



## **Strategic Environmental Assessment SEA 6: Other Users**

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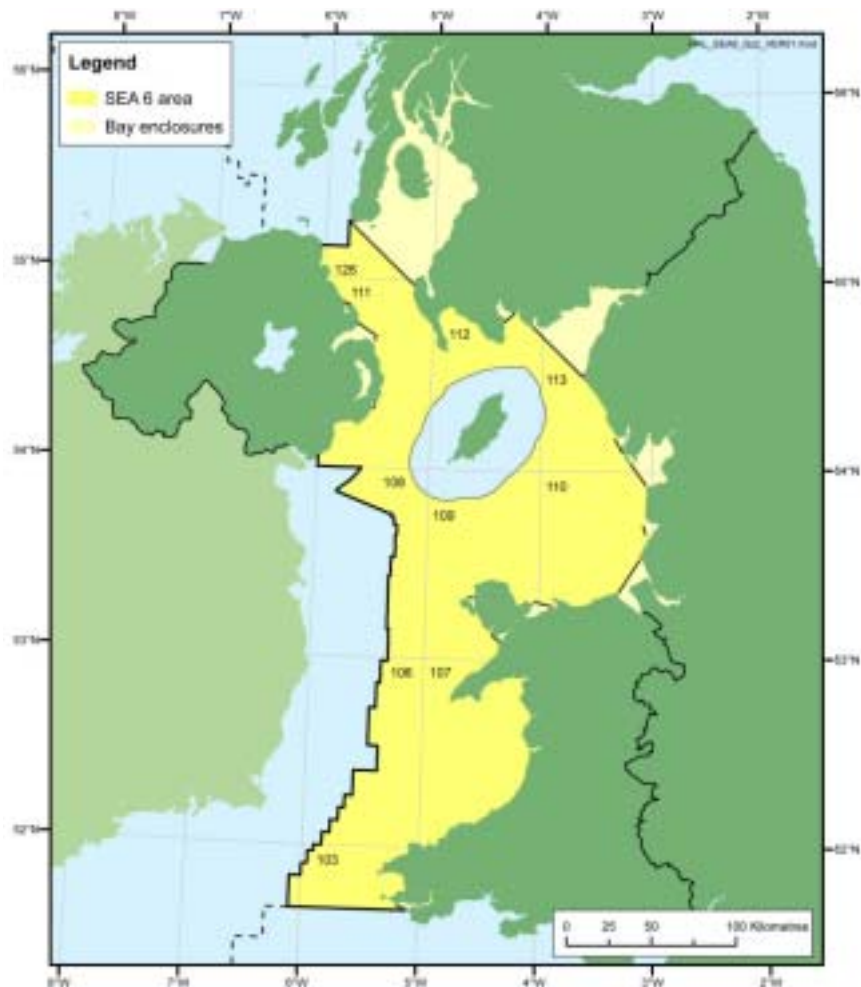
# 1 INTRODUCTION

The area of SEA 6 covers the eastern Irish Sea, Cardigan Bay, and the St George's Channel (Figure 1.1). The area supports different users and activities, many of which are focussed in particular coastal and marine areas. The SEA 6 area is a mixture of rural sparsely populated areas and highly developed centres of population. The primary contributors to the national and regional economy are tourism and leisure, oil and gas, ports and shipping and locally naval defence. The renewable energy sector is also increasing and may provide significant local opportunities for the port and local construction industries in the future.

In general, significant coastal development is centred upon the north-western coast and the large rivers/estuaries in the region; Blackpool, River Mersey, River Dee and Milford Haven. The importance of these areas has led to the development of coastal fora which seek to balance the environmental and economic characteristics of these areas.

This report presents an overview of the coastal population of the SEA 6 area and the industries and activities using the SEA 6 area including:

- Oil and gas activity
- Ports and shipping
- Mariculture
- Military activity
- Telecommunication cables
- Renewable energy
- Aggregate extraction
- Marine disposal
- Tourism and leisure
- Locally important activities
- Coastal and marine archaeology
- Coastal and marine management initiatives



*Figure 1.1 SEA 6 region and boundaries. To allow full consideration, the SEA 6 area is shown extending to the shoreline within bay enclosure lines (shaded paler yellow) although these areas would not form part of an offshore oil and gas licensing round. Please note also that this map includes a corrected scale bar, which for reasons related to mapping projections is not included in other maps in this report.*

## 2 COASTAL POPULATIONS

### 2.1 Introduction

The SEA 6 coastal area is a mixture of sparsely populated rural areas and major centres of population, with some of the UK's most significant urban and industrial areas located in the region. The coast also supports a number of smaller towns and villages.

### 2.2 Demographics and socio-economics

#### 2.2.1 Population

The total human population residing within 10 km of the Irish Sea coastline was estimated as 6 million in 2004 (Vincent *et al.*, 2004). However, this estimate includes settlements along the east coast of the Republic of Ireland which is not included in the SEA 6 area. The total population residing in the SEA 6 council areas in 2001 was over 3.7 million (Table 2.1). Of this 12 % resided in Liverpool (439,473), 8 % in Wirral (312,293) and 7.5 % in both Sefton (282,958) and Belfast (277,391).

Table 2.1 Population in SEA 6 Council areas. Source: Neighbourhood Statistics website - <http://www.neighbourhood.statistics.gov.uk>

Council area	Population 2001	Area (km <sup>2</sup> )	Density (persons/km <sup>2</sup> )
Ceredigion	74,941	1,794	42
Conwy	109,596	1,126	100
Denbighshire	93,065	837	100
Flintshire	148,594	438	300
Gwynedd	116,843	2,535	46
Isle of Anglesey	66,829	711	100
Pembrokeshire	114,131	1,618	100
Blackpool	142,283	35	4100
Ellesmere port & Neston	81,672	n/a	n/a
Halton	118,208	79	1500
Liverpool	439,473	112	3900
Oswestry	37,308	256	100
Preston	129,633	142	900
Sefton	282,958	153	1800
Warrington	191,080	181	1100
Wirral	312,293	157	2000
Wyre	105,618	283	400
Argyll & Bute	91,306	6909	13
Dumfries & Galloway	147,765	6426	23
North Ayrshire	135,817	885	153
South Ayrshire	112,097	1222	92
Douglas	25,347	n/a	2000
Onchan	8,803	n/a	750
Ards	73,244	n/a	196



Council area	Population 2001	Area (km <sup>2</sup> )	Density (persons/km <sup>2</sup> )
Belfast	277,391	n/a	2477
Carrickfergus	37,695	n/a	476
Down	63,828	n/a	101
Larne	30,832	n/a	92
Moyle	15,933	n/a	33
Newtownabbey	79,995	n/a	533
North Down	76,323	n/a	953
<b>Total</b>	<b>3,740,901</b>	n/a	

### 2.2.2 Coastal settlements

The stretch of coast between Liverpool Bay and the Solway Firth is one of the most intensively developed in the UK reflected in the high population densities; Liverpool, Wirral and Blackpool have the highest population densities and populations in the SEA 6 area (Tables 2.1 and 2.2). In contrast, the rural areas of Ceredigion, Gwynedd, Argyll & Bute and Dumfries & Galloway for example, are relatively sparsely populated. Similarly, the main population centre in Northern Ireland is Belfast which is home to more than 270,000 people. Other settlements along the Northern Ireland coast are much smaller in comparison.

Douglas on the Isle of Man has a population density comparable to Belfast (Table 2.1) despite having a population of only 22,214. However, it is the main centre of population on the island.

### 2.2.3 Socio-economics

The primary contributors to the regional economy are tourism, oil and gas production, ports and shipping and locally naval defence. Fisheries, renewable energy, mariculture and marine aggregates also contribute to the economy and employment of the SEA 6 area but to a lesser extent (Vincent *et al.* 2004).

Oil and gas is amongst the most important of the Irish Sea marine-related economic activities with a total revenue in 2001 of £1.56 billion. The number of people directly employed in activities relating to oil and gas production in the Irish Sea is in the order of 700-1000. These include about 350 people employed offshore, and some 450 people employed at the Heysham support base and the Barrow and Point of Ayr gas terminals.

Of all the marine sectors, tourism and leisure probably makes the biggest contribution to the regional economy of the SEA 6 area. Available statistics for the whole of the Irish Sea indicate a contribution to the regional economy in the order of £2.5 billion per annum, with between 100,000-200,000 people directly employed in the sector.

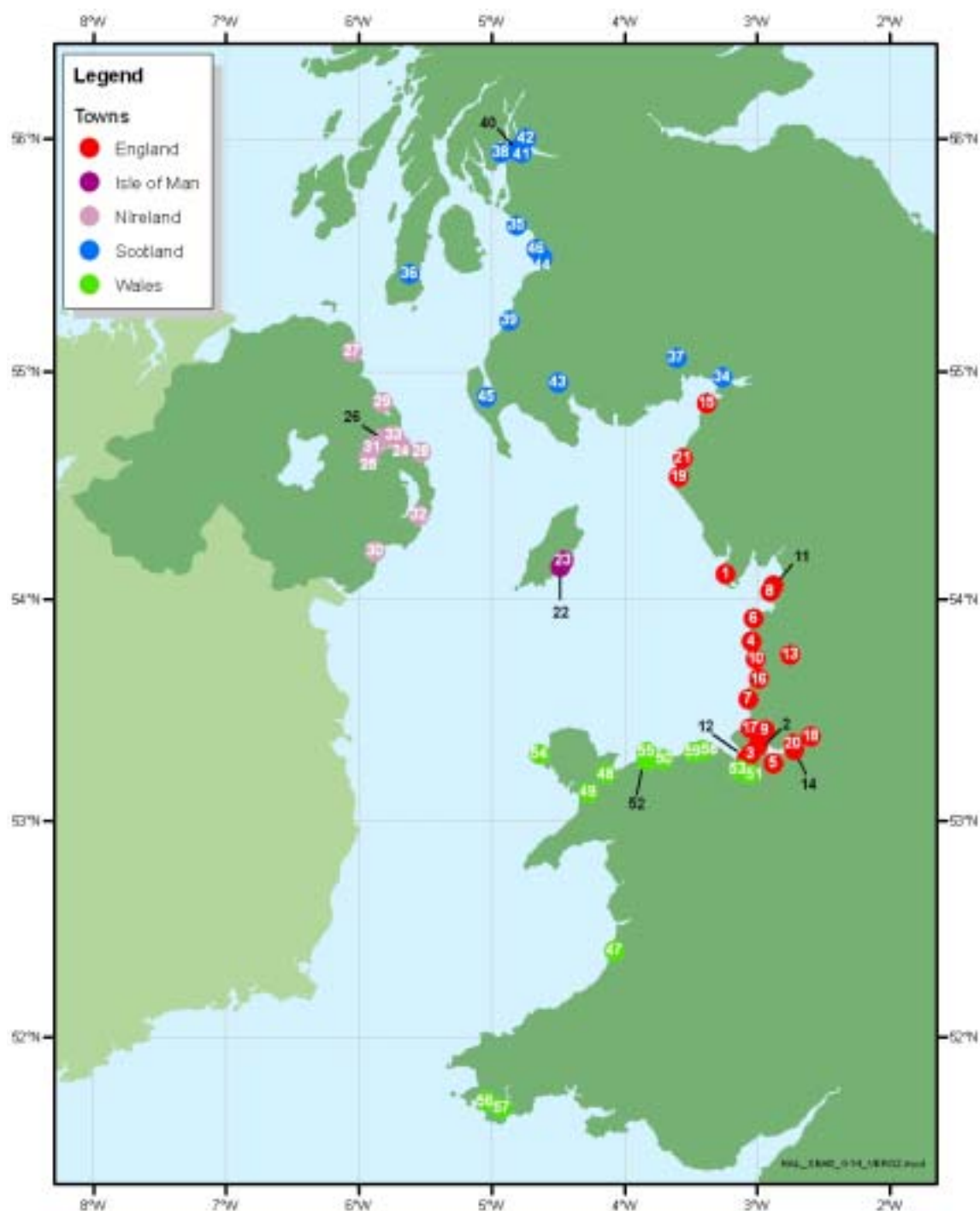


Figure 2.1 Major coastal settlements in the SEA 6 area. c.f. Table 2.2 for settlement names and populations.

Table 2.2 Major coastal settlements in the SEA 6 area. Source: Cook (2005) and <http://neighbourhood.statistics.gov.uk>, c.f. Figure 2.1

	Settlement	Local Authority	Population		Settlement	Local Authority	Population
<b>England</b>				<b>Scotland</b>			
1	Barrow-in-Furness	Barrow-in-Furness	71,980	34	Annan	Dumfries & Galloway	8,389
2	Bebington	Wirral		35	Ardrossan	North Ayrshire	10,952
3	Birkenhead	Wirral	93,087	36	Campbeltown	Argyll & Bute	5,144
4	Blackpool	Blackpool	153,600	37	Dumfries	Dumfries & Galloway	31,146
5	Ellesmere Port & Neston	Ellesmere Port & Neston	81,672	38	Dunoon	Argyll & Bute	8,251
6	Fleetwood	Wyre	27,227	39	Girvan	South Ayrshire	6,992
7	Formby	Sefton		40	Gourock	Inverclyde	11,511
9	Liverpool	Liverpool	481,786	41	Greenock	Inverclyde	45,467
10	Lytham St. Annes		40,866	42	Helensburgh	Argyll & Bute	14,626
11	Morecambe & Heysham	Lancaster	46,657	44	Prestwick	South Ayrshire	14,934
13	Preston	Preston	129,633	45	Stranraer	Dumfries & Galloway	10,851
14	Runcorn	Halton	64,154	46	Troon	South Ayrshire	14,766
15	Silloth	Allerdale		<b>Wales</b>			
16	Southport	Sefton	90,959	47	Aberystwyth	Ceredigion	11,154
17	Wallasey	Wirral	60,895	48	Bangor	Gwynedd	12,330
18	Warrington	Warrington	191,080	49	Caernarfon	Gwynedd	9,695
19	Whitehaven	Oswestry	26,542	50	Colwyn Bay	Conwy	29,883
20	Widnes	Halton	57,162	51	Connah's Quay	Flintshire	14,443
21	Workington	Allerdale	25,579	52	Conwy	Conwy	3,627
<b>Northern Ireland</b>				53	Flint	Flintshire	11,737
24	Bangor	Down	58,368	54	Holyhead	Anglesey	11,796
25	Belfast	Belfast	277,391	55	Llandudno	Anglesey	14,576
26	Carrickfergus	Carrickfergus	37,659	56	Milford Haven	Pembrokeshire	13,194
27	Cushendall	Moyle	1,242	57	Pembroke	Pembrokeshire	6,773
28	Donaghadee	Ards	6,474	58	Prestatyn	Denbighshire	15,020
30	Newcastle	Down	7,431	59	Rhyl	Denbighshire	24,909
31	Newtownabbey	Newtownabbey	62,022	<b>Isle of Man</b>			
32	Portaferry	Ards	2,478	22	Douglas	Isle of Man	22,214
33	Whitehead	Carrickfergus	3,711	23	Onchan		8,829

## 3 OIL & GAS ACTIVITY

### 3.1 Introduction

Production from UK offshore oil fields in 2004 reached in excess of 89.6 million tonnes of oil, 36.8 million tonnes of gas and 536 thousand tonnes of condensate (DTI Oil and Gas website - <http://www.og.dti.gov.uk/information/index.htm>). Oil and gas reserves in the Irish Sea make a significant contribution to the UK's energy needs. For example, in 2001 Irish Sea gas contributed the equivalent of 13.6% of UK gas production, whilst Irish Sea oil contributed 2.77% of UK oil production (Vincent *et al.* 2004).

Activity in the SEA 6 area has primarily centred on oil and gas fields in the Liverpool Bay area and off the coast of Cumbria (Figure 3.1). The Liverpool Bay development of oil and gas fields is BHP Petroleum's largest single project worldwide. It comprises 4 oil and gas fields, Douglas, Hamilton, Keith and Lennox together with significant offshore and onshore facilities used for extracting, transporting and processing these reserves. In addition, there are major oil refineries located in Pembrokeshire and South Wirral.

After years of being a net-exporter of natural gas, the UK is expected to become a net-importer of natural gas in 2005-2006. In response, the government has begun developing import infrastructure, such as liquefied natural gas (LNG) regasification terminals and pipelines (Energy Information Administration website - <http://www.eia.doe.gov/emeu/cabs/uk.html>). In the SEA 6 area, there are plans to develop a terminal for the importation and storage of LNG at Milford Haven.

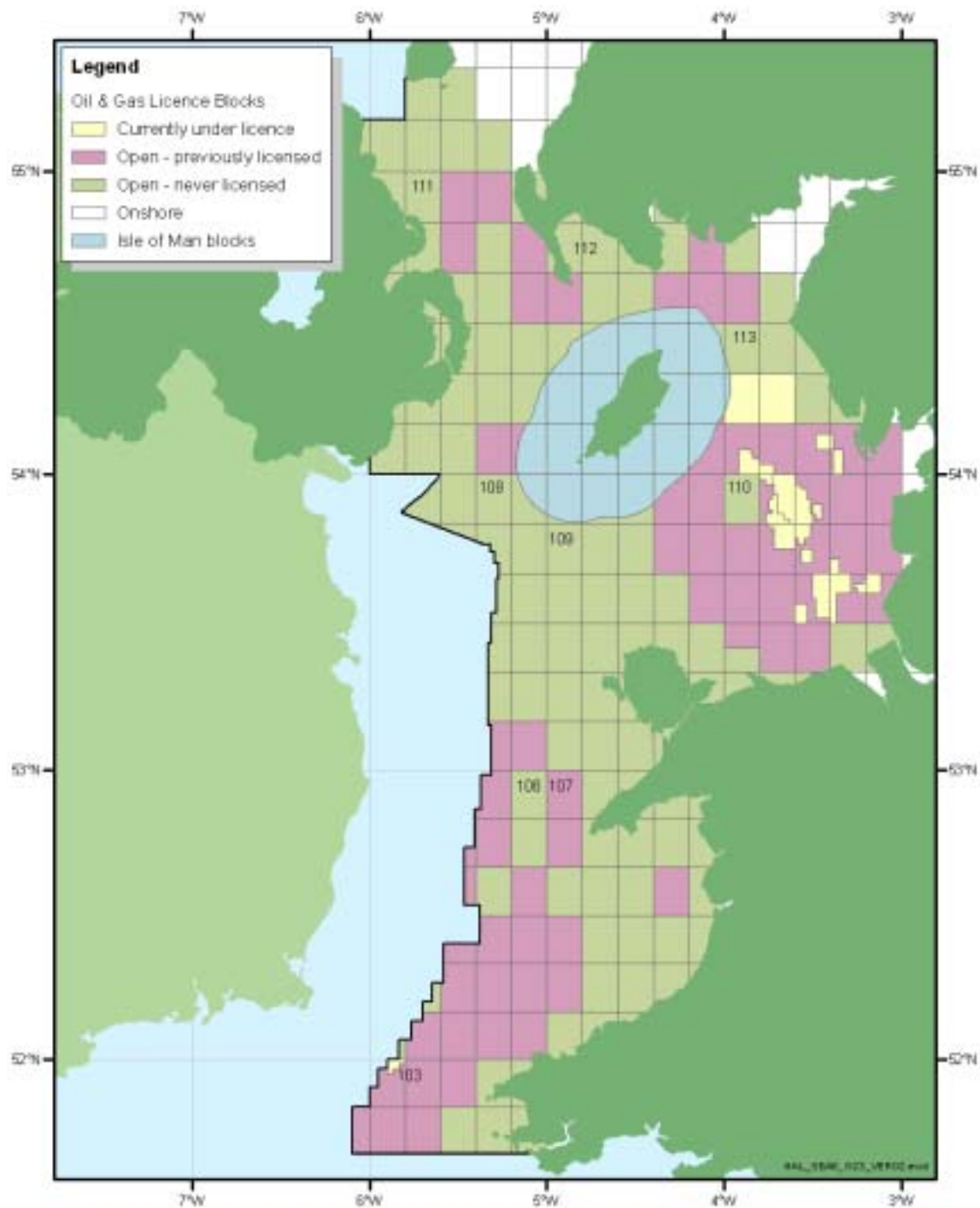


Figure 3.1 Licensed blocks for oil and gas exploration in the SEA 6 region. GIS data source: UK DEAL website: [www.ukdeal.co.uk](http://www.ukdeal.co.uk)

## 3.2 Upstream activity in SEA 6 area

### 3.2.1 Wells & Fields

Between 1994 and 2004, 26 exploration wells, 4 appraisal and 90 developmental wells were drilled in the SEA 6 area (Table 3.1 and Figure 3.2).

