BERR | Department for Business Enterprise & Regulatory Reform

UK OFFSHORE ENERGY SEA

Scoping for Environmental Report

DECEMBER 2007

STRATEGIC ENVIRONMENTAL ASSESSMENT FOR OFFSHORE OIL & GAS LICENSING AND WIND LEASING

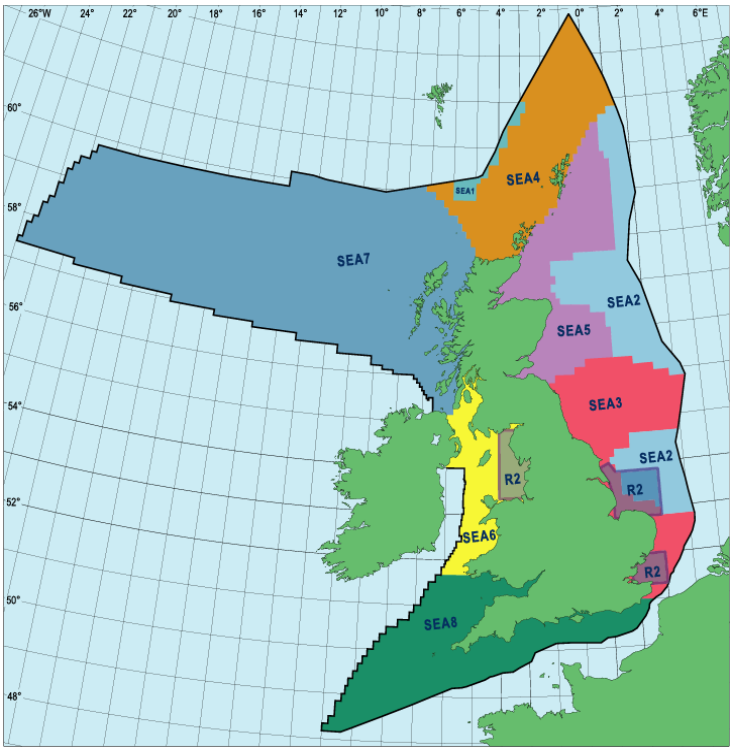
CONTENTS

1 INTRODUCTION

In 1999, the Department of Trade and Industry (now the Department for Business, Enterprise and Regulatory Reform, BERR) commenced a Strategic Environmental Assessment (SEA) process for offshore energy with a sequence of sectoral SEAs of the implications of further licensing of the UK Continental Shelf (UKCS) for oil and gas exploration and production – see below.

	Area Covered (also see Figure 1)	**Licensing Round**	
SEA 1	The deep water area along the UK and Faroese boundary	19th Round	(2001)
SEA 2	The central spine of the North Sea which contains the majority of existing UK oil and gas fields	20th Round	(2002)
SEA 3	The remaining parts of the southern North Sea	21st Round	(2003)
SEA 4	The offshore areas to the North and West of Shetland and Orkney	22nd Round	(2004)
SEA 5	Parts of the northern and central North Sea to the east of the Scottish mainland, Orkney and Shetland	23rd Round	(2005)
SEA 6	Parts of the Irish Sea	24th Round	(2006)
SEA 7	The offshore areas to the West of Scotland	25th Round	(2008)

Figure 1 – BERR SEA areas



During 2003, the department also conducted an SEA covering three strategic regions off the coasts of England and Wales in relation to a second round of offshore wind leasing – also shown on Figure 1 (as R2).

Full details of the SEA process, the steering group (established in early 2001) and documentation can be found at www.offshore-sea.org.uk, a website specially set up to facilitate public consultation in relation to BERR Offshore Energy SEAs.

BERR, as competent authority, is now conducting an integrated Offshore Energy SEA of a Draft Plan for further rounds of offshore oil and gas licensing and wind leasing in UK waters.

The purpose of this SEA scoping report is to set out sufficient information on the Draft Plan and associated SEA to enable the Consultation Bodies and Authorities to form a view and give feedback on the scope and level of detail appropriate for the environmental report and proposed consultation.

The SEA is being conducted in accordance with *The Environmental Assessment of Plans and Programmes Regulations 2004*. These regulations apply to any plan or programme which relates either solely to the whole or any part of England[1] or to England and any other part of the UK.

2 THE DRAFT PLAN

2.1 Draft plan

The main parts of the draft plan are:

- To enable further rounds of offshore windfarm leasing in the UK Renewable Energy Zone[2] and the territorial waters of England and Wales with the objective of achieving some 25GW of additional generation capacity by 2020. Scottish and Northern Irish waters within the 12 nautical mile territorial sea limit are not included in this part of the plan.
- To hold further seaward[3] rounds of oil and gas licensing in UK waters.
- In addition, to include the storage of gas in underground hydrocarbon reservoirs in the seaward licensing rounds in UK waters.

2.2 Context

The draft plan would contribute to achievement of UK government energy policy goals, as outlined in Meeting the Energy Challenge, a White Paper on Energy May 2007 (DTI):

- to put ourselves on a path to cutting the UK's carbon dioxide emissions - the main contributor to global warming - by some 60% by about 2050, with real progress by 2020;
- to maintain the reliability of energy supplies;
- to promote competitive markets in the UK and beyond, helping to raise the rate of sustainable economic growth and to improve our productivity; and
- to ensure that every home is adequately and affordably heated.

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[1] Including the territorial waters of the United Kingdom that are not part of Northern Ireland, Scotland or Wales, and waters in any area for the time being designated under Section 1(7) of the *Continental Shelf Act 1964*.

[2] The *Energy Act 2004* made provision for the designation of a Renewable Energy Zone outside territorial waters over which the UK may exercise rights for energy production. The UK Renewable Energy Zone was designated under order and includes an area where Scottish Ministers have functions in relation to renewable energy installations.

[3] The division between Landward and Seaward areas with respect to oil and gas licensing are defined in the *Petroleum (Production) (Seaward Areas) Regulations 1988 (as amended).*

In response to climate change concerns, the UK government and EU have and are introducing a variety of policy initiatives intended to stabilise and reduce greenhouse gas emissions. All recognise the long term nature of the venture and that there is no one solution.

It is a fact that the UK and global economy is at present heavily dependent on hydrocarbons. As described in the Energy White Paper, the UK's reliance on fossil fuels and higher levels of import dependence will bring new associated risks, as the UK will face greater exposure to developments in the global energy system.

As set out in the White Paper, the UK strategy to manage these risks includes reducing overall energy use through greater energy efficiency, supporting the development and deployment within the UK of non fossil fuel energy to reduce our dependence on fossil fuels and to diversify the range of energy sources available.

In March 2007, EU heads of states and government made a commitment to achieve at least a 20% reduction of greenhouse-gas emissions by 2020 compared with 1990 levels. In particular they agreed a binding target of a 20% share of renewable energies in overall EU energy consumption by 2020.

Of the marine renewable energy generation technologies, offshore wind is presently commercially viable, although it is recognised that in future other marine renewable technologies will also contribute to the attainment of these goals.

The Secretary of State announced on 25th September 2007 that work would begin immediately to examine the feasibility of generating electricity from the Severn Estuary tidal streams. This has the potential to provide 5% of total UK electricity demand from a renewable source.

Severn Estuary tidal stream electricity generation will not be included in the present SEA, or until the feasibility study is completed and there is a plan or programme to be assessed. However, the present offshore energy SEA studies will facilitate and contribute to wave and tidal stream assessments in the future.

Similarly, the current plan does not include licensing for the offshore storage of captured carbon dioxide, however, the SEA will help inform future potential considerations of such activities.

Wind leasing and oil and gas licensing are undertaken under different regulatory regimes which for convenience are described separately below.

2.3 Offshore windfarm leasing and consenting process

Under *The Crown Estate Act 1961*, The Crown Estate is landowner of the UK seabed and areas of foreshore (www.thecrownestate.co.uk). The Crown Estate's permission, in the form of a site option Agreement and Lease is required for the placement of structures or cables on the seabed, this includes offshore windfarms and their ancillary cables and other marine facilities. Potential offshore windfarm developers also require statutory consents from a number of Government departments before development can take place; these are listed in Appendix 2. During Rounds 1 and 2 of UK offshore windfarm development, successful applicants were awarded an option for a Lease by The Crown Estate. When all necessary statutory consents are obtained by the developer, The Crown Estate can grant a site lease for a development.

The Energy Act 2004 gave The Crown Estate rights to issue Leases within Renewable Energy Zones from 12nm (nautical miles) out to 200nm for development (previously the remit only extended to territorial waters within 12nm of the coast).

The Crown Estate intends to announce the competitive process and commercial terms for Round 3 offshore windfarm lease options in early 2008. For reference, Round 1 full term leases are for twenty-two years (plus 1 year for removal and decommissioning). For the largest Round 2 projects, the full term lease is for fifty years, including decommissioning.

In English and Welsh waters, BERR is responsible for consenting under the *Electricity Act 1989*, through its Offshore Renewables Consents Energy Development Unit, which acts as a central point for all offshore windfarm consent applications. BERR works closely with the Marine and Fisheries Agency, which licenses a number of activities in the marine environment on behalf of the Secretary of State for Environment, Food and Rural Affairs, and in certain areas for Wales for the Welsh Assembly Government[4]. In the Scottish Renewable Energy Zone, Scottish Ministers are responsible for *Electricity Act 1989* consent decisions.

2.4 Oil and gas licensing process

The *Petroleum Act 1998* vests exclusive right of searching and boring for and getting petroleum[5] resources in the Crown. BERR is responsible for licensing exploration and regulating development of the UK's oil and gas resources. The Secretary of State may grant licences to operators that confer exclusive rights to "search and bore for and get" petroleum. Each of these licences confers such rights over a limited area and for a limited period. Licensing of the United Kingdom Continental Shelf (UKCS) for offshore oil and gas exploration and production commenced in 1964 and has progressed through a series of seaward licensing rounds. Further information on offshore licensing can be found on BERR's website at http://www.og.dti.gov.uk/upstream/licensing/index.htm.

Under a Traditional Production Licence, exclusive rights are granted to the holders to "search and bore for, and get, petroleum" in specific blocks. Production Licence holders require the authorisation of the Secretary of State before installing facilities, producing hydrocarbons and other activities. The prospective Operator must demonstrate before award that they have the necessary finances, operating, technical and environmental competency to carry out the agreed work programme. Conditions may be attached to the Licence.

The Promote Licence, offered first in the 21st Licence Round, provides a period of time during which licensees are able to work up potential prospects - primarily using existing data. Full checks as for the Traditional Production Licence are made before any consent for further work is given. In recent years, two other variations of the 'Traditional' Production Licence have also been offered. These are the Frontier Licence, framed to match the operating challenges in the deepwater areas to the west of Britain, and Licences specially drafted to cover the redevelopment of a decommissioned field.

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[4] *The Planning Reform Bill* was published in November 2007 and includes proposals for an independent Infrastructure Planning Commission (IPC) and other measures to reform the system for deciding major infrastructure projects.

[5] That is any mineral oil or relative hydrocarbon and natural gas existing in its natural condition in strata

The terms and conditions of the Licences are set out in the *Petroleum Licensing (Exploration and Production) (Seaward and Landward Areas) Regulations Order 2004 (2004/352),* as amended by the *Petroleum Licensing (Exploration and Production) (Seaward and Landward Areas) (Amendment) Regulations Order 2006 (2006/784).*

The environmental capacity of applicants is explicitly examined by BERR, by way of written submissions and interviews, before licences are awarded.

Seaward Production Licences are valid for a sequence of fixed periods, called Terms. These Terms are designed to follow the typical field lifecycle of exploration, appraisal and production. Each Licence expires automatically at the end of each Term, unless the Licensee has made enough progress to earn the chance to move into the next Term.

It should be noted that Seaward Licences are not "permits" or "consents" for activity and that offshore oil and gas activities are subject to environmental consenting and permitting regimes – see Appendix 3 and http://www.og.berr.gov.uk/environment/index.htm .

2.5 Plan area and scope

BERR is conducting an SEA of a Draft Plan to hold further rounds of wind leasing, offshore oil and gas licensing and hydrocarbon gas storage licensing in UK waters.

For offshore wind leasing, the SEA[6] will cover the UK Renewable Energy Zone and the territorial waters of England and Wales where the water depth is around 60m or less[7] (see Figures 2 and 3). It does not include Scottish territorial waters, where it is understood there is limited scope for development and consequently no overarching plan or programme for offshore windfarms. It is anticipated therefore that the leasing arrangements for any such development in Scottish territorial waters will be conducted on an individual site basis. Similarly, it does not cover the territorial waters of Northern Ireland.

For offshore (seaward) oil and gas licensing, the SEA will cover UK waters (SEA 1 to 8 areas - see Figure 1).

For offshore gas storage licensing, the SEA will also cover UK waters.

Preparatory to SEA, BERR has recently conducted a screening exercise for potential future rounds of offshore wind leasing, to understand major constraints and issues, and whether there are any data gaps for strategic planning. Such an exercise has not been undertaken for offshore oil and gas licensing since UK areas with suitable geology for hydrocarbon occurrence are well defined.

Blocks currently under licence for oil and gas or in the licensing process are shown on Figure 4 overleaf.

[6] In cooperation with the devolved administrations.

[7] Based on current commercial technology, offshore windfarms are presently restricted to shallow waters.

Figure 2 – Existing Windfarm Leases and Shallow Waters showing 20m, 25m, 50m and 60m depth contours

