of key oil and gas receiving terminals are situated on the SEA 5 coast with associated pipeline networks crossing offshore areas of SEA 5 (Figure 8.1). On Shetland and Orkney, Sullom Voe and Flotta remain important terminals for the receipt of oil from fields in the northern North Sea and to the north and west of Scotland. The Nigg terminal in the Cromarty Firth receives oil from the Beatrice field and on the northeast coast the St. Fergus terminal is the largest single gas importing facility in the UK. To the north of Aberdeen, the Forties pipeline system makes landfall at Cruden Bay before continuing to the Grangemouth refinery and the Houndpoint tanker loading terminal on the Firth of Forth.

Figure 8.1 – Oil and gas infrastructure in the central and northern North Sea



Source: DTI oil and gas website – http://www.og.dti.gov.uk/

8.2.2 Management issues and initiatives

Shetland and Orkney

On Shetland, the Shetland Oil Terminal Environmental Advisory Group (SOTEAG), set up in 1977, continues to monitor the performance and environmental impact of the Sullom Voe terminal. The Orkney Islands Council also monitors the potential impact of the Flotta terminal on the Orkney marine environment.

Moray Firth

The environmental sensitivity of the Moray Firth has lead to the development of a number of initiatives to minimise the potential impact of oil and gas activities. A Shoreline Protection Strategy Plan has been compiled on behalf of a number of Operators covering the Moray Firth area between Duncansby Head and Rattray Head. The document identifies the most vulnerable sites and outlines the most effective methods of protecting the area (Briggs Marine Environmental Services 2000). Guidelines for dealing with cetaceans in the event of an oil spill in the Moray Firth have also been produced (Gubbay & Earll 1999).

St. Fergus terminal

Nine gas pipelines make landfall at the St. Fergus terminal and the pipeline corridors cut through the beach and dune systems which front the terminal complex. Since 1977, when the first pipeline was commissioned, extensive restoration work and ecological monitoring has been carried out at the site to minimise the environmental impact to the coast (Ritchie & Kingham 1997).

8.3 Fisheries

8.3.1 Overview

In terms of employment and economic revenue, fishing remains an important industry in the SEA 5 area, particularly along the North East coast and on Shetland. Many of the rural coastal communities rely on small scale coastal fishing, whilst larger ports in the region service a sizeable offshore fishing fleet. The catching sector contributes to a substantial processing industry, although this is also based to a large extent on imported fish; while a high proportion of the shellfish catch is exported live to the continent. Recreational angling for salmon and sea trout is also of major economic importance to a number of rural communities in the area.

Information used in this section came from a variety of sources including a report on North Sea fish and fisheries commissioned for SEA 2 (CEFAS 2001); a review of commercially exploited shellfish completed for SEA 5 (Chapman 2004); a number of recently produced strategy documents (RSE 2004, PMSU 2004), as well as stock assessments and information from ICES (ICES 2003) and the European Commission. Sections 4 and 5 of the SEA 5 Existing Users report provide a fuller account of commercial fishing and fisheries for diadromous species within the area.

Demersal fishery

One of the most important fisheries in the central and northern North Sea is the mixed demersal fishery that targets cod, haddock and whiting. The fishery also takes a number of important bycatch species including saithe and monkfish (ICES 2003). A combination of poor recruitment, over-exploitation and inadequate protection has lead to a significant

decline in the mixed demersal fishery over recent years and landings of monkfish and *Nephrops* have become increasingly important at the expense of haddock and cod.

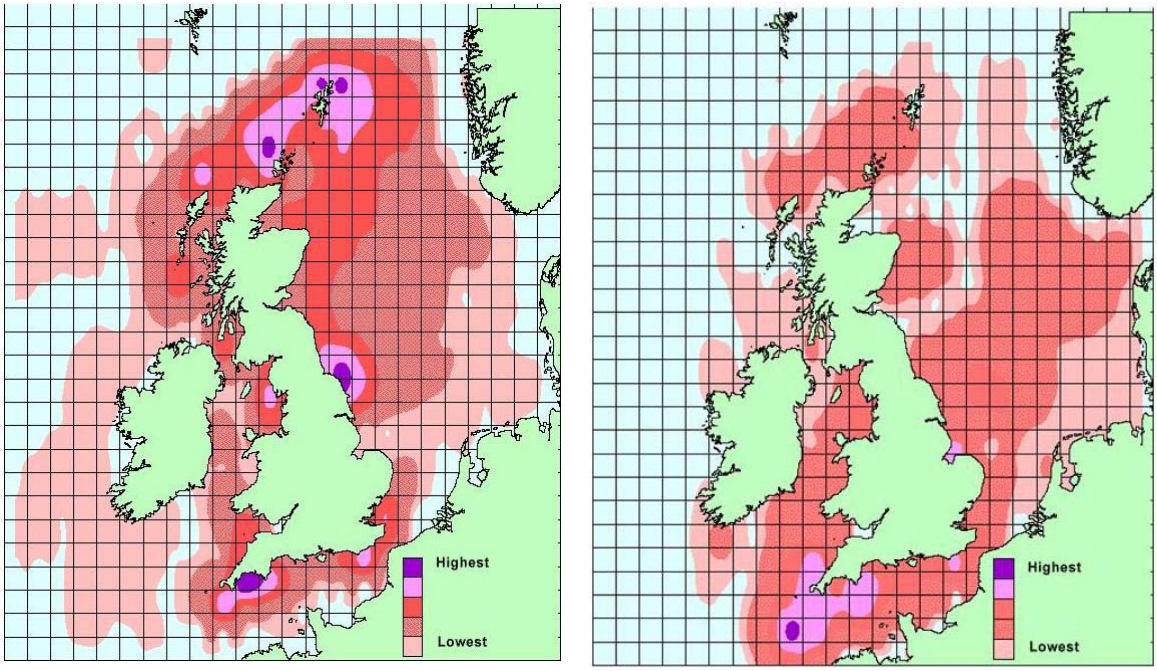
The main Scottish demersal fishing fleet is based in the North East of Scotland and in Shetland. In the northeast there were 239 boats in the demersal sector in 2002, although it is likely that the number of vessels has now fallen below 200 with further reductions likely if the fleet does not prove profitable (RSE 2004). In Shetland there were 27 demersal fishing boats in 2003, employing about 180 fishermen (with the fleet having shrunk by 40% over the last 13 years).

The recent decline of the fishery and downsizing of the fleet must be put in context with the rapid expansion of the fleet associated with successful recruitment to gadoid stocks in the 1970s and 1980s. Currently, fleet capacity far outstrips the opportunity that exists in large, partly due to over-investment during the gadoid outburst of the 1970/80s (PMSU 2004).

Historically, otter trawling has accounted for the majority of demersal fishing effort in the northern North Sea, with most effort in the SEA 5 area confined to the northeast of Scotland and to the east of Shetland (Figure 8.2a). Beam trawling is restricted largely to the central and southern North Sea although there is some fishing effort in the SEA 5 area (Figure 8.2b).

Figure 8.2 – Demersal fishing effort by UK vessels

a) Demersal exluding beam trawling *b) Beam trawling*



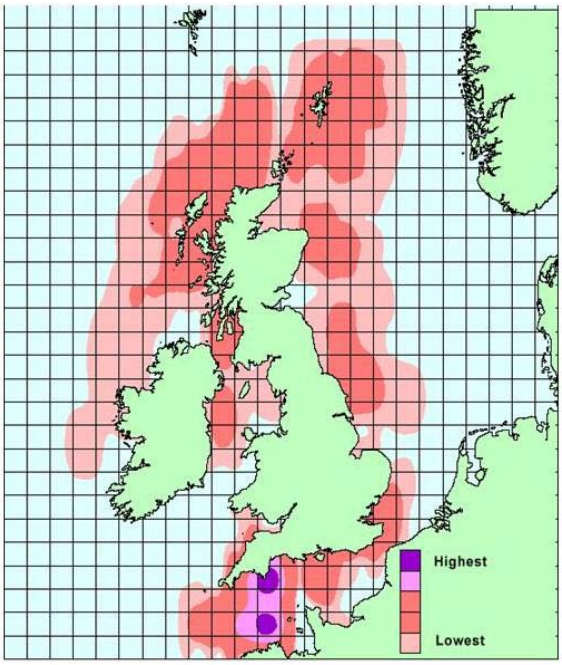
Source: Coull et al. 1998, adapted from UKOOA website – http://www.ukooa.co.uk

The maps of fishing effort produced for this report are based on information from UK vessel logbooks with effort measured as the time spent fishing (nominal fishing effort) in an ICES rectangle (Coull *et al*. 1998). However, vessels of less than 10 metres that do not report their catches are excluded and no adjustment is made for the varying efficiency of vessels. Further, Gordon (2003) suggested caution in the use of effort data as a result of recording inconsistencies and that consequently effort maps should be considered indicative only.