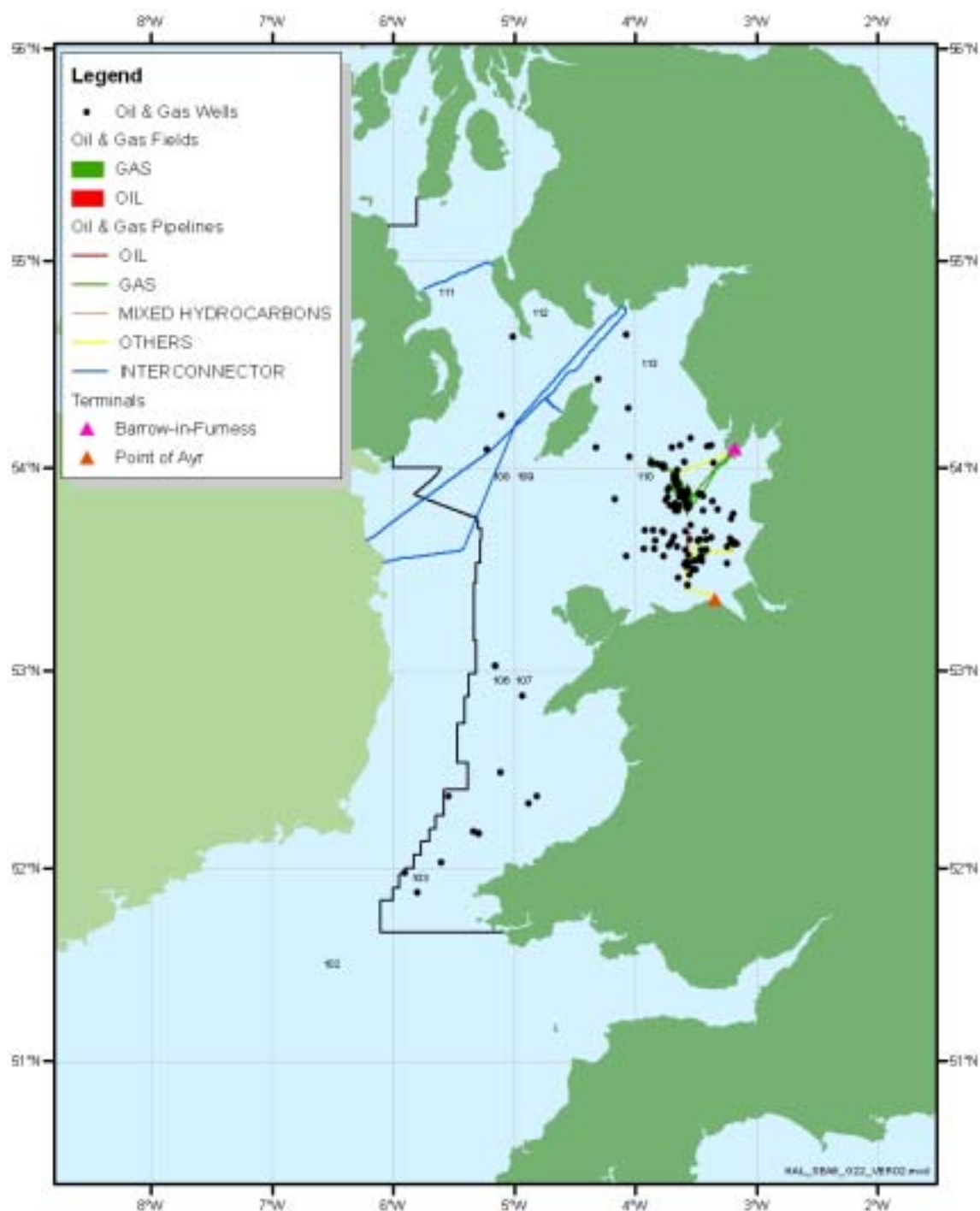


Figure 3.2 Oil and gas fields, production and pipelines in the SEA 6 region. GIS data source: UK DEAL website: [www.ukdeal.co.uk](http://www.ukdeal.co.uk)

Table 3.1 Drilling activity in West of England/Wales 1994-2004. Source: DTI Oil and gas website-<http://www.og.dti.gov.uk/information/index.htm>.

Area	Exploration wells	Appraisal wells	Development wells
West of England/Wales	26	4	90

Two groups of gas/oil fields are exploited in the eastern Irish Sea: the Liverpool Bay fields operated by BHP (<http://www.offshore-technology.com/projects/bhp/>) and the Rivers Fields development (40 km west of Walney Island, Barrow-in-Furness) operated by Centrica for Burlington

(<http://www.offshore-technology.com/projects/rivers/>). The total recoverable reserves in Liverpool Bay are currently estimated to be in excess of 20.5 million tonnes of oil and 0.37 trillion m<sup>3</sup> of gas. With peak oil production expected to average 9550 tonnes per day and a peak capacity of 91 million m<sup>3</sup> of gas per day, the life of the development is projected to be at least 20 years (Offshore Technology website - <http://www.offshore-technology.com>). In 2004 the Liverpool Bay fields produced a total of 1.69 million tonnes of oil from Douglas, Keith and Lennox and in 2003, 2753 million m<sup>3</sup> of gas from Hamilton (Table 3.2).

*Table 3.2 Operational oil and gas fields in SEA 6 area. Production shows total production of oil (tonnes) in 2004 and total production of gas (million m<sup>3</sup>) in 2003; n/a data unavailable, for example production start date for the Hamilton East gas field. Source: DTI Oil and Gas website - <http://www.og.dti.gov.uk/information/index.htm>.*

Operator	Field name	UK quadrant/block	Field type	Discovery date	Production start	Production
BHP	Douglas	UK110/13	Oil	11/1990	1/1/1996	394,484
BHP	Douglas West	UK110/13	Oil	02/1997	4/2003	99,745
BHP	Hamilton	UK110/13	Gas	06/1990	2/1/1997	1,833
BHP	Hamilton East	UK110/13	Gas	12/1993	n/a	354
BHP	Hamilton North	UK110/13	Gas	05/1991	2/1/1996	566
BHP	Keith	UK009/08	Oil	08/1983	n/a	93,756
BHP	Lennox	UK110/15	Oil	07/1992	2/1/1996	1,098,006
Burlington	Bains	UK110/2	Gas	n/a		505
Burlington	Calder	UK110/07	Gas	02/1982	n/a	n/a
Burlington	Dalton	UK110/02	Gas	05/1990	8/1/1999	110
Burlington	Millom	UK113/26	Gas	08/1982	8/1/1999	927
Burlington	North Morecambe	UK110/2	Gas	n/a		2,594
Burlington	South Morecambe	UK110/2,3 & 8	Gas	n/a		7,526

The Cumbrian gas fields Millom and Dalton (UK blocks 113/26 and 110/02) are operated by Centrica subsidiary Hydrocarbon Resources on behalf of Burlington and have recoverable estimated reserves of 67 and 15-31 billion m<sup>3</sup> respectively. The Millom field produces at an average rate of 30.5 million m<sup>3</sup> per day, giving an estimated field life of 20 years. In 2003 Millom produced 927 million m<sup>3</sup> of gas whilst Dalton produced 110 million m<sup>3</sup> of gas (Table 3.2).

In June 2002 Burlington Resources received approval for its £165 million Rivers Fields Development. The five fields Calder, Darwen, Crossans, Hodder and Asland are under development and are thought to have at least 91 billion m<sup>3</sup> of reserves. Calder is thought to have the largest reserves and is the only field currently on stream (Offshore Technology website - [www.offshore-technology.com/projects/rivers/](http://www.offshore-technology.com/projects/rivers/)). No production figures were available for Calder (UK block 110/07).

Total oil production from the fields in SEA 6 in 2004 was 1.7 million tonnes. Total gas production for SEA 6 in 2003 was 14.4 billion m<sup>3</sup> (Table 3.2).



### 3.2.2 Terminals and pipelines

Two gas receiving terminals are situated on the SEA 6 coast (Figure 3.2):

The Point of Ayr gas processing terminal in North Wales is part of BHP Petroleum's integrated Liverpool Bay Development. Oil and gas from all four fields is received at the three-platform Douglas complex. The oil is then sent to an 870,000bbl capacity tanker, which is permanently moored outside shipping lanes in the Irish Sea. From here it is loaded into tankers and exported worldwide (Offshore Technology website - [www.offshore-technology.com](http://www.offshore-technology.com)). Gas is received at the Point of Ayr terminal via a pipeline from Douglas (Table 3.3 & 3.4 and Figure 3.2).

The Barrow-in-Furness terminal in Cumbria, operated by BGS, receives gas from the Morecambe North and Morecambe South pipelines (Table 3.3 & 3.4 and Figure 3.2), which are operated by Burlington Resources. Morecambe South was built as part of the Rivers Fields Development.

Table 3.4 and Figure 3.2 show the pipelines between fields and between fields and gas terminals and oil storage facility at Douglas. Pipelines connected to the terminals at Walney Island, Barrow-in-Furness and Point of Ayr, North Wales receive gas directly from the fields offshore.

*Table 3.3 Gas receipts for Morecambe North and South (Barrow-in-Furness) and Point of Ayr (North Wales) terminals in SEA 6 area, 2003. Source: DTI, Oil and Gas website - <http://www.og.dti.gov.uk/information/index.htm>*

Terminal	Pipeline system	Terminal receipts (million m <sup>3</sup> )	Production from
Barrow-in-Furness	Morecambe North	3363	Bains, Dalton, Millom, Morecambe North
Barrow-in-Furness	Morecambe South	7853	Morecambe South
Point of Ayr	Point of Ayr	2617	Hamilton, Hamilton East, Hamilton North
	<b>Total</b>	<b>13833</b>	

*Table 3.4 Pipelines between fields and terminals in SEA 6 area. Source: DTI, 2005*

From-to	Material conveyed	Length of pipeline (km)	Diameter of pipeline (mm)	Operator	Year commissioned
Bains-South Morecambe	Natural gas	2.1	256.9	Hydrocarbon Res. Ltd	2002
Dalton-North Morecambe	Natural gas	7	323.9	Hydrocarbon Res. Ltd	1999
Hamilton-Douglas	Natural gas	11.5	508	BHP Petroleum	1996
Hamilton North-Douglas	Natural gas	14.6	355.6	BHP Petroleum	1995
Hamilton North-Hamilton East	Natural gas	6.5	258.5	BHP Petroleum	2001
Lennox-Douglas	Crude oil	32	355.6	BHP Petroleum	1996
Lennox-Douglas	Associated gas	32	406.4	BHP Petroleum	1996
MillomEast-North Morecambe	Natural gas	8.9	323.9	Hydrocarbon Res. Ltd	1999
Morecambe North-Walney	Natural gas	31	914.4	British Gas	1994



From-to	Material conveyed	Length of pipeline (km)	Diameter of pipeline (mm)	Operator	Year commissioned
Island Morecambe South-Walney Island	Natural gas	37.7	914.4	British gas	1984
Rivers-Walney Island	Natural gas	42.6	610	Burlington Resources	2003

### 3.3 Downstream activity in SEA 6 area

#### 3.3.1 Oil refineries

There are 9 major oil refineries in the UK with a distillation capacity of 88 million tonnes per annum (DTI Oil and Gas website - <http://www.og.dti.gov.uk/information/index.htm>); three of these refineries are located in the SEA 6 area (Table 3.5).

*Table 3.5 Major UK oil refineries in SEA 6*

Refinery	Location
Shell UK Ltd	Ellesmere Port, South Wirral
Texaco Ltd	Pembroke, Pembrokeshire
TotalFinaElf/Murco	Milford Haven, Pembrokeshire

#### 3.3.2 Proposed Liquefied Natural Gas (LNG) terminal

Dragon LNG, a joint venture between Petroplus, BG Group and Petronas of Malaysia plans to develop a terminal for the importation and storage of LNG at Waterston, Milford Haven. The initial development phase of the Terminal consists of two LNG storage tanks and re-gasification equipment to store 308,000 m<sup>3</sup> of LNG and process 4.6 million tonnes of LNG per year to create approximately 6 billion m<sup>3</sup> of Natural Gas into the National Transmission System. The facility is planned to start production in late 2007 (Dragon website- <http://www.dragonlng.co.uk/index.html>).

#### 3.3.3 Interconnectors

There are three interconnector pipelines in the SEA 6 area. Pipelines from the UK to the Irish Gas Inter-connector and between Portnaughan Bay in Scotland and Castle Robin transport gas from the mainland to the Isle of Man, Republic of Ireland and Northern Ireland (Figure 3.2 and Table 3.6).

Table 3.6 Interconnector pipelines in SEA 6 area. Source: DTI, 2005

From-to	Material conveyed	Length of pipeline (km)	Diameter of pipeline (mm)	Operator	Year commissioned
UK-Irish Gas Inter-connector section in UK waters	Natural gas	32.4	609.6	Bord Gais Eirann	1993
UK-Irish Gas Inter-connector section in UK waters	Natural gas	79.1	762	Bord Gais Eirann	2002
Portnaughan Bay-Castle Robin (SNIP)	Natural gas	40.4	609.6	Premier Transco	1996

### 3.4 Management issues and initiatives

The range of potential issues, for the environment, health and safety, associated with the oil and gas industry is wide. Some of the main management issues are considered in this section.

#### 3.4.1 Environmental Management Systems

Both BHP Billiton Petroleum and Centrica operate Environmental Management Systems to control emissions, spills and many other aspects of their operations; both offshore and at their land based terminals.

#### 3.4.2 Oil spills and contingency plan

The potential for oil spills to harm birds and marine and coastal wildlife is well known, especially in sheltered embayments and estuaries, such as Liverpool Bay, Morecambe Bay and Milford Haven. The SEA 6 area has already experienced one of the largest oil spills to date, when the *Sea Empress* ran aground at the entrance to Milford Haven on 15<sup>th</sup> February 1996. Seventy two thousand tonnes of light crude oil was released into the sea in an area of exceptional value for wildlife, tourism and natural beauty. The oil tanker responsible was delivering oil to the refinery in Milford Haven.

Contingency plans and response arrangements are in place on all drilling rigs, production platforms and at all terminals and oil ports to deal with oil spills; as required under the Merchant Shipping (Oil Pollution Preparedness, Response and Co-operation Convention) Regulations 1998. The National Contingency Plan for Marine Pollution from Shipping and Offshore Installations is activated by the Maritime and Coastguard Agency for large spills.

Oil spillages from the Liverpool Bay and Rivers Field operations have occurred, but as the main production from these fields is gas and condensate (which evaporates rapidly) the spillages (mainly diesel, hydraulic fuel) have been small and have rarely resulted in any shoreline contamination.

#### 3.4.3 LNG issues

Serious concerns for public safety have been expressed about the import of LNG to Milford Haven. However, the level of risk associated with the proposed LNG facility and terminal was considered tolerable and broadly acceptable by the HSE following a detailed assessment (Dragon LNG website <http://www.dragonlng.co.uk/index.html>).

## 4 PORTS & SHIPPING

### 4.1 Introduction

The UK port industry is one of the largest port industries in Europe, handling over 550 million tonnes of goods per year (Department for Transport: Maritime Statistics 2003). An estimated 97 % by volume of the UK's imports and exports pass through UK ports and the industry provides both communication and trading links fundamental to the British economy (DTI, SEA 5 Users Report).

There are several large ports in the SEA 6 area that form an important focus for shipping in the Irish Sea. Milford Haven in Pembrokeshire handles much of the crude oil traffic in the Irish Sea and is the fifth largest port in the UK, whilst Liverpool Bay port is the UK's major port for North Atlantic trade. As a result shipping densities are moderate to high in much of the Irish Sea.

### 4.2 Activity in SEA 6 area

#### 4.2.1 Major ports

Major ports in the SEA 6 area are shown in Table 4.1 and Figure 4.1. The most notable are Belfast, Liverpool and Milford Haven which handled 12.83, 30.41 and 34.54 million tonnes of foreign and domestic traffic respectively in 2002.

*Table 4.1 Foreign and domestic traffic (million tonnes) handled by major ports in SEA 6 area 2001-2003. Source: Department for Transport Maritime Statistics, 2003.*

Port	2001	2002	2003
1. Ayr	0.27	0.24	0.29
2. Barrow	0.23	0.28	0.24
3. Belfast	13.40	12.83	13.2
4. Cairnryan	2.01	2.10	2.33
5. Clyde (incl. Ardrossan)	11.07	9.73	9.21
6. Fishguard	0.34	0.41	0.47
7. Fleetwood	1.61	1.52	1.62
8. Garston	0.46	0.44	0.43
9. Heysham	0.38	0.37	0.41
10. Holyhead	3.23	3.29	3.33
11. Lancaster	0.12	0.13	0.16
12. Larne	3.52	4.30	4.32
13. Liverpool	30.29	30.41	31.68
14. Manchester	7.88	6.28	6.09
15. Milford Haven	33.79	34.54	32.74
16. Mostyn	0.31	0.87	0.94
17. Sillloth	0.14	0.13	0.16
18. Stranraer	1.40	1.27	1.27
19. Warrenpoint	1.48	1.83	1.88
20. Workington	0.42	0.43	0.26
<b>All UK ports</b>	<b>566.37</b>	<b>558.33</b>	<b>555.66</b>

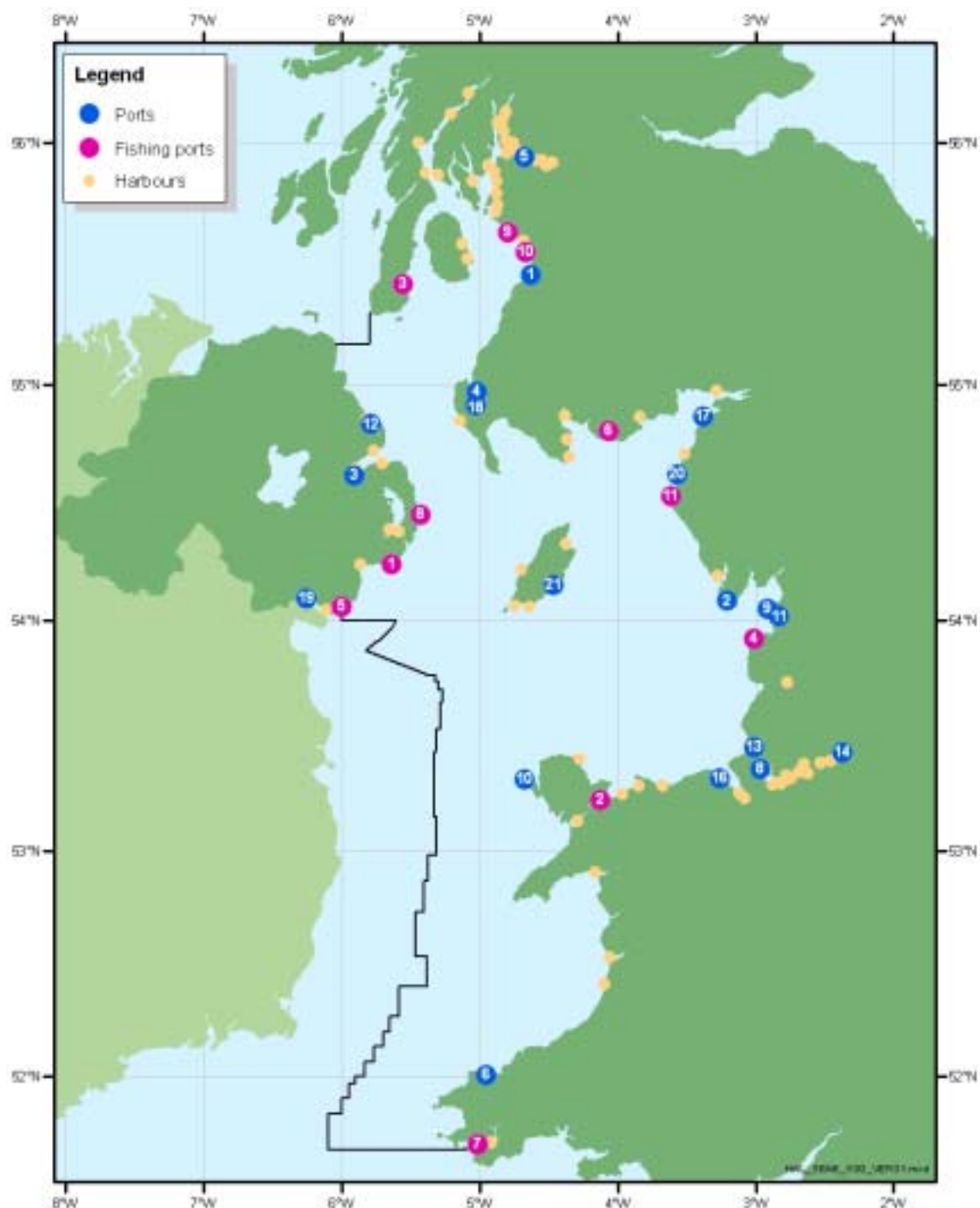


Figure 4.1 Ports and harbours in the SEA 6 area. See Tables 4.1 and 4.2.

The main port on the Isle of Man is Douglas on the east coast. It has extensive facilities for both commercial and private vessels and is the only Manx port with dedicated passenger handling facilities and roll-on roll-off vehicle services. The port provides specialist berths for oil and gas tankers as well as general cargo vessels and fishing boats and occasional survey, customs and naval vessels (Isle of Man Government website - <http://www.gov.im/harbours/DouglasPort.asp>).

### 4.2.2 Fishing ports

In 2003, the UK fleet landed 444 thousand tonnes of sea fish and shellfish, with a value of approximately £391 million. Only 8% of the UK total was landed into ports in the SEA 6 area. Demersal species represented 34% of the SEA 6 area catch whilst pelagic and shellfish accounted for 13% and 54% of the SEA 6 area catch respectively (DEFRA 2003).

Despite the industry being in general decline, fishing remains an important industry in the SEA 6 region and there are several major fishing ports along the Irish Sea coast. Table 4.2 provides details of fish landings into these ports in 2003; and Figure 4.1 shows their locations.