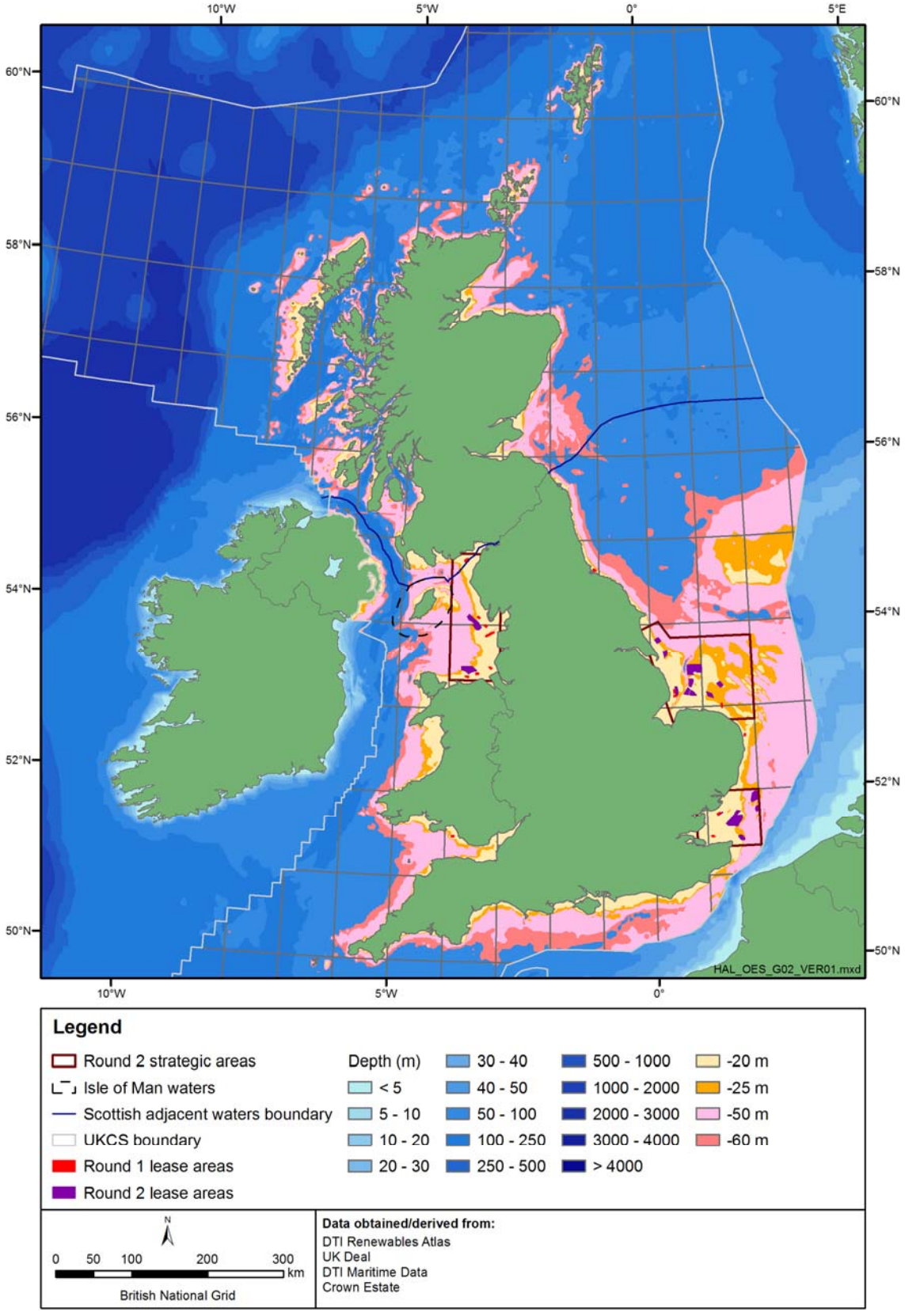


Figure 3 – Annual Mean Wind Power Density in Water Depths of <50 metres

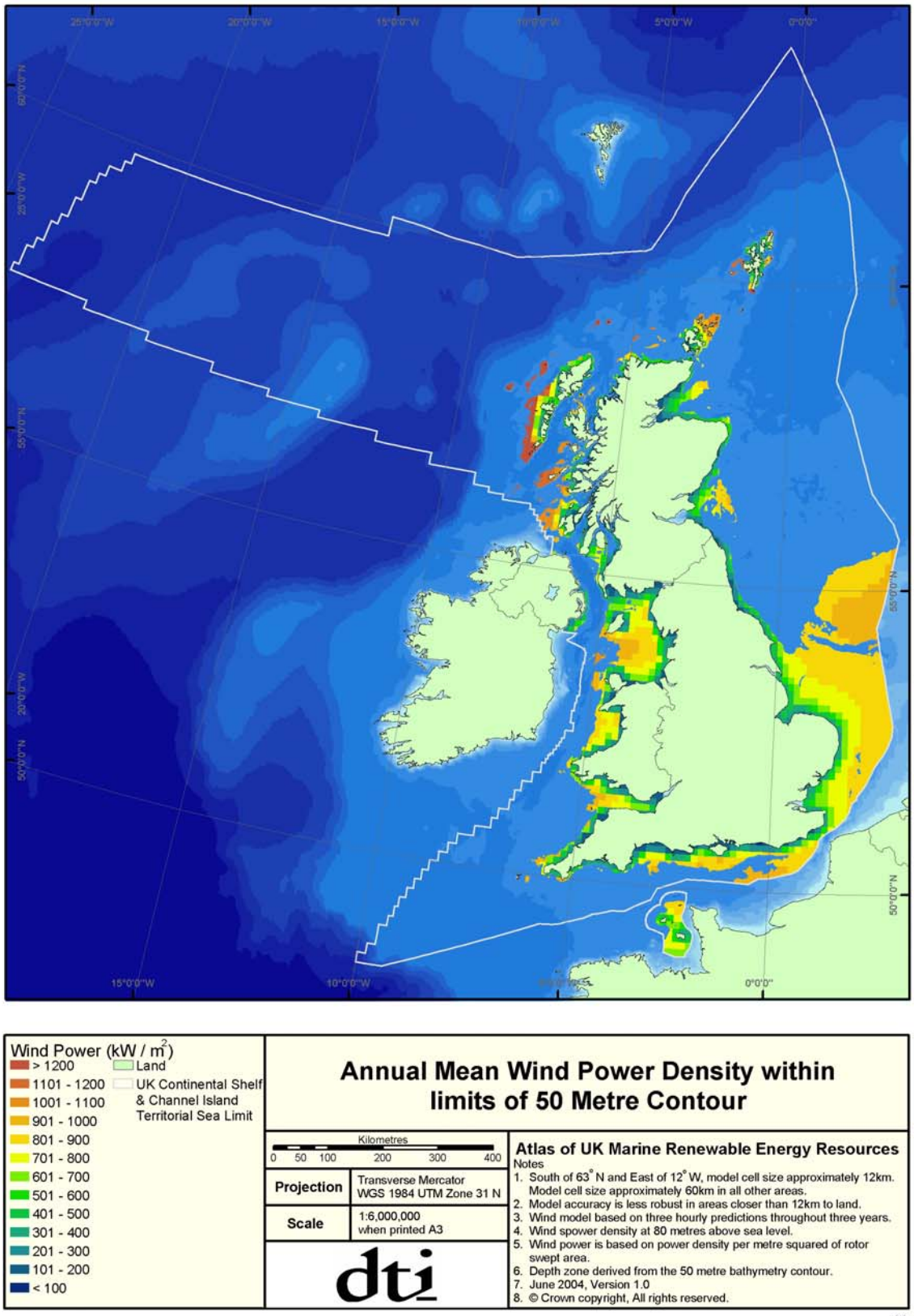
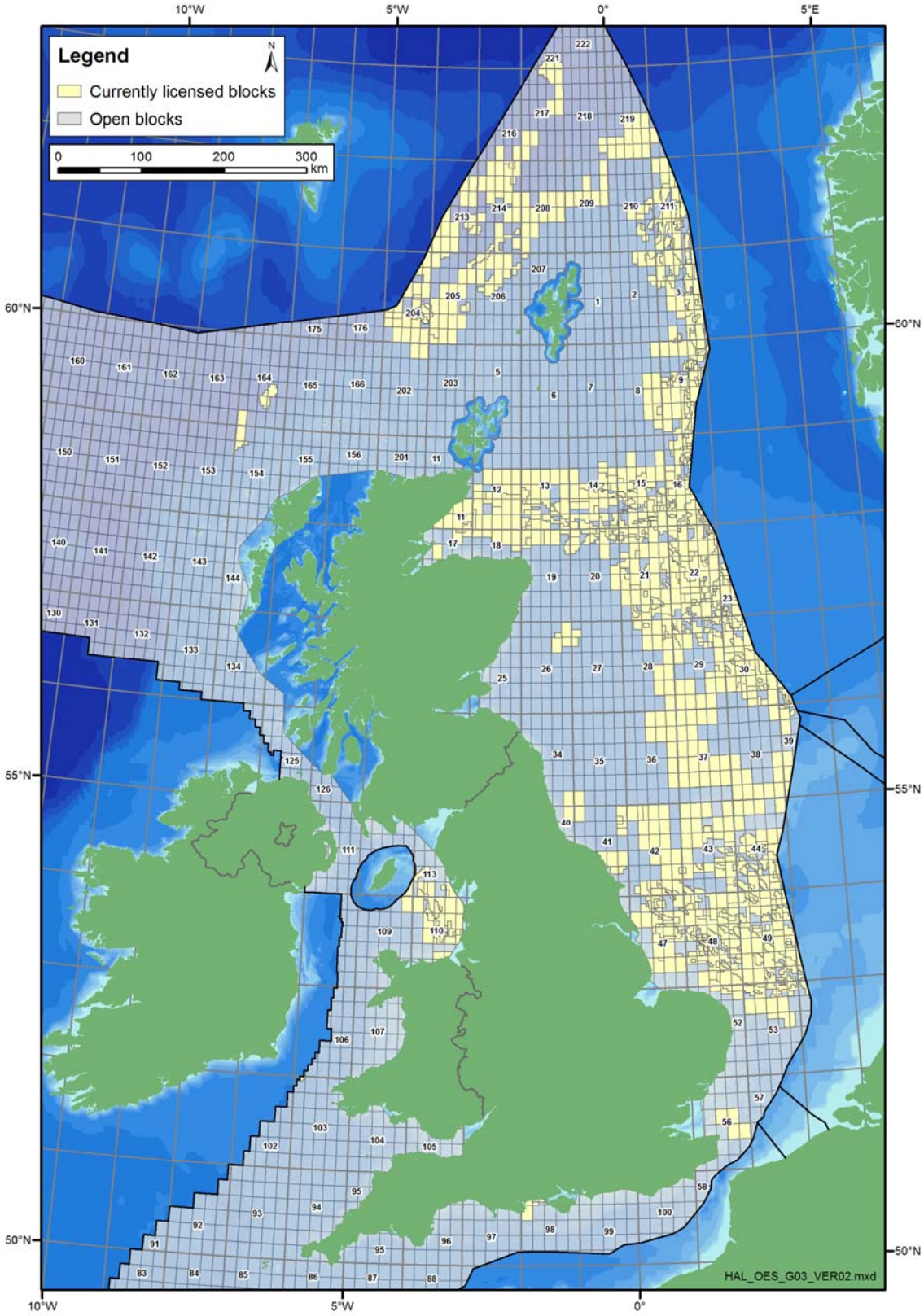


Figure 4 – SEA Area Showing Blocks currently under Seaward Licences



Note: The Landward areas within bay and estuary closure lines (unshaded in Figure 4) e.g. around the Scottish west coast, would not form part of a Seaward Licensing Round.

For oil and gas licensing, uptake of blocks offered and subsequent scale of activity would be largely dependent on perceptions of hydrocarbon prospectivity in the area. For commercial hydrocarbon resources to occur, a number of factors and features have to coincide. These include:

- The presence of source rocks, with an appreciable organic matter content
- Adequate depth of burial to allow the conversion of the organic matter to oil or gas through the action of temperature and pressure
- The presence of rocks with sufficient porosity to allow the accumulation of oil or gas
- Cap or seal rocks to prevent the oil or gas from escaping from the reservoir rocks
- Migration pathways to permit oil and gas formed in the source rocks to move to reservoir formations

3 RELATIONSHIP WITH OTHER INITIATIVES

The regulations require that the SEA Environmental Report contains consideration to:

- the degree to which the *"plan or programme influences other plans and programmes including those in a hierarchy"*
- as well as the *"environmental protection objectives, established at international, Community or Member State level, which are relevant to the plan or programme and the way those objectives and any environmental considerations have been taken into account during its preparation"*.

It is proposed to document this analysis in the Environment Report in matrix format[8].

The previous oil and gas seaward licensing rounds and offshore wind leasing rounds are of key importance to this SEA.

An initial list of other initiatives with potential relevance in the consideration of the Draft Plan is given in Appendix 1.

Consultation Question

1. Consultees are invited to highlight additional initiatives which they consider relevant to the consideration of the Draft Plan.

4 ENVIRONMENTAL INFORMATION BASELINE

A good understanding of the environment of the area covered by the SEA is essential to underpin sound assessment. By way of introduction, high level summaries of the natural environment of the areas covered by BERR past SEAs (as well as the remaining area to the southwest, SEA 8 in Figure 1) are provided below. For all areas other human uses are also important and reports for area prepared as the part of the SEA processes.

[8] Appendix 2 of Practical guidance on applying European Directive 2001/42/EC "on the assessment of the effects of certain plans and programmes on the environment". Published September 2005 (DCLG website)

After the summaries, a list is given of the proposed baseline information sources for the SEA. These include technical reports, surveys and other studies commissioned through the SEA process (www.offshore-sea.org.uk) and other key studies and references, primarily those at a regional scale. The list is intended to provide an overview to aid consultees identify any additional information and data sets which they consider of potential importance to this SEA.

SEA 1 overview

The overall topography of the SEA 1 area is dominated by a number of large-scale features; the deep water Faroe-Shetland and Faroe Bank Channels and the Wyville Thomson Ridge rising to within 400m of the water surface and dividing the Faroe Bank Channel from the Rockall Trough to the south. Numerous small to medium scale seabed features are also present resulting from past volcanic and glacial activity as well as modern sediment erosion, transport and deposition. Seabed sediments in the area vary with depth, with sediments in the deeper areas usually consisting of mud or muddy sand, and the proportion of mud decreasing upslope to the continental shelf break where the sediments are predominantly sands and gravel. Contaminant concentrations in sediments and seawater in the area are low and generally at, or close to, background levels.

The area has a complex hydrographic regime, with distinct water masses resulting in a pronounced difference in temperature between shallow and deeper waters. The main surface and slope currents flow northwards across the Wyville Thomson Ridge in water depths to around 500m, with a deeper southwesterly flowing cold current deflected westwards along the Faroe Bank Channel. Large scale atmospheric systems in the North Atlantic can induce significant variability to water mass characteristics and water flow patterns.

The topography and associated hydrographic conditions are strong determinants of the ecological character of the SEA 1 area. Phytoplankton productivity in the area varies seasonally. In the North Atlantic, the spring diatom bloom generally peaks in May with a sharp decline in June. Zooplankton communities are dominated by the copepod *Calanus finmarchicus* which represents an important food source for the young of many fish species and is important in the recruitment of fish stocks of the area. The Faroe-Shetland Channel is an important over-wintering area for *C. finmarchicus* which are transported into the North Sea in spring. Seabed communities in the area are characteristic of the interface of several biogeographic zones although they are widely distributed across the region. Water temperature and bathymetry are the primary environmental influences on distribution patterns in both community and species composition.

The Darwin Mounds on the southern flank of the Wyville Thomson Ridge were first discovered in 1998 and appear to be unique geological and biological features. The mound tails appear to have no physical expression, but are inhabited by dense populations of xenophyophores (single celled animals of up to 10cm diameter). The central mound appears to consist of blocky rubble with the cold water coral *Lophelia pertusa* usually present. The ecological significance of the mounds is unclear, although both *Lophelia* and xenophyophores are widely distributed elsewhere in the region. Following the introduction of enabling legislation, the mounds will be put forward as the UK's first offshore Special Area of Conservation (SAC) under the EU Habitats Directive. An area of Annex I reef habitat on the Wyville Thomson Ridge has also been proposed as an offshore SAC.

The SEA 1 area has no coastline, although in adjacent SEA areas 4 and 7, islands and coasts all have important conservation sites on international, European and national scales. Designated conservation sites include World Heritage Sites (St Kilda and parts of Orkney),

Biosphere Reserves, Special Protection Areas (SPAs), Special Areas of Conservation (SACs), and Ramsar sites. These have been assigned various designations for importance in relation to breeding seabirds, wildfowl and moorland birds, seals, otters, vegetated sea cliffs, submerged caves, reefs, lagoons and archaeology.

Seabird populations within the SEA 1 area consist mainly of breeding birds (fulmars, storm petrels, gannets, kittiwakes and various auks) from major colonies in the Faroe, Shetland, and Orkney Islands and more northerly breeding areas such as Norway and Iceland. In addition, a number of species migrate through the area in late summer and autumn (skuas and shearwaters), or are winter visitors (some gulls and little auk). The region to the north and west of Scotland contains substantial proportions of the northeast Atlantic breeding populations of some species, in particular great skua, gannet, puffin and black guillemot.

In a UK and North Atlantic context, the area is of high importance for marine mammal populations. Cetaceans in the area and adjacent waters can be broadly distinguished into several groups, on the basis of distribution and feeding:

- Baleen whales (blue, fin, sei and humpback) are mainly recorded in deep water
- Minke whales are summer visitors to shelf areas
- Sperm and beaked whales are concentrated on the eastern flank of Rockall Trough, the southern flank of Wyville Thomson Ridge and along the eastern side of the Faroe-Shetland Channel
- Atlantic white-sided and common dolphins are widely distributed in deep water
- White-beaked and Risso's dolphins are concentrated in shelf waters
- Killer whale, bottlenose dolphin and harbour porpoise are all widely distributed over deep and shelf waters.

Shetland and Orkney support large numbers of grey and common seals which breed on the islands and forage in coastal and offshore waters. Recent tagging data suggests that these animals forage more widely than previously thought, although numbers in the SEA 1 area are likely to be small as sightings over deep water are rare. Hooded seals utilise deep water in the Faroe-Shetland Channel and north of the Faroes, throughout the year.

The cold Norwegian Sea water of the deep Faroe-Shetland and Faroe Bank Channels supports a sparse and distinct fish fauna, of little commercial value, with very few of the Atlantic deep water species which are found on the upper slopes of the Faroe-Shetland Channel being present. The Wyville Thomson Ridge appears to form a major faunal barrier to deeper water fish.

The main commercial pelagic species found in the area are mackerel, Norway pout and blue whiting. Herring may also occur in the area and greater silver smelt is also present. Other than the greater silver smelt, commercial pelagic species are generally concentrated over the continental shelf and shelf break to the east. Deep-water vessels from Scotland, France, Spain and Norway dominate fishing in the area, with fishing vessels from England, Faroe, Germany, Netherlands, Denmark and Ireland also present. The main demersal gears employed are otter trawls and long-lines, with some gill netting also being used. Demersal fishing effort in the area is relatively low compared to other UK waters with greatest effort being seen around the Wyville Thomson Ridge. Pelagic effort over the upper slope is at similar levels to that seen in other areas around the UK.

Within the SEA 1 area, a significant oil and gas discovery was made in 2004 at the Rosebank/Lochnagar well (Block 213/27) with further appraisal of the discovery currently ongoing. The recent licence awards as part of the second Faroese licensing round may

result in increased exploration activities in adjacent Faroese waters. The waters of the SEA 1 area are of minor importance for shipping. Coastal industry and activities in adjacent areas (the Faroe, Shetland, Orkney and Western Isles and northwest Scotland) include fishing, aquaculture, tourism and recreation. All are of considerable importance to local economies.

SEA 2 overview

The SEA 2 area covers a large part of the southern, central and northern North Sea and contains the majority of the UK's oil and gas producing fields. Water depths gradually deepen from south to north and the main topographic features are the Dogger Bank which divides the southern and central North Sea, the Fladen/Witch Ground, a large muddy depression between the central and northern North Sea, and the Norwegian Trough, a deep water channel to the east of the northern SEA 2 area.