Pelagic fishery

The Scottish pelagic fleet (consisting of approximately 27 vessels at the end of 2003) is based mainly in Fraserburgh and Shetland and predominantly targets herring and mackerel (RSE 2004).

Figure 8.3 – Pelagic fishing effort by UK vessels



Source: Coull et al. 1998, adapted from UKOOA website – http://www.ukooa.co.uk

Fishing for herring is mainly undertaken with purse seines and trawls and while stocks are fished throughout the year, landings are greatest in the third quarter of the year, predominantly from the Orkney/Shetland area, Buchan and northwest of the Dogger Bank (Figure 8.3). An extensive directed mackerel fishery occurs in the northern North Sea, taking advantage of the return migration of the western stock to the feeding area. Fishing occurs throughout the year, with peak landings in the 3rd quarter (ICES 2003).

The apparent division into two areas of high effort to the north of Scotland seen in Figure 8.3 is most likely an artefact of misreporting of pelagic catches between ICES Sub-areas IV and VI when quotas become restrictive (Gordon 2003).

Industrial fishery

The majority of sandeel landings come from the central North Sea, with fleets from Denmark and Norway accounting for most of the landings. In 2003 there was a dramatic decline in the fishery, probably due to an extremely weak 2002 year class (STCEF 2003) and a closed area for sandeel fisheries off the east coast of Scotland has recently been introduced. The Shetland sandeel fishery re-opened in 1995 subject to a multi-annual management regime.

Fishing for Norway pout, predominantly by Danish and Norwegian vessels takes place in the northern and northeastern North Sea with a high bycatch of other species such as haddock and whiting (ICES 2003).

Fisheries for diadromous species

Shetland supports a very small rod and line fishery for salmon and sea trout whilst there are no recorded landings of salmon or sea trout within the Orkney region. The Moray Firth salmon fishery district, particularly the River Spey, supports important rod and line fisheries for salmon, grilse and sea trout whilst the North East district supports a significant net and coble industry for sea trout, accounting for over 54% of the Scottish total as well as a fixed engine fishery for both salmon and grilse. The East region, particularly the Rivers Tay and Tweed, support the greatest salmon rod and line catch fishery within the SEA 5 area, accounting for nearly 40% of the Scottish total for 2002 (FRS 2003). Salmon and sea trout angling is of considerable economic importance to many communities in the SEA 5 area, particularly those associated with rural areas. It is estimated that in Scotland salmon and sea trout angling produces an estimated £80.9 million worth of annual output, supports 2,200 jobs and generates nearly £40 million in wages (Radford *et al*. 2004).

In 2002, an estimated 27,000 salmon and 15,000 sea trout were caught by Northumbrian drift netsmen as the fish headed for rivers in northeast England and eastern Scotland (Environment Agency 2003). In May 2003 a £3.4 million buyout by DEFRA and the North Atlantic Salmon Fund saw 52 out of the 68 remaining netsmen accepting voluntary compensation to stop drift netting. It is estimated that this agreement will reduce the number of salmon and sea trout taken by nearly 75%.

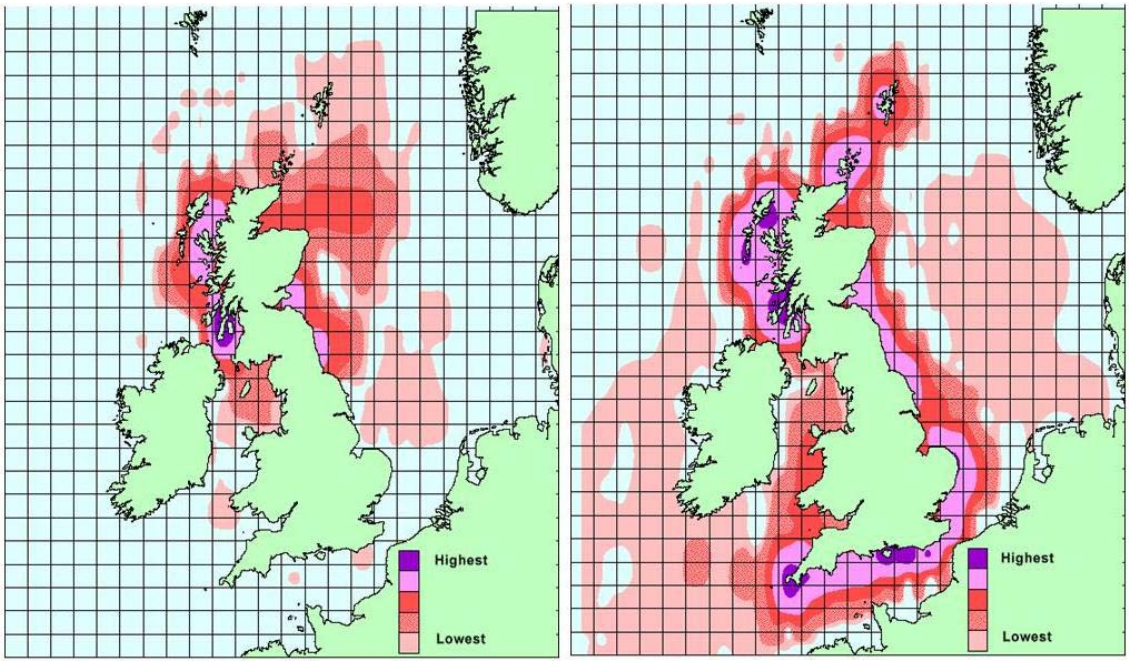
In Europe, eels are subject to a variety of capture fisheries and other commercial activities, such as re-stocking and aquaculture. However, with the exception of a few long-established traps on rivers, there is no tradition of commercially exploiting eels in Scotland (FRS website – http://www.marlab.ac.uk). However, concern about their status at a European level has led the European Commission to begin development of a Community Action Plan to improve eel stocks (see Section 8.3.2).

Shellfish fishery

Within the SEA 5 area, *Nephrops* is the most important shellfish species exploited with landings estimated to be worth about £18 million in 2002 (Chapman 2004). The main exploited stocks are found in areas of soft mud or muddy sand to the west of Orkney (Noup), within the Moray Firth, Firth of Forth and Fladen Ground (Figure 8.4a). The majority of trawl vessels directly target *Nephrops* but they are also taken as bycatch in the demersal whitefish fishery. Other crustacean species targeted primarily by static gear (creels, pots) in nearshore areas of SEA 5 include European lobster, edible crab, velvet crab and shore crab (Figure 8.4b).

Figure 8.4 – Shellfish fishing effort by UK vessels

a) Nephrops/shrimp trawling *b) Static gear*



Source: Coull et al. 1998, adapted from UKOOA website – http://www.ukooa.co.uk/

The king scallop is the most important exploited mollusc within the SEA 5 area. The main fisheries take place around the Orkney and Shetland Isles, in the Moray Firth and off the east coast of Scotland primarily by mechanical dredging. Cockles are found in fairly small

areas and some have been exploited on a small scale periodically. Marketable sized mussels are found in estuarine areas throughout SEA 5, although currently the only significant fishery is located in the Dornoch Firth (Chapman 2004).

8.3.2 Management issues and initiatives

European initiatives

There is concern about the stocks of many of the commercial fish species found in the SEA 5 region. To ensure the sustainability and recovery of these fisheries, a range of fisheries management measures have been implemented by the European Commission, including Total Allowable Catches (TACs), and area and seasonal closures that restrict access to specific fleets in order to offer protection to juveniles and spawning adults and thus encourage stock recovery.

In the 2002 Common Fisheries Policy reform, the European Commission's Agriculture and Fisheries Council agreed to apply a multi-annual approach to fisheries management. This involves the establishment of recovery plans for the most endangered stocks and multi-annual management plans to prevent other stocks from falling below safe biological limits (European Commission Fisheries website – http://www.europa.eu.int/comm/fisheries). In December 2003, the Council adopted a long-term recovery plan for North Sea cod (Council Regulation (EC) No 2287/2003). The plan limits the number of days that vessels spend fishing so as to prevent overshooting of quotas (Table 8.1).

Table 8.1 – Maximum days in the North Sea by fishing gear

Fishing gear type	Maximum days in any month
Demersal trawls, seines or similar towed gears of mesh size ≥ 100mm except for beam trawls	10
Beam trawls of mesh size ≥ 80mm	14
Static demersal nets	14
Demersal long lines	17
Demersal trawls, seines or similar towed gears of mesh size 70-99mm except beam trawls with mesh size 80-99mm.	22
Demersal trawls, seines or similar towed gears of mesh size 16-31mm except beam trawls.	20

Source: Council Regulation (EC) No 2287/2003

The Regulations also contain special measures concerning the capture, sorting or landing of herring from the North Sea to ensure observance of capture limitations; special conditions for fishing for haddock in the North Sea, including restrictions within a 'cod protection area', and designation of a closed area off the east coast of Scotland for sandeel fisheries. Reinforced inspection and control measures have also been adopted (Council Regulation (EC) No 2287/2003, European Commission Fisheries website – http://www.europa.eu.int/comm/fisheries).