*Table 4.2 Fish landings by the UK into major fishing ports in SEA 6 region 2003. Source: DEFRA 2003 UK Sea Fisheries Statistics. See Figure 4.1 for locations.*

	Demersal		Pelagic		Shellfish	
	Quantity (thousand tonnes)	Value (£ million)	Quantity (thousand tonnes)	Value (£ million)	Quantity (thousand tonnes)	Value (£ million)
1. Ardglass	0.3	0.2	3.6	0.5	1.2	1.7
2. Bangor	-	-	-	-	-	-
3. Campbeltown	0.1	0.1	..	..	1.3	1.7
4. Fleetwood	0.6	0.7	..	..	0.4	0.2
5. Kilkeel	2.9	2.8	..	..	2.2	3.0
6. Kirkcudbright	..	..	-	-	3.9	2.0
7. Milford Haven	1.8	3.1	..	..	0.5	0.9
8. Portavogie	2.3	2.6	..	..	1.9	2.9
9. Saltcoats & Troon	0.7	1.1	..	..	1.9	2.5
11. Whitehaven	0.7	0.8	-	-	1.7	1.4
<b>Total UK ports</b>	<b>143.2</b>	<b>167.9</b>	<b>172.1</b>	<b>53.2</b>	<b>129.3</b>	<b>170.5</b>

The Northern Ireland fleet is the main UK fishing interest in the Irish Sea; the 3 main ports are Kilkeel, Portavogie and Ardglass (Table 4.2). The main species landed are *Nephrops*, cod, haddock and hake (DARDNI website, <http://www.dardni.gov.uk/fisheries/file/sfishrep.doc>).

In 2003, 2941 regular and 1257 part-time fishermen were employed in the Irish Sea, accounting for 32% and 50% of the UK total respectively. Despite its general decline the fishing industry remains an important source of employment for people in the SEA 6 region, with SEA 6 fishing districts employing over 35% of the total number of UK fishermen (Table 4.3).

*Table 4.3 Numbers of fishermen employed by district in SEA 6 area, 2003. Source: DEFRA 2003 UK Sea Fisheries Statistics.*

District	Regular	Part-time	Total
Ardglass	91	10	101
Ayr	461	132	593
Campbeltown	255	73	328
Kilkeel	190	0	190
North Coast Northern Ireland	21	6	27
North western England	96	231	327

District	Regular	Part-time	Total
Portavogie	156	24	180
Wales	664	319	983
Western England	1007	462	1469
<b>UK Total</b>	<b>9242</b>	<b>2532</b>	<b>11774</b>

## 4.2.3 Shipping

### 4.2.3.1 Ship arrivals

Table 4.4 describes the numbers and types of vessels visiting the major ports in the SEA 6 area in 2003.

*Table 4.4 Ship arrivals at major ports in SEA 6 area by type and deadweight in 2003. Source: Department for Transport: Maritime Statistics 2003*  
<http://www.statistics.gov.uk/STATBASE/Product.asp?vlnk=2252>

Deadweight tonnes (x1000)	Tankers			Ro-Ro vessels			Container vessels			Other dry cargo vessels		
	1-19.1	20-99.9	100+	1-4.9	5-19.9	20+	1-4.9	5-19.9	20+	1-19.1	20-99.9	100+
Ayr	7						3			121		
Barrow	14									71		
Belfast	461	14	1	3696	630		79	250	3	1752	4	
Cairnryan				2680								
Clyde	118	21	13	3	6		2	122	51	662	70	16
Fishguard	3			1159								
Fleetwood				580	329							
Garston				1			1			169		
Heysham	5			1541	830					14		
Holyhead	8			2016	1376					8	11	
Lancaster										225		
Larne	5	2		3848	331					10		
Liverpool	330	73	115	1433	1282	105	7	272	137	1154	272	1
Manchester	1132	10		1						431		
Milford Haven	2327	302	101	62	641					20	3	
Mostyn	51			541						105		
Silloth	14									70		
Stranraer				2347								
Warrenpoint	3			597			15	14		377		
Workington	31			3						68		
<b>All UK ports</b>	<b>17773</b>	<b>2086</b>	<b>1066</b>	<b>55760</b>	<b>28994</b>	<b>233</b>	<b>2476</b>	<b>2228</b>	<b>3484</b>	<b>36475</b>	<b>2036</b>	<b>285</b>

Table 4.4 highlights the importance of ports in the SEA 6 area for handling tanker traffic of all sizes. Milford Haven and Liverpool handled the most tankers over 100,000 tonnes which amounted to 20 % of the UK total, whilst Milford Haven and Manchester handled the most tankers overall. Milford Haven is one of the UK's largest ports and the Milford Haven Port Authority (MHPA) provides a wide range of facilities, including navigation, pilotage and support services for the oil terminals in the Haven (MHPA website- <http://www.mhpa.co.uk>).

Belfast, Clyde and Liverpool were the most important ports for handling traffic of all varieties (Table 4.4). Substantial investment by the Mersey Docks Group and other companies within the Port of Liverpool community has resulted in Liverpool becoming the UK's major gateway for container trade with the United States and Canada (Port of Liverpool website- <http://www.merseydocks.co.uk/index2.htm>).

#### 4.2.3.2 Principal ferry routes

Several ports are important for ferry traffic (Tables 4.5 and 4.6). Passengers on Irish Sea Ferries use ports including Belfast, Larne, Liverpool, Holyhead and Stranraer.

*Table 4.5 International sea passenger movements by principal ferry routes in SEA 6 region, 2003. Source: Maritime Statistics 2003*

Route	Frequency (each way)	No. passengers (thousands)
Douglas (IOM) - Dublin	3 crossings weekly	n/a
Fishguard – Rosslare	2 to 5 crossings daily	645
Holyhead – Dublin	2 crossings daily	1,350
Holyhead – Dun Laoghaire	3 crossings daily	984
Liverpool – Dublin	1 or 2 crossings daily	269
Mostyn - Dublin	n/a	48
Pembroke - Rosslare	Twice daily	384

*Table 4.6 Domestic waterborne passenger movements in SEA 6 region, 2003. Source: Maritime Statistics 2003*

Sea crossings	Frequency	No. passengers (thousands)
Belfast – Douglas (IOM)	3 crossings weekly	n/a
Cairnryan/Troon - Larne	4 to 10 crossings daily	599
Fleetwood - Larne	2 or 3 crossings daily	n/a
Heysham – Douglas (IOM)	2 crossings daily	261
Liverpool - Belfast	n/a	150
Liverpool – Douglas (IOM)	2 crossings daily	324
Stranraer - Belfast	8 crossings daily	1,363
Troon - Belfast	n/a	368

#### 4.2.3.3 Shipping density

Nearshore areas of SEA 6 experience predominantly low (<1,000 vessels per annum) to moderate (1,000-5,000 vessels) shipping densities, particularly around the west coast of Wales and Cumbrian and Scottish coasts (Figure 4.2). Coastal areas of south Pembrokeshire, west Anglesey, Galloway and Northern Ireland, as well as offshore areas of SEA 6 experience relatively high shipping densities (5,000-20,000 vessels). This is primarily associated with the movement of cargo vessels to and from the various ports (c.f. Section 4.2.1) and ferry traffic (DETR 1999).

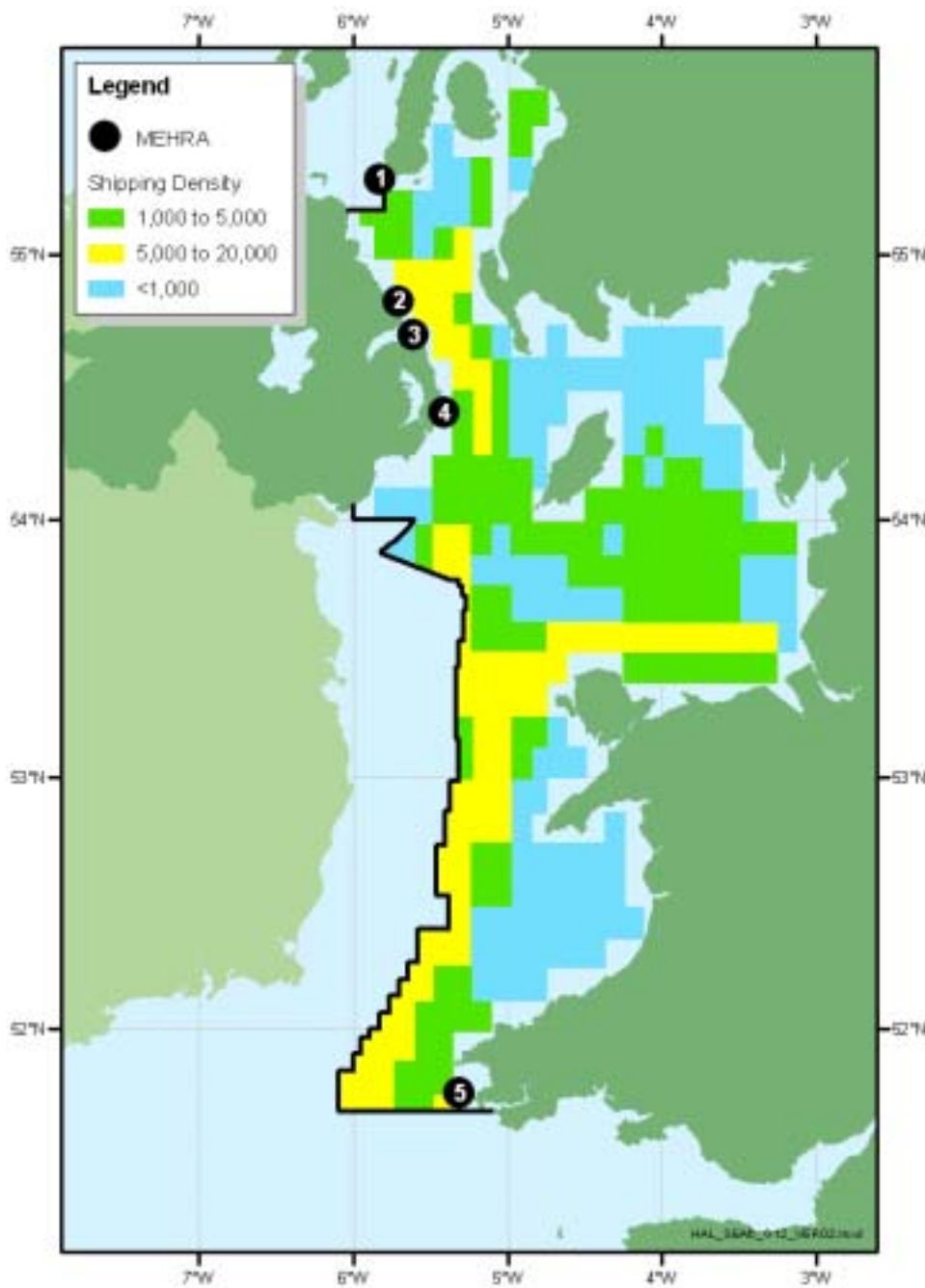


Figure 4.2 Shipping density in the SEA 6 region. Redrawn from figures in MEHRAs report (DETR 1999).

## 4.3 Management issues and initiatives

### 4.3.1 Marine Environment High Risk Areas (MEHRAs)

Following the *Braer* oil spill (5 January 1993), the Donaldson Inquiry of 1994 proposed the establishment of MEHRAs to protect marine areas of high environmental sensitivity at risk from shipping. An assessment was carried out to identify the environmental sensitivity of the UK coastline and coastal waters. An inter-departmental group, including representatives of DEFRA, Department for Transport, DTI, the Maritime and Coastguard Agency, the Devolved Administrations, the nature conservation agencies and the UK Hydrographic Office are due to publish the identity of UK



MEHRAs for consultation (c.f. DEFRA 2002). The location of these sites will be brought to the attention of ship owners and insurers to encourage shipping to plan routeing to avoid these sites and hence reduce the risk of pollution in environmentally sensitive areas. Those areas of SEA 6 that have been highlighted as potential MEHRAs are identified in Table 4.7 and Figure 4.2.

*Table 4.7 Potential location of MEHRAs in SEA 6 area. Source: DETR (1999)*

Map Ref.	Location
1	South-west point of Kintyre (West Scotland)
2	Near Larne (East Coast of Northern Ireland)
3	Near Bangor (East Coast of Northern Ireland)
4	Near Kearney Point (East Coast of Northern Ireland)
5	Skomer & Skokholm Island (West Wales)

### 4.3.2 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 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. (IMO website - <http://www.imo.org/home.asp>).

At the 52<sup>nd</sup> session of the IMO Marine Environment Protection Committee (MEPC) in October 2004 the MEPC agreed to designate the Western European Waters a new PSSA (International Maritime Pilot's Association (IMPA) website [http://www.impahq.org/haberdetay.asp?kategori\\_no=31&id=64](http://www.impahq.org/haberdetay.asp?kategori_no=31&id=64)).

The revised MARPOL1 Annex I Regulations for the prevention of pollution by oil was also adopted by the Committee and is expected to enter into force on 1 January 2007. It incorporates the various amendments adopted since MARPOL entered into force in 1983, including the amended regulation 13G (regulation 20 in the revised annex) and regulation 13H (regulation 21 in the revised annex) on the phasing-in of double hull requirements for oil tankers.

#### Review of PSSA guidelines

The MEPC agreed to establish a correspondence group to review, with the objective of clarifying, and, where appropriate, strengthening the current PSSA Guidelines (contained in resolution A.927(22)). The group is expected to report to the next session of the MEPC and any revisions proposed are expected to be presented to the next Assembly in late 2005 for adoption (IMPA website [http://www.impahq.org/haberdetay.asp?kategori\\_no=31&id=64](http://www.impahq.org/haberdetay.asp?kategori_no=31&id=64)).

### 4.3.3 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 (DTI SEA 5 Users Report).

#### **4.3.3.1 National Contingency Plan**

The Maritime and Coastguard Agency have put in place a new National Contingency Plan for dealing with pollution incidents, in consultation with the relevant government departments and other stakeholders. The plan sets out a framework for dealing with major oil or chemical pollution incidents that threaten UK interests, and the roles and responsibilities of a wide range of national and local bodies in responding to an incident (see section 3.3).

#### **4.3.3.2 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. This must be carried out if the port, harbour or oil handling facility falls into one of the following categories:

- Any harbour for which there is a statutory harbour authority having an annual turnover of more than £1million.
- Any other harbour or oil handling facility offering berths alongside to ships of over 400GT or oil tankers of over 150GT.
- Any other harbour or oil handling facility where there is a significant risk of spillage of over 10 tonnes of oil.
- Any other harbour or oil handling facility located in an area of significant environmental sensitivity, or in an area where a discharge of oil or other substances could cause significant economic damage.

A National Audit Office survey of UK ports and harbours found that, by May 2002, all ports and harbours subject to the OPRC regulations had contracts in place for dealing with a medium sized spill (National Audit Office, 2002).

## 5 MARICULTURE

### 5.1 Introduction

Mariculture is the cultivation of marine species in coastal waters. The southern part of the Irish Sea has few sheltered sites suitable for sea farms, however local research institutes play an important role in improving mariculture techniques in this area. In the north, along the west coast of Scotland there are many more sheltered sites suitable for fish farms and this is where the majority of both finfish and shellfish cultivation takes place in the SEA 6 area.

### 5.2 Activity in SEA 6 area

#### 5.2.1 Finfish

Marine finfish farms in the SEA 6 area are confined to the sheltered sea lochs of Scotland and two sites in Northern Ireland (Figure 5.1). Atlantic salmon and Halibut are farmed in Scotland and production for 2002 in the area bordering the Irish Sea was 8821 tonnes of Salmon and 2 tonnes of Halibut (Pers. Comm. R. Smith, FRS). Salmon farming is an important source of income to rural communities in Scotland and since the early 1990's the industry has steadily grown from a production of 32,000 tonnes in 1990, to 145,609 tonnes in 2002 (Table 5.1). In 2001, an estimated £300 million was generated from salmon production (SEERAD, 2003).

In Northern Ireland Atlantic salmon accounts for 13 % of aquaculture production, producing 208 tonnes per annum valued at £520,000 (Northern Ireland Seafood website <http://niseafood.co.uk/industry/aquaculturedev.asp>)

*Table 5.1 Total production (tonnes) of farmed finfish in Scotland, 2002. \* includes Arctic charr, Brown trout, Sea trout, Halibut, Haddock, Brook charr and Turbot. Source: Pers. Comm. R. Smith, FRS.*

Species	Production (tonnes)
Atlantic salmon	145,609
Rainbow trout	6,659
Other species*	417
<b>Total</b>	<b>152,685</b>

There are no marine finfish farms in the southern part of the SEA 6 area, although there are two land based units rearing Turbot *Psetta maxima*, Lemon Sole *Microstomus kitt* and Sea Bass *Dicentrarchus labrax* on Anglesey and on the Llyn Peninsula. Total production from these units in 2003 was approximately 100 tonnes (Pers. Comm. Ian Laing, CEFAS). Juvenile Turbot are also reared in nurseries on the Isle of Man by Mannin Seafarms, for export abroad. The Isle of Man has a desirable position for the culture and export of salmon eggs being free from all major diseases that affect Atlantic salmon (Port Erin Marine Laboratory website, <http://www.liv.ac.uk/peml/surrsea/seafarming.htm>).

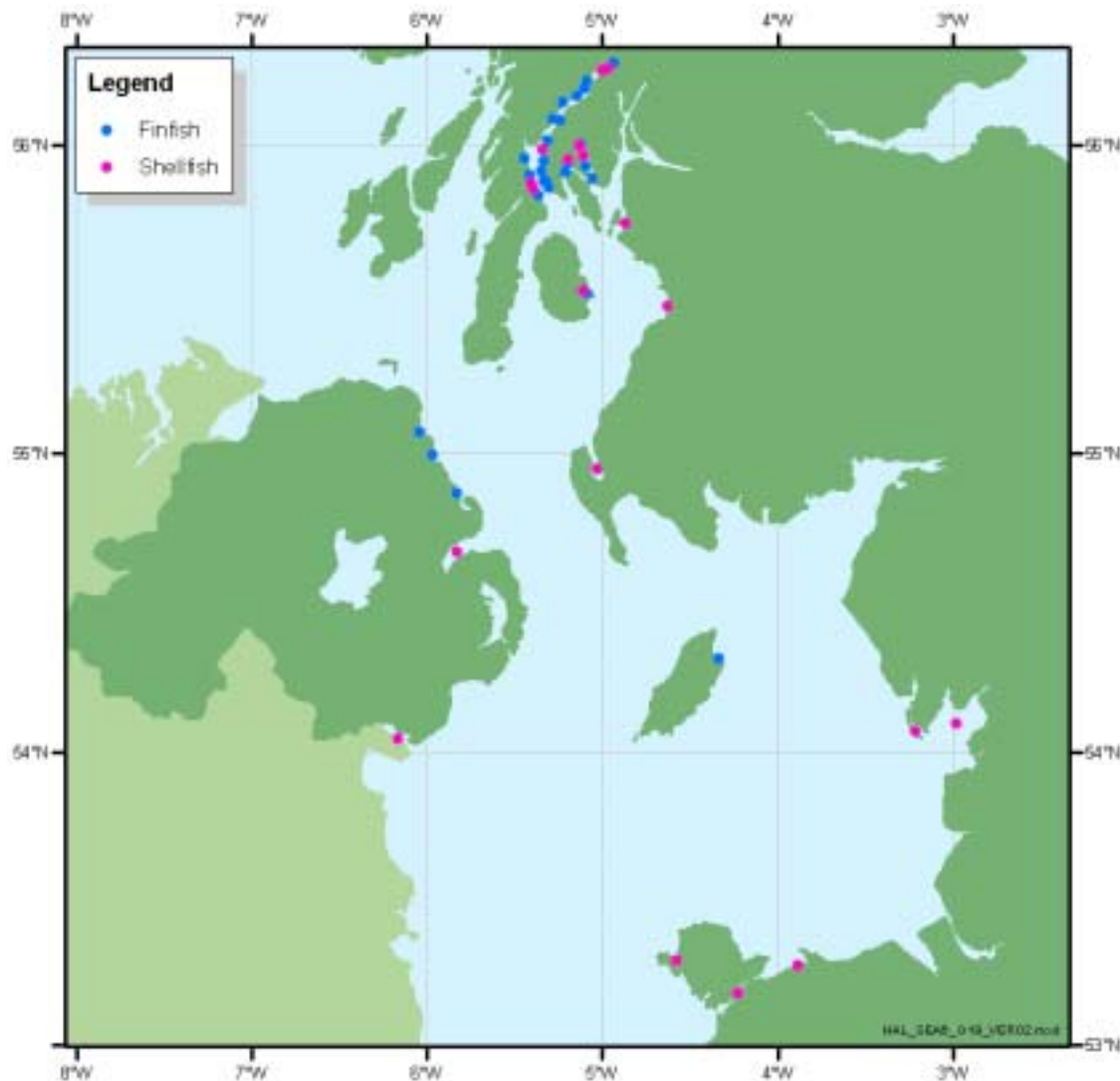


Figure 5.1 Mariculture sites in the SEA 6 region

## 5.2.2 Shellfish

In 2003, more than 27,000 tonnes of shellfish with an estimated value of £18 million was produced in the UK for human consumption (CEFAS, 2004). Production is dominated by Mussels which represented 96 % of the total UK production in 2003; the majority of mussels are produced at farm sites in Wales (Table 5.2). Compared with 2002, there was a substantial (44 %) increase in mussel production in 2003. For example, in Northern Ireland production increased from 728 tonnes in 2002 to 4,500 tonnes in 2003 due to sites previously licensed for cultivation coming into production (CEFAS, 2004). The most significant development in Northern Ireland continues to be the farmed mussel industry in Carlingford and Belfast Loughs, where there are now 16 licensed sites (DARDNI website, <http://www.dardni.gov.uk/fisheries/fish0025.htm>).