Various inflows of Atlantic water into the North Sea occur from the west and north, with outflow mainly via the Norwegian Trough and along the Norwegian coast. Water circulation in the North Sea is anticlockwise, with an eddy forming over the Fladen Ground. The water column of the southern North Sea remains mixed throughout the year while to the north it becomes stratified in summer, effectively isolating surface and near bottom waters until autumn gales break down the stratification.

Seabed sediments over the majority of the area are sand or mud, or a mixture of the two. Typically, sandier sediments are found in the south and north, and in coastal waters, with muddy sediments present in the deeper areas of the central North Sea. Pockmarks (shallow seabed depressions formed from the seepage of gas) are found in muddy areas in particular the Fladen and Witch Grounds. Most pockmarks are relict features but a few continue to leak natural gas and some contain carbonate rocks which provide a habitat for encrusting and other surface living seabed animals.

The DTI commissioned survey for SEA 2 investigated habitats of potential conservation interest within the area. These covered potential areas of Annex I habitats defined by the EU Habitats Directive as *sandbanks in shallow water* and *submarine structures made by leaking gases*. Since SEA 2, the Dogger Bank has been proposed as an offshore SAC for the qualifying feature *sandbanks which are slightly covered by sea water all the time.* Other relevant sites that have been proposed as offshore SACs include the 'Saturn' *Sabellaria spinulosa* reef site between Swarte and Broken Banks in the southern North Sea and the Scanner pockmark in the Witch Ground. Relevant areas of Annex I habitat that may be designated in the near future include the Braemar pockmarks; the North Norfolk Sandbanks; Haddock Bank; Haisborough Tail, Hewett Ridges, Hammond Knoll & Smiths Knoll.

The North Sea is a very productive area with a "food web" linking the plankton (the source of much of the initial productivity) with fish, birds, marine mammals, other water column animals and the fauna of the seabed.

Recently, phytoplankton biomass has increased in the SEA 2 area, possibly associated with large scale meteorological and hydrographical variations. The zooplankton community has also shown significant changes particularly in the proportions of the dominant copepod species, which have been linked to increasing sea surface temperatures. The ecological importance of these changes to the plankton community has yet to be fully understood. Benthic communities are also determined broadly by hydrographic conditions with water temperature particularly important. On a smaller scale, community types reflect local sediment distribution patterns.

Offshore areas of the North Sea (including the SEA 2 area) contain peak numbers of seabirds following the breeding season and through winter, with birds tending to forage closer to coastal breeding colonies in spring and early summer. Many shorebirds and waterfowl also use North Sea coastal waters and shores extensively, particularly during spring and autumn migrations and some species overwinter in large numbers.

A wide range of cetaceans are sighted in the North Sea, the most common being the harbour porpoise, minke whale and white beaked dolphin. Bottlenose dolphins from the nearshore population of the Moray Firth are rarely seen far offshore. Important grey and common seal breeding colonies on the UK east coast have been protected through designation as SACs. Recent tagging studies indicate that both species forage extensively in nearshore and offshore areas of the North Sea.

The North Sea coastline has many sites of conservation, economic and human interest. A large number of coastal sites have been protected at a European level under the EU Habitats and Birds Directives. Important archaeological sites dating back to prehistoric times have been found in coastal areas surrounding the North Sea with significant offshore sites likely although few have yet been discovered.

Fish species diversity in the SEA 2 area is higher in the central and northern North Sea and in inshore waters. The North Sea is one of the world's most important fishing grounds with extensive fisheries for pelagic species (e.g. herring and mackerel) demersal species (cod, haddock and whiting in the central and northern North Sea, with plaice and sole targeted in the south). In addition, there are important shellfisheries for Norway lobster, crab and scallop and industrial fisheries for sandeel and Norway pout. Commercial fishing in the area is of significant importance for both the UK and other North Sea states.

The oil and gas fields of the SEA 2 area have formed the focus of much of the UK offshore industry over the last 30 years. Recent high oil prices have led to an upturn in activity in the central North Sea with the number of exploration, appraisal and development wells drilled in the region increasing since 2003. Shipping is another major user of offshore areas of the North Sea, particularly in southern parts with the large ports on the UK east coast forming an important focus for many of the shipping routes.

Contamination concentrations are typically very low but in some (usually coastal) areas they can be high enough to result in marked biological effects (e.g. through eutrophication). The historic discharge of oil based drill muds with rock cuttings from oil and gas well drilling has resulted in numerous piles of cuttings on the seabed in the northern and central SEA 2 areas. Produced water from existing oil industry activities remains a source of contaminants although company, national and OSPAR actions have succeeded in reducing the average concentration of oil in these discharges.

SEA 3 overview

The SEA 3 area covers a large part of the central and southern North Sea and includes the entire coast of eastern England. Water depth gradually deepens from south to north, with the Dogger Bank, the main topographic feature of the region. Water circulation consists of a southerly coastal flow which in the southern part moves offshore across the North Sea. There is a relatively minor inflow of water into the area through the English Channel.

Seabed sediments in SEA 3 are generally sandy and gravelly in the south and in coastal waters. Large sandbanks of variable morphology and sediment composition are present in both coastal and offshore waters. Rocky outcrops and platforms are associated with discrete sections of the coast, primarily in the northern part of the area. Several large

estuaries including the Thames estuary and Wash embayment are also present. Many of these coastal habitats support a diverse range of benthic species as well as internationally important numbers of seabirds, waterbirds and marine mammals which are protected at national and international levels. Further offshore, the DTI survey of the SEA 2 and adjacent areas highlighted the species richness of certain types of sandbank. As mentioned in the SEA 2 overview, the Dogger Bank has been proposed as an offshore SAC and a number of sandbanks are likely to be proposed as SACs (some of which may extend into the SEA 3 area) in the near future.

The SEA 3 area supports a wide variety of fish species although in general, diversity is highest in the central and northern North Sea and in inshore waters. Coastal waters of SEA 3 support important fixed gear fisheries for crab, lobster, whelk, and cockles as well as netting for a number of fish species, including cod, herring and sole. Salmon netting off the North East coast has declined significantly due to a recent buy-out of fishing licences. Further offshore, a mixed demersal fishery primarily targets cod, whiting, plaice and sole. Herring are taken from northwest of the Dogger Bank and in the coastal waters of eastern England. An industrial sandeel fishery targets the Dogger Bank as well as coastal and offshore areas of the northern part of the SEA 3 area.

Sandeels represent an important prey species for a number of seabird species, many of which utilise internationally important seabird breeding colonies along the SEA 3 coast in the spring and early summer. Offshore areas of SEA 3 contain peak numbers of seabirds following the breeding season and throughout the winter. Many of the estuaries along the English east coast also support important populations of migratory and wintering wildfowl and waders, as well as breeding birds. Many of the coastal sites of international importance for seabirds and waterbirds have been protected through various designations at national, European and international levels.

The SEA 3 area is of less overall importance to cetaceans compared to more northerly parts of the North Sea, although some areas are important for harbour porpoise and white-beaked dolphin. The SEA 3 coast, particularly around the Farne Islands and the Wash, supports internationally important (and protected) grey and common seal breeding sites and both species forage extensively in nearshore and offshore areas.

Prehistoric sites discovered within the SEA 3 area are important but probably represent a small fraction of existing sites. Important coastal sites have been discovered along the coasts of Cleveland, Yorkshire, Norfolk, Essex and Kent. Offshore archaeological discoveries have been made on the Dogger Bank, the Leman and Ower Banks and the Brown Ridge in the southern North Sea. There are also a number of historic wrecks and protected monuments in coastal waters of the southern SEA 3 area.

The SEA 3 marine environment provides an important resource for a wide variety of users. The extensive natural gas reservoirs of the southern North Sea have attracted significant infrastructure development and a number of oil and gas pipelines traverse the SEA 3 area. The greater Wash area and the Thames estuary are the focus of considerable development in offshore windfarms with large areas licensed recently for development. The Scroby Sands windfarm off Great Yarmouth is now operational. The presence of offshore sand and gravel deposits in coastal waters provides an important source of marine aggregates and, within the same area there are a number of marine disposal sites for spoil from harbour and other dredging operations.

SEA 4 overview

Broadly, the SEA 4 area consists of two contrasting environments; an area of continental shelf and upper slope to the north and west of Orkney and Shetland characterised by relatively high temperatures, hydrodynamic energy and primary productivity; and the much colder, less dynamic and dark waters of the deep Faroe-Shetland and Faroe Bank Channels (described previously for SEA 1).

On shelf areas, the high sediment mobility associated with tidal and wave action results in mobile and often patchy benthic habitats with the high productivity of benthic and fish species assemblages driven by a highly seasonal input of phytoplankton and detrital carbon. There is also a coupling, to some degree, of the shelf ecosystem to productive coastal, intertidal and terrestrial systems through the export of detritus, and through foraging and seasonal migrations of fish, seabirds and marine mammals.

The deep channels and basins of the SEA 4 area are characterised by a lower hydrodynamic energy, although still mobile (and in places erosive) seabed environment; contrasting with most other areas in comparable water depth which are more quiescent and depositional. There is distinct zonation of species assemblages with depth; and less direct pelagic-benthic coupling. Vertical transfers of carbon and energy also result from diurnal migrations of zooplankton, cephalopods and fish, and predation on squid and fish by marine mammals. Near-surface predation on zooplankton, cephalopods and fish by seabirds is probably less intense than in coastal waters, due to distance from breeding colonies.

The deepwater SEA 4 area has been described (SEA 4 assessment workshop) as being of considerable scientific and conservation interest, as a result of the presence in close spatial proximity of contrasting seabed habitats and communities. Deep water cetacean populations of the SEA 4 area are of national and international significance. Coastal habitats and communities adjacent to the area are widely recognised as being of high conservation value, associated particularly with breeding seabird and seal colonies. Offshore, an area of the Wyville Thomson Ridge has been proposed as an SAC for reef habitat and similar habitat in the Judd Deeps may be protected in the future following further survey work. In addition, the Pilot Whale diapirs (mud volcanoes) in the north of the area are large features with the possible presence of seep chemosynthetic communities and are of conservation interest.

A large number of internationally important seabird colonies are found on the cliffs of the SEA 4 area coast and huge numbers of breeding seabirds are associated with these in spring and early summer. After the breeding season, species such as fulmar, gannet, kittiwake, guillemot, puffin and razorbill leave coastal waters and disperse offshore to feed. Coastal and sheltered waters also support important populations of migratory and wintering wildfowl and waders, as well as breeding birds.

A wide variety of marine mammals occur in the SEA 4 area, with internationally important numbers of grey and common seals found at coastal breeding colonies. The most common cetaceans sighted in shelf waters are harbour porpoise, minke whale and white-beaked dolphin. Offshore species include Atlantic white-sided dolphin, long-finned pilot whale, killer whale, sperm whale and fin whale, some of which are thought to migrate through the area. Several species of beaked whale are thought to inhabit deeper water in the Faroe-Shetland Channel, although there is very little information concerning these species. Hooded seals, which breed in the Arctic, are found in considerable numbers in the deeper waters of the SEA 4 area.

Fisheries are very important in parts of the SEA 4 area. There are several demersal fisheries of which the mixed fishery for cod, haddock and whiting is the most important. The main pelagic fisheries are for herring and mackerel and there are industrial fisheries for sandeel and blue whiting.

Parts of the area have been licensed for oil & gas exploration since 1965 and approaching 200 exploration and appraisal wells have been drilled to date. There are currently three major oilfields in production (Foinaven, Schiehallion and Clair) with the significant Rosebank/Lochnagar discovery undergoing further appraisal. Since SEA 4, levels of exploration and appraisal drilling to the west of Shetland have remained low however the first half of 2005 has seen more development drilling (7 wells) in the region than took place throughout the whole of 2004 (6 wells). The Sullom Voe and Flotta oil terminals provide facilities for the export of resources from developments to the east and west of the islands. A pipeline transports surplus gas from the Clair, Foinaven and Schiehallion fields to the Sullom Voe terminal where the gas is enhanced with natural gas liquids before being piped to the Magnus oilfield in the northern North Sea for use in enhanced oil recovery. Exploration success in adjacent Faroese waters has been limited to date (e.g. the Marjun appraisal well was deemed not to contain sufficient hydrocarbons to justify a well test). However, the Rosebank/Lochnagar discovery and the recent licence awards as part of the second Faroese licensing round may stimulate exploration activity in the region.

In addition to the oil and gas industry and commercial fisheries, the SEA 4 area provides an important resource for a number of other users. The area experiences low to moderate shipping pressures and a proportion of this involves tanker traffic to and from the Sullom Voe and Flotta oil terminals. Much of the SEA 4 coast is rural in nature and attracts tourists to its unspoilt scenery and natural history interest. Sheltered coastal waters are important for both finfish and shellfish cultivation.

The coastal region supports many prehistoric sites and due to changes in relative sea level, prehistoric submarine archaeological remains of up to about 9,000 years old could occur in the SEA 4 area down to water depths of around 150m. However, despite the potential for sites, marine archaeological discoveries are very rare primarily due to the strong currents and exposed nature of much of the shelf area. There are a large number of identified wrecks throughout the area, some of which are protected.

The SEA 4 area is remote from areas of major industrial activity. However, there are local sources of various contaminants and the atmospheric and hydrographic transport of persistent contaminants into the SEA 4 area has probably resulted in detectable pollution throughout the region. However, contaminant concentrations in water and sediments are typically at background levels.

SEA 5 overview

The SEA 5 area is bounded to the west by the continental shelves of Shetland, Orkney and the Scottish mainland and to the north and east by the deep basins of the northern North Sea. The seabed over the area is relatively flat deepening to the north and east with localised depressions (e.g. the Southern Trench) and highs (e.g. Smith Bank, Pobie Bank). Sediments consist predominantly of sands, sandy gravels and gravel, particularly in nearshore areas with strong currents. Muddy sediments are restricted to deeper waters and sheltered coastal areas.

Cliffs and large firths and estuaries characterise much of the coast of the Scottish mainland with the Shetland and Orkney archipelagos displaying a variety of coastal habitats, many of which are protected by international and national conservation designations. Potential reef

habitat to the east of Shetland may be designated as an offshore SAC in the future following further survey work.

Water circulation in SEA 5 is dominated by significant inflows of Atlantic water. Inflow variability associated with NAO-related atmospheric forcing can result in significant seasonal and annual changes to circulation patterns and water masses with profound implications for the circulation of nutrients and contaminants, and for the supply of oceanic planktonic species and fish larvae. For example, in recent years, spring and autumn plankton blooms have become more evident and primary production has increased throughout the year. Recent changes in the abundance of key zooplankton species (e.g. copepods *Calanus helgolandicus* and *C. finmarchicus*) with potentially important ecological (and economic) consequences have been linked to changes in sea surface temperatures.

The nature and extent of benthic communities are linked to the physical nature and characteristics of the substrate. Offshore communities are spatially distributed over large scales, with distinctive species assemblages associated with particular substrate types. Sedentary species with high abundance and biomass dominate sheltered coastal areas whereas exposed beaches have lower diversity, abundance and biomass. Dense populations of intertidal benthos in many of the sheltered inner firths and estuaries support important fish populations.

Fish spawning areas are found throughout SEA 5 with the juvenile stages of many commercial fish species remaining within coastal nursery areas for a year or two before moving offshore. Offshore areas are characterised by fish communities dominated by haddock, whiting and cod. Migratory species such as herring and mackerel are also found although their distribution is seasonal. Sandeels, a key prey species for a number of seabird and marine mammal species are associated with well-oxygenated sandy sediments. Diadromous species such as salmon, sea lamprey and eels are present with coastal rivers supporting internationally important populations. Commercially important *Nephrops* stocks are found on muddy-sand sediments within the Moray Firth, Firth of Forth and offshore on the Fladen Ground.

The abundant intertidal benthos of the inner firths and estuaries also supports large numbers of breeding, over-wintering and migratory waterbirds. The extensive coastal cliffs of the region support breeding seabirds including auks, kittiwakes, fulmars and gannets with important feeding areas in both nearshore and offshore waters. Many of these bird populations and aggregations are internationally important and protected as SPAs with work ongoing to extend coastal sites and identify new marine SPAs in the region.

Other key predators include marine mammals which are present in both coastal and offshore waters. The harbour porpoise is the most abundant cetacean species, particularly in summer with white-beaked dolphins and minke whales also present during summer months. A resident population of bottlenose dolphins also inhabits coastal waters of eastern Scotland, particularly the inner Moray Firth where they are protected by an SAC designation. Both grey and common seals forage extensively within the area, targeting fish and cephalopods with coastal areas supporting important breeding colonies for both species. Given the importance of the region for marine mammal species listed on Annex II of the Habitats Directive (i.e. harbour porpoise, bottlenose dolphin, grey and common seals), application of the Directive offshore may, following further research, result in further areas of SEA 5 being protected for these species.