European eel Community Action Plan

Following an ICES recommendation that an international rebuilding plan be developed for the whole Western European eel stock, the European Commission adopted a Communication (COM (2003) 573 final) on the development of a Community Action Plan for the management of European eel in October 2003.

The Commission proposes that eel management be built up from a set of local actions to be put in place by the Member States according to an agreed standard. These actions should ensure the survival and the migration of the eel in all its habitats. While this plan is being developed, the Commission will propose urgent measures to ensure that mature eels can migrate back to the sea to spawn. To secure this end, the Commission intends to urgently address the issues of a prohibition on fishing activities likely to catch silver eel and facilitation of downriver migrations for silver eel.

Although eel measures are to be developed under the Common Fisheries Policy, the European Commission foresees that some issues will be taken forward in the context of the Water Framework Directive (WFD) (Directive 2000/60).

Under the WFD, European-wide River Basin Management is being introduced together with international co-ordination. The WFD could be used to promote the objectives of eel management, such as using eels as an indicator of 'good ecological status' of rivers. River basin authorities could also be used for setting targets and implementing eel action programmes.

National & local initiatives

Salmon fishery protection

Salmon fishery protection measures in Scotland were consolidated recently by *The Salmon and Freshwater Fisheries (Consolidation) (Scotland) Bill* which received Royal Assent on 1st May 2003. The Act describes legal methods of fishing; close times for salmon and trout fishing; salmon fishery districts (districts extend seaward for 5km from MLWS), and salmon conservation measures (Her Majesty's Stationery Office website - http://www.hmso.gov.uk/legislation/scotland/acts2003/30015--a.htm).

Regulatory Orders

The Shetland Islands Regulating Order 1999 devolved the management of local resources of lobsters, all crab species, giant scallops, queen scallops, whelks, mussels, cockles, oysters and razor-shells out to 6 nautical miles to the Shetland Shellfish Management Organisation (SSMO). Since the Shetland Order was granted, several other applications have been, or are being, submitted to the Scottish Executive. Of major significance is an application from an organisation, named the Highland Shellfish Management Organisation (HSMO), for a Regulatory Order to cover the inshore waters adjacent to the whole Highland Regional Council coastline (Chapman 2004).

In addition to the SSMO, Shetland Islands Council and the Islands' fishing interests, in part supported by oil revenues invested in the Shetland Development Trust, have introduced a range of initiatives intended to guarantee the future sustainability of the Shetland fishing industry. These include:

- The building of the North Atlantic Fisheries College, providing the basis for education, research and training in fisheries related disciplines.
- Quota purchase schemes funded by the Shetland Fish Producers' Organisation and by Shetland Leasing and Property Development Ltd (SLAP), a commercial investment agency of SIC.
- The creation of Shetland Oceans Alliance (SHOAL), a partnership between Shetland Islands Council (SIC) and the fishing industry which serves as a think tank and lobby group for the fishing industry.

- The drafting of The Whitefish Plan – Developing a Long Term Sustainable Fishery for Shetland (2003) by SHOAL.
- Several schemes offering financial assistance to the local fishing and shellfish industries (RSE 2004).

Sustainable fishing strategies

Two strategy documents published recently by the Royal Society of Edinburgh and the Prime Minister's Strategy Unit made a series of recommendations for a sustainable UK fishing industry in the future. Common themes in both reports included the need for:

- Improved stock assessment methods and ecosystem-based management of the fisheries resource.
- Increased regional and local involvement in fisheries management.
- Introduction of a system of environmental assessment for both inshore and offshore fisheries.
- Reduction in the demersal fishing fleet to remove over-capacity and improve long-term profitability and sustainability.
- Increase support for sustainable development of the shellfish fishery to take advantage of large growth opportunities with associated measures aimed at reducing whitefish bycatch.

Of particular relevance to SEA 5 are the implications for fleet reduction in the fishing industry, particularly the demersal sector. The PMSU report indicates that even if demersal stocks recover strongly and prices remain broadly constant a reduction in fleet capacity of at least 13% will be needed. Some communities will lose some or all of their fishing activity, while others will see increases in activity, profits and turnover as the fleet concentrates in fewer ports. Those likely to suffer most are small, highly dependent and remote communities and medium-dependency ports that are not well enough equipped to sustain highly productive fleets (PMSU 2004). These predicted changes could have a marked impact on the fishing fleet and communities within the SEA 5 area given the importance of the area for the Scottish demersal fleet. Whilst the area contains some of the UK's largest fishing ports in which the fleet are likely to concentrate, there are a large number of small, rural ports which may suffer.

Evidence from Scotland suggests that efforts to decommission fishing capacity in the demersal whitefish sector and to restrict quotas have resulted in a shift towards fishing for shellfish. Since different regulations are in place for vessels of 10m and under, and they are generally fishing nearer to shore, an unintended consequence of the decommissioning schemes for the demersal fleet may have been to increase the pressure on the inshore fishing region and, therefore, to increase the nearshore impacts of fishing (RSE 2004). Therefore, whilst reductions in fishing capacity and effort are likely to reduce potential interactions with the offshore oil and gas industry, the increased utilisation of nearshore areas may increase the likelihood of interactions between the fishing industry and potential offshore renewable sites which are at present restricted mainly to nearshore areas.

Changes in stock size and/or composition have a number of important ecological implications. For example, whilst studies have not found wide scale consequences, the effects of the sandeel industrial fishing cannot be fully anticipated – first there have been rather few studies and secondly the depletion of larger fish predators might mean that no effects are discernible at present. This might change should stocks of the larger fish be given the opportunity to recover. Equally, overfishing of the smaller fish carries the risk of inhibiting the return of these larger predatory fish. Changes in predatory fish abundances,

especially mackerel and whiting, may influence sandeel stocks more than changes in industrial fishery, at least at the scale of the North Sea as a whole. These interactions imply that seabird and seal food supply in terms of sandeel may be strongly dependent on decisions regarding management of stocks of mackerel and gadoids (Furness 2002).

8.4 Ports and shipping

8.4.1 Overview

Nearshore areas of SEA 5 experience predominantly low (<1,000 vessels per annum) to moderate (1,000-5,000 vessels) shipping densities, particularly around the Northern Isles, the Moray Firth and the Angus coast (Figure 8.5). Coastal areas around Peterhead and Aberdeen experience relatively high shipping densities (5,000-20,000 vessels) primarily associated with the movement of support vessels for the North Sea oil industry. High shipping densities are also found at the mouth of the Firth of Forth extending down the south east coast (DETR 1999). These are associated with the transport of cargo vessels and tankers between the Forth ports and other North Sea ports. Offshore areas of SEA 5 experience low to moderate shipping density.

8.4.2 Management issues and initiatives

Ship routeing

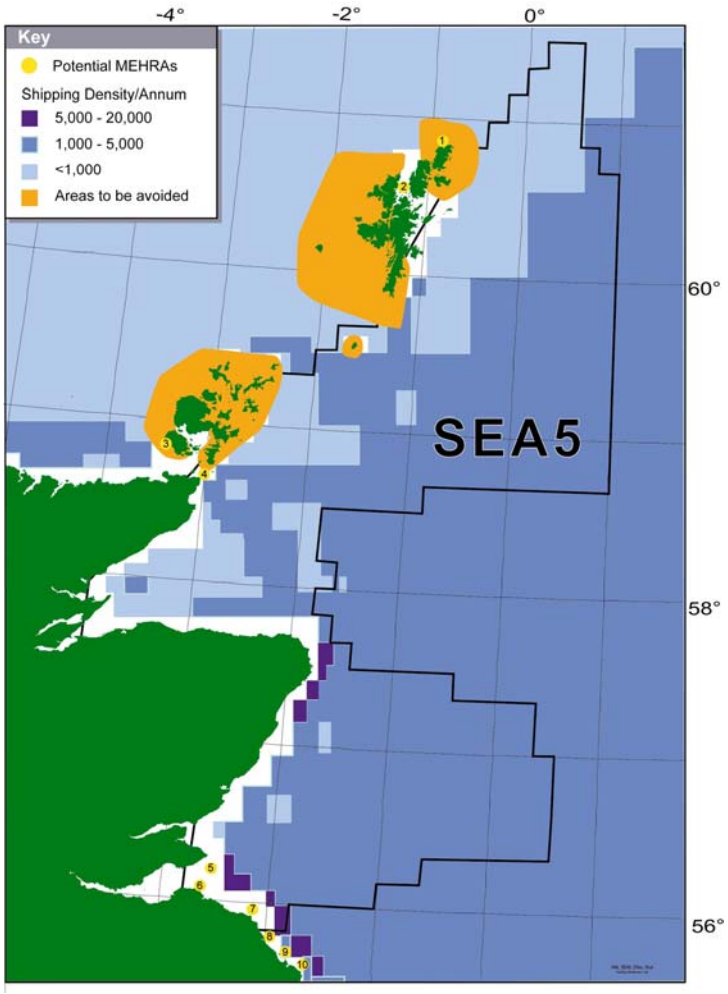
There are no traffic separation schemes operating in the SEA 5 area although there are several 'Areas to be Avoided', designed to keep oil traffic clear of sensitive coastlines (Figure 8.5). These include a single chartered area that almost entirely encompasses Orkney, a second surrounding Fair Isle, and two chartered areas around Shetland.