*Table 5.2 Production (tonnes) of farmed shellfish in the UK in 2003. Source: CEFAS (2004)*

Species	Scotland	England	Wales	N. Ireland	UK Total
Clams	-	43	-	18	61
Cockles	-	24	-	-	24
Mussels	3632	2230	15230	4776	25868
Native (flat) oyster	13	119	-	5	137
Pacific oyster	279	446	8	335	1068
Queens	45	-	-	-	45
Scallops	22	0	-	-	22
<b>Estimated Value (£ million)</b>	<b>5.0</b>	<b>2.87</b>	<b>6.86</b>	<b>3.3</b>	<b>18.03</b>

Seed Pacific oysters are produced at Walney Island, Cumbria. Over 50 million were reared for the export market and for on-growing in the UK in 2003. Pacific oysters for the table market are produced at a nearby site in Morecambe Bay, as well as at two sites on Anglesey (Figure 5.1). Total production from these areas is approximately 5 tonnes per annum (Pers. Comm. I. Laing, CEFAS).

Market size mussels are produced in the Menai Strait, off Penrhos Point (Holy Island) Anglesey and in the Conwy Estuary which are designated as Fishery Orders. Total production in 2003 was 15,600 tonnes. Morecambe Bay, also a Fishery Order area, is an important source of seed mussel for the Menai Strait.

Five species of shellfish are farmed in sea lochs in the area of Scotland bordering the Irish Sea (Table 5.3). Total production from this area in 2003 was 284 tonnes.

*Table 5.3 Production of farmed shellfish in the area of Scotland bordering the Irish Sea for 2002 and 2003. Source: Pers. Comm. R. Smith, FRS*

Species	Production (tonnes) 2002	Production (tonnes) 2003
King Scallop	12	6
Mussel	83	139
Native Oyster	15	13
Pacific Oyster	60	86
Queen Scallop	12	40
<b>Totals</b>	<b>182</b>	<b>284</b>

The Port Erin Marine Laboratory (PEML) on the Isle of Man has been pioneering the cultivation of scallops. The larvae are collected and grown-on in cages suspended in the sea or anchored to areas of the sea bed protected from fishing (PEML website, <http://www.liv.ac.uk/peml/surrsea/seafarming.htm>). Note, however, that PEML is due to close in 2006.

### 5.2.3 Seaweed

The first seaweed farm to be established in Europe is located in Strangford Lough, Northern Ireland and is run by the Dolphin Sea Vegetable Company (Dolphin Sea Vegetable Company website <http://www.irishseaweeds.com/main/aboutus.asp>).

## 5.3 Management issues and initiatives

### 5.3.1 Legislation

The relevant local authority issues planning permission for fish farms and a seabed lease is required from the Crown Estate Commissioners in Scotland, England and Wales. The lease includes conditions relating to issues such as location, size of proposed farm and number of cages.

Registration and licensing of fish farms is carried out by the Scottish Executive Environment and Rural Affairs Department (SEERAD) in Scotland, the Fish Health Inspectorate, CEFAS in England and Wales and the Department of Agriculture and Rural Development (DARD) in Northern Ireland.

In Scotland, the Scottish Executive Development Department (SEDD) issues navigational consents and is concerned with the marine safety of fish farms. They also issue consents for the installation of pens, ancillary equipment and associated onshore developments such as slipways. In England, all fish farms need to obtain consent from DEFRA to install the cages and ancillary equipment on the site. In Wales, consent is required from the National Assembly of Wales (NAW). In Northern Ireland, DARD has produced a code of practice for the safe servicing of marine fish farms (NetRegs website, <http://www.environment-agency.gov.uk/netregs/>).

### 5.3.2 Regional initiatives

Considerable funds have been spent by the Government on aquaculture research, particularly on work to control disease. In addition, joint Government/industry research has been undertaken through the Aquaculture Link programme to promote the sustainable development of the industry, including the evaluation of alternative species for cultivation (DEFRA website, <http://www.defra.gov.uk/fish/fishfarm/index.htm>). Initiatives specific to the different regions of the SEA 6 area have also been undertaken.

#### Scotland

The Strategic framework for Scottish aquaculture was produced by the Scottish Executive Environment and Rural Affairs Department (SEERAD) in March 2003 and outlines SEERAD's strategy for the aquaculture industry in Scotland. The document (<http://www.scotland.gov.uk/library5/environment/sfsa-00.asp>) describes the importance of sustainability in aquaculture, aquaculture policy developments, and outlines the framework for the future development of the industry to maintain Scotland's largest food-exporting sector.

#### Northern Ireland

The Department of Agriculture and Rural Development in Northern Ireland (DARDNI) commissioned the production of a Shellfish Aquaculture Management Plan for Northern Ireland in 2001. The Plan contains a number of strategic recommendations to promote a sustainable aquaculture industry, including 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. The Cross Border Aquaculture Initiative also aims to increase employment in Northern Ireland and the six border counties of Ireland and broaden the base of species currently being cultivated (DARDNI website, <http://www.dardni.gov.uk/fisheries>).

#### Wales

The Strategic Action Plan for Development of the Welsh Fisheries & Aquaculture Sector was published by the Welsh Development Agency and the Welsh Assembly Government (WAG) in 2003

to provide direction to development of fisheries and aquaculture in Wales, as directed by the overarching policy of the WAG (WAG website, <http://www.countryside.wales.gov.uk>).

## 6 MILITARY ACTIVITY

### 6.1 Introduction

Practice and Exercise Areas (PEXA) charts, produced by the UK Hydrographic Office, provide information relating to military activity in the SEA 6 area. These are kept up to date through the Admiralty Notices to Mariners (NMs) service and show areas which are in use, or available for use by the Ministry of Defence for military practice and exercises.

### 6.2 Activity in SEA 6 area

The Scotland and Northern Ireland part of the SEA 6 area is used extensively by the Navy for activities which include non-firing exercises, practises and trials, submarine exercises and mine counter measures. By contrast, no Navy exercise areas occur in the southern part of SEA 6. Army exercise areas occur throughout SEA 6 but are most extensive in the southern part and are used for activities such as firing, bombing and demolition of unexploded ordnance. There are currently no Air Force practise areas in SEA 6 (Figures 6.1 and 6.2 and Table 6.1).

Military operations in Scottish waters include the triennial exercises run jointly by the Royal Navy and the Royal Air Force run mainly off the west coast. 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 (DTI SEA 5 Users report).

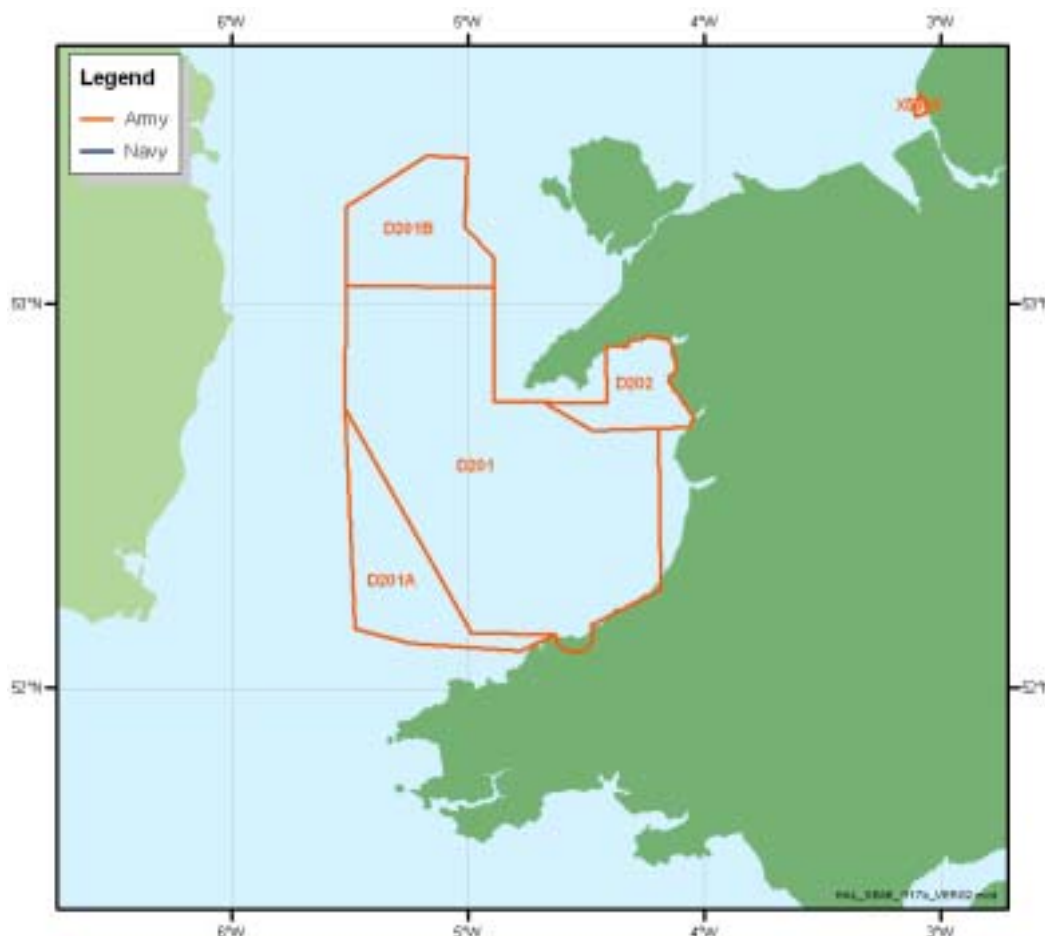


Figure 6.1 Military activity in SEA 6 area - south



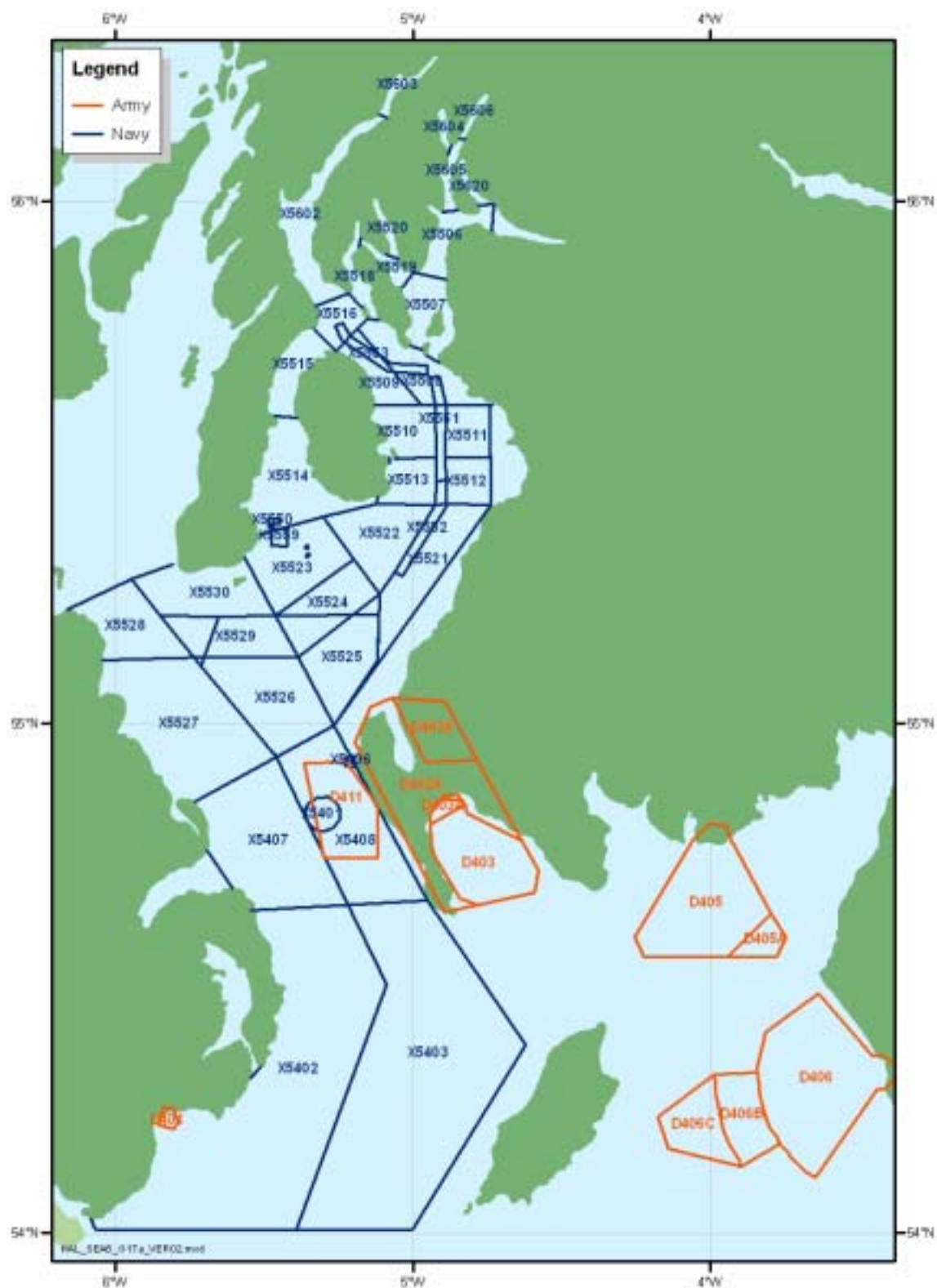


Figure 6.2 Military activity in SEA 6 area - north

*Table 6.1 Military activity in SEA 6 area. 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. Source: PEXA charts Q6403 (NW sheet, Isle of Man to Stornoway) and Q6402 (SW sheet Poole to Isle of Man)*

Serial no.	Name	Type of practise	Altitude range (ft above ground)
<b>Navy department areas</b>			
D509	Campbeltown (Zulu)	High & Low Angle Gunnery, HM Ships, Pilotless Target Aircraft, Surface to Surface Firing, Torpedo Firing	55,000
X5401	Londonderry	Depth Charge Dropping/Firing	
X5402	Ardglass	Air General, HM Ships, Submarine Exercises	
X5403	Peel	Air General, HM Ships, Submarine Exercises	
X5406		Mine Disposal	
X5407	Magee	Air General, HM Ships, Submarine Exercises	
X5408	Beaufort	Air General, HM Ships, Submarine Exercises	
X5504	Triplane Target	Air General, HM Ships	
X5506	Rosneath	Air General, HM Ships	
X5507	Cumbræ	Air General, HM Ships, Submarine Exercises	
X5508	Garroch	Air General, HM Ships, Submarine Exercises	
X5509	Laggan	Air General, HM Ships, Submarine Exercises	
X5510	Brodick	Air General, HM Ships, Submarine Exercises	
X5511	Irvine	Air General, HM Ships, Submarine Exercises	
X5512	Ayr	Air General, HM Ships, Submarine Exercises	
X5513	Lamlash	Air General, HM Ships, Submarine Exercises	
X5514	Davaar	Air General, HM Ships, Submarine Exercises	
X5515	Lochranza	Air General, HM Ships, Submarine Exercises	
X5516	Skipness	Air General, HM Ships, Submarine Exercises	
X5517	Tarbert	HM Ships, Submarine Exercises	
X5518	West Kyle	Air General, HM Ships, Submarine Exercises	
X5519	East Kyle	HM Ships	
X5520	Striven	HM Ships, Submarine Exercises	
X5521	Turnberry	Air General, HM Ships, Submarine Exercises	

Serial no.	Name	Type of practise	Altitude range (ft above ground)
X5522	Pladda	Air General, HM Ships, Submarine Exercises	
X5523	Stafnish	Air General, HM Ships, Submarine Exercises	
X5524	Ailsa	Air General, HM Ships, Submarine Exercises	
X5525	Ballantrae	Air General, HM Ships, Submarine Exercises	
X5526	Corsewall	Air General, HM Ships, Submarine Exercises	
X5527	Maiden	Air General, HM Ships, Submarine Exercises	
X5528	Torr	Air General, HM Ships, Submarine Exercises	
X5529	Mermaid	Air General, HM Ships, Submarine Exercises	
X5530	Sanda	Air General, HM Ships, Submarine Exercises	
X5550	ATF Anchorage	Mine Counter Measures	
X5551	Corridor Alpha	Mine Counter Measures	
X5552	Corridor Bravo	Mine Counter Measures	
X5553	Corridor Charlie	Mine Counter Measures	
X5554	Campbeltown North	Mine Counter Measures	
X5555	Campbeltown Middle	Mine Counter Measures	
X5556	Campbeltown South	Mine Counter Measures	
X5558	Campbeltown Loch	Mine Counter Measures	
X5559		Mine Counter Measures	
X5602	Minard	HM Ships, Submarine Exercises	
X5603	Fyne	Acoustic Trials, Mine Counter Measures	
X5604	Goil	Noise Ranging	
X5605	Cove	Air General, HM Ships, Submarine Exercises	
X5606	Long	HM Ships, Submarine Exercises	
X5620	Gareloch	HM Ships, Submarine Exercises	
X5639	Coulport South	Mine Counter Measures	
X5640	Coulport North	Mine Counter Measures	
<b>Army department areas</b>			
D201	Aberporth	Firing, Bombing, Pilotless Target Aircraft	Unlimited
D201A	Aberporth	Pilotless Target Aircraft manoeuvring	Unlimited
D201B	Aberporth	Pilotless Target Aircraft manoeuvring	Unlimited
D202	Llanbedr	Pilotless Target Aircraft	6,000
D401	Ballykinder	Firing	3,200
D402A	Luce Bay (N)	Bombing	3,000 & 23,000
D402B	Luce Bay (N)	Bombing	3,000 & 23,000
D402C	Luce Bay (N)	Demolition of Unexploded Ordnance	4,000

Serial no.	Name	Type of practise	Altitude range (ft above ground)
D403	Luce Bay	Air to Air Firing, Bombing	35,000
D403A	Luce Bay	Demolition of Unexploded Ordinance, Surface Explosions	3,000
D405	Kirkcudbright	Demolition of Unexploded Ordinance, Firing	15,000 & 50,000
D405A	Kirkcudbright	Firing	1,000
D406	Eskmeals	Firing	50,000 & 80,000
D406B	Eskmeals	Firing	50,000 & 80,000
D406C	Eskmeals	Firing	50,000
D411	Portpatrick	Sonobuoy Dropping	1,000
D601	Garelochhead	Demolition of Unexploded Ordinance, Firing	4,000
X5306	Altcar	Rifle, Grenade	

## 7 TELECOMMUNICATION CABLES

### 7.1 Introduction

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 submarine telecommunication cables being planned and laid, with many now crossing the Irish Sea to connect mainland Britain with the Isle of Man, Ireland and Europe.

### 7.2 Activity in SEA 6 area

There are 14 telecommunication cables which cross the SEA 6 area. The UK-Ireland 2 Crossing cable is the only cable to connect areas outside the SEA 6 area (Table 7.1 and Figure 7.1). The other cables link mainland Britain with the Isle of Man and Northern Ireland.