The SEA 5 area supports a range of human activities including recreation, tourism and industrial uses. Coastal areas support significant oil and gas infrastructure with key distribution ports providing a focus for shipping in the area. The Beatrice platform in the

Moray Firth represents the only significant offshore infrastructure in the area, along with a two turbine offshore windfarm demonstrator project. In general, coastal development has centred upon the large firths with much of the rest of the coast rural in nature. The fishing industry, whilst generally in decline, remains a key industry for many communities in the area, as is aquaculture on Shetland and Orkney. Generally, anthropogenic contamination of the marine environment is low and restricted largely to industrialised coastal areas.

Coastal and offshore areas of SEA 5 contain important archaeological remains dating back to prehistoric times. A large number of archaeological sites have been identified and some protected, although evidence suggests that a large number of sites in both the coastal and marine environment have yet to be discovered.

SEA 6 overview

The SEA 6 area covers the semi-enclosed Irish Sea, a dynamic area exposed to considerable variation in tidal range, tidal currents and wave action which are important determinants of the region's physical and biological environment.

The Irish Sea is open-ended, connected at both ends to the Atlantic Ocean, in the south via St. George's Channel and in the north via the North Channel. The extent of Atlantic inflow to the region varies with changes to large scale circulation patterns in the North East Atlantic and weather, particularly the strength and direction of the prevailing winds. Freshwater run-off from coastal areas is important in determining the salinity of water masses particularly in coastal areas. River run-off and inputs from industrialised areas are responsible for the majority of contaminants, with sediments from areas such as the Mersey and Ribble estuaries containing elevated levels of contaminants (often from historical discharges). Throughout much of the region tidal mixing is sufficiently intense to ensure that the water column remains well mixed throughout the year. However, there are regions where temperature and/or salinity differences between water masses result in stratification in summer and autumn. Frontal areas between these mixed and stratified regions are often areas of enhanced biological production attracting fish, marine turtles, seabirds and marine mammals.

Seabed sediments include large areas of mud to the east and west of the Isle of Man where currents are weak; coarser sand and gravel in areas of stronger tidal and wave-driven currents, and rock and boulders in the most exposed areas. Large sandwaves and sandbanks are also present off the Isle of Man, Lleyn Peninsula and within the major estuaries of the region and some of these areas may be of conservation interest. Seabed surveys carried out for SEA 6 identified and described a number of seabed features of potential conservation interest, including possible occurrences of methane-derived authigenic carbonate (MDAC).

Benthic species and habitats of conservation interest include biogenic reefs of the horse mussel, *Modiolus modiolus*, the distribution and abundance of which were surveyed as part of SEA 6. Muddy areas particularly to the east and west of the Isle of Man support important *Nephrops* fishing grounds with scallop and queen scallop found on gravelly substrates. Fish communities are diverse and determined largely by sediment type with coastal sandy areas for example supporting large numbers of juvenile flatfish, sand eels, and seasonal populations of sprat, herring and juvenile gadoids.

The region also provides important breeding and over-wintering areas for a wide variety of seabirds and coastal waterbirds. During spring and summer months, almost half a million pairs of seabirds including Manx shearwater, gannet, lesser black-backed gull and guillemot breed at locations (primarily on cliffs and islands) throughout the region. The estuaries of

the region hold internationally important numbers of breeding, wintering and migratory waterbirds, with shallow offshore waters of Liverpool and Cardigan Bays supporting internationally important numbers of wintering common scoter and red-throated diver.

Harbour porpoise and bottlenose dolphin are present throughout the year while others are more commonly seen in summer months (e.g. minke whale, Risso's dolphin and short-beaked common dolphin). In general, southern areas are more important for cetaceans with coastal waters of Cardigan Bay supporting a protected bottlenose dolphin population of about 220 individuals and harbour porpoise also numerous along the Welsh coast. A relatively small population of grey seals utilise all but the northwest Irish Sea while harbour seals are found primarily in the far north of the area.

Some parts of the SEA 6 area are intensively used and developed but the region also includes rural areas and many sites and features of conservation importance. Tourism and leisure contributes in the order of £2.5 billion per annum to the regional economy, with between 100,000-200,000 people directly employed in the sector. Oil and gas activity is centred on fields in Liverpool and Morecambe Bays. A number of pipelines connect these fields with onshore terminals and several gas interconnector pipelines link mainland Britain to Ireland. There are several major ports in the SEA 6 area notably Belfast, Liverpool and Milford Haven with large parts of the SEA 6 area experiencing moderate to high shipping densities (5,000-20,000 vessels per annum). Other activities include renewable and nuclear energy facilities, military activities, telecommunications, aggregate extraction and marine disposal. Recent initiatives including the JNCC Irish Sea Pilot project under the Review of Marine Nature Conservation, and the Defra Marine Spatial Planning Pilot have explored options for strategic planning in the Irish Sea

SEA 7 overview

SEA 7 is the largest of the SEA areas. Topographically it includes sheltered coastal sea lochs, the exposed Hebrides continental shelf, the continental slope beyond the shelf to extensive areas of deep water muds of the Rockall Trough. The deep water area contains a number of major banks such as the Rockall and Hatton Banks as well as several seamounts. The area is bounded to the north east by the Wyville Thomson Ridge, a major ecological divide between warm and cold water areas.

The region is fully exposed to North Atlantic winds and waves. Water movement is largely from southwest to northeast with the prevailing current system dominated by an along shelf slope current of warm Atlantic water, the European Shelf Current. This is subject to some seasonality and variability in speed according to the influence of depth contours. In the north of the region the current passes over the Wyville Thomson Ridge and a proportion of the water enters the North Sea by the Fair Isle current between Orkney and Shetland, and also from the north to the east of Shetland. Deeper waters to the west of the shelf edge are a mixture of water masses of different origin including periodic overspill of Arctic water from the north. Strong bottom currents around many of the seamounts and banks play an important role in determining the distribution of sediments and seabed biological communities.

The wide range in bathymetry, water currents and other factors results in a diverse array of seabed habitats and biological community types. Whilst shelf habitats have been fairly well described, those in deeper waters have remained largely unknown. The DTI SEA-funded seabed surveys of 2005 and 2006, which were largely directed at the major banks and seamounts of the area, have provided valuable information on these offshore areas and documented several cold water coral reefs and features of potential conservation importance. It is likely that based on this information a number of potential new offshore

SACs will be selected in the SEA 7 area in the future. Currently three offshore areas in SEA 7 have been put forward as SACs for coral, stony and reef habitats on the Darwin Mounds, Wyville Thomson Ridge and Stanton Banks – see figure below.

Within shelf and coastal waters, there are a large number of conservation sites of international and national importance, many of which cover extensive marine areas. The region is of great importance for seabirds (including puffin, guillemot, gannets, fulmar, shearwaters and other petrels) and waterbirds (e.g. seaduck, divers and geese), both during and outwith the breeding season. This importance is reflected in the number of SPAs designated. One of the most important conservation sites is St. Kilda which is an SAC, SPA, World Heritage Site and National Nature Reserve which holds 89% and 24% of the north east Atlantic population of Leach's petrel and gannet respectively. The most abundant breeding bird on St. Kilda is the puffin with over 135,000 nests. Some of the birds breeding on St. Kilda and other offshore islands feed beyond the shelf edge (e.g. Leach's petrel).

The SEA 7 area is also very important for marine mammals, with ten species of whale and dolphin recorded regularly, and the shelf region is of particular importance for harbour porpoise and a variety of dolphin species. Although data is limited, the deeper waters off the shelf appear to be important for a number of medium sized and large whale species, including beaked whales, sperm whale and humpback whale. Some whales migrate through the SEA 7 area between their Arctic feeding grounds and their breeding grounds at lower latitudes, although it is uncertain if defined migration routes are used.

Shelf areas are also very important for grey and harbour seals. Many of the region's islands support important breeding and moulting haul out sites for both species, with the exposed shelf waters to the west of the Hebrides of particular importance to foraging grey seals. More sheltered areas of the Minch and around Islay appear to be important for foraging harbour seals.

The SEA 7 area is largely rural and undeveloped. Important coastal activities and industries include tourism and mariculture, with fishing important both in coastal and offshore waters (including the offshore banks and seamounts). Offshore waters also contain important shipping routes, military practice areas and past munitions and other disposal sites. A number of telecommunications cables traverse the region.

SEA 8 overview

The SEA 8 area stretches from Dover in the east, westward through the English Channel to the edge of the continental shelf in the Celtic Sea, northeastwards to the St George's Channel entrance to the Irish Sea and includes the Bristol Channel. The area contains a wide variety of habitat types ranging from deep water in the extreme west through rocky cliffs and saline lagoons to sandy or muddy beaches and coastal saltmarsh.

The seabed is generally planar, sloping gently towards the shelf break in the south west. Water depths in the most southwestern region of the SEA 8 area reach 2200m.

The area is exposed to strong wave activity and storms and experiences significant variation in tidal ranges and currents. The mean spring tidal range varies from approximately 3-4m offshore to 12m at Avonmouth in the Severn Estuary. Mean spring tidal currents are generally between 0.2-0.5ms^{-1} over much of the offshore Celtic Sea shelf. Tidal currents are greatest (>2ms^{-1}) off major headlands and around the Isles of Scilly. At the shelf edge, a poleward along-slope current occurs with associated internal waves and eddies. Similarly upwelling of deeper waters to the shelf and cold water cascades may be features of the shelf break. Mean circulation on the Celtic shelf is generally weak with residual circulation

controlled largely by wind forcing. The residual flow along the English Channel is from the west to east, driven by non-linear tides (due to strong tidal forcing from the Atlantic), predominantly southwesterly prevailing winds and density currents.

In summer, most of the Celtic Sea experiences strong thermal stratification resulting in a seasonal Celtic Sea front with strong anticlockwise jet currents associated with bottom fronts around a cold saline pool. Another seasonally occurring front, the Ushant front develops at the mouth of the English Channel, from the Lizard to Brittany.

Seabed sediments in the English Channel generally comprise sandy gravel and gravel. These sediment types are also present in the Celtic Sea but here the dominant sediment types are sandy mud and sand. The seabed in the Bristol Channel and Severn Estuary is quite mobile due to the strong tidal currents. Riverine and direct inputs of contaminants to the area are generally reducing and, in absolute terms, inputs to the Celtic Seas were about one third of those to the Greater North Sea.

All plankton species composition records show there have been substantial changes over time, both in species present and the timing of blooms. However, the changes are believed to be linked to similar changes observed over a wide area of the North East Atlantic and are probably climatically induced.

The southwest of the British Isles is a region of biogeographical change and overlap for both intertidal and subtidal marine benthos. Certain species with known southern (Lusitanian) distributions are at their northernmost limits, while other northern (Boreal) species reach their southern limits. Cold water coral reefs are known to occur on the continental shelf break and slope in the southwest.

The entire region supports valuable fisheries, including fin and shellfish, with international fleets present offshore, particularly French, Spanish and Belgian. There is some regional variation in the key biological resources exploited. The most commonly used commercial gears in the eastern English Channel are gill and drift nets, pots and trawls, and the species targeted include demersal fishes (e.g. sole, plaice, rays, cod and whiting), pelagic fish (e.g. bass and herring) and shellfish (e.g. oysters, cuttlefish and crab). Fishing grounds in the western English Channel are generally deeper and rougher, and species such as anglerfish, lemon sole, various crustaceans, scallops, conger eel, pollack and ling become increasingly important. Many pelagic species also occur in the western English Channel, and the large number of juvenile mackerel in the area has led to the establishment of the “Mackerel Box”.

Important commercial species in the Bristol Channel include anglerfish, cod, hake, plaice, rays, sole and whiting, and the inshore fleet generally use a variety of gears, ranging from pots (for crab, lobster and whelks), set nets (e.g. for rays) and long-lines. Pelagic fish are not of high commercial value in the Bristol Channel, although there is a small fishery for Milford Haven herring. There are important bass fisheries in both the English and Bristol Channels. Further offshore in the Celtic Sea the deeper waters support valuable demersal fisheries. This area also contains muddy grounds where *Nephrops* is fished. Mackerel are the basis of an important pelagic fishery in the south-western approaches.

The Celtic Deep, outer Bristol Channel and the waters south of Devon, are amongst the most important offshore areas for seabirds in the region, with northern gannet, kittiwake, fulmar and lesser black-backed gull the most commonly recorded species. Five offshore seabird species found in SEA 8 are EU Bird Directive Annex I species and one, the European Storm Petrel, breeds in nationally important numbers in the area. Several coastal sites hold internationally and nationally important numbers of wintering waterbirds and most of these sites are regularly monitored. Although there are large gaps in coverage in the

offshore waters of the region (e.g. September, October, December and February), survey work has shown that total seabird density is generally low throughout the region.

The range of cetacean species is considered to be normal for the latitude and population estimates have been made for some species but not population trend data. The short-beaked common dolphin is the most numerous cetacean species recorded in the area, with records in all seasons in coastal, shelf, slope and deepwater habitats. There are grey seal breeding colonies on the Scilly Isles and Lundy Island.

The area appears to be of importance to marine turtles, with animals recorded from coastal and offshore waters throughout the region, particularly in the southwest. For at least two consecutive years (2005 and 2006), over a third of the total number of turtles recorded in the UK and Ireland, occurred in the region. Data for leatherback turtles implies this species moves into British and Irish waters from the south and west, and pass northwards up western coasts and the Irish Sea.

The region includes habitats which are rare in a national and/or international context and many support important numbers of seabirds, wintering waders and wildfowl, seals and cetaceans or important examples of Annex I habitat, flora and/or geological features. Much of the region's coast is protected through statutory and non-statutory designations including areas such as SACs, SPAs, Marine Nature Reserves, National Parks, Areas of Outstanding Natural Beauty and stretches of Heritage Coast.

Human occupation of southern Britain has varied with the climate and the extent of the ice sheets which covered much of Britain. Submerged in-filled estuaries contain deposits suitable for the preservation of archaeological material e.g. the stratified Mesolithic site 11m underwater within Bouldnor Cliff on the Isle of Wight. The SEA 8 area contains many wrecks, although the majority of these are modern.

A number of telecommunication cables traverse the region, and there are several military exercise areas including live-fire ranges. There is no offshore oil and gas infrastructure in the region, with the exception of the Wytch Farm oil field which extends under Poole Bay. There are currently no operational renewable energy developments in the SEA 8 area, although construction of a 20MW wave energy device off the north Cornwall coast is due to commence in spring/early summer 2008. An extensive number of sites along the southeast and southwest coastlines are licensed as marine disposal sites. Yachting is important throughout the area and there are many cruising routes, sailing areas and yachting facilities. There are several IMO traffic separation schemes in the English Channel and off the Scilly Isles.

Data sources

The SEA regulations require that the Environmental Report documents the likely significant effects on the environment. The baseline information for the Offshore Energy SEA will be drawn from a number of sources including those outlined below.

Seabed surveys

The BERR SEA programme has been underway since 1999 and considerable seabed survey information has been gathered contributing to baseline understanding. Survey areas and targets were identified through formal and informal scoping and these are listed below. Surveys have used a range of techniques including topographic mapping using multibeam sonar with ground-truthing by photography and sampling. Completed SEA survey data is archived and available on the UKDEAL database www.ukdeal.co.uk .

SEA 1 – Parts of Faroe-Shetland Channel and Wyville Thomson Ridge
SEA 2 – Selected central North Sea pockmarks and southern North Sea sandbanks (also relevant to SEA 3)
SEA 4 – Parts of Faroe-Shetland Channel and North Sea Fan
SEA 5 – Moray Firth and off Orkney and Shetland
SEA 6 – Irish Sea
SEA 7 – West of Hebrides and Shetland
SEA 8 – Bristol Channel/Severn Estuary and central Channel off Portland

Technical reports

A number of technical studies have been commissioned over the years to underpin the baseline and assessment for the various SEAs covering the topics listed below:

Geology
Hydrography
Plankton
Benthos
Pockmarks and methane derived authigenic carbonates
Contaminants
Cephalopods
Fish
Shellfish
Seabirds
Marine Mammals
Maritime Archaeology
Prehistoric Archaeology
Ambient Noise
Conservation
Other Users (including military, navigation, fisheries, aviation, tourism, aggregates etc)
Recreational boat use
Socio-economics

These studies were also framed to facilitate future SEA for offshore renewable energy as well as oil and gas. The technical reports are available for download at www.offshore-sea.org.uk.

Other SEA surveys and studies

The following surveys and studies have been identified through informal scoping as necessary to support the Offshore Energy SEA:

Further aerial bird surveys for distribution and abundance of water birds in coastal waters
Boat based offshore surveys of seabirds at sea for selected areas
Further seal tagging studies
Aerial bird survey
Boat based bird survey
Large cetacean distribution
Marine mammals review (cetaceans and seals)
Archaeology
Mosaic and interpretation of Bristol Channel mapping

Bristol Channel/Celtic Sea coupling scoping study
SEA 8 sample analysis
Phase 2 of marine renewables atlas

Previous SEA Reports and Data

Previous SEA Environmental Reports are available for download either at www.offshore-sea.org.uk and/or from the UKDEAL database.