The sensitivity of the marine and coastal environment of SEA 5 is also reflected by the potential designation of a number of Marine Environment High Risk Areas (MEHRAs) designed to protect marine areas of high environmental sensitivity at risk from shipping (Figure 8.5, DETR 1999).

Proposal for a Western European Waters PSSA

A Particularly Sensitive Sea Area (PSSA) is defined by the International Maritime Organisation (IMO) as an area that needs special protection because of its significance for recognised ecological, socio-economic or scientific reasons and which may be vulnerable to damage by international maritime

Figure 8.5 – Shipping in the SEA 5 area



Source: DETR (1999), IMO website - http://www.imo.org/home. asp

activities. Specific measures can be used to control the maritime activities in the PSSA, such as vessel routeing, and strict application of MARPOL discharge and equipment requirements for ships.

A number of European states including the UK have submitted a proposal to the 49th session of the IMO Marine Environment Protection Committee (MEPC) (July 2003) for an area of North Western European waters stretching from east of the Orkney and Shetland Isles to Portugal to be designated as a PSSA (IMO website - http://www.imo.org/home.asp).

The MEPC approved in principle the proposal for the Western European Waters PSSA, subject to the area being reduced to bring the easterly line off the Shetland Isles to the Greenwich meridian. The states proposing the measure also withdrew an earlier proposal to ban carriage of heavy fuel oil in single hull tankers in the PSSA and instead agreed that the Associated Protective Measures linked to the PSSA would, at this stage, concern a proposed 48-hour reporting rule for ships carrying certain cargoes entering the PSSA. The Western European Waters PSSA will be considered for potential final designation by the MEPC in October 2004.

Pollution control initiatives

The UK has obligations under two key international conventions concerned with protecting the marine environment from pollution. The 1973 International Convention for the Prevention of Pollution from Ships (the "MARPOL Convention") aims to control pollution of the sea by oil, chemical and other harmful substances that might be discharged during the course of a ship's operations or when a ship is damaged. Signatories to the Convention are required to inspect ships in port and at sea, trace and prosecute polluting ships and ensure there are adequate port facilities for receiving waste from ships.

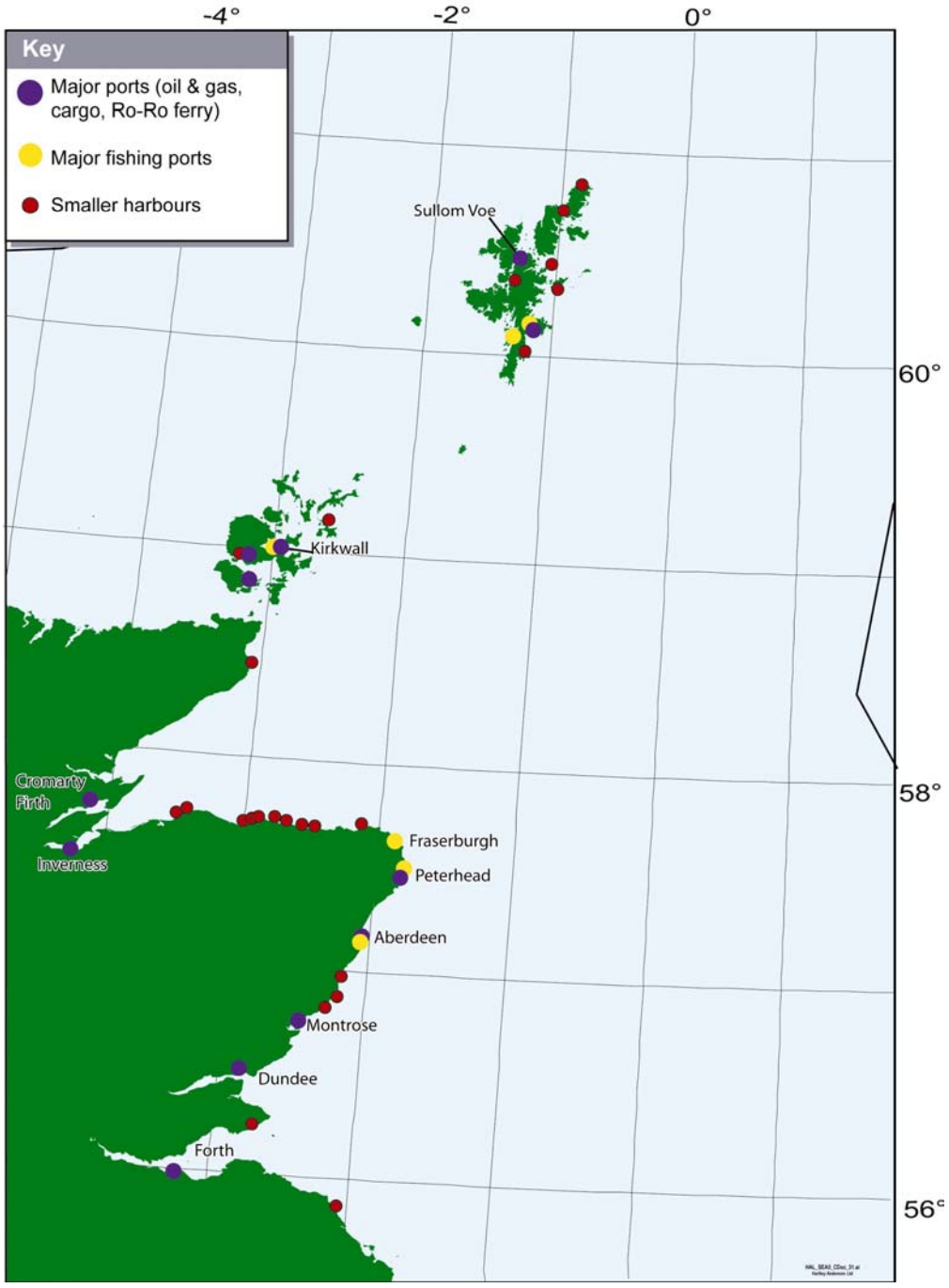
The 1990 International Convention on Oil Pollution Preparedness, Response and Co-operation (the "OPRC Convention") requires signatories to inspect ships, maintain a national contingency plan for responding to oil pollution incidents and provide technical assistance to other signatories in the event of such incidents. Ports and harbours, ships and offshore installations are required to have their own approved oil pollution contingency plans and to report pollution incidents when they occur.

8.4.3 Ports

There are a number of large ports in the SEA 5 area that form an important focus for shipping in the North Sea (Figure 8.6). Sullom Voe in Shetland and the Flotta oil terminal on Orkney handle much of the crude oil traffic in the northern North Sea, whilst the Firth of Forth supports container and general cargo traffic in addition to oil cargoes at Hound Point and gas cargoes at Braefoot Bay (Scottish Coastal Forum 2002). In 2002, the Forth was the largest port for oil and gas traffic (38.0 million tonnes) and the fourth largest in the UK in terms of traffic handled (42.2m tonnes) (DfT Maritime Statistics 2002).

Fishing remains an important industry in the SEA 5 region and there are a number of important fishing ports along the Scottish coast. In 2002, Peterhead landed more demersal species (37.9 thousand tonnes) than any other port in the SEA 5 area and accounted for over 20% of the total landings made into major UK ports, while Aberdeen, Scrabster, Lerwick and Fraserburgh all had landings of demersal species in excess of 10 thousand tonnes. Peterhead is also important for landings of pelagic species, coming second only to Lerwick (DEFRA 2003).