Table 7.1 Submarine cables in SEA 6, 2005. Source: Kingfisher Cable Awareness, <http://www.kisca.org.uk/index.htm>

Map Ref.	Cable	Operator	Route
1	UK-Ireland 2 Crossing	Global Crossing	Ballinsker to Crooklets Bay
2	BT-TE1	BT	Portmarnock to Porth Dafarch
3	Sirius South	NTL	Lytham to Portmanock
4	LANIS 1	C&W	IoM to Lancashire
5	IoM/UK Interconnector	Manx Cable Co.	
6	BT-MT1	BT	Groudle Bay to Silecroft Beach
7	Manx-N.Ireland	BT	Ballyhornan to Peel
8	LANIS 2	C&W	N.Ireland to Peel
9	Scotland-N.Ireland 1	BT	
10	Sirius North	NTL	Ardrossan to Carrickfergus
11	Moyle Interconnector South	Northern Ireland Electricity	Scotland to N.Ireland
12	Moyle Interconnector North	Northern Ireland Electricity	Scotland to N.Ireland
13	Scotland-NI 2	BT	Larne to Girvan
14	LANIS 3	C&W	N.Ireland to Troon

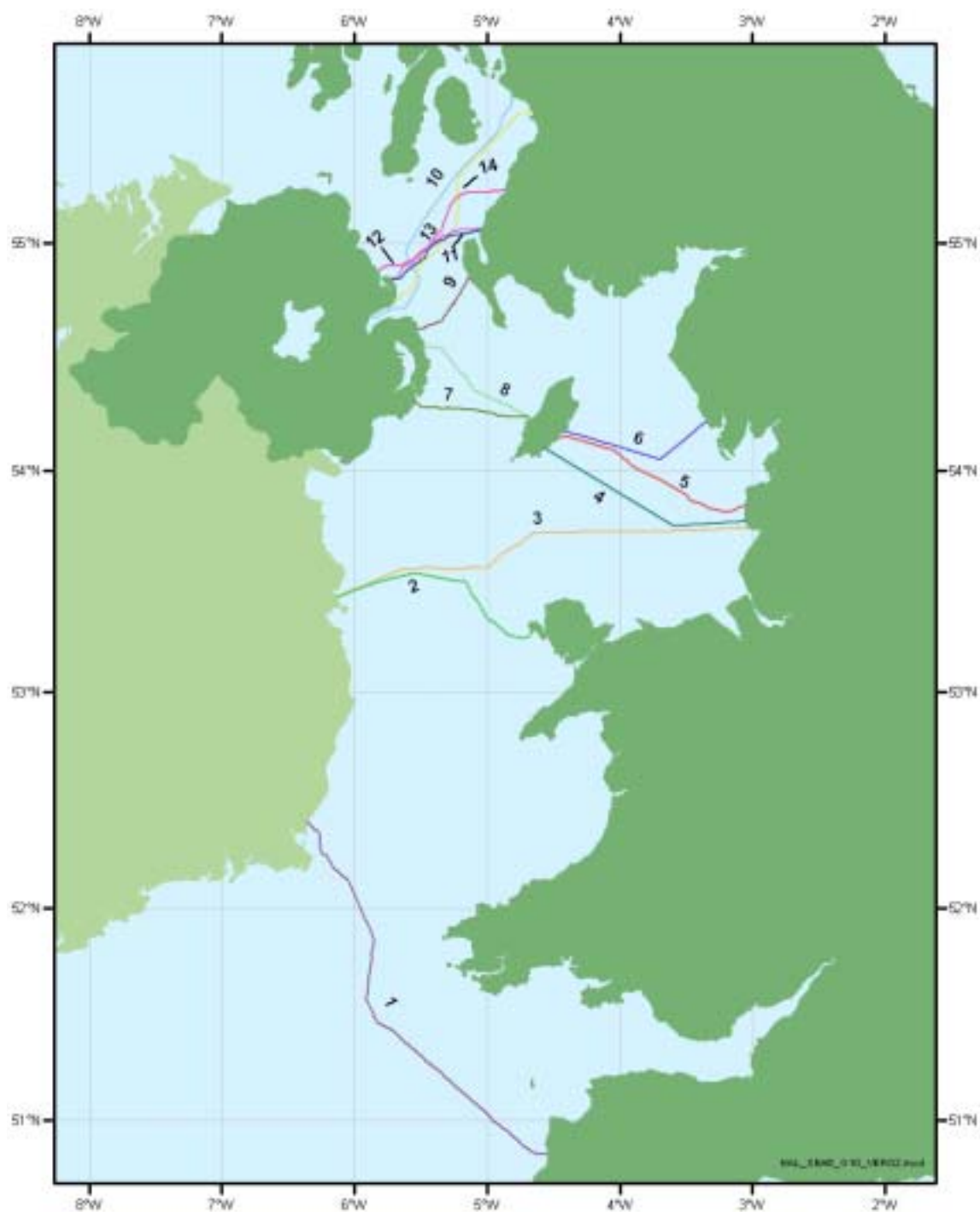


Figure 7.1 Submarine cables in SEA 6

## 8 RENEWABLE ENERGY

### 8.1 Introduction

The signing of the 1997 Kyoto Protocol committed the UK Government to reducing greenhouse gas emissions. For this to be achieved, renewable sources of energy need to be developed. The UK Government has proposed that by 2010, 10% of UK electricity needs should be met from renewable sources.

### 8.2 Activity in SEA 6 area

The Irish Sea is rich in potential sources of offshore renewable energy including wind, wave and tidal (c.f. DTI's Renewable energy atlas). SEA 6 is an important area for offshore wind energy developments and includes the UK's first large-scale offshore wind farm.

#### 8.2.1 Wind

Offshore wind energy is expected to be a major contributor towards the Government's 2010 target for renewable generation (The British Wind Energy Association website- <http://www.bwea.com/offshore/info.html>). The first large scale offshore wind farm in the UK, North Hoyle, off the north coast of Wales was commissioned in 2003 and heralded the first round of offshore wind farm developments in the UK. This 30 turbine development with an installed capacity of 60 MW provides electricity to 50,000 homes (Crown Estate website- [http://www.thecrownestate.co.uk/34\\_wind\\_farms\\_04\\_02\\_07](http://www.thecrownestate.co.uk/34_wind_farms_04_02_07)).

Thirteen large-scale wind farms were approved as part of Round One of the Crown Estates UK Offshore Wind Development initiative and are expected to be completed by 2010. Ten of these wind farm developments occur in the SEA 6 area, including North Hoyle (Figure 8.1 and Table 8.1). In addition, there are 3 successful Round Two developments (see Section 8.3.3), the next stage for the UK offshore wind industry (Figure 8.1 and Table 8.1). All of these projects have been offered site licences, but require formal planning approval (DTI website - [http://www.dti.gov.uk/renewables/renew\\_1.2.2.2.htm](http://www.dti.gov.uk/renewables/renew_1.2.2.2.htm)).

*Table 8.1 Offshore wind farms in SEA 6 area, 2005. Source: Pers. Comm. S. Gibson, Royal Haskoning.*

ID	Operator	Farm	Round
1	Offshore Energy Resources Limited	Solway Firth	1
2	Solway Offshore Limited	Solway Firth	1
3	Ormonde Energy Limited	Ormonde	1
4	Barrow Offshore Wind Limited	Barrow	1
5	CeltPower Limited	Shell Flats	1
6	Shell Wind Energy Limited	Shell Flats	1
7	Elsam A/S	Shell Flats	1
8	Seascope Energy Limited	Burbo Bank	1
9	npower renewables	North Hoyle	1
10	npower renewables	Rhyl Flats	1
11	DONG A/S, Statkraft SF	Walney	2

ID	Operator	Farm	Round
12	Scott Scottish Power Generation Ltd, Elsam A/S, Euros Energy Europe B.V.	West Duddon	2
13	npower renewables	Gwynt Y Mor	2

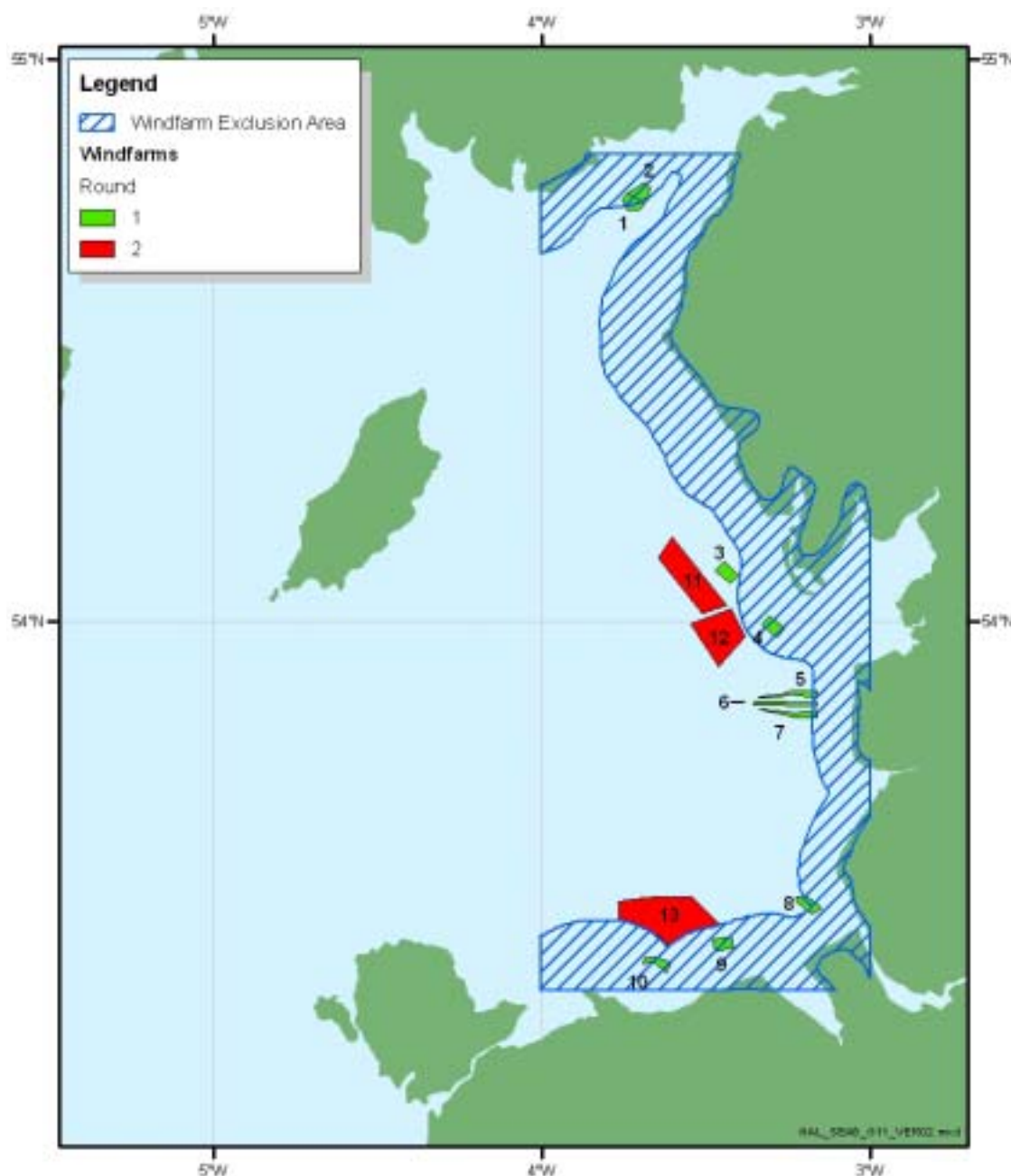


Figure 8.1 Offshore wind farms in SEA 6 area, 2005. Note: The Windfarm Exclusion Area was established for the purposes of Round 2.

### 8.2.2 Wave

There are two wave power devices in operation in the UK with a total capacity of 1.25 megawatts. The first type of device is the LIMPET (Land Installed Marine Powered Energy Transformer), a 500-kilowatt shoreline oscillating water column on the Scottish island of Islay.



The second, the 750-kilowatt Pelamis sea snake, is an example of a hinged contour device. It is the first deep-water grid-connected trial and is currently installed at the European Marine Energy Centre in Scotland, where it is undergoing testing.

Wind-generated waves on the ocean surface have a total estimated power of 90 million gigawatts worldwide. Due to the direction of the prevailing winds and the size of the Atlantic Ocean, the UK has wave power levels that are among the highest in the world. Wave energy has the potential to provide as much renewable energy as the wind industry, but the development of wave technology is currently at the same level as the wind industry was 10 years ago (DTI website - [http://www.dti.gov.uk/renewables/renew\\_1.5.1.2.htm](http://www.dti.gov.uk/renewables/renew_1.5.1.2.htm)).

### **8.2.3 Tidal**

The technology required to harness tidal energy is well established however, tidal power remains expensive and there are no projects currently contributing to electricity supplies in the UK. There are only about 40 sites around the world, including some sites on the west coast of the UK, with the appropriate magnitude of tidal range.

At least 30 suitable tidal stream locations have been identified around the UK. One of the most advanced tidal stream prototypes, currently supported under the DTI's Technology Programme, is the Seaflow project, which has been demonstrated full-scale off the north Devon coast since June 2003 (DTI website- [http://www.dti.gov.uk/renewables/renew\\_1.5.2.2.htm](http://www.dti.gov.uk/renewables/renew_1.5.2.2.htm)). The future may well bring the development of tidal power to the SEA 6 area.

## **8.3 Management issues and initiatives**

The renewable energy issues and initiatives specific to Scotland are described in the SEA 4 Existing Users report and the SEA 5 Users report and should be referenced. Other issues and initiatives relevant to the SEA 6 area will be discussed here.

### **8.3.1 Energy Act 2004**

The Energy Act 2004 puts in place a comprehensive legal framework for offshore renewable energy projects – wind, wave and tidal – 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. The Act enables the Crown Estate to award licences for wind farm sites in the REZ on much the same basis as it currently leases sites within territorial waters ([http://www.dti.gov.uk/renewables/renew\\_2.1.3.5.htm](http://www.dti.gov.uk/renewables/renew_2.1.3.5.htm)).

### **8.3.2 Renewables Obligation**

The Renewables Obligation, introduced in April 2002 requires licensed electricity suppliers in England and Wales to source specified percentages of the electricity they supply from renewable sources. The percentage target is set to increase each year from its current level of 4.9 per cent in 2004/05 to reach 10.4 per cent by 2010/11.

In December 2003, the Government announced its intention for the Obligation percentages to continue to rise beyond 2010/11 to reach 15.4 per cent by 2015/16. A consultation on this proposal and some other changes closed on 1 December 2004, with the aim that the changes will come into effect from 1 April 2005. It is expected that the Obligation, together with exemption from the Climate Change Levy for electricity from renewables, will provide support of £1 billion per year by 2010 (DTI website- [http://www.dti.gov.uk/renewables/renew\\_2.2.1.htm](http://www.dti.gov.uk/renewables/renew_2.2.1.htm)).

In Scotland, the Renewables Obligation Scotland (ROS) performs the equivalent function, whilst work is under way to implement a Renewables Obligation scheme in Northern Ireland from April 2005. Efforts are also being made to ensure that the Renewables Obligation Certificates will be mutually recognised within the Renewables Obligation operating in England and Wales, and the Renewables Obligation Scotland (ROS) (DTI website- [http://www.dti.gov.uk/renewables/renew\\_2.2.1.htm](http://www.dti.gov.uk/renewables/renew_2.2.1.htm)).

### **8.3.3 Offshore wind farm developments**

In July 2003 The Crown Estate invited developers to apply for leases for the second round of UK offshore wind farm developments. The results of the tendering process were announced in December 2004 with fifteen projects, representing between 5.4 and 7.2GW of new wind capacity, being offered leases to develop projects off the coast of the UK.

The sites will be built in three strategic areas of shallow sea - the Thames Estuary, Greater Wash and the North West. Of the 15 wind farms, three are fully outside territorial waters and include the world's largest proposed offshore wind farm, in the Greater Wash area, which will provide up to 1.2GW of generating capacity (DTI Renewables website -<http://www.dti.gov.uk/energy/renewables>).

The British Wind Energy Association's (BWEA's) best practice guidelines are currently being revised to include offshore considerations. Among these will be the recommendation that all offshore projects be sited at least 5 kilometres offshore. In the Greater Wash, the Thames Estuary and the North West an inshore zone of 8 kilometres from the shore has been excluded from any potential developments (Figure 8.1). The exclusion zone has been extended to 13 kilometres in places of particular environmental sensitivity. This exclusion zone was set for Round 2 and will be reviewed at the time of any subsequent round (The British Wind Energy Association website- <http://www.bwea.com/offshore/info.html>).

B9 Energy Offshore Developments Ltd was formed in 2002 specifically for the purpose of developing Northern Ireland's offshore wind energy potential. However, no potential sites lie within the SEA 6 area (B9 Energy website- [http://www.b9energy.co.uk/offshore\\_tunes.htm](http://www.b9energy.co.uk/offshore_tunes.htm)).

## 9 AGGREGATE EXTRACTION

### 9.1 Introduction

Sand and gravel are essential materials for coastal protection, beach replenishment and private and industrial construction work. Extraction of sand and gravel from the seabed is licensed by the Crown Estate and is the largest source of revenue for the marine estate. There are currently 72 licences for the extraction of sand and gravel in the UK, mainly for areas off the East Coast, South Coast and the Bristol Channel (The Crown Estate website- [http://www.thecrownestate.co.uk/40\\_aggregates\\_04\\_02\\_07.htm](http://www.thecrownestate.co.uk/40_aggregates_04_02_07.htm)).

### 9.2 Activity in SEA 6 area

There are currently 4 active licensed areas for aggregate dredging in SEA 6 (Figure 9.1). In Liverpool Bay aggregate is extracted by United Marine Dredging Ltd and Norwest Sand & Ballast Company (known as site A, Figure 9.1). Building sand is dredged from two very small licence areas at the mouth of the Mersey Estuary (known as sites B & C, Figure 9.1) and an area located approximately 33 km due west of Cumbrian coast is dredged by the United Marine Dredging Ltd and RMC Marine Ltd (known as site 331, Figure 9.1).

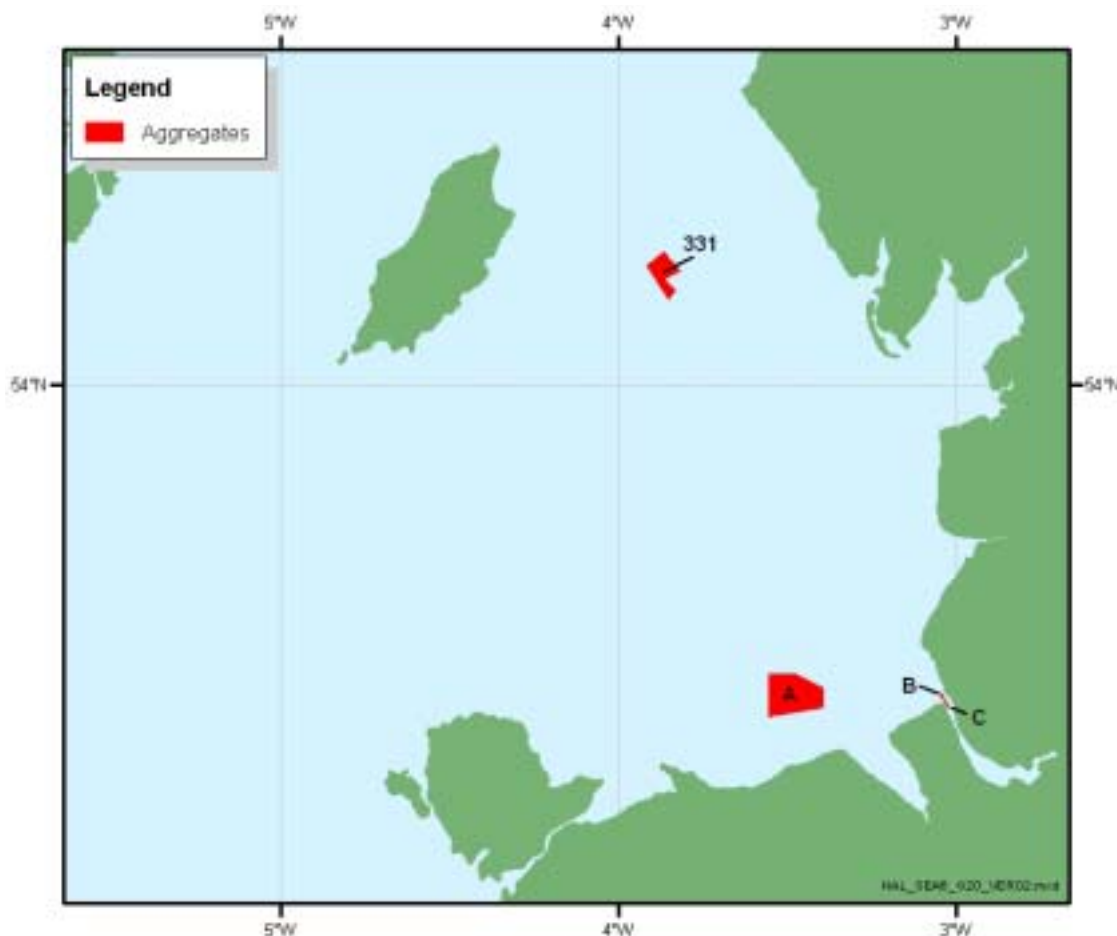


Figure 9.1 Licensed areas for aggregate dredging in the SEA 6 region

The total area dredged in SEA 6 in 2003 was 2.66 km<sup>2</sup> which represented 1.9 % of the total area dredged in England and Wales (Marine Aggregate Dredging 2003, Annual Report BMAPA & Crown

Estate). Table 9.1 shows the amount of dredged aggregates landed at ports in SEA 6 in 2003 representing 2.3 % of the total 22.1 million tonne landed in England and Wales in 2003.

*Table 9.1 Port statistics for marine dredged aggregates in SEA 6 in 2003. Source: Crown Estate web site- [http://www.thecrownestate.co.uk/42\\_aggregate\\_statistics\\_04\\_04\\_20](http://www.thecrownestate.co.uk/42_aggregate_statistics_04_04_20)*

Landing ports	Tonnage
Barrow	38,472
Heysham	105,812
Liverpool	275,367
Pembroke	34,206
Penrhyn	51,311
<b>Total England &amp; Wales</b>	<b>22,107,368</b>

### 9.3 Management issues and initiatives

#### Active Dredge Areas

The Crown Estate and British Marine Aggregate Producers Association (BMAPA) have undertaken a new initiative to provide more detailed information on the zoning of marine aggregate licence areas located around the coastline of England and Wales.