Other relevant research and surveys

Maritime and Coastguard Agency (MCA) multibeam mapping of various areas of UK seabed

Information on prime shipping routes from the MCA "Future vessel routing and traffic management study for UK waters"

Research Advisory Group - wide range of research studies on environmental aspects of marine renewable energy (see http://www.berr.gov.uk/energy/sources/renewables/policy/offshore-energy-policy/research-advisory/page22590.html)

COWRIE - wide range of research studies on the effects of marine renewable energy primarily windfarms (see http://www.offshorewindfarms.co.uk/Research.aspx)

BERR Screening for Potential Future Offshore Wind Leasing & other Marine Renewables Phases 1 and 2

Spatial datasets

Where practical and relevant, GIS is used as an aid to assessment in the SEA process. A range of publicly available spatial data sets will be used.

Quality status and other regional scale studies and reports

Quality status reports used in the assessment include:

OSPAR (2000). Quality status report 2000 (various volumes) OSPAR Commission, London.

Inter-Agency Committee on Marine Science and Technology (IACMST) (2005). Marine Processes and Climate. IACMST contribution to Charting Progress - an Integrated Assessment of the State of UK Seas (The 2nd of 5 Reports).
DEFRA website
http://www.defra.gov.uk/environment/water/marine/uk/stateofsea/

DEFRA (2000). Quality Status Report of the Marine and Coastal Areas of the Irish Sea and Bristol Channel
http://www.defra.gov.uk/environment/water/marine/uk/science/irishbristol/index.htm

Boelens RGV, Maloney DM, Parson AP & Walsh AR (1999). Ireland's Marine and Coastal Areas and Adjacent Seas: An Environmental Assessment. Marine Institute.

Fisheries Research Service (FRS) (2005). Scottish Ocean Climate Status Report 2002-2003. Marine Laboratory, Aberdeen, 52pp

Leterme *et al.* (2006). Differential contribution of diatoms and dinoflagellates to phytoplankton biomass in the NE Atlantic Ocean and the North Sea. Marine Ecology Progress Series 312: 57-65.

Southall *et al*. (2006). Seasonal space-use estimates of basking sharks in relation to protection and political–economic zones in the North-east Atlantic. Biological Conservation 132: 33-39.

Southall *et al*. (2006). Spatial distribution patterns of basking sharks on the European shelf: preliminary comparison of satellite-tag geolocation, survey and public sightings data. Journal of the Marine Biological Association of the United Kingdom 85: 1083-1088.

UK & Eire marine turtle strandings & sightings annual reports (Penrose & Gander 2006, 2007).

Pollock & Barton (2006). An analysis of ESAS seabird surveys in UK waters to highlight gaps in coverage. A report to the DTI.

Longeran *et al*. (2007). Using sparse survey data to investigate the declining abundance of British harbour seals. Journal of Zoology 271: 261–269.

SCANS (Small Cetacean Abundance in the North Sea) II survey http://biology.st-andrews.ac.uk/scans2.

OSPAR (2006). 2005/2006 Report on the status of the OSPAR network of Marine Protected Areas.

OSPAR (2005). Case reports for the initial list of threatened and/or declining species and habitats in the OSPAR maritime area. OSPAR biodiversity series.

Reid (2006). Update on progress with the identification of marine SPAs. JNCC 06 N06.

Turnbull *et al*. (2006). Towards achieving a representative suite of marine habitat SACs for UK waters: Update on progress. JNCC 06 N09.

SNH (http://www.snh.org.uk) and JNCC (http://www.jncc.gov.uk) websites -provide up-to-date, detailed information on conservation sites.

OSPAR (2006). 2005/2006 Coordinated environmental monitoring programme (CEMP) assessment: Trends and concentrations of selected hazardous substances in the marine environment.

OSPAR (2006). Comprehensive atmospheric monitoring programme (CAMP): Pollutant deposits and air quality around the North Sea and the North-East Atlantic in 2004.

ICES (2007). Structure and dynamics of the North Sea benthos. Eds. HL Rees, JD Eggleton, E Rachor and E Vanden Berghe. ICES Cooperative Research Report No. 288, 259pp.

Local air quality management website http://www.airquality.co.uk/archive/laqm/laqm.php

National atmospheric emissions inventory website http://www.naei.org.uk/index.php

Intergovernmental Panel on Climate Change (2007). Climate change 2007: The physical science basis - Summary for policymakers.

Cetacean Offshore Distribution and Abundance (CODA) (2007). Surveys small cetaceans in offshore waters (beyond the continental shelf edge) west of UK, Ireland, France and Spain.

http://www.sd-commission.org.uk/pages/tidal.html

http://www.offshorewindfarms.co.uk/Research/ResearchAreas.aspx

http://www.dti.gov.uk/energy/sources/renewables/policy/offshore/research-advisory-group/page22590.html

Trends and statistics

http://statistics.defra.gov.uk/esg/

http://www.scotland.gov.uk/Topics/Statistics/Browse/Environment

http://www.nisra.gov.uk/statistics

http://www.sustainable-development.gov.uk/

http://new.wales.gov.uk/topics/statistics/?lang=en

Consultation Question

2. The outputs from the surveys, technical reports and other sources above form a key part of the information baseline for the Offshore Energy SEA and consultees are invited to draw attention to and provide (where possible) additional information and data sets which they consider of potential relevance to this SEA.

5 ASSESSMENT FRAMEWORK

Draft objectives

The development of SEA objectives is a recognised way in which environmental considerations can be described, analysed and compared. Draft objectives and indicators for the Offshore Energy SEA are listed below.

SEA topic	SEA Objective	Indicators
Biodiversity, habitats, flora and fauna	Avoids significant impact to conservation sites, and protected species	Site condition monitoring reveals no decline in conservation status
	Contributes to conservation of the wildlife and wildlife habitats of the United Kingdom	For selected "valued ecosystem components" no loss of diversity or decline in population (measures as % of relevant biogeographic population) attributable to offshore oil and gas and windfarm activities

SEA topic	SEA Objective	Indicators
Geology and soils	Protects the quality of the seabed and sediments	No adverse change in quality of seabed sediments at a series of regional monitoring stations
	Avoids significant damage to geological conservation sites and protects important geological features	No physical damage to designated geological conservation sites
Landscape/seascape	Minimises adverse impact on seascape/landscape including designated and non-designated areas	No permanent impact on designated areas (inclusive of related shore developments)
Water resources	Protects surface water and aquifer resources	No adverse change in quality of surface water and aquifers UKCS Exploration and Production (E&P) meets OSPAR hydrocarbon discharge reduction targets Number of spills and quantity of spilled oil
Air quality	Avoids degradation of regional air quality from oil and gas activities	Existing monitoring of local air quality shows no adverse impact
Climatic factors	Minimises greenhouse gas emissions	UKCS E&P greenhouse gas emissions 2003 Energy white paper "Low Carbon Indicator" (Greenhouse gas and carbon dioxide emissions)
Population and human health	Has no adverse impact on human health	Progress in achieving OSPAR targets for continued reduction in harmfulness of offshore discharges
	Avoids disruption, disturbance and nuisance to communities	Seascape and nuisance indicators
Material assets (infrastructure, other natural resources)	Protects other United Kingdom resources of economic and amenity value	Spatial conflicts
	Promotes waste reduction	Progress in reducing volumes of waste to landfill
Cultural heritage including architectural and archaeological heritage	Protects the historic environment and cultural heritage of the United Kingdom	Condition of designated sites and features (including impact on their setting)

Consultation Questions

3. Are there any objectives that you feel should be included, modified or removed?

4. Are the indicators for each objective suitable? If not please suggest alternatives.

Consideration of alternatives

The following initial alternatives for the Draft Plan for future offshore wind leasing, oil and gas licensing and gas storage have been identified:

1. Not to offer any areas for leasing/licensing
2. To proceed with a leasing and licensing programme
3. To restrict the areas offered for leasing and licensing temporally or spatially[9]

It is intended to review the initial alternatives in the Environmental Report using the hierarchy of options overleaf.

Need or demand: is it necessary?
Can the need or demand be met without implementing the plan or programme at all?

↓

Mode or process: how should it be done?
Are there methods that can meet the need with less environmental damage than 'obvious' or traditional methods?

↓

Location: where should it go?

↓

Timing and detailed implementation:
When, in what form and in what sequence, should the plan be carried out?
What are the important issues? Do existing controls and measures address them?
What other controls and measures are required?

Adapted from: Office of the Deputy Prime Minister (2005). A practical guide to the Strategic Environmental Assessment Directive. Practical guidance on applying European Directive 2001/42/EC "on the assessment of the effects of certain plans and programmes on the environment"

The potential environmental implications of the alternatives will be assessed in the Environmental Report.

Assessment approach

The Draft Plan does not itself permit any windfarm construction or oil and gas exploration or production activities. Levels of activity and their timing would depend on a range of factors including the area licensed/leased, the work programme commitments made by applicants, economic and commercial factors and approval of project development plans.

To aid assessment of the potential implications of the Draft Plan, activity scenarios will be developed covering a credible range of activity. The indicative scenarios will be used as the basis for consideration of the environmental implications of potential licensing/leasing.

[9] These options will be refined during the assessment process.

The table below summarises the working list of topics that are likely to be assessed in detail. At this stage no activities, potential effects or receptors have been scoped out.

Working list of Offshore Energy SEA issues

SEA Topic	Potential sources of significant effect
Biodiversity, habitats, flora and fauna	Physical damage to biotopes
	Marine discharges – potential effects of non-native species introductions in ballast water discharges
	Major oil spill effects and associated damage to habitats and ecosystem function
	Underwater noise - potential behavioural and physiological effects on sensitive species associated with piling, seismic surveys and other noise-generating activities
	Physical damage to biotopes – potential effects on benthos, associated with infrastructure construction and anchoring
	Physical damage to birds from collision with turbines
	Electromagnetic field radiation (EMF)
	Barrier effects of installation presence
	Physical presence of infrastructure and support activities may cause behavioural disturbance to fish, birds, marine mammals
	Marine discharges – potential effects of produced water discharges on zooplankton and fish; drilling wastes effects on benthos
	Marine discharges – potential effects of non-native phytoplankton species introductions in ballast water discharges
	Oil spills – risks of effects on all faunal groups
	Oil spills – risks of effects of beached oil on intertidal algal and macrophyte populations
	Impacts on Natura 2000 and other conservation sites
Geology and soils	Physical effects of anchoring and infrastructure construction on seabed sediments and features including scour
	Marine discharges – sediment modification and contamination by particulate discharges
	Permanent effects of reinjection of produced water and cuttings
	Onshore disposal of returned wastes – requirement for landfill
	Oil spills (with or without chemical dispersion) – risk of sediment contamination
Landscape/seascape	Potential visual impacts, including seascape effects, of nearshore windfarm development or oil and gas exploration and development
Water resources	Marine discharges – contamination by soluble and dispersed discharges
	Oil spills (with or without chemical dispersion) – risk of contamination of the water column by dissolved and dispersed hydrocarbons
Air quality	Local air quality effects resulting from exhaust emissions, flaring and venting
	Emissions of acid gases

SEA Topic	Potential sources of significant effect
	Air quality effects of a major gas release or volatile oil spill
Climatic factors	Contributions to greenhouse gas emissions
	Greenhouse gas emissions associated with combustion of hydrocarbons produced as a result of proposed activities, are outside the scope of assessment
Population and human health	Interactions with other users:
	Commercial implications of exclusion of fishing activities in vicinity of infrastructure, and safety risks of interactions between fishing gear and subsea infrastructure
	Interactions with shipping, military and other human uses of the offshore environment
	Socio-economic consequences of oil spills
	Positive socio-economic effects of potential activities, in terms of employment, expenditure, tax revenue and security of energy supply
	Potential for significant effects on human health – associated with effects on local air quality resulting from atmospheric emissions
	Potential food chain effects of major oil spills
Material assets (infrastructure, other natural resources)	Impacts on other existing/future other spatial uses of the sea
	Energy and resource use
Cultural heritage, including architectural and archaeological heritage	Potential effects in relation to known or postulated archaeological heritage
The inter-relationship between the issues	Multiple effects – biodiversity and faunal effects associated with habitat disturbance; contamination of water, sediment and fauna; oil spill risks
	In-combination effects
	Implications for Marine Spatial Planning
	Conflicts between issues and receptors – reinjection vs marine discharges; and options for oil spill contingency

The assessment will be presented as text based discussion citing peer reviewed and other literature as appropriate together with spatial (GIS output) maps and graphics. The assessment will consider the implications of the Draft Plan for relevant existing environmental problems including in particular, those relating to any areas of a particular environmental importance, such as areas designated under the Habitats & Species and Birds Directives. The assessment will draw on stakeholder perspectives on key issues relating to offshore windfarm development and oil and gas exploration and production obtained through consultation with regulators, local authorities, operators and others.

The results of the assessment will be summarised for each alternative in receptor based matrix format with explanatory notes. Impacts on the receptors will be assigned to impact categories:

- Significant[10] positive
- Minimal positive
- Neutral
- Minimal negative
- Significant negative
- Unknown impact

Draft contents of the Environmental Report

Non-Technical Summary

1 Introduction
- 1.1 Background
- 1.2 Strategic Environmental Assessment
- 1.3 Organisation of the Environmental Report

2 Overview of the Draft Plan
- 2.1 The draft plan
- 2.2 Plan objectives
- 2.3 Potential activities following licensing
- 2.4 Alternatives to the plan
- 2.5 Relationship of the Draft Plan to other Initiatives

3 SEA Approach
- 3.1 SEA process and stages completed to date
- 3.2 Scoping
- 3.3 Surveys and studies
- 3.4 SEA objectives
- 3.5 SEA scope
- 3.6 Assessment methodology
- 3.7 Public consultation

4 Environmental Information
- 4.1 Introduction
- 4.2 Environmental baseline
- 4.3 Relevant existing environmental problems
- 4.4 Likely evolution of the baseline[11]
- 4.5 Review of baseline for previous SEA areas

5 Summary of Assessment
- 5.1 Introduction
- 5.2 Biodiversity, habitats, flora and fauna
- 5.3 Geology and sediments
- 5.4 Landscape/seascape
- 5.5 Water environment
- 5.6 Air quality
- 5.7 Climatic factors
- 5.8 Population and human health
- 5.9 Material assets (infrastructure, other natural resources)
- 5.10 Cultural heritage, including architectural & archaeological heritage
- 5.11 Interrelationships - cumulative effects
- 5.12 Interrelationships - Wider policy objectives
- 5.13 Transboundary effects

[10] Significance criteria take account of Schedule 1 to *the Environmental Assessment of Plans and Programmes Regulations 2004*.

[11] and the likely evolution thereof without implementation of the proposed draft plan for offshore energy. This will consider all main parts of the plan.

Consultation on the Draft Plan and Environmental Report

The Environmental Report and draft plan will be issued for formal consultation in line with the requirements of the SEA Regulations and the Cabinet Office Code of Practice – see below.

CABINET OFFICE CODE OF PRACTICE ON CONSULTATION

The six consultation criteria:

1. Consult widely throughout the process, allowing a minimum of 12 weeks for written consultation at least once during the development of the policy.
2. Be clear about what your proposals are, who may be affected, what questions are being asked and the timescale for responses.
3. Ensure that your consultation is clear, concise and widely accessible.
4. Give feedback regarding the responses received and how the consultation process influenced the policy.
5. Monitor your department's effectiveness at consultation, including through the use of a designated consultation co-ordinator.
6. Ensure your consultation follows better regulation best practice, including carrying out a Regulatory Impact Assessment if appropriate.

These criteria must be reproduced within all consultation documents.

Extract from Code of Practice on Written Consultation issued January 2004

It is currently proposed that the public consultation period on the Environmental Report will be 12 weeks. The Environmental Report will be made available to download from www.offshore-sea.org.uk and in a variety of media.

Public notices announcing the commencement of the public consultation period and giving details of how to respond will be published in selected national and regional newspapers.

Consultation Question

5. Do you have any comments on the proposed approach to assessment and consultation?

6 INPUT TO SCOPING

For convenience the consultation questions from earlier in the document are compiled below.

Consultation Questions
1. Consultees are invited to highlight additional initiatives which they consider relevant to the consideration of the Draft Plan.
2. Consultees are invited to draw attention to and provide (where possible) additional information and data sets which they consider of potential relevance to this SEA.
3. Are there any objectives that you feel should be included, modified or removed?
4. Are the indicators for each objective suitable? If not please suggest alternatives?
5. Do you have any comments on the proposed approach to assessment and consultation?

Please return any comments on the above questions or any other relevant issues or information by 1st February 2008.

Responses[12] should include a reference to "Offshore Energy SEA Scoping", and be submitted by e-mail to ptc@hartleyanderson.com.