Figure 8.6 – Ports and harbours in the SEA 5 area



Management issues and initiatives

Oil spill response contingency plans

In accordance with the Merchant Shipping (Oil Pollution Preparedness, Response and Co-operation Convention) Regulations 1998, there is a requirement in the UK for ports, harbours and oil handling facilities to prepare and submit oil spill response contingency plans to the Maritime and Coastguard Agency (MCA) for approval. The National Audit Office found that all ports and harbours subject to the OPRC regulations had contracts in place for dealing with a medium sized spill (National Audit Office 2002).

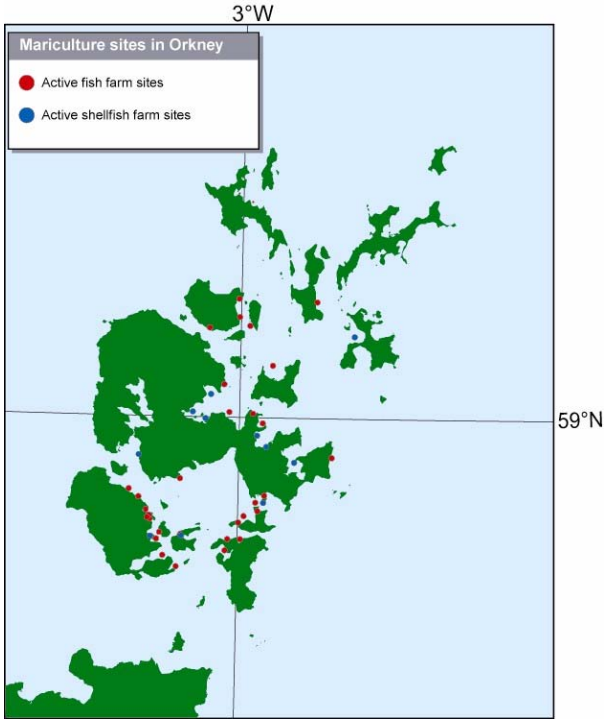
8.5 Mariculture

8.5.1 Overview

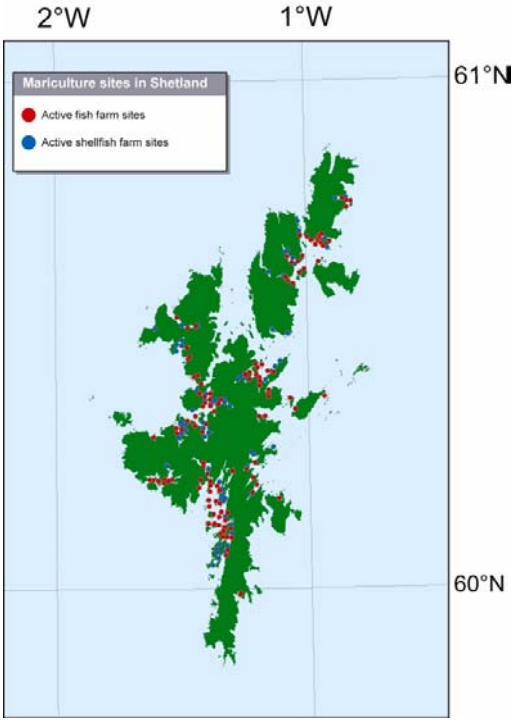
Mariculture, the cultivation of marine species such as shellfish, finfish and seaweed within coastal waters, principally takes place along the west coast of Scotland, the Inner and Outer Hebrides and the Northern Isles. With the exception of Shetland and Orkney, the SEA 5 area is relatively unimportant for mariculture, with very few sites along the Scottish east coast.

Figure 8.7 – Active finfish and shellfish sites in the Northern Isles

a) Orkney



b) Shetland



Finfish

On Shetland and Orkney there were approximately 200 salmon production sites in 2002 (Figure 8.7a and 8.7b), which produced almost 60,000 tonnes of salmon (39% of the Scottish total) (Fisheries Research Services 2003a). Along the Scottish east coast there are no active finfish farms, with the salmon and trout farms in the Cromarty Firth having been inactivated (Pers. comm. Kate Douglas FRS, Marine Laboratory, Aberdeen).

Shellfish

Shellfish production in Scotland is dominated by mussels and Pacific oysters with small volumes of scallops, queens and native oyster also produced. The importance of Shetland and Orkney for shellfish production was previously noted in SEA 4. In 2002 there were 72 active shellfish production sites on Shetland and 12 on Orkney (Figure 8.7a and 8.7b), with Shetland producing almost 39% of the 3,236 tonnes of mussels produced in Scotland (Fisheries Research Services 2003b). On the Scottish east coast there were two sites, one

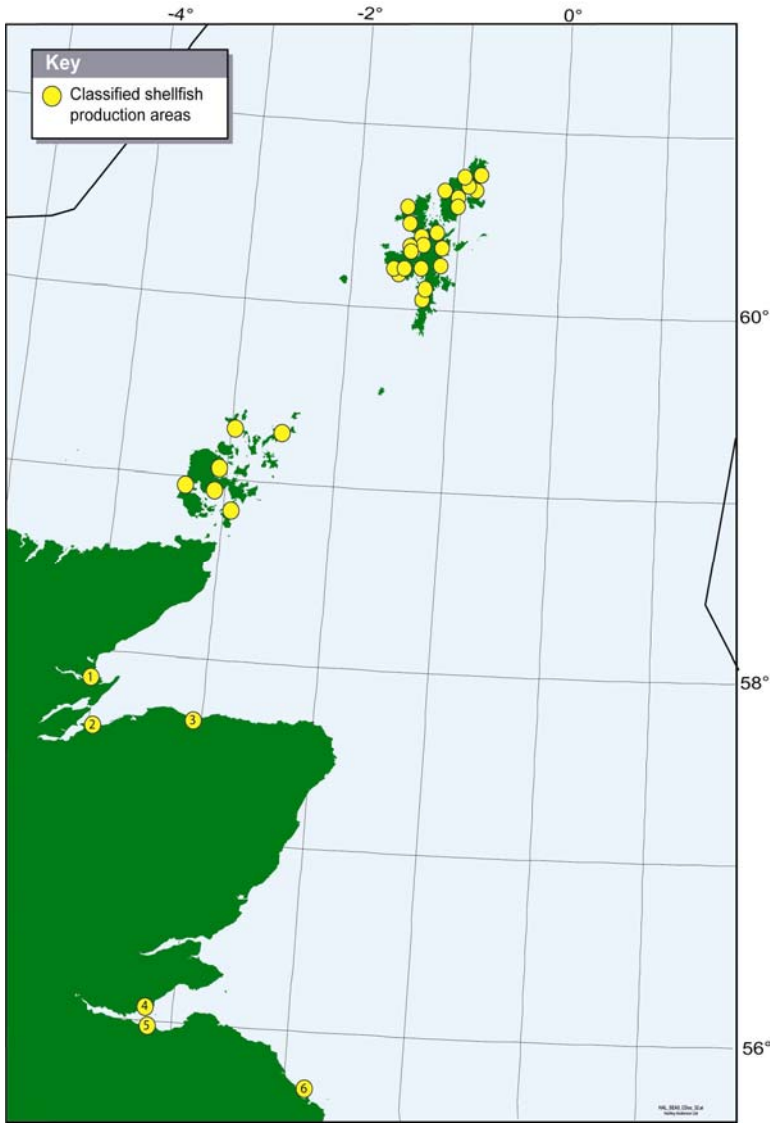
in the Dornoch Firth and the other in the Cromarty Firth (Fisheries Research Services 2003b, Pers. comm. Kate Douglas FRS, Marine Laboratory, Aberdeen).

8.5.2 Management issues and initiatives

Shellfish harvesting classifications

The classification of shellfish harvesting areas in Scotland is compiled by FRS and is required under EC Directive 91/492/EEC on the health conditions for the production and placing on the market of live bivalve molluscs. This Directive is now implemented in the UK by means of the 1998 Regulations which themselves were amended by the *Food Safety (Fishery Products and Live Shellfish) (Hygiene) (Amendment) Regulations 1999*.

Figure 8.8 - Classified shellfish production areas in the SEA 5 area, 2003



Source: Food Standards Agency website - http://www.foodstandards.gov.uk/

The harvesting areas are classified according to the extent to which shellfish sampled from the area are contaminated with *E. coli*, the classification determining the treatment required before the shellfish can be marketed. Shellfish production areas in the SEA 5 area are highlighted in Figure 8.8. The sites marked do not reflect the total number of shellfish farms, rather the main areas from which shellfish can be farmed. Species farmed include mussels, cockles, surf clams and Pacfic oysters.

Water Environment and Water Services (Scotland) Act

The *Water Environment and Water Services (Scotland) Act* received Royal Assent in March 2003 and transposes the EC Water Framework Directive (2000/60/EC) into national legislation. Section 24 of the Act provides for amendment to the *Town and County Planning (Scotland) Act 1997* to the effect that local authorities will be given planning control over marine fish farms out to 3 miles offshore.