Active dredge areas are usually defined by the limits of the licence. However, in a number of cases the area available to be dredged at any one time is restricted through zoning schemes - introduced either as licence conditions or as voluntary initiatives by the dredging companies themselves. These reduce the extent of the environmental impact of dredging operations, as well as aiding the management of sand and gravel resources and liaison with other marine users, particularly the fishing industry (Crown Estate website [http://www.thecrownestate.co.uk/42\\_aggregate\\_statistics\\_04\\_04\\_20](http://www.thecrownestate.co.uk/42_aggregate_statistics_04_04_20)).

A series of charts have been produced defining the current active dredge area for eight separate regions; Humber, East Coast, Thames, Hastings, Owers, Isle of Wight, South West and North West. On the reverse of each are the associated co-ordinates for each licence area together with contact details for the operating companies. The active dredge area charts are updated regularly and are available to be downloaded from the websites of both BMAPA (<http://www.bmapa.org>) and The Crown Estate (<http://www.thecrownestate.co.uk>). They are currently similar to the areas marked on Figure 9.1, but provide more detail on zoning.

## 10 MARINE DISPOSAL

### 10.1 Introduction

Most forms of disposal at sea have been prohibited since the end of 1998 when the disposal of sewage sludge was phased out. Dredged material from ports and harbours is the only significant exception and now forms the majority of waste disposal at sea. Control of waste disposal at sea is achieved through a strict licensing system under the *Food and Environment Protection Act 1985* (FEPA). Responsibility for statutory licences to carry out disposal in UK waters lies with the Marine Consents & Environment Unit (MCEU) of DEFRA for England and Wales, SEERAD through the Fisheries Research Services (FRS) for Scotland and the Department of the Environment for Northern Ireland (MCEU website-[http://www.mceu.gov.uk/MCEU\\_LOCAL/mceu1-test-E.htm](http://www.mceu.gov.uk/MCEU_LOCAL/mceu1-test-E.htm)).

### 10.2 Activity in SEA 6 area

#### 10.2.1 Disposal of dredged material

In 2004 there were 24 sites in the SEA 6 area licensed for the disposal of dredged material (Table 10.1 and Figure 10.1 & 10.2).

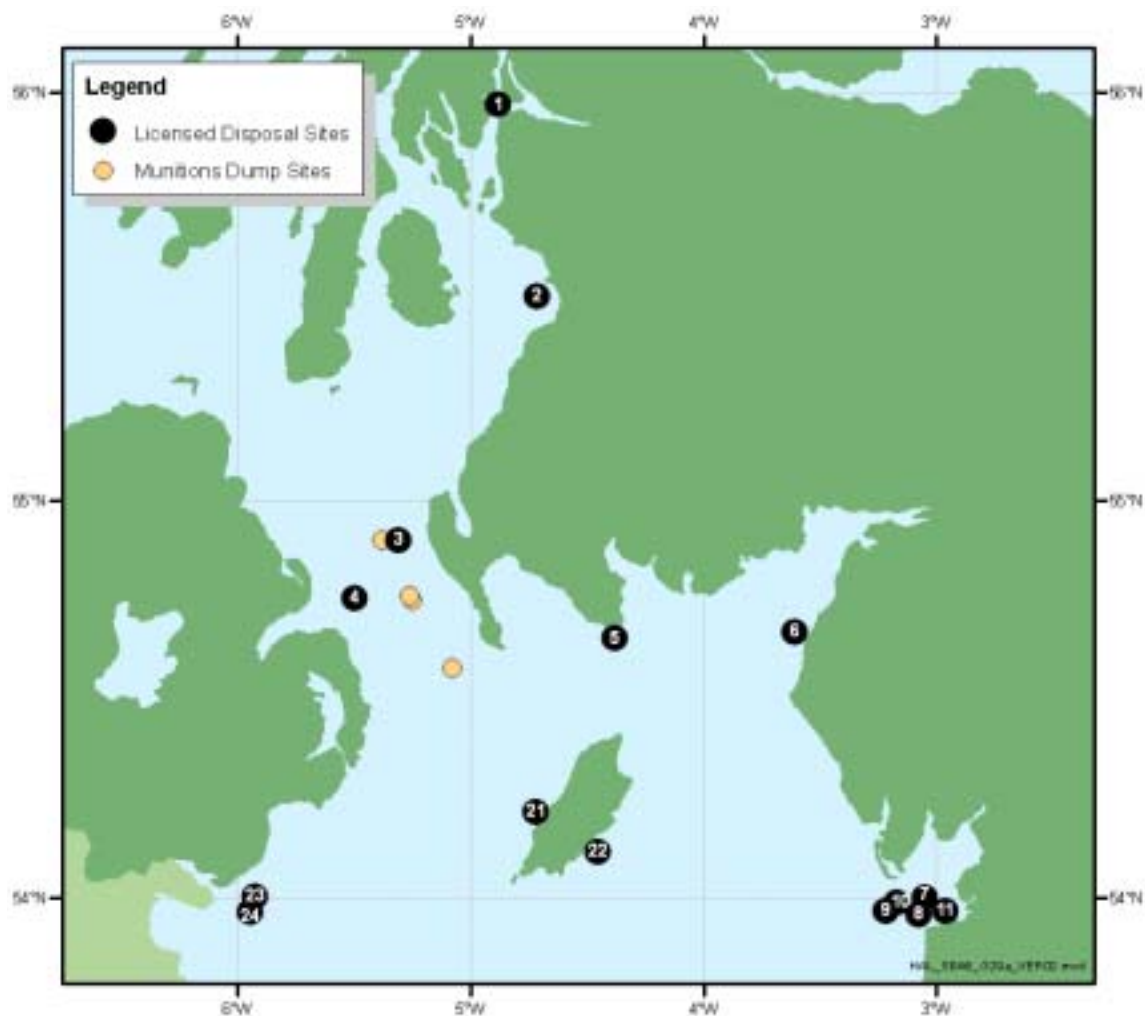


Figure 10.1 Licensed disposal sites for dredged material in the SEA 6 area - north

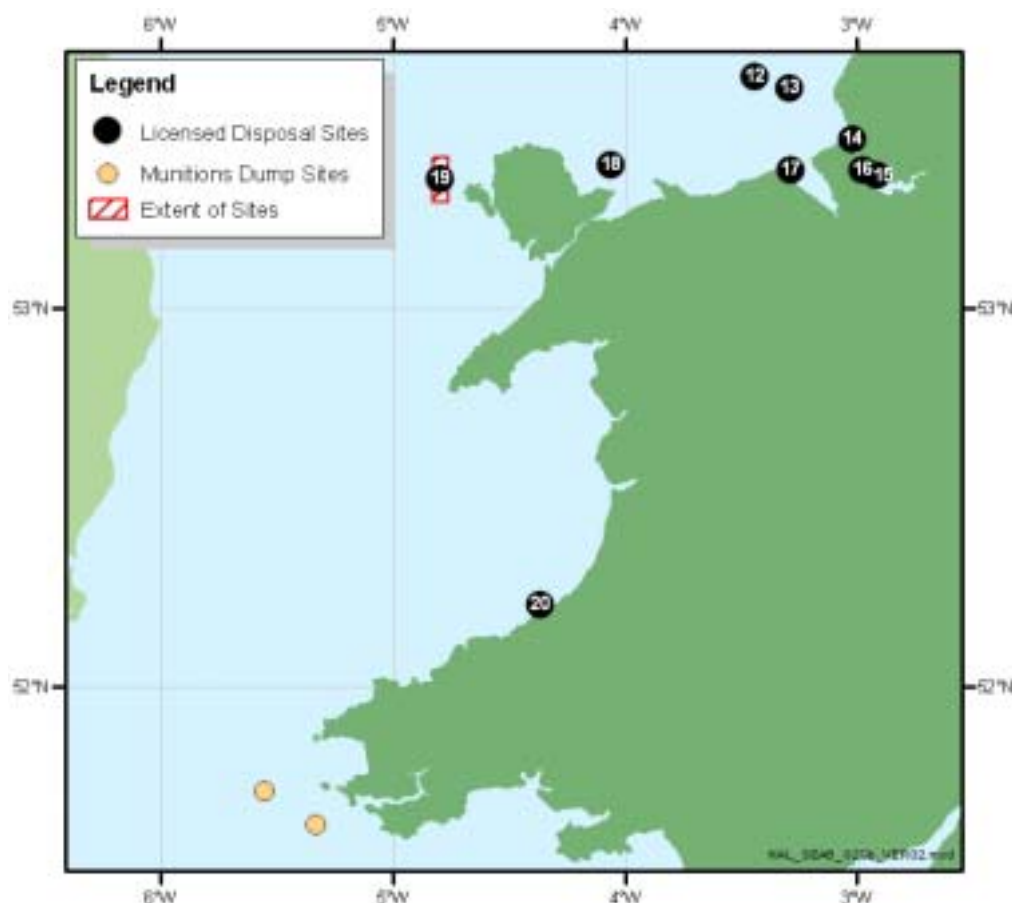


Figure 10.2 Licensed disposal sites for dredged material in the SEA 6 area - south

Table 10.1 Annual returns for sites licensed in SEA 6 area in 2003 and 2004\*. Source: Pers. Comm. Sue Reed DEFRA, Peter Hayes FRS and Paul McAnulty DOENI.

Map Ref.	Disposal site code		Annual return (tonnes)	Most recent licence
1	MA021	Cloch Point	0	15/9/03 – 14/9/04
2	MA050	Ayr Bay	56,444	1/4/03 – 31/3/04
3	MA010	North Channel Scotland	0	10/9/03 - 9/9/04
4	IS591	Belfast dredgings C	42,963	7/11/03 - 6/11/04
5	IS310	Burrow Head A	0	18/1/02 – 17/1/03
6	IS241	Workington anchorage	10,825	4/11/03 – 15/9/05
7	IS200	Morecambe Bay B	380,600	11/2/05 – 30/1/08
8	IS170	Morecambe Bay: Lune deep	898,625	23/6/04 – 22/6/05
9	IS205	Barrow D	1,679,780	12/12/03 – 3/7/06
10	IS180	Barrow A	0	12/12/03 – 3/7/06
11	IS192	Lune River B	4,450	3/12/04 – 2/12/05
12	IS150	Site Y	38,795	28/4/03 – 27/4/05
13	IS140	Site Z	1,173,357	23/4/04 – 19/12/05
14	IS120	Mersey (mid-river site)	84,550	28/4/04 – 27/4/05
15	IS110	Mersey (Garston site)	374,967	23/4/04 – 19/12/05
16	IS128	Bromborough	45,833	28/5/03 – 27/5/06
17	IS101	Mostyn deep	349,842	27/6/03 – 26/6/04

Map Ref.	Disposal site code	Disposal site name	Annual return (tonnes)	Most recent licence
18	IS055	Conwy Bay	0	9/12/03 – 8/12/04
19	IS040	Holyhead deep	0	8/10/03 – 7/10/04
20	IS015	New Quay	953	1/2/03 – 31/1/06
21	IS420	Peel (I.O.M.)	0	23/9/02 – 23/3/03
22	IS400	Douglas (I.O.M.)	0	3/7/03 – 6/7/04
23		Kilkeel*	14,175	2004
24		Carlingford*	17,437	2004

### 10.2.2 Munitions dumping

Since the end of the First World War, dumping of chemical weapons and munitions at sea has taken place. The full extent of this dumping will never be known due mainly to inadequate documentation of operations at the time of dumping and the subsequent loss or destruction of any records (OSPAR Commission, 2004).

One of the most heavily used areas for dumping of conventional and chemical warfare munitions in the North-East Atlantic is located in the SEA 6 area. The Beaufort's Dyke, a 200 to 300 meters deep trench is located between Scotland and Northern Ireland and it has been estimated that over 1 million tons of munitions have been dumped in the Beaufort's Dyke since the early 1920s (OSPAR Commission, 2004). During the 1990s reports of large numbers of phosphorous devices stranded on Scottish and Irish coasts were commonplace.

A detailed survey of the Beaufort's Dyke disposal site was undertaken by the Marine Laboratory, Aberdeen (SOAEFD, 1996). This report showed that fish, shellfish and sediment samples collected adjacent to, and from the general area of the Beaufort's Dyke, did not contain chemical warfare agents or contaminants associated with the dumped munitions. It also clearly showed munitions and munitions-related materials at high densities outside the charted dumpsite.

In 2004, there were 6 recorded chemical weapons and munitions dump sites in the SEA 6 area (Table 10.2 and Figure 10.1). Four sites are located within Beaufort's Dyke and 2 are off the coast of Pembrokeshire.

*Table 10.2 Marine munitions dumpsites in SEA 6 area. Source: OSPAR Commission, 2004*

Latitude	Longitude	Type of munitions	Notes
54.9	-5.38	Conventional	Beaufort's Dyke- 1 million+ tons dumped by UK and 1160 tons dumped by Ireland
54.75	-5.25	Conventional	Beaufort's Dyke
54.58	-5.08	Conventional	Beaufort's Dyke
54.76	-5.26	Chemical & Conventional	Beaufort's Dyke. 1367 tons dumped loose or in cases
51.72	-5.55	Conventional	Off Pembrokeshire coast
51.63	-5.33	Conventional	Off Pembrokeshire coast



## 11 TOURISM & LEISURE

### 11.1 Introduction

The Irish Sea region has some of the best and most attractive resources in the UK for coastal tourism and leisure. The nature of tourism around the Irish Sea is changing, with a decline in the numbers of visitors to traditional seaside resorts and growth in the number of people wishing to enjoy a more active holiday experience. Such tourism includes yachting, motor cruising, sailboarding and other water sports, sea angling and diving. Tourism and leisure probably contributes the most of all the marine sectors to the regional economy. Available statistics indicate a contribution to the regional economy in the order of £2.5 billion per annum, with between 100,000-200,000 people directly employed in the sector (Vincent *et al.* 2004).

### 11.2 Activity in SEA 6 area

A wide range of land-based leisure activities take place along the coast, coast, including walking, camping, golf, beach recreation, bird watching, wildfowling, horse riding, angling and, increasingly, the use of motorised vehicles on beaches and dunes (Barne *et al.* 1996). Table 11.1 shows the number of tourists and expenditure in 2002 for countries bordering the SEA 6 region.

*Table 11.1 Number of tourists(millions) and expenditure (£ million) for tourist board regions in the UK in 2002. Source: National Statistics website: tourism*

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

Tourist board regions	UK Residents		Overseas Residents	
	No. of tourists (millions)	Expenditure (£ million)	No. of tourists (millions)	Expenditure (£ million)
England	134.9	20,787	20.5	10,313
Wales	11.9	1,543	0.9	252
Scotland	18.5	3,683	1.6	806
Northern Ireland	2.8	525	0.3	126

The North Wales and Lancashire coasts are dominated by traditional seaside resorts, whilst Cumbria, Dumfries and Galloway and Pembrokeshire are important for more active leisure pursuits. The value of seaside tourism to Wales in 2001 was estimated at £0.9 billion. Resorts along the eastern coasts of the SEA 6 area are also important for the sector. For example, Blackpool is the largest coastal resort in the UK and attracts 17 million visitors a year with an annual expenditure of £545 million (Vincent *et al.* 2004). Some 0.54 million tourist trips are made from Northern Ireland to Scotland each year, spending an estimated £114 million and supporting an estimated 3,800 jobs (Vincent *et al.* 2004).

The Isle of Man has 118 km of coastline, much of it unspoilt and is very popular for water-based activities (Barne *et al.* 1996). In 2004 the Isle of Man was visited by an estimated 120,270 staying visitors and 7,286 day trippers and an estimated £113 million was spent by visitors in 2004 ([www.gov.im/treasury/economic/data/traffic.xml](http://www.gov.im/treasury/economic/data/traffic.xml)). The TT motorcycling racing fortnight in late May/early June is the busiest part of the year for tourism. Other popular activities include sea angling, sailing, power boating, diving and golf ([www.gov.im/tourism](http://www.gov.im/tourism)).

In Ireland, interest in coastal and marine based activities is growing. In the mid 1990's over 26,000 overseas visitors participated in water-based activities, representing 29 % of the total outdoor market. Leisure craft services are growing with an expansion of marine developments around the whole of the



Irish Sea. Recreational angling is an increasingly important part of the rural economy. In England and Wales, CEFAS calculated the recreational fishery generated almost £19 million of expenditure. Similarly, in Ireland local and long-distance sea angling tourism is valued at £17 million per annum (Vincent *et al.* 2004).

### 11.2.1.1 Bathing waters

Bathing waters which have attained certain water quality standards are designated under the EC Bathing Water Directive. Within the SEA 6 area there were 96 designated coastal bathing water areas in 2004 (Figures 11.1 and 11.2).

The European Blue Flag Campaign was started in 1987 by the Foundation for Environmental Education in Europe and covers resort bathing beaches. To qualify, bathing beaches have to meet certain guideline standards of the EC Bathing Water Directive as well as other criteria on beach facilities, cleanliness and safety. In the SEA 6 area there were 28 Blue Flag beaches in 2004 most of which were in Wales (Table 11.1 and Figures 11.1 and 11.2).