Alternatively, written comments can be submitted to the address below:

The Office Administrator
Hartley Anderson Limited
Regent House
Regent Quay
Aberdeen AB11 5BE

Or by fax: 01224 587276

[12] **Confidentiality:** Your comments may be made public by BERR in relation to this consultation exercise. If you do not want your name or all or part of your response made public, please state this clearly in the response. Any confidentiality disclaimer that may be generated by your organisation's IT system or included as a general statement in your fax cover sheet will be taken to apply only to information in your response for which confidentiality has been requested.
However, please also note that BERR may disclose information it holds pursuant to a statutory, legal or parliamentary obligation, including without limitation, requirements for disclosure under the Freedom of Information Act 2000 and/or the Environmental Information Regulations 2004. In considering any request for disclosure of such information under the Freedom of Information Act 2000 or the Environmental Information Regulations 2004, BERR will consider and make use of relevant exemptions or exceptions where they properly apply and, where relevant, will consider whether the public interest in withholding the information outweighs the public interest in disclosing the information. It is BERR's normal practice to consult and consider the views of third parties where necessary although decisions on disclosure are ultimately taken by BERR. However, any decision by BERR against the release of information can be appealed to the Information Commissioner and ultimately the Information Tribunal.
We will handle any personal data you provide appropriately in accordance with the Data Protection Act 1998 and the Freedom of Information Act 2000.

APPENDIX 1 - OTHER POTENTIALLY RELEVANT INITIATIVES

Initiative	Main objectives/requirements	Implications
International		
UN Conference on the Human Environment, Stockholm, 1972 The UN Conference on Environment and Development (UNCED, Earth Summit) Rio de Janeiro, Brazil 1992 The World Summit on Sustainable Development (WSSD), Johannesburg, September 2002 - Commitments arising from Johannesburg Summit The UN Millennium Declaration (2000) and Millennium Development Goals The EU's sustainable development strategy (2001) – A sustainable Europe for a better world: A European strategy for sustainable development 'Securing The Future' the new UK strategy for sustainable development March 2005 Local Authorities have been encouraged to adopt their own strategies for sustainable development at local level The Department of Trade and Industry Sustainable Development Action Plan 05-06	The UN Conference on Environment and Development in 1992 reviewed the linkages between economic and social development and environmental protection and adopted Agenda 21. The Rio declaration on environment and development reaffirmed the declaration of the UN Conference on the Human Environment (Stockholm conference 1972) and included 27 sustainable development principles, "the Rio Principles" In December 1992 - The UN General Assembly created the Commission on Sustainable Development (CSD) to ensure effective follow-up to UNCED and a special session of the General Assembly Earth Summit + 5, held in New York in 1997, adopted a "Programme for the Further Implementation of Agenda 21". Following from UNCED, the WSSD (Rio+10) reviewed progress and results achieved since the 1992 Earth Summit and adopted the Johannesburg Plan of Implementation (JPOI), with concrete steps and quantifiable and time-bound targets and goals The seventh of the Millennium Development Goals is for Environmental Sustainability and includes a target to "integrate the principles of sustainable development into country policies and programs and reverse the loss of environmental resources"	UK Government sustainable development strategy includes a table of the UK's international priorities for sustainable development primarily arising from the WSSD which are relevant to the draft plan.
Montreal Protocol (UN September 1987) EC has implemented the Protocol through Regulations	Montreal Protocol was negotiated under the framework established by Vienna Convention for the Protection of the Ozone Layer, 1985 Phase out production and use of chlorofluorocarbons (CFCs), halons and other chemicals that destroy ozone. The Protocol is revised regularly and sets out a timetable for the phase-out of ozone-depleting substances or substance groups.	Consider contributions to ozone depleting substance emissions as a result of licensing. Activities which may be conducted subsequent to licensing will require to be compliant with implementing EU and national legislation and consistent with Montreal Protocol requirements
Kyoto Protocol and the UN Framework Convention on Climate Change Climate Change - the UK Programme (Nov 2006) sets out how to tackle climate change domestically and to secure agreement on action to reduce global greenhouse gas emissions.	To achieve stabilisation of greenhouse gas concentrations in the atmosphere at safe levels The protocol set out a series of targets for specific greenhouse gases and established a framework of actions and requirements to meet these targets with the aim of achieving a meaningful time frame: i.e. legally binding cuts in emissions of carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride. The methods to be taken are to be decided by individual nations.	Consider implications of the draft plan in terms of greenhouse gas emissions and climate change.

Initiative	Main objectives/requirements	Implications
	The UK's target under the Kyoto Protocol is to reduce its greenhouse gas emissions to 12.5% below 1990 levels by 2008-2012	
Geneva Convention on Long-Range Transboundary Air Pollution 1979.	Provides framework for controlling and reducing environmental damage caused by transboundary air pollution Convention protocols cover range of pollutants including persistent organic pollutants, heavy metals, sulphur, VOCs and nitrogen oxides.	Consider implications of the draft plan in terms of transboundary air pollution.
The Convention on EIA in Transboundary Context 1991 (Espoo Convention) Implemented by the 1997 Directive 97/11/EC	To facilitate wider, more transparent and comprehensive consultation process for projects with cross-boundary effects.	Consider potential for transboundary effects on the environment.
Aarhus Convention The Directive 2003/35/EC, formally adopted on 26 May 2003, providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC	The Convention provides for: • The right of everyone to receive environmental information that is held by public authorities. • The right to participate in environmental decision-making. • Access to justice with respect to the above.	Publicise and make SEA available to stakeholders via http://www.offshore-sea.org.uk comment
Ramsar Convention on wetlands of international importance especially as waterfowl habitat (Ramsar 2.2.1971, as amended 3.12.1982)	An intergovernmental treaty which provides the framework for national action and international co-operation for the conservation and wise use of wetlands and their resources • To stem the progressive encroachment on and loss of wetlands now and in the future • Recognition that waterfowl in their seasonal migrations may transcend frontiers and so should be regarded as an international resource • The conservation of wetlands and their flora and fauna can be ensured by combining far-sighted national policies with co-ordinated international action	Consider implications of the draft plan in terms of Ramsar sites.
Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979) The EC adopted Council Directive 79/409/EEC on the Conservation of Wild Birds (the EC Birds Directive) in 1979, and Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (the EC Habitats Directive) in 1992 to implement the Bern Convention	• To conserve wild flora and fauna and their natural habitats • To promote co-operation between states • To give particular emphasis to endangered and vulnerable species, including endangered and vulnerable migratory species.	Consider implications of the draft plan for protected habitats and species.
Bonn Convention on the Conservation of Migratory Species of Wild Animals (1979)	An intergovernmental treaty, concerned with the conservation of wildlife and habitats on a global scale	Consider implications of the draft plan for migratory species.

Initiative	Main objectives/requirements	Implications
	• Aims to conserve terrestrial, marine and avian species throughout their range through international cooperation. • The UK is party to the convention and to several agreements which have been concluded to date under the auspices of the convention e.g. AEWA, ASCOBANS, and EUROBATS	
United Nations Convention on Biodiversity (the Rio Convention) Entered into force 1993 The UK Biodiversity Action Plan (and various subsidiary plans) is part of its implementation of the Convention	To promote: • The conservation of biological diversity • The sustainable use of its components • The sharing of the benefits of genetic resources. Specific programmes are required for the identification of important components of biodiversity and their understanding and protection	Consider implications of the draft plan for UK Biodiversity Action Plan
Convention Concerning the Protection of the World Cultural and Natural Heritage (Paris 1972)	To encourage the identification, protection and preservation of cultural and natural heritage around the world considered to be of outstanding value to humanity	Consider implications of the draft plan in relation to World Heritage Sites
"Biosphere Conference" organised by UNESCO in 1968	Established framework for designation of a coordinated world network of new protected areas designated as "Biosphere Reserves"	Consider implications of the draft plan for Biosphere Reserves
IMO International Convention for the Prevention of Pollution from Ships, 1973, as modified by the Protocol of 1978 (MARPOL 73/78)	Prevent marine pollution from ships and in part from oil rigs and production platforms. Six annexes covering pollution by oil, noxious liquids carried in bulk, harmful substances in packaged form, sewage, garbage and air pollution.	Activities which may be conducted subsequent to licensing will require to be compliant with national legislation
International Convention for the Control and Management of Ships' Ballast Water and Sediments (IMO 2003), adopted February 2004, still to enter into force	Prevent, minimise and ultimately eliminate the transfer of harmful aquatic organisms and pathogens through the control and management of ships' ballast water and sediments.	Consider the management issues surrounding ballast water.
International Convention on Oil Pollution Preparedness, Response and Co-operation (OPRC) 1990, entered into force 1995	Provides a framework for international co-operation in combating major incidents or threats of marine pollution	Activities which may be conducted subsequent to licensing will require to be compliant with implementing national legislation on oil spill contingency planning
London Convention on the Prevention of Marine Pollution by Dumping of Wastes and Other Matter, 1972 (as amended) 1996 Protocol - Revision to convention 2006 Amendments to the 1996 Protocol	Prohibits the dumping of certain hazardous materials, requires a prior special permit for the dumping of a number of other identified materials and a prior general permit for other wastes or matter. Wastes derived from the exploration and exploitation of sea-bed mineral resources are excluded from the definition. The amendments adopted in 2006 (which entered into force in February 2007) create a basis in international law to allow and regulate carbon capture and storage (CCS) in sub-seabed geological formations.	Is a consideration for CCS.
Convention for the Protection of the Marine Environment of the North East Atlantic (the OSPAR Convention 1992)	Currently five annexes in force: I: Prevention and elimination of pollution from land-based sources II: Prevention and elimination of pollution by	Consider measures to prevent and eliminate pollution, assess the quality of and protect and

Initiative	Main objectives/requirements	Implications
	dumping or incineration III: Prevention and elimination of pollution from offshore sources IV: Assessment of the quality of the marine environment V: Protection and conservation of the ecosystem and biological diversity of the maritime area	conserve the ecosystem of the maritime area. Activities which may be conducted subsequent to licensing will require to be compliant with national legislation implementing OSPAR recommendations and decisions Amendment proposals have been drafted regarding CCS.
OSPAR Decision 2000/3 on the Use of Organic-Phase Drilling Fluids (OPF) and the Discharge of OPF-Contaminated Cuttings	No such fluids used without prior authorisation. Discharge of cuttings to sea with a concentration >1% by weight of oil based fluids on dry cuttings prohibited	Activities which may be conducted subsequent to licensing will require to be compliant with national legislation with regard to OPFs and OPF-contaminated cuttings.
OSPAR Decision 2000/2 on a Harmonised Mandatory Control System for the Use and Reduction of the Discharge of Offshore Chemicals (as amended by OSPAR Decision 2005/1) OSPAR Recommendation 2000/5 on a Harmonised Offshore Chemical Notification Format (HOCNF), as amended by OSPAR Recommendation 2005/3 OSPAR Recommendation 2005/2 on Environmental Goals for the Discharge by the Offshore Industry of Chemicals that Are, or Contain Added Substances, Listed in the OSPAR 2004 List of Chemicals for Priority Action OSPAR Recommendation 2006/3 on Environmental Goals for the Discharge by the Offshore Industry of Chemicals that Are, or Which Contain Substances Identified as Candidates for Substitution Implemented through the Offshore Chemicals Regulations 2002	Mandatory harmonised system of testing, risk assessment and approval for offshore chemicals across the OSPAR area. Objective is reduction in harm from such use and discharge.	Activities which may be conducted subsequent to licensing will require to be compliant with implementing national legislation relating to the use and discharge of offshore chemicals
OSPAR Recommendation 2001/1 for the Management of Produced Water from Offshore Installations as amended by Recommendation 2006/4 Implemented through the Offshore Petroleum Activities (Oil	Reduction in discharge of oil in produced water by 15% over a five year period. Lowering of the discharge concentration from each installation to 30mg/l. Presumption against the discharge to sea of oil in produced water from new stand-alone developments.	Activities which may be conducted subsequent to licensing will require to be compliant with the implementing national legislation for the management of produced water

Initiative	Main objectives/requirements	Implications
Pollution Prevention and Control) Regulations 2005		
OSPAR Recommendation 2003/3 on a Network of Marine Protected Areas (MPA)	OSPAR will identify the first set of MPAs by 2006 (not yet completed) and complete by 2010 a joint network of well managed marine protected areas that, together with the Natura 2000 network, is ecologically coherent.	Bring attention to the new MPAs currently being designated by OSPAR.
OSPAR Recommendation 2003/5 to Promote the Use and Implementation of Environmental Management Systems by the Offshore Industry	Recommendation that by the end of 2005 all operators within a Contracting Parties' jurisdiction in the maritime area should have in place Environmental Management Systems that are in accordance with the principles of internationally recognised standards	Requirement that all operators with offshore operations have in place an Environmental Management System
OSPAR Decision 98/3 on the Disposal of Disused Offshore Installations	The dumping, and the leaving wholly or partly in place, of disused offshore installations within the maritime area is prohibited (with derogations).	Decommissioning of installations will require to be compliant with the implementing national legislation.
OSPAR Recommendation 2006/5 on a Management Regime for Offshore Cuttings Piles	A two stage Cuttings Pile Management Regime aimed to reduce to a level that is not significant, the impacts of pollution by oil and/or other substances from existing cuttings piles.	Only limited drilling of exploration and appraisal wells has taken place within the SEA 7 area.
OSPAR Recommendation 2003/1 on the Strategy for the Joint Assessment and Monitoring Programme	Joint programme to fulfil the obligations under the OSPAR Convention in relation to monitoring and assessment	UK participates in JAMP
The EU's sustainable development strategy (2001) – A sustainable Europe for a better world: A European strategy for sustainable development 'Securing The Future' the new UK strategy for sustainable development March 2005	Proposed measures aimed at promoting sustainable development in a number of important areas, including the following relating to the environment: climate change, management of natural resources and mobility and transport.	Consider the potential impact of plan alternatives on a range of indicators of sustainable development
A European Strategy for Sustainable, Competitive and Secure Energy. European Commission Green Paper. March 2006. COM(2006) 105 final Action Plan for Energy Efficiency: Realising The Potential - Saving 20% By 2020	Puts forward suggestions and options that could form the basis for a new comprehensive European energy policy. Identifies six key areas where action is necessary: • Energy for growth and jobs in Europe • An Internal Energy Market that guarantees security of supply • Tackling security and competitiveness of energy supply • An integrated approach to tackling climate change • Encouraging innovation • Towards a coherent external energy policy	Consider the implications of licensing and potential activities on maintaining security of supply as well as greenhouse gas emissions and climate change
An Energy Policy for Europe. Communication from the Commission to the European Council and the European Parliament. COM(2007) 1 final	This Strategic Energy Review follows on from the submissions received during the consultation period on the Green Paper above. Proposes that the European Energy Policy be underpinned by: • An EU objective in international negotiations of 30% reduction in greenhouse gas emissions by developed countries by 2020 compared to 1990. In addition, 2050 global GHG emissions must be reduced by up to 50% compared to 1990, implying reductions in industrialised countries of 60-80% by	Consider the implications of licensing and potential activities on maintaining security of supply as well as greenhouse gas emissions and climate change

Initiative	Main objectives/requirements	Implications
	2050. • an EU commitment now to achieve, in any event, at least a 20% reduction of greenhouse gases by 2020 compared to 1990.	
Directive 2001/42/EC of the European Parliament and of the Council on the assessment of the effects of certain plans and programmes on the environment.	Strategic environmental assessment required for relevant plans and programmes. The Environmental Assessment of Plans and Programmes Regulations 2004 apply to any plan or programme which relates either solely to the whole or any part of England or to England and any other part of the UK.	The SEA should address all requirements of Directive 2001/42/EC.
Council Directive 97/11/EC of 3 March 1997 amending Directive 85/337/EEC on the assessment of the effects of certain public and private projects on the environment.	Requires an Environmental Impact Assessment (EIA) and a public consultation document, an Environmental Statement (ES) to be submitted for certain projects considered likely to have an environmental effect.	Development activities will be subject to the implementing EIA regulations.
Directive 2003/35/EC of the European Parliament and of the Council of 26 May 2003 providing for public participation in respect of the drawing up of certain plans and programmes relating to the environment and amending with regard to public participation and access to justice Council Directives 85/337/EEC and 96/61/EC	Provides for public participation in the preparation of environmental plans, programmes and projects with significant environmental impacts, thus enabling the ratification of the Aarhus Convention by the Community	Amendments to procedures for EIA and PPC
Council of Europe European Landscape Convention, 2000	Landscape is a key factor in quality of life, and is of cultural and economic importance, notably for tourism. The convention establishes the general legal principles which should serve as a basis for adopting national landscape policies and promoting interaction between local and central authorities, as well as establishing international co-operation in such matters. Entered into force in the UK on 1/3/2007.	The convention also includes seascape and is relevant to the SEA for the assessment of the implications of facility siting under the draft plan.
European Convention on the Protection of the Archaeological Heritage (Revised), Valletta, 1992	The convention includes provisions for the identification and protection of archaeological heritage, its conservation, the control of excavations, the use of metal detectors and the prevention of illicit circulation of archaeological objects, as well as for dissemination of information. Entered into force in the UK on 21/3/2001.	Requires due consideration is taken of archaeological heritage.
Air Quality Framework Directive (96/62/EC) First Daughter Directive (1999/30/EC) relating to limit values for NO_x, SO_2, Pb and PM_{10} in ambient air. Second Daughter Directive (2000/69/EC) relating to limit values for benzene and carbon monoxide in ambient air. Third Daughter Directive (2002/3/EC) relating to ozone. Fourth Daughter Directive (2004/107/EC) relating to arsenic, cadmium, mercury, nickel and polycyclic aromatic	EU air quality policy takes the form of an Air Quality Framework Directive and a number of 'daughter' directives which address individual or groups of pollutants. The main aims of the framework are: • Set limits and thresholds for air quality • Assessing air quality in uniform manner • Information made available to public • Maintaining/improving ambient air quality	Consider potential implications of draft plan in terms of air pollution (e.g. exhaust emissions, flaring and venting). Activities conducted subsequent to licensing will require to be compliant with EU and national legislation on Air Quality