Strategic framework for Scottish aquaculture

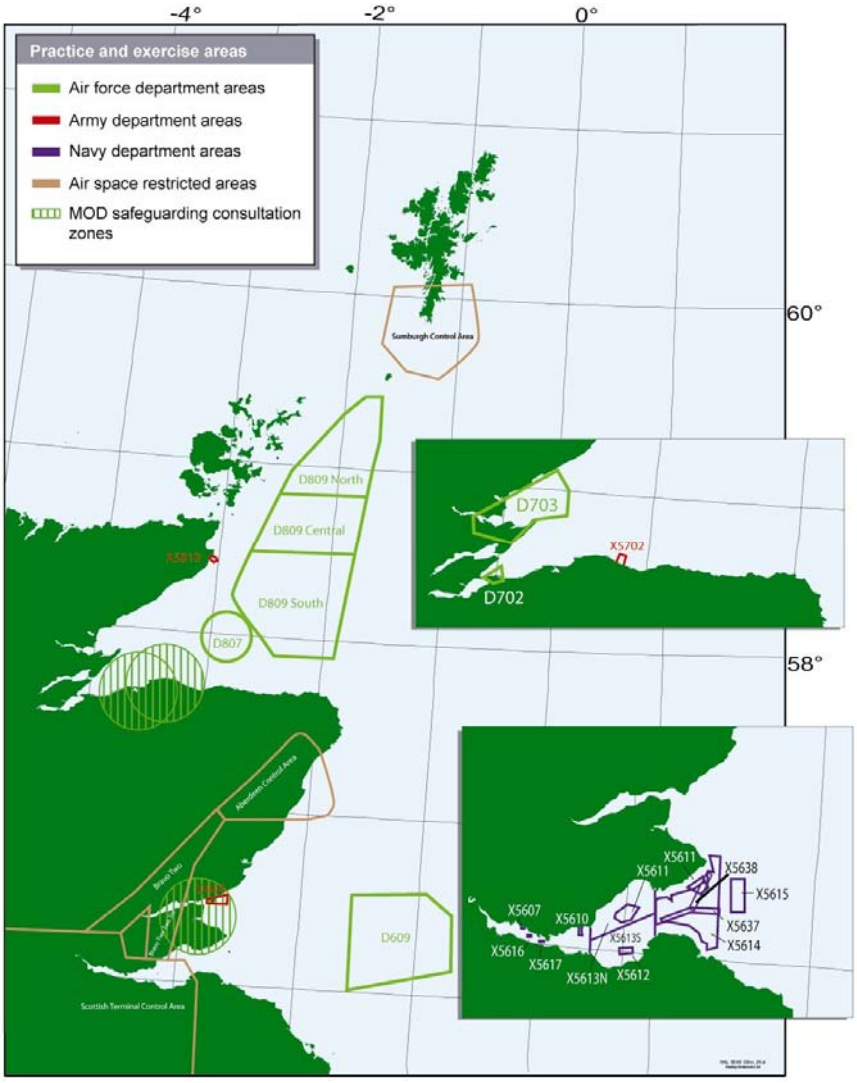
The Strategic Framework for Scottish aquaculture was produced by the Scottish Executive Environment and Rural Affairs Department (SEERAD) in March 2003 and outlines a strategy for the aquaculture industry in Scotland. The framework document describes the importance of sustainability in aquaculture, aquaculture policy developments and outlines the framework for the future development of the industry (Scottish Executive 2003a).

8.6 Military activity

8.6.1 Overview

Several areas of the inner and outer Moray Firth, including an extensive area to the east of Orkney, are utilised by the Air Force for activities which include radar training, high and low-angle gunnery and air to sea or ground firing. Areas in and around the Firth of Forth are predominantly used by the Navy for submarine exercises, mine countermeasures and minesweeping, and explosive trials (Figure 8.9).

Figure 8.9 – Military practice and exercise areas in the SEA 5 area



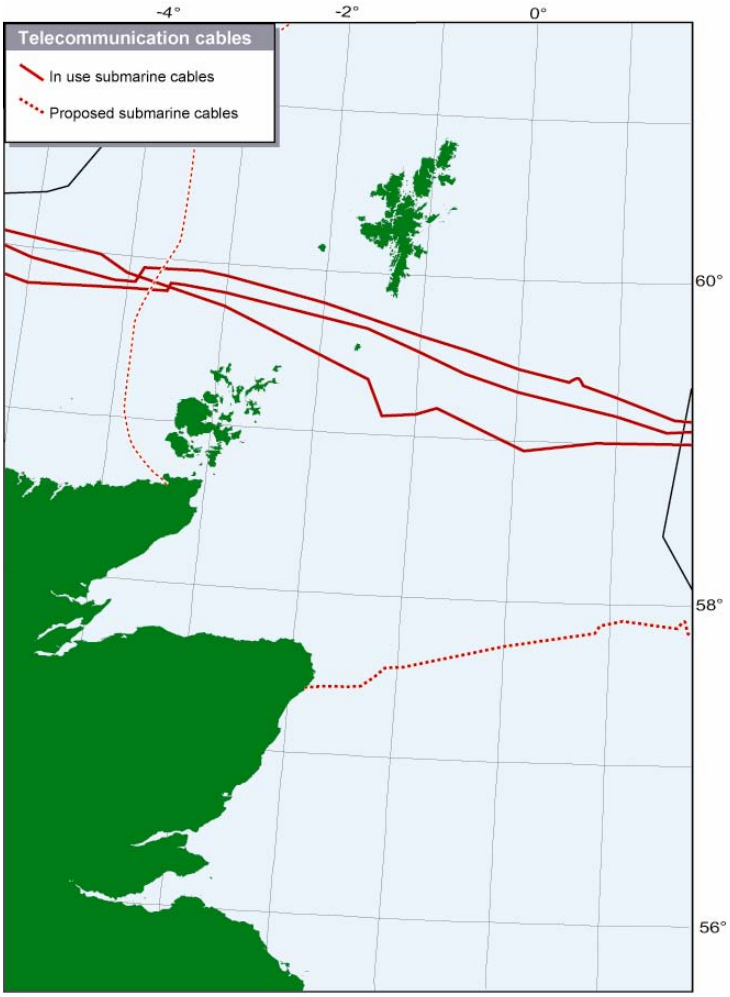
Source: PEXA Chart Q 6404, Q 6405 - Ministry of Defence (2004) Col 792

UK territorial waters are also partially affected by the statutory safeguarding of land-based defence facilities. The statutory safeguarding zones surrounding some of these types of MOD facilities at coastal locations extend over the inshore and offshore area and include two areas of the inner Moray Firth and one centered on the Firth of Tay (Figure 8.9). In addition, the MOD have identified several areas within which proposed developments (in particular renewable energy) may impact upon air defence radar and air traffic control. These areas overlap and extend along the SEA 5 coast from the Moray Firth to the Scottish border.

Military operations in Scottish waters include the triennial exercises run jointly by the Royal Navy and the Royal Air Force. The exercises, called Joint Maritime Courses (JMCs), provide collective training for the warships and aircraft of the UK and allied forces (including German, Canadian and Scandinavian units). JMCs take place mainly off the west coast, but include operations to the north and east of Scotland as well (ETS News website - http://www.ets-news.com/maritime.htm).

8.7 Telecommunication cables

Figure 8.10 – Telecommunication cables in the SEA 5 area



Source: Kingfisher Cable Awareness Charts: North Sea - Northwest Approaches, North and Central

The rapid development of the internet, coupled with growing demands for telecommunication services and improvements in communication technology, have lead to an increase in the number of new subsea telecommunication cables being planned and laid, with many now traversing the North Sea to link the UK with mainland Europe and North America.

There are three telecommunication cables which currently cross the SEA 5 area before reaching landfall on mainland Europe. A proposed BP fibre optic cable (from the Forties field) will make landfall at Cruden Bay on the northeast coast (Figure 8.10).

8.8 Renewable energy

8.8.1 Overview

The UK Government has proposed that by 2010, 10% of UK electricity needs should be met from renewable sources, however, in Scotland, where the promotion of renewable energy is devolved, the Executive have proposed a target of 18% by 2010 and 40% by 2020 (Scottish Executive 2003b).

Interest in renewable energy developments in Scotland's coastal waters and offshore locations has grown in recent years and while wave and tidal devices are predominantly still at the experimental stage, offshore wind farms currently represent the best developed form of offshore renewable technology.

Wind

Currently, there are no operational offshore wind farms in the SEA 5 area, although there are a number of conceptual plans. The most prominent of these is the potential offshore wind farm development in the vicinity of the Beatrice oilfield, approximately 12 miles off the Moray Firth coast.