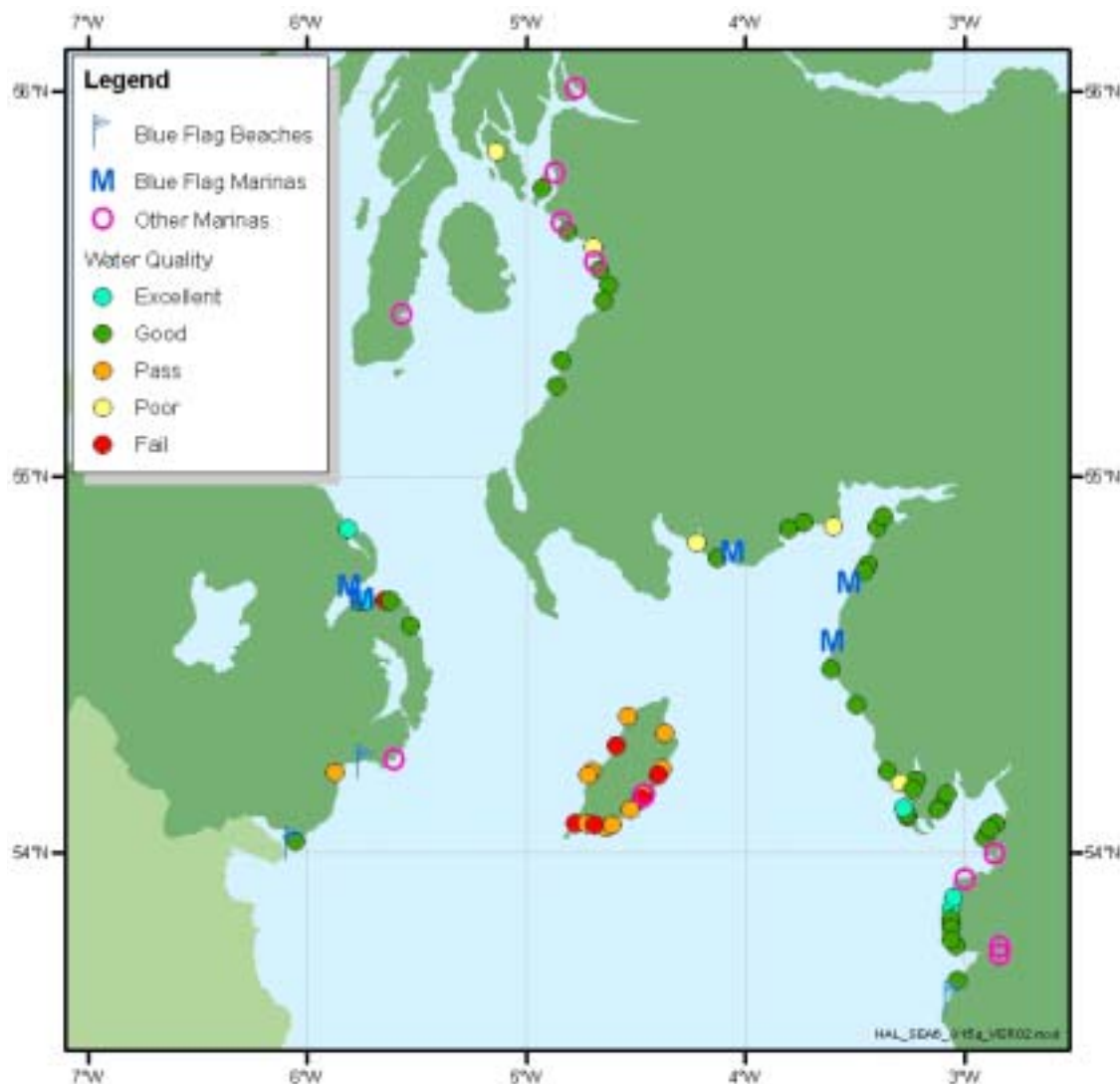


Figure 11.1 Designated beaches and marinas in the SEA 6 region – north

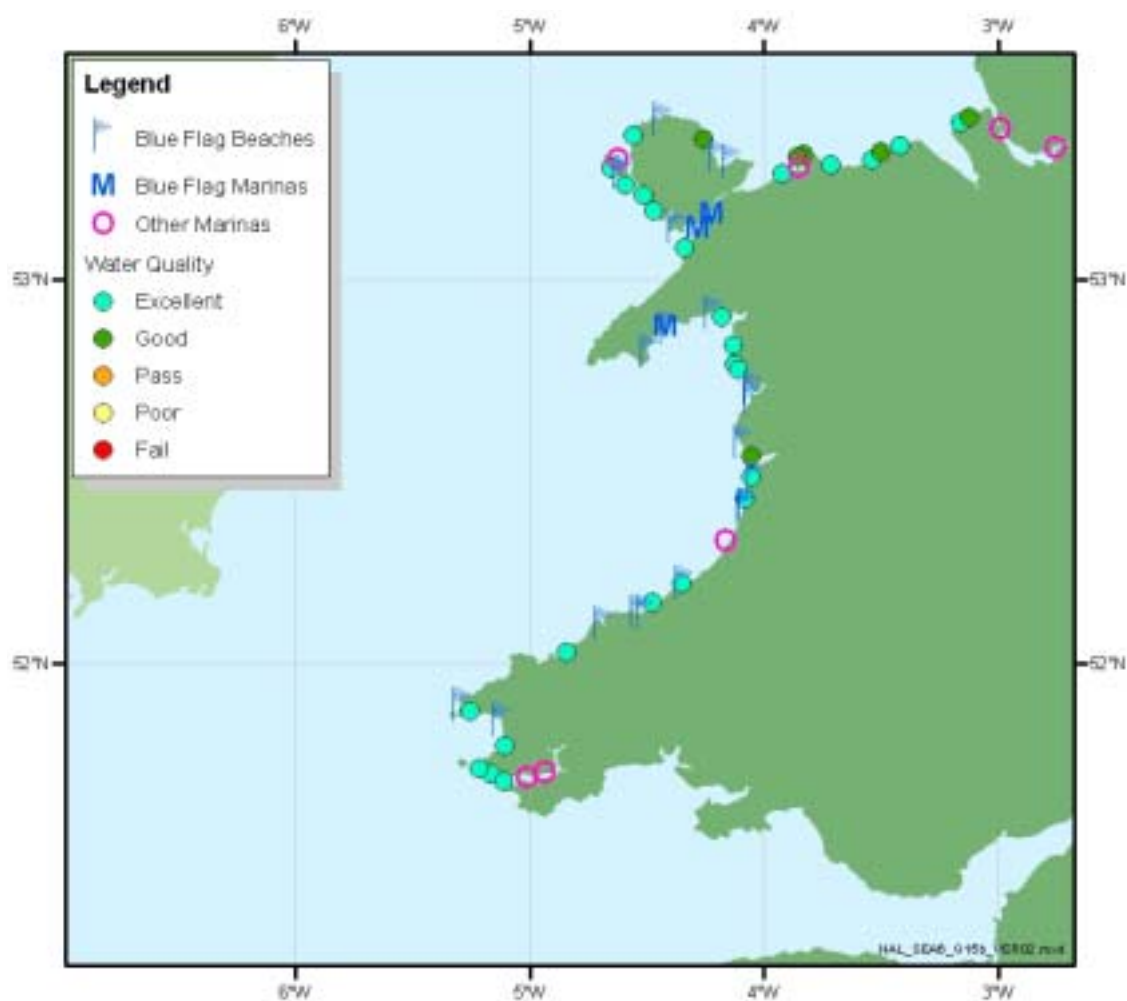


Figure 11.2 Designated beaches and marinas in the SEA 6 region - south

Table 11.1 Blue Flag beaches in the SEA 6 area, 2004. Source: Seaside Awards website- [http://seasideawards.org.ukBF\\_LIST.ASP](http://seasideawards.org.ukBF_LIST.ASP)

Beach name	County
Aberporth	Ceredigion
Abersoch	Gwynedd
Aberystwyth North	Ceredigion
Aberystwyth South	Ceredigion
Ainsdale	Merseyside
Amroth	Pembrokeshire
Barmouth	Gwynedd
Benllech	Ynys Mon
Borth	Ceredigion
Cemaes	Ynys Mon
Criccieth	Gwynedd
Fairbourne	Gwynedd
Llanddona	Ynys Mon
Llanddwyn	Ynys Mon
Lydstep	Pembrokeshire

Beach name	County
Newquay Harbour	Ceredigion
Newgale	Pembrokeshire
Poppit Sands	Pembrokeshire
Pwllheli	Gwynedd
Saundersfoot	Pembrokeshire
Tenby North	Pembrokeshire
Tenby South	Pembrokeshire
Trearddur Bay	Ynys Mon
Tresaith	Ceredigion
Tywyn	Gwynedd
Whitesands	Pembrokeshire
Cranfield West	Down
Tyrella	Down

The ENCAMS Seaside Award scheme for resort and rural beaches complements the Blue Flag scheme and is based on similar management criteria but with fewer requirements for rural beaches. The 2004 Seaside Awards have recently been announced and 109 resort and rural beaches within the SEA 6 area were given the award. Further details can be found on the organisation's website (<http://www.seasideawards.org.uk>).

#### 11.2.1.2 Marinas

Sailing is a popular activity in the Irish Sea and there are several marinas located throughout the SEA 6 area (Figures 11.1 and 11.2 and Table 11.2). The Blue Flag campaign also includes marinas; to be eligible for a Blue Flag a marina must fulfil certain requirements for environmental education and management, water quality and safety. There are 8 Blue Flag marinas in the SEA 6 area (Figures 11.1 and 11.2).

*Table 11.2 Marinas in SEA 6 area. BF indicates Blue Flag marina. Source: Royal Yachting Association website – <http://rya.co.uk> Seaside Awards website – <http://www.seasideawards.org.uk/blue4.asp>*

Marina	Location
Aberystwyth	Ceredigion
Caernarfon BF	Gwynedd
Conwy	Conwy
Hafan Pwllheli BF	Gwynedd
Holyhead	Isle of Anglesey
Milford	Pembrokeshire
Neyland Yacht Haven Ltd	Pembrokeshire
Port Dinorwic BF	Gwynedd
Douglas Boatyard	Preston, Lancashire
Fiddlers Ferry Yacht Haven	Warrington, Cheshire
Fleetwood Harbour Village	Fleetwood, Lancashire
Glasson Basin Yacht Co Ltd	Lancaster, Lancashire
James Mayor & Co Ltd	Tartleton, Lancashire

Marina	Location
Liverpool Marina	Merseyside
Maryport <a href="#">BF</a>	Cumbria
Preston	Lancashire
Ardglass	County Down
Bangor <a href="#">BF</a>	County Down
Carrickfergus <a href="#">BF</a>	County Antrim
Campbeltown Loch Berthing Co Ltd	Mull of Kintyre, Argyll
Clyde Marina	Ardrossan, Ayreshire
Largs Yacht Haven	Ayreshire
Rhu Marina	Helensburgh, Dunbartonshire
Troon Yacht Haven	Ayreshire

## 12 LOCALLY IMPORTANT ACTIVITIES

Within the SEA 6 area, a number of coastal industries and activities provide important local sources of employment and economic value.

### 12.1 Power stations

Five nuclear power stations were operational in the SEA 6 area in 2005 (DTI Energy website - <http://www.dti.gov.uk/energy/inform>; Table 12.1 and Figure 12.1). For example, Wylfa on Anglesey started generating electricity in 1971. It is British Nuclear Fuels (BNFL) largest reactor and generates 980 MW of electricity which is enough to provide two cities the size of Liverpool and Manchester with all their electricity needs (British Nuclear Fuels website <http://www.bnfl.com>). In addition, Milford Power proposes to develop a 1600 MW Combined Cycle Gas Turbine at Waterston, Pembrokeshire (Milford Power website- [http://www.milfordpower.co.uk/proposed\\_ps.html](http://www.milfordpower.co.uk/proposed_ps.html)).

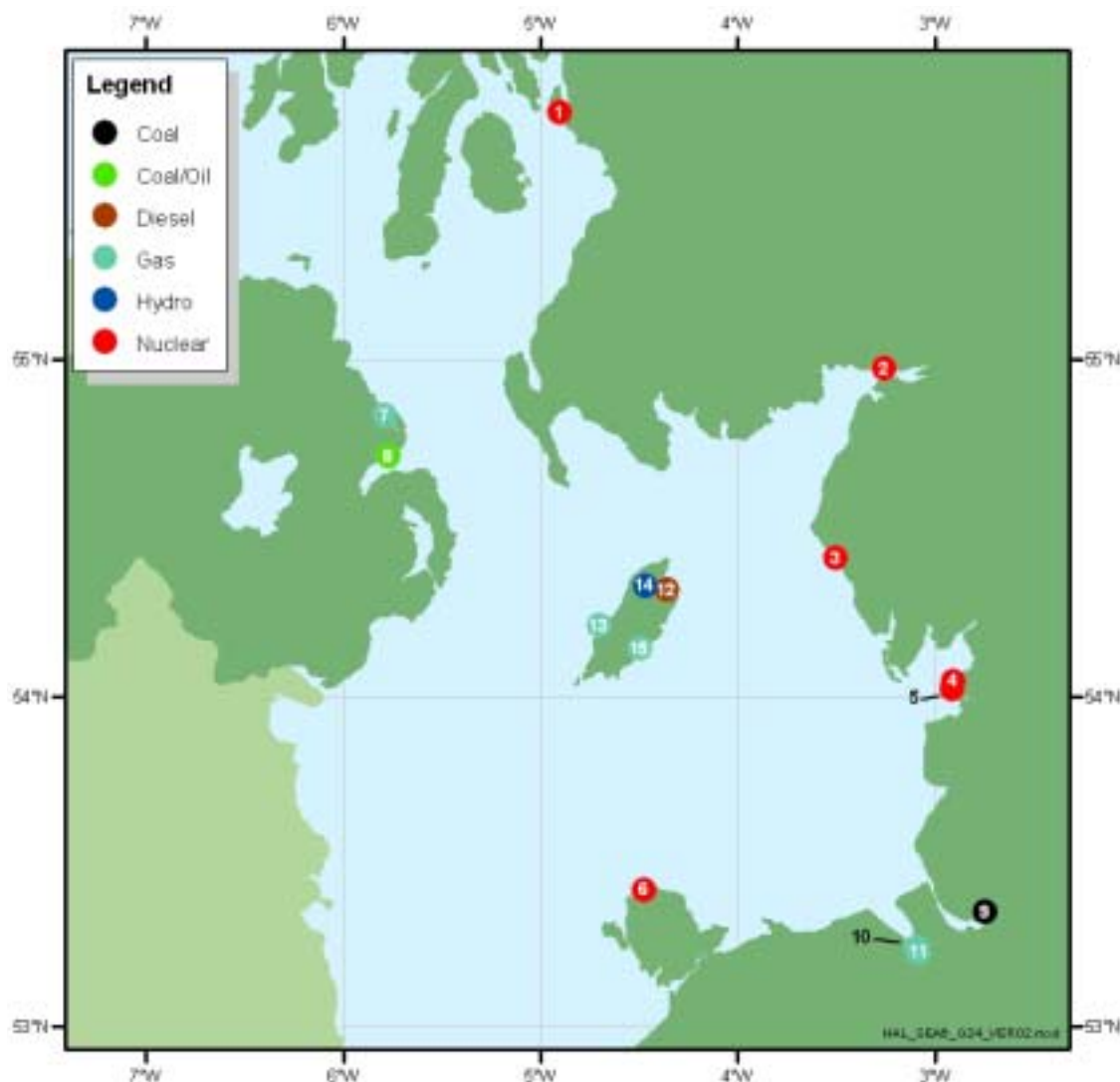


Figure 12.1 Power stations in SEA 6 area 2005.

Table 12.1 Power stations in SEA 6 area 2005. Source: <http://www.dti.gov.uk/energy> , <http://www.bnfl.com> <http://www.gov.im/gambling/infrastructure/power.xml> and Northern Ireland Energy Map <http://www.detini.gov.uk> .

Map Ref.	Power station	Type	Capacity (MW)	Published lifetime	Operator
7	Ballylumford	Combined Cycle Gas Turbine (CCGT)	1082	-	Premier Power Ltd
2	Chapelcross	Magnox	196	2005	BNFL
11	Deeside	Combined Cycle Gas Turbine (CCGT)	498		Deeside Power
9	Fiddlers Ferry	Coal	1961		American Electric Power
5	Heysham 1	Advanced Gas Cooled Reactor	1150	2014	British Energy
4	Heysham 2	Advanced Gas Cooled Reactor	1250	2014	British Energy
1	Hunterston B	Advanced Gas Cooled Reactor	1190	2011	British Energy
8	Kilroot	Coal/oil	520	-	AES Kilroot
13	Peel	Gas	40		Manx Electricity Authority
15	Pulrose	Combined Cycle Gas Turbine (CCGT)	?		Manx Electricity Authority
12	Ramsey	Diesel	7		Manx Electricity Authority
10	Shotton	Gas	215		
14	Sulby	Hydro	1		Manx Electricity Authority
6	Wylfa	Magnox	980	2010	BNFL

Sellafield is also shown on Figure 12.1 (no. 3). Although there are no longer any active nuclear power stations at this site it is one of the largest nuclear engineering centres in the world. Now managed by the British Nuclear Group, the main focus is on the decommissioning of historical liabilities (Sellafield website- <http://www.sellafield.com> ).

## 12.2 Quarrying

Coastal quarries are those less than 2 km inland; 60 quarries occur within the SEA 6 area (Figure 12.2). The type of minerals quarried in SEA 6 is varied and includes igneous and metamorphic rock, sand and gravel, limestone and slate.

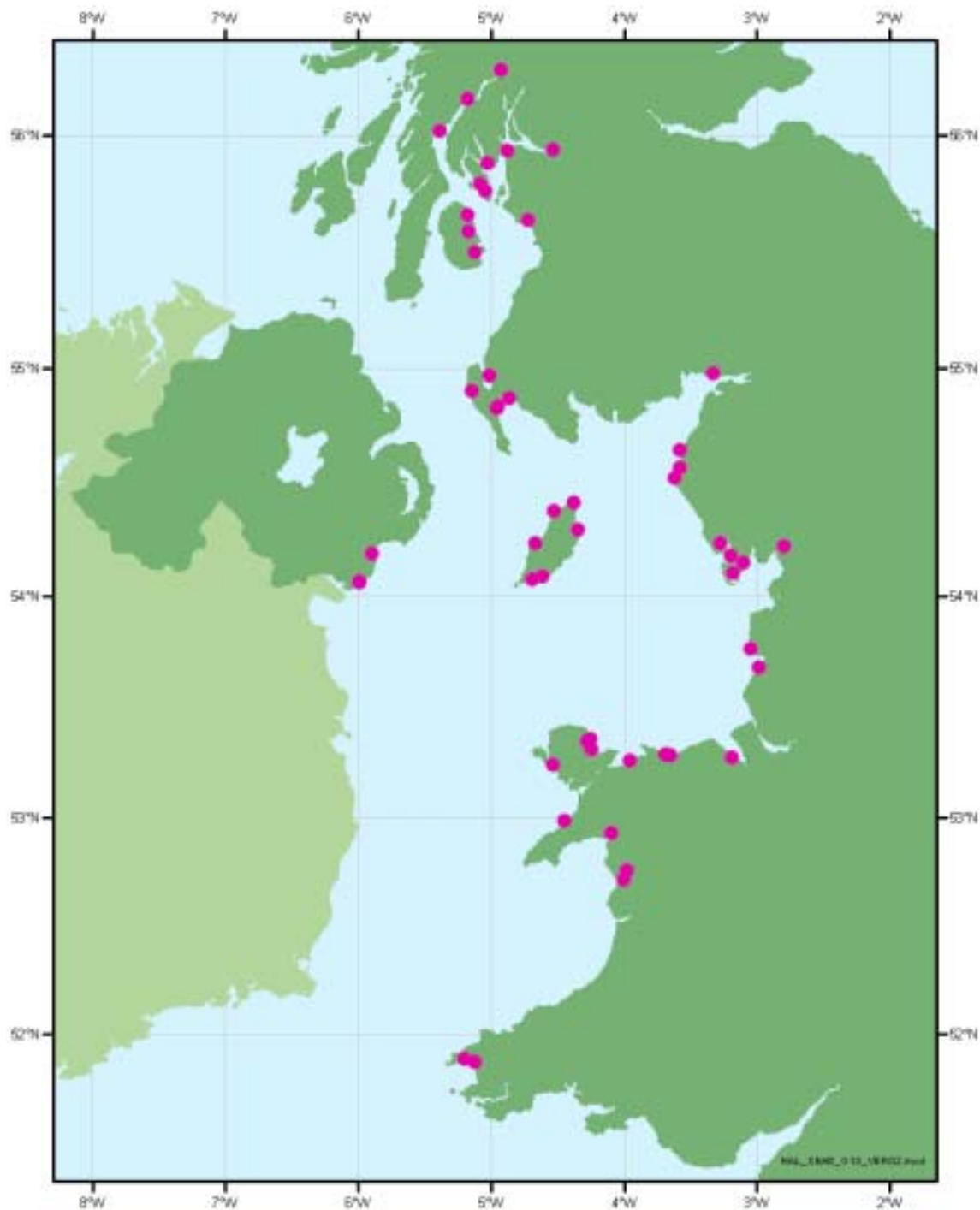


Figure 12.2 Coastal quarries in SEA 6 area

### 12.3 Other activities

Dune grazing is practised at several sites in Wales (Barne *et al.*, 1995) and Northern Ireland (Mourne Mountains website- <http://www.mournemountains.com/murloughbay.htm> and UK BAP website- <http://www.ukbap.org.uk/UKPlans.aspx?ID=28>). Grazing is an important management tool in dune conservation and the preponderance of grassland and heath vegetation on UK dunes is due to a long history of grazing by livestock. For example, Dexter cattle and Exmoor ponies graze the 5,000 year old sand dune system of Murlough National Nature Reserve, in County Down (Mourne Mountains website- <http://www.mournemountains.com/murloughbay.htm>). However, during the National Sand

Dune Survey grazing by domestic stock was only recorded at 17 of the 49 sand dune sites in Wales (Dargie, 1995). Although most of the large sand dune sites were grazed, the absence of grazing from the majority of sites was due largely to displacement by other land uses, including leisure development and military use (Barne *et al.*, 1995).

Saltmarsh grazing is also practised in the SEA 6 region (Barne *et al.*, 1995). The most recent saltmarsh surveys of the UK estimate the total extent of saltmarsh to be approximately 45,500 ha (England 32,500 ha, Scotland 6747 ha, Wales 6089 ha, and Northern Ireland 215 ha) (UK BAP website- <http://www.ukbap.org.uk/UKPlans.aspx?ID=33>). In SEA 6 saltmarsh is concentrated in the major estuaries of low-lying land in north-west England and in Wales, with smaller areas in the firths of south-west Scotland and the sea loughs of Northern Ireland. The most significant saltmarsh grazing in SEA 6 occurs in North Wales (Barne *et al.*, 1995).

Seaweed collection in the SEA 6 area occurs mainly in Pembrokeshire. *Porphyra* or lava weed is collected from the shore for food and is sometimes carried out using trailers, which can remove up to half a tonne at a time (Barne *et al.*, 1995 and Pers. Obs.).



## 13 COASTAL & MARINE ARCHAEOLOGY

### 13.1 Overview

Two reviews of the coastal and submarine prehistoric and maritime archaeology of the SEA 6 area have been prepared for SEA 6 (Flemming, 2005, Wessex Archaeology 2005) and should be consulted. Similar reviews were also produced for the SEA 3, SEA 4 and SEA 5 areas.

#### Offshore archaeology

The treacherous nature of near shore waters has lead to a large number of wrecks in the area. Many of these wrecks have been identified and the UK Hydrographic Office maintains a register of their locations. The Wrecks Database contains over 60,000 records, of which approximately 20,000 are named vessels (UK Hydrographic Office website <http://www.hydro.gov.uk/wrecks.html>). However, the locations of many more remain uncharted.

### 13.2 Archaeological surveys in the SEA 6 area

#### 13.2.1.1 National Monuments Record

The National Monuments Record of Scotland, England, Northern Ireland and Wales can be accessed through databases which contain details of many thousands of archaeological sites, monuments, buildings and maritime sites in the UK. Databases can be found on the following websites:

- **Scotland:** Royal Commission on the Ancient and Historical Monuments of Scotland  
<http://www.rcahms.gov.uk/canmoreintro.html>
- **England:** English Heritage National Monuments Record <http://amaxus.english-heritage.org.uk/server/show/nav.1530>
- **Northern Ireland:** Sites and Monuments Record  
[http://www.ehnsi.gov.uk/built/mbr/monuments\\_database/mons.asp](http://www.ehnsi.gov.uk/built/mbr/monuments_database/mons.asp)
- **Wales:** Royal Commission on the Ancient and Historical Monuments of Wales  
<http://www.rcahmw.org.uk/aboutus.shtml>

#### 13.2.1.2 Scheduled Monuments

Scheduled monuments are protected under the *Ancient Monuments and Archaeological Areas Act 1979* and consent is normally required before any alteration or development can take place. For information on Scheduled Monuments in the SEA 6 area refer to the databases given above.

#### 13.2.1.3 Protected wrecks

There are currently approximately 93 wreck sites around the UK coast that are designated as protected wrecks. There are 3 main pieces of legislation under which wreck sites have been protected:

1. The Protection of Wrecks Act 1973, sections 1 & 2
2. The Protection of Military Remains Act 1986
3. Ancient Monuments & Archaeological Areas Act 1979.