Initiative	Main objectives/requirements	Implications
hydrocarbons in ambient air (There is a proposal for a new directive on ambient air quality and cleaner air for Europe consolidating the earlier directives) Implemented in England through the Air Quality Limit Values Regulations 2001 and similar in Scotland (SSI 2001/224), Wales (SI 2001/2683) & Northern Ireland (S.R. 2002/94) Air Quality Standards Regulations 2007		
Clean Air for Europe (CAFÉ) programme 2001	To integrate the various strands of air policy under the 6th Environmental Action Programme. CAFÉ will form both an air quality strategy for Europe and an active framework within which air pollution measures, national emissions ceilings Directives and the air quality Daughter Directives can be coordinated.	Consider potential effects of air pollution resulting from potential activities (e.g. exhaust emissions, flaring and venting).
National emission ceilings for acidification and eutrophication (2001/81/EC)	The proposed National Emission Ceilings Directive (NECD) sets emission ceilings for each Member State for four atmospheric pollutants to be met by 2010: • Sulphur dioxide (SO_2) • Nitrogen oxides (NO_x) • Volatile Organic Compounds (VOCs) • Ammonia (NH_3)	Consider potential effects of air pollution resulting from potential activities (e.g. exhaust emissions, flaring and venting).
Council Directive 2003/87/EC of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC European Emissions Trading Scheme 2005	EU Greenhouse Gas Emission Trading Scheme promotes reduction of greenhouse gas emissions. Involves the allocation of greenhouse gas emissions permits and allowances which can be traded.	Consider implications of CO_2 emissions as a result of licensing on ETS thresholds and the National Allocation Plan.
Ozone Depleting Substances Regulation 2037/2000/EC The Environmental Protection (Controls on Ozone Depleting Substances) Regulations 2002 (SI 528)	A licence is required for the production, supply, use, trading and emission of certain “controlled substances” that deplete the ozone layer	Activities conducted subsequent to licensing will require to be compliant with EU and national legislation regarding ozone depleting substances
Water Framework Directive (2000/60/EC) Currently two 'daughter directives' are in preparation. They are aimed at protecting groundwater and reducing pollution of surface water (rivers, lakes, estuaries and coastal waters) by pollutants on a list of priority substances. The Directive has been transposed into English & Welsh, Northern Irish and Scottish	Purpose and Objectives: • prevents further deterioration, protects and enhances the status of aquatic ecosystems • promotes sustainable water use • aims at enhanced protection and improvement of the aquatic environment • ensures the progressive reduction of pollution of groundwater and prevents further pollution • contributes to mitigating the effects of floods and droughts River Basin Management Plans (RBMP’s) to be created by 2009, including programmes of measures (which are to be implemented by	Activities conducted subsequent to licensing will require to be compliant with requirements of the Water Framework Directive and implementing national legislation. However seaward extent has been set at one nautical mile from the coast - most activities subsequent to licensing will take place outside this area.

Initiative	Main objectives/requirements	Implications
regulations	2012). RBD's are made up of both river basins and associated groundwater and coastal waters.	
Urban Waste Water Treatment Directive (91/271/EEC) The Directive has been transposed into English & Welsh, Northern Irish and Scottish regulations	To protect the environment from the adverse effects of waste water discharges from urban and industrial sources. Sets acceptable pollutant levels	Offshore oil and gas installations fall out with the criteria for inclusion in this regulation
Sixth Environmental Action Plan (EAP), 'Environment 2010: Our Future, Our Choice'	Sets out EU's environmental policy agenda until 2012. Highlights nature and biodiversity as a top priority States that responses must be found to the pressures from human activities on nature and the biodiversity it supports	Consider implications of the draft plan on biodiversity, habitats, flora and fauna.
Action plan 'Halting the loss of biodiversity by 2010 – and beyond' (2006)	EU Action Plan consists of ten priority objectives: 1. To safeguard the EU's most important habitats and species 2. To restore and conserve biodiversity and ecosystems service in the wider EU countryside 3. To restore and conserve biodiversity and ecosystem service in the wider EU marine environment 4. To reinforce compatibility of regional and territorial development with biodiversity in the EU 5. To substantially reduce the impact on EU biodiversity of invasive alien species and alien genotypes 6. To substantially strengthen effectiveness of international governance for biodiversity and ecosystem services 7. To substantially strengthen support for biodiversity and ecosystem services in EU external assistance 8. To substantially reduce the impact of international trade on global biodiversity and ecosystem services 9. To support biodiversity adaptation to climate change 10. To substantially strengthen the knowledge base for conservation and sustainable use of biodiversity in the EU and globally	Consider the implications of the proposed plan on biodiversity.
Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH)	Establishes a European Chemicals Agency and aims to: • improve the protection of human health and the environment from the hazards of chemicals • enhance the competitiveness of the EU chemicals industry.	Interface with existing OSPAR requirements for testing and registration of offshore chemicals.
Directive 79/409/EEC, on the Conservation of Wild Birds (1979) and Directive 92/43/EEC, on the Conservation of Natural Habitats and of Wild Fauna and Flora (1992) Implemented with respect to	The Birds Directive covers the protection of birds in Member States. Special Protection Areas (SPAs) are strictly protected sites classified in accordance with Article 4 of the Directive. The Habitats Directive covers protection of species and habitats and sets out the framework for the establishment of Special Areas of Conservation (SACs), for sites hosting habitats listed in Annex I and habitats of the species listed in Annex II of the Directive. SPAs and	Requirement that the plan avoids adversely affecting the integrity of relevant European Sites. It will be necessary to undertake screening as to whether the plan should be subject to an Appropriate Assessment.

Initiative	Main objectives/requirements	Implications
offshore oil and gas by the Offshore Petroleum Activities (Conservation of Habitats) Regulations, 2001 (as amended 2007) Implemented outside territorial waters by Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007	SACs are collectively known as the Natura 2000 network of sites.	
Directive 2006/12/EC of the European Parliament and of the Council of 5 April 2006 on waste Implemented through EPA and associated regulation Consultation on a proposal for a Directive of the EU Parliament and the Council on Waste 2006 (closed January 2007)	Codifies Council Directive 75/442/EEC on waste and its amendments. Member states shall take measures to encourage: • The prevention or reduction of waste production and its harmfulness • The recovery of waste by means of recycling, re-use or reclamation or any other process with a view to extracting secondary raw materials • The use of waste as a source of energy • Defra are consulting on a proposal by the European Commission to revise the Waste Framework Directive (WFD) (2006/12/EC) and related EU legislation.	Consider potential contributions to waste production resulting from licensing.
European Council Directive 91/689/EEC (the Hazardous Waste Directive as amended) Implemented through Special Waste and Hazardous Waste Regulations	Set the framework within Member States for provisions to control the movement of hazardous wastes. Provided a European-wide definition of hazardous waste promoting the correct management and regulation of such waste.	Consider contributions to hazardous waste production resulting from licensing.
Council Regulation (EEC) No 259/93 of 1 February 1993 on the supervision and control of shipments of waste within, into and out of the European Community Also Commission Regulation (EC) No 1547/1999	Regulates transboundary shipment of waste	Returnable wastes produced from UK offshore oil and gas are generally returned to UK
Council Directive 99/31/EC of April 1999 on the landfill of waste (as amended) ("Landfill" Directive)	Landfill Directive aimed to reduce amount of waste to landfill, promote recycling and recovery, establish high standards of management.	Consider impact of waste to landfill resulting from the proposed plan.
EC Directive on Integrated Pollution Prevention and Control (96/61/EC) Pollution Prevention and Control Act 1999 The Offshore Combustion Installations (Prevention and Control of Pollution) Regulations 2001 (as amended)	Integrated Pollution Prevention and Control (IPPC) applies a comprehensive approach to the environmental regulation of combustion processes to generate power on offshore facilities. The integrated approach means that emissions to air, the sea and land, plus a range of other environmental effects, must be considered together.	Activities must be compliant with PPC legislation.
Directive 2005/33/EC of the European Parliament and of the Council of 6 July 2005 as regards the sulphur content of marine fuels Amending Directive 1999/32/EC	Directive aims to reduce impact of emissions from shipping due to the combustion of marine fuels with high sulphur content	Sets limits on the sulphur content of marine fuels
EU Maritime Green Paper Towards a future Maritime Policy	The Maritime Green Paper was intended by the Commission to stimulate debate about the future	Emissions and discharge standards and regional

Initiative	Main objectives/requirements	Implications
for the Union: A European vision for the oceans and seas Consultation closed June 2007 Proposal for a Directive of the European Parliament and of the Council establishing a Framework for Community Action in the field of Marine Environmental Policy (EU Marine Strategy Directive)	direction and focus of Community maritime policy. Member States to develop Marine Strategies including a detailed assessment of the state of the environment, a definition of "good environmental status" at regional level and the establishment of environmental targets & monitoring programmes The Commission has separately published the European Marine Thematic Strategy for the Protection and Conservation of the European Environment (and a proposal for a Marine Strategy Directive consistent with the Water Framework Directive) in October 2005. The Directive will establish European Marine Regions on the basis of geographical and environmental criteria.	targets
OSPAR Decision 2007/1 to Prohibit the Storage of Carbon Dioxide Streams in the Water Column or on the Sea-bed Enters into force January 2008.	The placement of carbon dioxide streams in the water column or on the seabed is prohibited, unless it results from normal operations as described in Article 1(g)(i) of the Convention or is for the purpose other than the mere disposal thereof as described in Article 1(g)(ii) of the Convention and is in accordance with the relevant provision of the Convention.	Disposal of CO_2
OSPAR Decision 2007/2 on the Storage of Carbon Dioxide Streams in Geological Formations Enters into force January 2008.	Application of the OSPAR Guidelines for Risk Assessment and Management of Storage of CO_2 Streams in Geological Formations Authorities to ensure that CO_2 streams, which are stored in geological formations, are intended to be retained in these formations permanently and will not lead to significant adverse consequences for the marine environment, human health and other legitimate uses of the maritime area.	Disposal of CO_2
Council Directive 2001/77/EC on the Promotion of Electricity from Renewable Energy Sources in the Internal Electricity Market (Renewables Directive) (2001) Implemented in the UK through the Renewables Obligation (2002)	Sets a target of 22% of electricity from renewable sources in the EC by 2010, with the UK target set at 10% by 2010.	Draft plan would contribute to attainment of targets
National		
This Common Inheritance September 1990	Stewardship and sustainable development should be an integral part of domestic and international policies	Consider the potential impact of plan alternatives on a range of indicators of sustainable development.
Securing the Future - UK Government sustainable development strategy (2005) See also One future – different paths (the UK's shared framework for sustainable development March 2005) agreed by the UK Government and the administrations in Scotland, Wales and Northern Ireland, to provide a consistent approach and focus across the UK:	Principles for sustainable development and shared priorities agreed across the UK, including the Devolved Administrations. Strategy contains: • an integrated vision building on the 1999 strategy – with stronger international and societal dimensions • five principles – with a more explicit focus on environmental limits • four agreed priorities – sustainable consumption and production, climate change, natural resource protection and sustainable communities, and	To support the UK Government Sustainable Development Strategy there are 68 national sustainable development indicators including 20 UK Framework Indicators, which are shared by the UK Government and the devolved administrations in Scotland, Wales and Northern Ireland.

Initiative	Main objectives/requirements	Implications
• Choosing Our Future: Scotland's Sustainable Development Strategy • The Sustainable Development Scheme and Sustainable Development Action Plan Wales • First Steps – towards sustainability. A sustainable development strategy for Northern Ireland	• an outcome focused indicator set and commitments to look at new indicators such as on wellbeing.	
Department of Trade and Industry – Sustainable Development Action Plan (05-06)	Departmental Sustainable Development Action Plan, drawn up to meet the Prime Minister's commitment in his Foreword to HMG's Sustainable Development Strategy – 'Securing the Future'. Includes Includes indicators, delivery actions, 2006 targets and work streams relevant to "Secure, Sustainable, Affordable Energy delivered through competitive markets"; "Sustainable Consumption and Production – increasing the business contribution to sustainable development and decoupling economic growth from environmental impacts"; "International Work/Globalisation - Contributing to sustainable development worldwide through the Doha Development Agenda and trade and the environment"; "BERR HQ Estate Management"; "BERR Agencies".	Context and indicators relevant to the SEA
Energy White Paper: Our energy future - creating a low carbon economy February 2003 The Energy Act 2004	Addresses issues of climate change and security of energy supplies. Reiterates UK Government policy that by 2010, 10% of UK electricity needs, should be met from renewable sources. Establishes four energy policy goals: • "To put ourselves on a path to cut the UK's CO_2 emissions by some 60% by about 2050,with real progress by 2020; • To maintain the reliability of energy supplies; • To promote competitive markets in the UK and beyond, helping to raise the rate of sustainable economic growth and to improve productivity; and • To ensure that every home is adequately and affordably heated." The Energy Act 2004 (implements commitments from the 2003 Energy White Paper) and supports the government's commitment to a sustainable and secure energy policy for the future. Provides the mechanism for the future designation of renewable energy zones outside territorial waters	Secretary of State's 2nd report to parliament (July 2006) on security of gas and electricity supply in Great Britain stated that North Sea oil and gas will continue to play a key role in helping to meet the UK's energy needs well beyond the next decade.
Our Energy Challenge Securing clean, affordable energy for the long-term.	UK Energy Review report published in 2006 with a view to stimulating wide ranging debate of the Government's four goals for the country's energy policy set in the 2003 White Paper	Consider the implications of the draft plan in terms of maintaining security of supply and climate change.
Energy – Its impact on the environment and society (updated 2006)	Outlines the environmental and social impacts of energy.	Information on emissions and other environmental consequences from energy production and supply and the social

Initiative	Main objectives/requirements	Implications
		impacts of domestic competition, service quality issues and fuel poverty.
Sustainable Energy Act 2003	A duty on the Gas and Electricity Markets Authority to undertake and publish impact assessments, including environmental assessments, before implementing significant proposals. A power for the Secretary of State to direct the Gas and Electricity Markets Authority to pay up to £60 million into the Consolidated Fund from surplus funds arising from the Non Fossil Fuel Obligation (NFFO). There is also a duty on the Secretary of State to use the same amount to promote renewable energy.	Consider the requirement for impact assessments to be made public and for the overriding national drive towards renewable energy.
The Energy White Paper: Meeting the Energy Challenge (May 2007)	Sets out the UK Government's international and domestic energy strategy to deliver energy policy goals: • To cut UK carbon dioxide emissions by some 60% by about 2050, with 26-32% by 2020 (against a 1990 baseline). • To maintain the reliability of energy supplies. • To promote competitive markets in the UK and beyond, helping to raise the rate of sustainable economic growth and to improve UK productivity. • To ensure that every home is adequately and affordably heated.	Consider contributions to greenhouse gas emissions and reliability of energy supplies as a result of licensing.
The Energy Bill (expected summer 2008) See also: Renewables Obligation (RO) (introduced 2002), currently undergoing reform under the Renewables Obligation Amendment Order (2007)	Will implement the legislative aspects of the Energy White Paper: meeting the energy challenge. The Energy Bill will help the UK to ensure secure supplies of energy, tackle climate change and enable better targeting of fuel poverty measures. The Bill includes: • Offshore gas supply infrastructure: strengthening the regulatory framework to enable private sector investment in order to help maintain reliable supplies of energy. • Carbon Capture and Storage: creating a regulatory framework to enable private sector investment in CCS projects. • Renewables: Strengthening the Renewables Obligation to drive greater and more rapid deployment of renewables in the UK. • Decommissioning of offshore renewables and oil and gas installations: strengthen statutory decommissioning provisions to minimise the risk of liabilities falling to the Government. • Improvements to offshore oil and gas licensing: to improve the licensing regime in response to changes in the commercial environment and enable BERR to carry out its regulatory functions more effectively. • Offshore electricity transmission. Amending powers such that Ofgem is able to run the offshore transmission licensing regime more effectively.	Context for draft plan