In 2001, the operator of the Beatrice oilfield, Talisman, undertook a study to investigate the feasibility of utilising the existing oil infrastructure as a hub for a wind farm. However, although the project was technically feasible, the costs involved rendered the development non-viable at that time. In 2003 the Scottish Executive awarded a grant of up to £194,000 to Talisman and its research partner Scottish and Southern Energy to develop the project further. The proposal is to install up to 120 wind turbines, generating approximately 500MW, which would provide approximately 5% of the UK's renewable energy needs (Talisman Energy).

Wave and tidal

Whilst not as developed as offshore wind technology, the exploitation of wave (and tidal) energy offers promise for the long-term. In the UK, three projects have already been awarded contracts under the third Scottish Renewables Order (the first Renewables Order open to wave power). Of these, Seapower International's FWPV is expected to be constructed 500m off Mu Ness in Shetland after initial testing in Sweden and further testing in Scotland, and the prototype Pelamis offshore wave convertor is expected to be tested at the European Marine Energy Centre in Orkney. The third contract was awarded to Wavegen for the LIMPET device, the world's first commercial wave power station located on the shoreline of Islay.

Stingray, the world's first large scale tidal stream generator system, was deployed in Yell Sound off the Shetland coast in 2002 for preliminary testing. The success of these tests has lead to the redeployment of *Stingray* for additional testing, with plans for installing the *Stingray* power station, connected to the local network, in 2004. In September 2003, testing began on a prototype tidal energy turbine, the EXIM* Tidal Turbine, developed by Seapower Scotland and the Lerwick company, Delta Marine. Testing will be at 10 sites in the Bluemull Sound, a stretch of water between Yell and Unst.

8.8.2 Management issues and initiatives

Energy Bill

The Energy Bill, introduced to the House of Lords on 27th November 2003, will establish a comprehensive legal framework to support renewable energy developments beyond territorial waters (12 nautical miles) and augment the regime for inshore waters (UK Parliament website - http://www.parliament.the-stationery-office.co.uk/pa/ld200304/ldbills/002/2004002.htm).

Renewables Obligation

The Renewables Obligation and associated Renewables (Scotland) Obligation came into force in April 2002. It requires power suppliers to supply a specified and growing proportion of their electricity sales from renewable sources. The level of the Renewables Obligation was 3% in 2003, and will increase each year to reach 10.4% in 2010-2011. It was announced in December 2003 that the Renewables Obligation would be extended to rise to 15.4% by 2015, requiring the installation of an additional 5,000MW of new renewables capacity (DTI Renewables website - http://www.dti.gov.uk/energy/renewables/).

Enterprise Committee inquiry into Renewable Energy

The Enterprise Committee of the Scottish Parliament launched a wide ranging inquiry into the development of renewable energy in Scotland in November 2003. The Committee will examine a number of issues including the Scottish Executive's targets for renewable energy and how they relate to the UK (Scottish Parliament website - http://www.scottish.parliament.uk/news/news-03/cent03-002.htm).

8.9 Tourism and leisure

Tourism contributed around £4 billion to the Scottish economy in 2001, representing 5% of the country's GDP, and employs 193,000 people, representing 8% of the Scottish workforce. In 1999 and 2001 a Tourist Attitudes Survey conducted by the Scottish Executive, suggested that over 90% of visitors rated the 'beautiful scenery' as the most important factor in choosing Scotland as a destination (Scottish Executive (2002) 'Tourism framework for action 2002:2005'). The coastal zone is an important resource for this key industry.

SEA 5 contains all the elements of this diverse resource (with the exception of the scenic interplay of sea lochs and mountains, which is found along Scotland's west coast). There are numerous coastal nature conservation areas along the coastline of Shetland, Orkney and the SEA 5 mainland. Examples include the Dornoch Firth, Loch of Strathbeg, Sands of Forvie, Fowlsheugh, St. Cyrus, Montrose Basin, Eden Estuary, Aberlady Bay and the Firth of Forth Islands.

Within SEA 5 particular developments highlight the local importance of wildlife based attractions, for example:

- The Montrose Basin Wildlife Centre which was hailed in 2004 as a model development by the Scottish Minister for tourism, culture and sport.
- The North Berwick Seabird centre which contributes £1 million a year to the local economy and was the site for the launch of Wild Scotland (the new wildlife tourism association) in 2004.

- Boat based observation of marine life, especially dolphins in the Moray Firth, is a fast growing sector (increased by 79% since 1997).

Such developments also demonstrate the importance of wildlife tourism to the Scottish economy, now valued at £74 million, with 3000 jobs throughout Scotland and a growth rate of 50% since 1997 (Wild Scotland (2004) Press release 18/08/04). These and other coastal developments have assisted in reinvigorating local tourism.

Tourism at traditional coastal holiday destinations, such as the towns of the Moray Firth and the Fife and East Lothian coast, has been in relative decline but nevertheless remains important. Another feature of this coastline is the presence of caravan and camping sites along the coast, with large numbers especially along the South Fife and Moray Firth coasts.

Within the region as a whole, the Edinburgh area is of singular importance as a focus for tourism.

Numerous coastal archaeological sites, such as Jarlshof in Shetland; and historical and cultural sites such as Dunnottar Castle in Aberdeenshire, Culross in Fife and the Fisheries Museum at Anstruther are to be found along the SEA 5 coastline.

The many coastal golf courses in the SEA 5 area, some of which are of international importance e.g. St. Andrews, Carnoustie and Muirfield are of great significance as an attraction for overseas visitors. Golf courses, like historical and archaeological sites, also tend to have a longer 'season', being less dependent on summer weather conditions.

A number of SEA 5 beaches have European Blue Flag status. Many old and relatively underused harbours have developed small-scale marinas and sailing centres e.g. Whitehills near Banff and Peterhead (Aberdeenshire). The coastline and nearshore area of the SEA 5 region provides a variety of opportunities for other water-based sports and recreational activities including sport fishing, wind-surfing, sailing and diving.

In order to maintain and enhance the value of this diverse and rich coastal resource base management and promotion have to be developed both sensitively and selectively. This management ranges from conservation protection to investment in infrastructural developments such as transport linkages. In July 2004 the Scottish Coastal Forum produced a comprehensive report, which gave prominence to the importance of tourism and leisure activities within the context of the need for an Integrated Coastal Zone Management approach (SCF (2004) 'A strategy for Scotland's coast and inshore waters').

8.10 Other users of the coastal environment

8.10.1 Coastal settlements

The SEA 5 coast supports a mixture of sparsely populated rural areas and major centres of population, with some of Scotland's most significant urban and industrial areas located in the region, including four of Scotland's six cities.

In 2001 the population in the SEA 5 coastal region was greater than 2 million, accounting for over 42% of the Scottish total. Of this, over 21% lived in the City of Edinburgh (448,624), 16% in Fife (349,429) and nearly 10% in Aberdeen (212,871) (Scotland's Census 2001 website - http://www.gro-scotland.gov.uk/grosweb/grosweb.nsf/pages/censushm).

8.10.2 Aggregate extraction

Sand and gravel are essential materials for coastal protection, beach replenishment and private and industrial construction work. The main area for aggregate extraction in the UK is the southeast of England with only limited commercial deposits located in Scottish waters (Crumpton & Goodwin 1996).

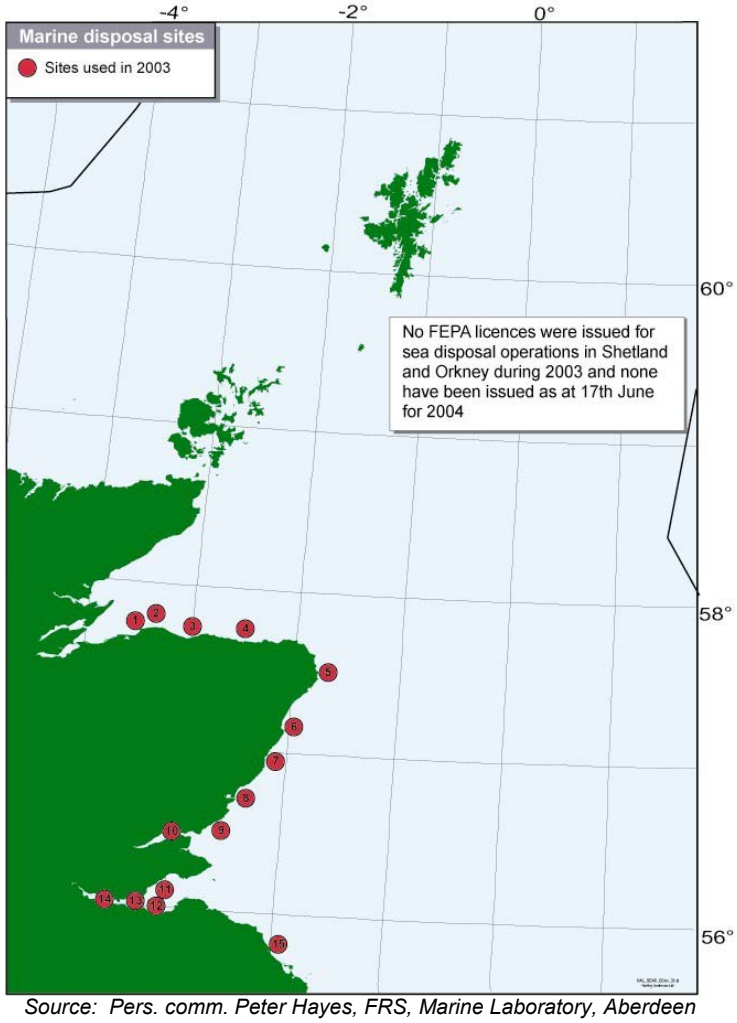
Within the SEA 5 area there are currently two licensed sites for aggregate extraction; one in the Tay Estuary and one in the Firth of Forth, both are active dredge areas (Pers. comm. Kevin O'Shea, Crown Estate).