### 13.2.1.4 Designated wrecks

There are 6 wrecks within the SEA 6 area protected under section 1 of the Protection of Wrecks Act 1973 and 1 under section 2; these are described in Table 13.1 and Figure 13.1. Another off Strumble Head, Pembrokeshire is due to be considered for designation in 2005 (Pers. Comm. Matthew Coward, CADW).

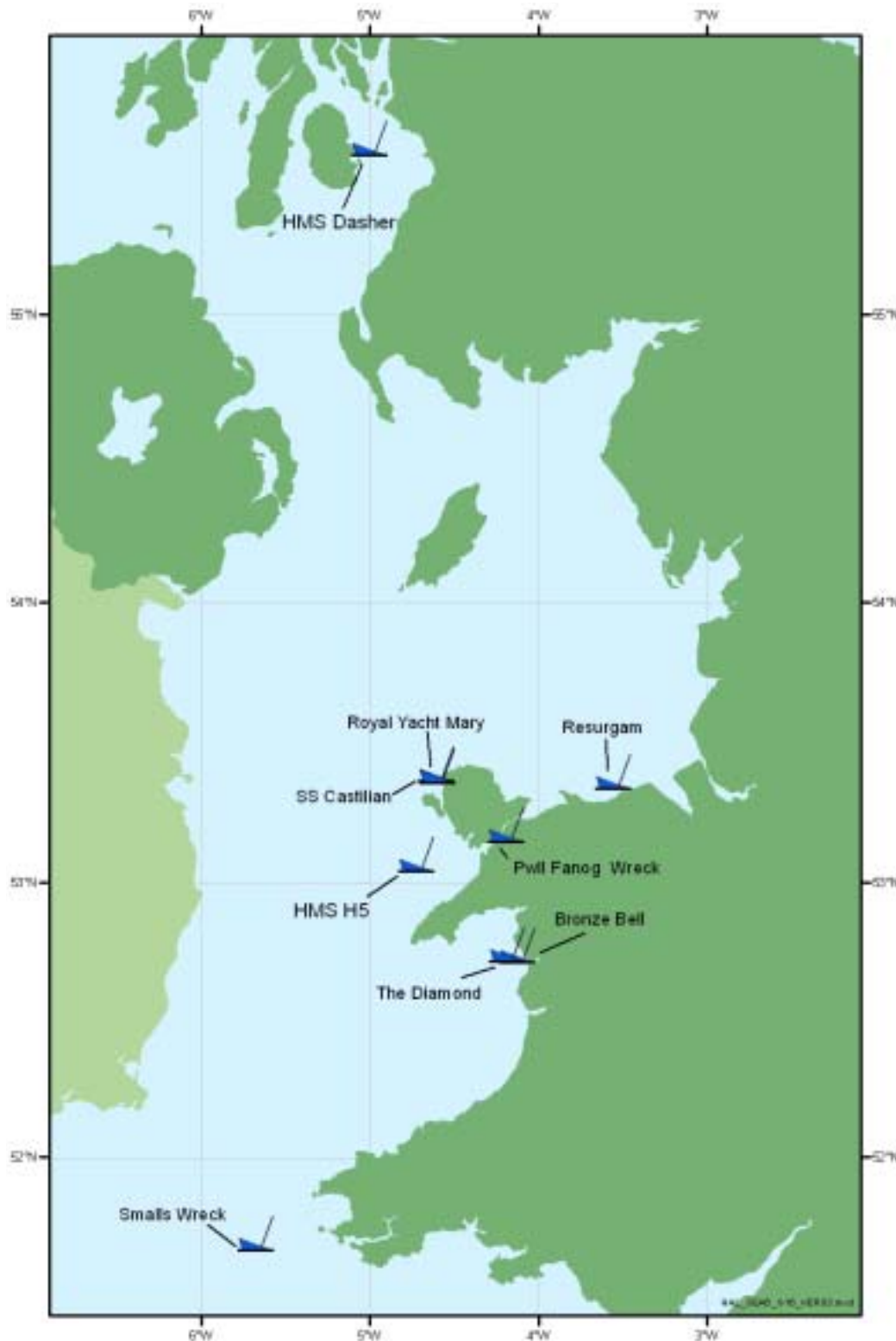


Figure 13.1 Designated wrecks in the SEA 6 area

Table 13.1 Designated wrecks in the SEA 6 area. Source: [http://www.mcga.gov.uk/c4mca/mcga-environmental/mcga-receiver\\_of\\_wreck/mcga-dops-row-protected-wrecks.htm](http://www.mcga.gov.uk/c4mca/mcga-environmental/mcga-receiver_of_wreck/mcga-dops-row-protected-wrecks.htm) and Pers. Comm. Matthew Coward, Cadw).

Name of wreck	Location	Year of sinking	Year of designation	Exclusion zone (m)
Bronze Bell or Tal-y-Bont wreck	Cardigan Bay, Gwynedd	1677	12/01/1979 (redesignated 28/09/1989)	300
Pwll Fanog wreck	Menai Strait, Anglesey	Medieval	14/02/1978 (redesignated 19/01/1979)	150
Resurgam	Rhyl, Denbighshire	1880	04/07/1996	300
Royal Yacht Mary	Skerries, Anglesey	1675	12/01/1974	100
Smalls wreck	Smalls Reef, Pembrokeshire	1100	05/12/1991 (redesignated 09/10/1995)	300
SS Castilian	East Platters, Anglesey	1943	13/08/1997	500
The Diamond	Barmouth, Gwynedd	1825	27/03/2002	200

### 13.2.1.5 Military remains

The Protection of Military Remains Act 1986 makes it an offence to interfere with the wreckage of any crashed, sunken or stranded military aircraft or designated vessel without a licence, irrespective of loss of life or whether the loss occurred during peacetime or wartime. There are two levels of protection offered by this Act, designation as a Protected Place or as a Controlled Site. There are two Controlled Sites in SEA 6 area (Table 13.2 and Figure 13.1) but no Protected Places. Controlled sites are specifically designated areas which encompass the remains of a military aircraft or a vessel sunk or stranded in military service within the last two hundred years (DTI SEA 5 Users report).

Table 13.2 Controlled sites in SEA 6 area. Source: MCA website, 2005 [http://www.mcga.gov.uk/c4mca/mcga-environmental/mcga-receiver\\_of\\_wreck/mcga-dops-row-protected-wrecks.htm](http://www.mcga.gov.uk/c4mca/mcga-environmental/mcga-receiver_of_wreck/mcga-dops-row-protected-wrecks.htm)

Name of wreck	Location	Year of sinking	History
HMS Dasher	Strathclyde	1943	Escort aircraft carrier destroyed by an internal explosion in Firth of Clyde. Sank within 3 minutes. Loss of 379 lives.
HM Submarine H5	Anglesey	1918	Sunk in collision with unidentified vessel. All perished.

## 14 COASTAL & MARINE MANAGEMENT INITIATIVES

### 14.1 Introduction

The SEA 6 area includes the entire west coast of England, the north and west coast of Wales, the east coast of Northern Ireland, the Isle of Man and part of the south-west coast of Scotland. It supports a 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

### 14.2 Coastal planning initiatives

The SEA 6 coast is a mixture of rural areas and centres of industry and population. Coastal planning is essential to managing and maintaining the current character of the coastal environment and to this end, a number of statutory and non-statutory mechanisms guide development within the coastal zone.

Decisions on whether to allow proposals to build on land or to change its use are usually made by local authorities. Development plans set out the authority's policies and proposals for the development and use of land in their area.

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. In London and the metropolitan areas, and in a few non-metropolitan unitary areas, authorities produce Unitary Development Plans (UDPs), which combine the functions of structure and local plans and include minerals and waste policies ([http://www.odpm.gov.uk/stellent/groups/odpm\\_planning/documents/page/odpm\\_plan\\_606149-02.hcsp#P17\\_1845](http://www.odpm.gov.uk/stellent/groups/odpm_planning/documents/page/odpm_plan_606149-02.hcsp#P17_1845)).

All the relevant local authorities within the SEA 6 area have structure plans or UDP's in place.

#### 14.2.1 England

The planning system in England is underpinned by the statutory development plan system. Under this system, adopted development plans, regional spatial strategies (RSSs) and local development documents (LDDs) will set out the planning policies for any given area (regional, sub-regional or local) against which planning applications will be assessed.

This system came into being through the Planning and Compulsory Purchase Act 2004, and will replace regional planning guidance (RPG), unitary development plans (UDPs), structure plans and local plans.

### 14.2.2 Scotland

The planning system in Scotland is underpinned by the statutory development plan system, which sets out the planning policies for any given area against which planning applications will be assessed.

A number of recent planning consultations and announcements have detailed ways in which the Scottish Ministers intend to review the existing strategic planning system and implement a new system. Scottish Ministers have announced their intention to remove the requirement to have structure plans covering the whole of Scotland. These will be replaced by a framework of local development plans (LDPs) across the country ([http://www.dti.gov.uk/renewables/renew\\_3.3.htm](http://www.dti.gov.uk/renewables/renew_3.3.htm)).

### 14.2.3 Wales

The recent Planning and Compulsory Purchase Act 2004 is bringing about a reform of the planning system. The main objective is to simplify the system, replacing current unitary development plans (UDPs) with local development plans (LDPs). The Act also provides statutory status for the Wales Spatial Plan, to which all lower tier plans must 'have regard' and which will be material in the consideration of development proposals.

The transition from UDPs to LDPs will not formally be required until the National Assembly has commenced Part 6 of the Act, which specifically relates to Wales. This is expected to happen in the summer 2005 ([http://www.dti.gov.uk/renewables/renew\\_3.3.htm](http://www.dti.gov.uk/renewables/renew_3.3.htm)).

### 14.2.4 Northern Ireland

The Regional Development Strategy, '*Shaping our Future*', is a strategy for the development 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.

Development plans may be in the form of area plans, local plans or subject plans. They apply the regional policies of the Department of the Environment at the appropriate level, and must be in 'general conformity' with the Regional Development Strategy ([http://www.dti.gov.uk/renewables/renew\\_3.3.htm](http://www.dti.gov.uk/renewables/renew_3.3.htm)).

More information is available from the Northern Ireland Department of the Environment Planning Service at <http://www.planningni.gov.uk/default.htm>.

## 14.3 Coastal Protection

Coastal protection is a major issue in the UK. Shoreline Management Plans (SMPs) have been developed throughout the SEA 6 area to help address the problems. 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). 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. Although non-statutory, SMPs have direct inter-relationships with voluntary Coastal Zone Management Plans, Estuary Management Plans and Local Environment Agency Plans (Coastal Guide website <http://www.coastalguide.org/icm/wales.html>).

The shoreline has been divided into lengths called major sediment cells, the boundaries of which are based on natural coastal process. There are 11 major sediment cells around the coast of Wales and England and these have been sub-divided into sediment sub cells.

Sediment sub-cells represent practical subdivisions of the coastline into lengths that follow sediment cell principles while enabling suitably sized groups to be formed to consider coastal defence issues at the strategic level (DEFRA 2001). For example, the Cardigan Bay SMP covers the Ceredigion, Pembrokeshire and Gwynedd coastline (<http://www2.ceredigion.gov.uk/english/council/policy/shoreline/index.htm>).

## 14.4 Coastal water quality initiatives

Within SEA 6, the management and maintenance of water quality is an important issue for coastal industries, conservation interests and public health. There are specific classification schemes for shellfish harvesting areas and bathing waters that are monitored and regulated by the Environment Agency (EA) in England and Wales, Scottish Environment Protection (SEPA) in Scotland and Environment and Heritage Service (EHS) in Northern Ireland. These organisations also operate more general classification schemes for estuarine and coastal waters.

Details of the classification method in Scotland were described in Section 16.3 of the SEA 4 Existing Users report. Broadly, 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.

The Northern Ireland Estuarine and Coastal Waters Classification Schemes (NIECWCS) were introduced by the Environment and Heritage Service (EHS) in 1996 and are based upon the SEPA Estuarine and Coastal Waters Classification Schemes (EHS, 2000 and [http://themes.eea.eu.int/Specific\\_media/water/indicators/WEC2d,2003.1017/38\\_Classifications\\_rc.pdf](http://themes.eea.eu.int/Specific_media/water/indicators/WEC2d,2003.1017/38_Classifications_rc.pdf)). EHS has an extensive network of estuarine and coastal water monitoring points (>40) around Northern Ireland of which seven form part of the UK National Marine Monitoring Programme (NMMP).

Up until 2000, estuarine water quality in England and Wales was assessed every five years based on an assessment and classification scheme prepared by the Classification of Estuaries Working Party (CEWP) in the 1970s. Estuaries were classified as Good, Fair, Poor or Bad based on three quality elements, biological quality (presence of certain species of fish, aesthetic quality), evidence of aesthetic pollution (sewage-derived litter) and chemical quality (in terms of dissolved oxygen concentrations). A score was allocated for each of these categories according to set criteria and the scores added to determine the overall class.

Assessments were last made in 2000 using a combination of data from statutory monitoring programmes and local knowledge. A new scheme has been under development, based on the Scottish Classification scheme, which was due to replace the CEWP scheme by 2005. However this has now been abandoned pending the development of the scheme that will be needed to meet the requirements of the EC Water Framework Directive (Environment Agency website- [http://www.environment-agency.gov.uk/yourenv/eff/water/213925/marine\\_waterqual/?lang=e](http://www.environment-agency.gov.uk/yourenv/eff/water/213925/marine_waterqual/?lang=e)).

Table 14.1 provides details of the classification of estuarine and coastal waters relevant to SEA 6. Ninety eight percent of estuaries and ninety seven percent of coastal waters in SW Scotland were of excellent or good quality in 2002 (Table 14.1). Most estuaries in North-west England and Wales were classed as good or fair quality in 2000 (Table 14.1), except for some parts of the Mersey and Ribble estuaries that were of poor quality. This is an improvement in the parts of the Mersey that were of bad

quality at the last survey in 1995 (Environment Agency website- [http://www.environment-agency.gov.uk/yourenv/eff/water/213925/marine\\_waterqual/?lang=e](http://www.environment-agency.gov.uk/yourenv/eff/water/213925/marine_waterqual/?lang=e)).

*Table 14.1 Estuarine & coastal water quality in SEA 6 . Data for 2002 Scotland and 2000 England & Wales. Source: SEPA website- <http://sepa.org.uk> and EA website- <http://www.environment-agency.gov.uk>. No data were available for Northern Ireland.*

Region	Excellent (%)	Good (%)	Unsatisfactory (%)	Seriously polluted (%)
<b>Estuarine water</b>				
SW Scotland	87	11	1.8	0.2
<b>Coastal water</b>				
SW Scotland	89.5	7.4	2.8	0.3
Region	Good (%)	Fair (%)	Poor (%)	Bad (%)
<b>Estuarine water</b>				
NW England	48.8	26	14.5	10.7
Wales	78	22	0	0

### EC Water Framework Directive

The Water Framework Directive (Directive 2000/60/EC) was adopted by the European Parliament and the Council of the European Union in December 2000. The Directive establishes a new system for the protection and improvement of all of the EU's water environment including rivers, lakes, estuaries, coastal waters, groundwaters, heavily modified and artificial waters. It is a complex document, comprising 26 Articles and 11 supporting annexes, but its central aim is to ensure that the water environment across the EU is managed in a sensible and consistent manner. The word 'Framework' means that the Directive sets out common principles and provides an overall structure for the protection of the water environment and action to be undertaken by each Member State.

The WFD introduces two key changes 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.

The WFD requires that all water bodies of each Member State should have at least 'good' quality status by 2015.

## 14.5 Coastal and marine nature conservation initiatives

At present, there are a number of initiatives underway which may influence conservation management of the SEA 6 coastal and marine resource. Relevant initiatives include:

- Continued development of management plans for marine SACs.
- 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 recently been published.
- The development of a framework for mapping European seabed habitats (MESH).
- A number of biodiversity and sustainability initiatives including Biodiversity Action Plans

Further details of these initiatives can be found in Section 9 of the SEA 6 Conservation report.

## **14.6 Integrated Coastal Zone Management (ICZM)**

### **14.6.1 Scotland**

#### **Firth of Clyde Forum**

The Firth of Clyde Forum (FCF), set up in 1994, is a voluntary partnership of local authorities, organisations, businesses and communities committed to working towards integrated, sustainable management of the Clyde's environmental, economic and community resources. It is one of a series of similar projects across Scotland.

The Forum's area extends from the tidal limit of the river in Glasgow's City Centre, westwards along the sea lochs and to the Mull of Kintyre, and southwards down the Ayrshire Coast to Loch Ryan, taking in the Islands of Arran, Bute and the Cumbraes. The FCF Management Strategy and Action Plan are available on the FCF website <http://www.clydeforum.org>.

#### **Solway Firth Partnership**

The Solway Firth Partnership (SFP) was formed in 1994 and brings together organisations, agencies, companies and individuals to work in partnership for the benefit of the Solway Firth, defined seaward as the area between the Mull of Galloway to St Bees Head. During 2004 the SFP became an independent charitable company with the objective of working with local people to increase sustainable use and management of the Solway Firth.

The Solway Firth Management Strategy was published in July 1998. The Action Plan covers a wide range of concerns from nuclear pollution and coastal erosion to cockle fishing and wildlife disturbance (<http://www.solwayfirthpartnership.org.uk/index.htm>).

#### **Loch Ryan Advisory Management Forum**

The Loch Ryan Advisory Management Forum was established in 1997 following growing concerns amongst members of the public and various user groups about the sustainable use of the Loch

The Forum has produced a Strategy, organised beach cleans, facilitated interaction between users and regulators, developed better understanding of relevant issues, investigated coastal processes and impact of ferry operations and investigated methods for protecting and restoring World War II sites and monuments (Scottish Coastal Forum website <http://www.scotland.gov.uk/environment/coastalforum/lochryan.asp>).

### **14.6.2 Northern Ireland**

Northern Ireland does not yet have a Coastal Forum although a recent scoping study (2002) examined the potential establishment of such a body and made a series of recommendations regarding its structure, remit and funding (Cooper, 2003).



### 14.6.3 Wales

#### The Pembrokeshire Coastal Forum

The Pembrokeshire Coastal Forum (PCF) was officially established in May 2000 and brings together a variety of stakeholders from the public, private and voluntary sector. All the partners work to promote a sustainable approach to the planning, management, use of and development of the entire Pembrokeshire Coastal Zone. PCF is currently in the process of developing a localised strategy and action plan for Pembrokeshire. This will help define the priorities for the long-term sustainable management of the county's coastal zone (Pembrokeshire Coastal Forum website-<http://www.pembrokeshirecoastalforum.org.uk>).

#### The Cardigan Bay Coastal Forum

The Cardigan Bay Forum was launched in 1991 with 50 member organisations from the voluntary and statutory sectors, as well as industry and local Government and communities. The aim was to provide a facility for debate and exchange of information in order to improve the sustainable management of Cardigan Bay.

#### The North Wales Coastal Forum

The North Wales Coastal Forum exists both to encourage information exchange and to bring further understanding between different types of interest in a way that will benefit the environment. A Coastal Charter was established in order to raise the profile of marine issues affecting the North Wales coast and to gain wider recognition for the Forum's role. Participating members pledge to support and uphold the Charter which was signed by a wide range of relevant local authorities, businesses and NGO groups active along the North Wales Coast (<http://www.northwales.org.uk/nwcf/index.htm>).

### 14.6.4 England

#### North West Coastal Forum

North West Coastal Forum launched in May 2000 is a multi-agency partnership bringing together stakeholders from the public, private and voluntary sectors working to promote and deliver integrated management for the coastal area from the Solway to the Dee to ensure its long term sustainability. The Forum is a unique regional organisation, which has been promoted as a model of good practice in the UK.

Originally supported by Government Office for the North West the Secretariat function was transferred to the North West Regional Assembly in September 2002. This move coincided with the election of the first independent chair for the Forum and subsequently the merger of the Coastal Forum with the North West Bathing Water Forum to further integrate work on coastal issues.

The North West Bathing Water Forum was established in September 1999 and brought together a strong partnership of organisations dedicated to ensuring that North West bathing waters met the EC Bathing Water Directive. Jointly the skills and expertise of the two Fora deliver an integrated approach to the management and development of the North West coast (North West Coastal Forum website-<http://www.nwcoastalforum.co.uk/index.php>).

Other partners of the North West Coastal Forum include:

- Partnership of Irish Sea Coast and Estuary Strategies (PISCES)
- Irish Sea Forum
- Mersey Basin Campaign

- Liverpool Bay Coastal Group
- North Western Coastal Group
- Tidal Dee Users Group
- North West Biodiversity Forum
- Ribble Source to Sea

Links to websites of the partners are provided from the website <http://www.northwestcoast.org.uk>.

#### **14.6.5 Isle of Man**

There is no coastal group for ICZM on the Isle of Man.

#### **14.6.6 Irish Sea**

##### **Irish Sea Forum**

The environmental health of the Irish Sea was discussed at an international conference in the Isle of Man in October 1990 where it was decided to follow up the work of the conference by establishing a group to discuss any topic which might affect the Irish Sea's environment. The Irish Sea Forum was established to do this. It is a non-profit making organisation operating from the Oceanography Laboratories of the University of Liverpool (<http://www.liv.ac.uk/~isf1/isfhome.html>). The Forum organizes three seminars a year on a wide range of subjects concerning the Irish Sea.

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