8.10.3 Marine disposal

The dumping at sea of most forms of industrial waste has been prohibited since 1994, with the disposal of sewage sludge phased out in 1998. Dredged waste from excavated ports and navigation channels now forms the majority of the remaining material eligible for disposal at sea. In Scotland the licensing function for disposal at sea of dredged material is administered by SEERAD through the Fisheries Research Services under the *Food and Environment Protection Act 1985*.

There are a number of sites along the Scottish east coast which are used for the disposal of dredge spoil (Figure 8.11). In 2003, considerable amounts of dredge spoil were disposed of at sites close to Aberdeen, Montrose, and within the Firths of Tay and Forth. No FEPA licences were issued for sea disposal operations in Orkney and Shetland during 2003 and none have been issued to date for 2004 (Pers. comm. Peter Hayes, FRS, Marine Laboratory, Aberdeen).

Figure 8.11 – Marine disposal sites in the SEA 5 area



Source: Pers. comm. Peter Hayes, FRS, Marine Laboratory, Aberdeen

8.10.4 Locally important activities

Four power stations were operational in the SEA 5 area in 2003: Peterhead; Cockenzie; Longannet and Torness (DTI Energy website - http://www.dti.gov.uk/ energy/inform).

The Peterhead oil and gas power station is located at Boddam, 3km south of Peterhead, and opened in 1980 with the initial intention of utilising North Sea oil. However, a rise in the oil price saw the station convert to gas, which can be piped directly from the Brent Field. The station draws cooling water direct from the sea and the

nearby harbour facilitates the unloading of fuel-oil. An estimated 160 people are employed at the power station.

Cockenzie is a coal-fired power station located at Prestonpans, East Lothian, on the south shore of the Forth Estuary. Built in 1967/1968, the station is used primarily to guarantee security of electricity supply during seasonal or peak periods or the non-availability of other plants (Scottish Power website - http://www.scottishpower. com).

Longannet, a coal-fired power station built in 1970, is located on the edge of the River Forth near Kincardine Bridge. The station is involved in a project to achieve useful energy recovery from waste derived fuel (Scottish Power website - http://www.scottishpower.com).

Torness is a nuclear power station located on the east Lothian coast, 5 miles southeast of Dunbar. The station is operated by British Energy PLC and is one of the largest employers in East Lothian, employing over 600 staff. The station opened in 1988 and has an installed capacity of 1,250MW.

8.11 Coastal and marine management initiatives

8.11.1 Introduction

There is a long history of marine management initiatives in the SEA 5 area, for example various areas were closed to trawl fishing for 12 years in the late 1800s (McIntosh 1899). It is clear from the preceding descriptions of existing users and the information provided in Section 7 that the SEA 5 area supports a wide range of important 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 and include a range of:

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

Given that details of these initiatives have been described in the SEA 5 Existing Users report as well as previously for SEA 4, this current section will provide a brief summary of the main initiatives expanding on areas not covered previously.

8.11.2 Coastal planning initiatives

Coastal planning initiatives offer an important mechanism of directing coastal development to appropriate areas thereby maintaining the character of the coastal environment. Initiatives include:

- National Planning Policy Guidelines (NPPG) 13 which set out the Scottish Executive's policy on coastal planning matters and are transposed into a strategic planning policy through development plans.
- Development plans are made up of two parts - a structure plan and a local plan. The structure plan for an area takes a long-term strategic view of development while local plans set out more detailed policies and proposals to guide development. All the relevant local authorities within the SEA 5 area have structure plans in place.

- Shoreline Management Plans (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 to people and the environment (DEFRA 2001). Whilst there is no statutory requirement for Scottish authorities to prepare SMPs, a number of local authorities relevant to the SEA 5 area have done so.

8.11.3 Coastal water quality initiatives

The Water Framework Directive (Directive 2000/60/EC) was adopted by the European Parliament and the Council of the European Union in December 2000 and has been transposed into Scottish law through the passing of the *Water Environment and Water Services (Scotland) Bill* in January 2003.

The Directive introduces two key changes as to the way the water environment will be managed:

- New broader ecological objectives designed to protect and, where necessary, restore the structure and function of aquatic ecosystems.
- A river basin management planning system which will be the key mechanism for ensuring the integrated management of groundwater, rivers, canals, lochs, reservoirs, estuaries and other brackish waters, and coastal waters.

In Scotland, a single Scottish River Basin Management Plan is likely to be supplemented by sub-basin plans. These will introduce a statutory basis to the strategic management of catchments and coastal zones. The Directive will also replace or integrate a range of previous water directives (e.g. on urban wastewater, freshwater quality for fish, bathing water quality, shellfish water quality, nitrates), and strengthen linkages with the aquatic and wetland aspects of the Birds and Habitats Directives (SEPA website - http://www.sepa.org.uk/wfd/index.htm).

8.11.4 Coastal and marine nature conservation initiatives

Presently, there are a number of initiatives underway which may influence conservation management of the SEA 5 coastal and marine resource:

- Continued development of management plans for marine SACs. Relevant management schemes in operation include those for the Moray Firth marine cSAC and the Berwickshire and North Northumberland Coast European marine site.
- Initiatives to establish offshore conservation sites including the Offshore Natura 2000 Project and OSPAR's Marine Protected Areas programme.
- The Review of Marine Nature Conservation (RMNC) was set up in 1999 to examine the effectiveness of the system for protecting nature conservation in the marine environment. The Review's recommendations have been tested through the Irish Sea Pilot, the outcomes of which have now been published.
- The development of a framework for mapping European seabed habitats (MESH). JNCC will lead a mapping programme due to start in spring 2004 which will produce seabed habitat maps covering the marine waters of northwest Europe.
- A number of biodiversity and sustainability initiatives including Biodiversity Action Plans and the 'Sustainable Scottish Marine Environment Initiative', which aims to develop and test the benefits of new management frameworks for the sustainable development of Scotland's marine resources.

8.11.5 Integrated Coastal Zone Management (ICZM)

Integrated Coastal Zone Management is a process that brings together all those involved in the development, management and use of the coast within a framework that facilitates the integration of their interests and responsibilities. The objective is to establish sustainable levels of economic and social activity in coastal areas while protecting the coastal environment.

Key European ICZM initiatives include:

- The adoption by the EU of a Recommendation on Integrated Coastal Zone Management (ICZM) in May 2002. The UK is currently preparing a national coastal strategy as part of its EU commitment, the first phase of which was the completion of a national stocktake of ICZM in March 2004.

- The development of an EU marine strategy which will cover a range of themes including: loss of biodiversity and destruction of habitats; hazardous substances; eutrophication; radionuclides; chronic oil pollution; litter; maritime transport; health and environment; climate change; enhancing co-ordination and co-operation, and improving the knowledge base.

At a national level, the 'Focus on Firths' Project, later to become the 'Firths Initiative' was set up in 1992 by Scottish Natural Heritage (SNH) in response to the growing awareness of the need for better management to promote and co-ordinate ICZM of these areas. As a result, a number of voluntary local management partnerships have been established in the SEA 5 area, these include:

- The Moray Firth Partnership which focuses on the coast and sea from Duncansby Head in Caithness to Fraserburgh in Aberdeenshire, its main objective being to ensure more integrated and informed management of the Firth.
- The Tay Estuary Forum which promotes a sustainable, integrated and co-ordinated approach towards management and use of the Firth of Tay and local coastline.
- The Forth Estuary Forum whose management strategy forms the basis for the management of the Forth.