Initiative	Main objectives/requirements	Implications
Renewables Obligation (RO) (introduced 2002) Currently undergoing reform under the Renewables Obligation Amendment Order (2007)	Renewables obligations (ROs) require electricity providers to supply a specified and growing proportion of their sales from renewables. The UK proportion is set at 7.9% in 2007/08 rising in annual steps to 15.4% by 2015/16, and to remain at that level until 2027. The RO is currently under going reform which is likely to include targets of 10% by 2010 and 20% by 2020.	Consider implications of the draft on the ability to achieve Renewables Obligations.
Energy Wales: Route Map to a Clean, Low Carbon and more Competitive Energy Future for Wales Consultation document 2005	Sets out a vision for Wales to become a global showcase for clean energy production and energy efficiency.	The implications of draft plan on sustainability and maintaining security of supply
Marine Renewable Energy Strategy for Wales	Project (2007-2010) to develop a Welsh Marine Renewable Energy Strategic Framework covering sustainable energy extraction and CO_2 storage in Welsh seas with minimum environmental impact, taking account of the Welsh Assembly Government's sustainability duties.	Liaise and monitor progress
Strategic Energy Framework for Northern Ireland	Stated objective is to achieve a competitive, sustainable, reliable energy market at the minimum cost necessary in an all-island, UK and European context. The four goals are to: • reduce energy costs relative to other UK/EU regions • build competitive energy markets • protect our future by enhancing the sustainability of our energy supply and consumption • and maintain the reliability of energy supplies.	The implications of draft plan on sustainability and maintaining security of supply
Climate Change and Sustainable Energy Act 2006	The principal purpose of this Act is to enhance the UK's contribution to combating climate change. The Act requires the Secretary of State to submit an annual report to parliament regarding current levels of greenhouse gas emissions and the efforts being made to reduce them.	Consider implications of the draft plan in terms of greenhouse gas emissions and climate change.
Climate Change - the UK Programme (Nov 2006)	Sets out how to tackle climate change domestically and to secure agreement on action to reduce global greenhouse gas emissions. Programme expected to reduce the UK's emissions of greenhouse gases to 23-25% below base year levels and reduce the UK's carbon dioxide emissions to 15-18% below 1990 levels by 2010. Reduce carbon emissions by some 7-12Mt by 2010.	Consider implications of the draft plan in terms of greenhouse gas emissions and climate change.
Draft Climate Change Bill 2007	A Bill to set a target for the year 2050 for the reduction of targeted greenhouse gas emissions; to provide for a system of carbon budgeting; to establish a Committee on Climate Change; to confer powers to establish trading schemes for the purpose of limiting greenhouse gas emissions or encouraging activities that reduce such emissions or remove greenhouse gas from the atmosphere; to make provision about adaptation to climate change; to confer powers to make schemes for providing financial incentives to produce less domestic waste and to recycle more of what is produced; to amend	Consider implications of the draft plan in terms of greenhouse gas emissions and climate change.

Initiative	Main objectives/requirements	Implications
	the provisions of the Energy Act 2004 about renewable transport fuel obligations; to make other provisions about climate change; and for connected purposes.	
Changing our Ways Scotland's Climate Change Programme 2006 Securing a Renewable Future: Scotland's Renewable Energy	Quantifies Scotland's contribution to UK commitments on climate change, including the Kyoto target and more ambitious domestic goal on CO_2 emissions. Sets a Scottish Target to exceed Scotland's fair share in devolved policy areas by an additional 1 million tonnes of carbon (MtC) savings in 2010. A Scottish Marine Renewables Strategic Environmental Assessment was published in 2007	Consider contributions to greenhouse gas emissions as a result of licensing. Consider implications of draft plan in terms of potential future marine renewables
Environment Strategy for Wales 2006	Assembly Government's long term strategy for the environment of Wales has five main environmental themes: • Addressing climate change • Sustainable resource use • Distinctive biodiversity, landscapes and seascapes • Our local environment • Environmental hazards	The potential for impact of plan alternatives on a range of indicators of sustainable development
National Air Quality Strategy for England, Wales, Scotland and Northern Ireland – Working together for Clean Air (2000) Addenda 2003 and 2004	Aims to provide the best practicable protection to human health by setting health-based objectives for eight main air pollutants. Sets objectives for two pollutants (NO_2 and SO_2) to protect vegetation and ecosystems. Describes the current and likely future levels of air pollution in the UK Provides a framework to help everyone identify what they can do to improve air quality	Provides context for the consideration of potential air quality effects of resulting from potential activities (e.g. exhaust emissions, flaring and venting).
Biodiversity: UK Action Plan Scotland's Biodiversity: It's In Your Hands Northern Ireland Biodiversity Strategy & Habitat Action plans Working with the grain of nature: a biodiversity strategy for England	A strategy for the conservation and enhancement of biodiversity in the UK. Includes an agreement to promote awareness of biodiversity and encourage public involvement. Habitat and species action plans have been produced to protect some of our most threatened species of plants and animals. • Scotland and England have published national biodiversity strategies. • In Wales the focus for action will be through the preparation and implementation of local plans in partnerships (see also above) • The Northern Ireland Biodiversity Strategy was published in August 2002.	Consider implications of the draft plan for UK Biodiversity Action Plan.
The Nature Conservation (Scotland) Act 2004 Consultation – Making a difference for Scotland's species: A Framework for Action 2006	The Nature Conservation (Scotland) Act 2004 and the Biodiversity Strategy set out a 25 year plan imposing a wide-ranging duty on Scotland's public sector to conserve biodiversity and protect the nation's natural heritage. The strategy includes sectoral implementation plans which identify specific actions covering marine, rural and urban issues. This framework document builds upon the Nature Conservation (Scotland) Act 2004 and identifies certain priority species for Scotland.	Consider implications of the draft plan for Biodiversity Action Plan and protected sites

Initiative	Main objectives/requirements	Implications
Areas of Outstanding Natural Beauty	The designation of Areas of Outstanding Natural Beauty (AONB) was enabled by the National Parks and Access to the Countryside Act of 1949 and the Countryside and Rights of Way Act, 2000 added further regulation and protection. There are 40 AONBs in England and Wales (including one which straddles the border). There are also 9 AONBs in Northern Ireland, where a further two are proposed. The primary purpose of AONB designation is to conserve and enhance the natural beauty of the landscape, with secondary aims to meet the need for quiet enjoyment of the countryside, and to have regard for the interests of those who live and work there. In achieving these aims each AONB relies on planning controls and practical countryside management. The care of AONBs is entrusted to the local authorities, organisations, community groups and the individuals who live and work within them or who value them.	Consideration of land and seascape issues.
National Parks	National Parks are designated under the National Parks and Access to the Countryside Act, 1949 to preserve and enhance their natural beauty and promote their enjoyment by the public. The responsibilities of National Park Authorities were extended by the Environment Act, 1995 to include taking account of the economic and social needs of local communities. There are 14 National Parks in the UK, 9 in England, 2 in Scotland and 3 in Wales. Each National Park is managed by an independant National Park Authority with responsibility for preparing and producing the policies, management plans and guidance on all future development within the National Park.	Avoid significant impacts to areas of cultural and/or natural heritage value through assessment of vulnerable areas and potentially damaging activities.
Consultation on Proposals to Establish Scotland's First Coastal and Marine National Park 2006 National Parks (Scotland) Act 2000	Consultation identified 5 potential areas and responses to the consultation were published in March 2007. Following a change in administration, plans are currently on hold.	Consider implications of the draft plan for potential future National Parks
Heritage Protection for the 21st Century March 2007 White Paper	Proposals for reform of UK wide heritage protection, including: • Broadening the range of marine historic assets that can be protected. • Designation decisions to be made on the basis of special archaeological or historic interest. • Publication of new selection criteria for marine designation. • Introduction of simpler and clearer designation records. • Introduction of interim protection for marine historic assets. • Consideration of scope for a new, flexible consents system, including provision for	Consider implications for heritage

Initiative	Main objectives/requirements	Implications
	voluntary management agreements. • Introduction of a new statutory duty on the Receiver of Wreck to inform heritage bodies about marine historic assets.	
Safeguarding our seas: A strategy for the conservation and sustainable development of our marine environment (Defra) 2002 Seas of Change – Consultation 2003	Set out UK government policy for marine waters. Ecosystem based management	Consider the proposed plan in the context of the UK policy for the marine environment.
A Follow up to Seas the Opportunity: A Strategy for the Long Term Sustainability of Scotland's Coasts and Seas (2007) An Integrated Coastal Zone Strategy for Northern Ireland 2006 – 2026 Promoting an integrated approach to management of the coastal zone (ICZM) in England (2006 consultation) Making the Most of Wales' Coast Cleaner Coasts Healthier Seas, Working for a better marine environment, Our strategy for 2005-2011 (Environment Agency)	Set out marine and coastal strategies.	ICZM plans
Consultation on a UK Marine Bill (current) A Sea Change A Marine Bill White Paper (March 2007)	The draft marine Bill includes a range of provisions including: Marine Spatial Planning - priorities, guidance and environmental standards for the development and protection of marine resources Marine Consents - streamline and make more transparent the arrangements through which developments in the marine environment are consented Marine Management Organisation - considering the case for a potential new Marine Management Organisation Marine Nature Conservation - improved legal protection of marine biodiversity Coastal and Estuary Management - strategy for integrated coastal zone management Fisheries Management and Marine Enforcement - approach across the UK for combining fisheries and marine resource management	Consider the new requirements set out by the Marine Bill with regard to marine spatial planning, licensing, development consents and offshore nature conservation (including MPAs).
Waste Strategy for England 2007 The National Waste Strategy and the National Waste Plan (Scotland) Wise about Waste, The National Waste Strategy for Wales The Northern Ireland Waste Management Strategy 2006-2020	Set out the national strategies on waste with targets including reducing waste to landfill	Implications of draft plan in terms of achievement of reductions and other targets
Unitary Development Plans Structure Plans Regional Spatial Strategies Regional Development Strategies	Onshore regional planning strategies and plans set out frameworks for the future use and development of land in an area	Onshore interfaces for offshore developments

APPENDIX 2 – OFFSHORE WINDFARM KEY ENVIRONMENTAL CONTROLS

BERR is responsible for consenting under the Electricity Act, through its Offshore Renewables Consents Energy Development Unit, which acts as a central point for all offshore windfarm consent applications. BERR works closely with the Marine and Fisheries Agency, which licenses a number of activities in the marine environment on behalf of the Secretary of State for Environment, Food and Rural Affairs and in certain areas for Wales for the Welsh Assembly Government. In the Scottish Renewable Energy Zone, Scottish Ministers are responsible for Electricity Act consent decisions.

Licence/consent/permission	Legislation	Reason required
Essential		
FEPA Construction Licence	Food and Environment Protection Act 1985	For the placement of structures in the sea or in the seabed during construction.
Section 36 consent	Section 36 of the Electricity Act 1989	For the construction and operation of an offshore power station with a nominal capacity in excess of 1MW (within the territorial sea) or 50 MW (beyond the territorial sea).
Section 36A declaration	Section 36A of the Electricity Act 1989 (introduced by the Energy Act 2004)	To extinguish the common law public right of navigation and fishing on the site of a renewable energy installation.
CPA consent	Section 34 of the Coast Protection Act 1949	For any works which are likely to obstruct or cause a danger to navigation, and which involve a construction or improvement of any works or the deposit of any materials below the level of mean high water springs.
Project dependent		
Energy Act 2004	Section 95 of the Energy Act 2004	To establish safety zones regulating the right of navigation and fishing in the windfarm area.
FEPA disposal licence	Food and Environment Protection Act 1985	To dispose dredged material or other waste at sea.
Water Resources Act[13]	Section 109 of the Water Resources Act 1991	For works above mean spring low water in a watercourse defined as a main river by the Environment Agency.

[13] For Scotland see The Water Environment and Water Services (Scotland) Act 2003

Licence/consent/permission	Legislation	Reason required
Planning permission[14]	Town and Country Planning Act 1990	For onshore works (e.g. substation construction).
Section 37 consent	Section 37 of the Electricity Act 1989	For National Grid works associated with onshore sub-stations.
Land Drainage Act[15]	Section 23 of the Land Drainage Act 1991	For works in watercourses regulated by the Internal Drainage Board.
Port Authority licence	Relevant Port Authority legislation	For works below mean spring high water within the jurisdiction of a statutory port authority.

Following the *Energy Act 2004*, the Department has introduced a decommissioning scheme for offshore wind and marine energy installations. Guidance: Decommissioning of offshore renewable energy installations under the Energy Act 2004 http://www.dti.gov.uk/files/file35754.pdf

Section 95 and Schedule 16 of the *Energy Act 2004* set out the basic requirements for applying to the Secretary of State (for Business, Enterprise and Regulatory Reform) for a safety zone to be placed around or adjacent to an offshore renewable energy installation (OREI). Following public consultation, new regulations – '*The Electricity (Offshore Generating Stations) (Safety Zones) (Applications Procedures and Control of Access) Regulations 2007 (SI No 2007/1948)* - were introduced in August 2007. For safety zone guidance see http://www.berr.gov.uk/energy/markets/consents/guidance/page27939.html.

[14] For Scotland see Planning etc (Scotland) Act 2006 Town and Country Planning (Scotland) Act 1997

[15] For Scotland Flood Prevention and Land Drainage (Scotland) Act 1997

APPENDIX 3 – OFFSHORE OIL & GAS KEY ENVIRONMENTAL CONTROLS

BERR Environmental Management Team and Environmental Inspectorate

BERR's Offshore Environment Unit is split into two teams, the Environmental Management Team and the Offshore Environmental Inspection Team.

The Environmental Management Team (EMT) is responsible for the environmental assessment of offshore oil and gas activities (and offshore renewables), and for the administration of environmental legislation such as the *Offshore Petroleum Production and Pipelines (Assessment of Environmental Effects) Regulations 1999*; the *Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001*; the *Offshore Combustion Installations (Prevention and Control of Pollution) Regulations 2001*; the *Offshore Chemicals Regulations 2002*; and the *European Union Emissions Trading Scheme Regulations 2003*.

The EMT coordinates the review of applications or submissions required under various legislation, for example environmental statements, applications for directions confirming that an environmental statement is not required, applications for chemical permits, and applications to undertake seismic surveys and application for combustion installation permits.

The EMT is also responsible for providing environmental advice and increasing the environmental awareness of operators, and for encouraging operators to use best environmental practice (BEP) throughout their activities.

The Offshore Environmental Inspectorate is responsible for ensuring that operators comply with environmental legislative requirements and ensuring that new licence applicants have satisfactory procedures in place to operate in a manner which reflects best environmental practice. In support of this, all offshore installations are inspected and operators are encouraged to use Best Environmental Practice (BEP) in all activities.

The Offshore Inspectorate Unit also carries out investigations into breaches of legislation.

In consenting decisions BERR takes advice from a range of agencies and departments for example the JNCC, CEFAS, FRS, DoENI, MoD etc

Any development within nearshore waters will be subject to controls additional to those described above, for example, discharges to controlled waters would also come under the remit of the Scottish Environment Protection Agency, Environment Agency or DoENI. Onshore waste disposal and the Radioactive Substances Act are also the remit of these agencies.

Requirement for Environmental Management Systems

All operators controlling the operation of offshore installations on the UKCS are required to have in place an independently verified Environmental Management System designed to achieve:

- The environmental goals of the prevention and elimination of pollution from offshore sources and of the protection and conservation of the maritime area against other adverse effects of offshore activities
- Continual improvement in environmental performance

and, more generally, to achieve the objectives of the OSPAR Offshore Strategy.

OSPAR currently recognises that the following international standards contain the necessary elements:

ISO 14001: 2004 environmental management systems - specifications with guidance for use; and

Regulation (EC) No 761/2001 of the European Parliament and the Council allowing voluntary participation by organisations in a Community Eco-management and Audit Scheme (EMAS).

Appropriate assessment

The *Offshore Petroleum Activities (Conservation of Habitats) Regulations, 2001 (as amended 2007)* implement European Directives for the protection of habitats & species in relation to offshore oil and gas activities. An Appropriate Assessment may be required prior to issue of consent dependent on the potential of the activity to have a significant effect on a Natura 2000 site.

Consent to conduct a geophysical survey

Offshore seismic and other geophysical surveys must be carried out under the terms of an exploration or production licence. Surveys require a consent from Government (*Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001 (as amended 2007*)) - applied for by submission of a Petroleum Operations Notice No 14A (PON14A). An assessment is appended to consent applications for areas important for marine mammals.

The PON14A application is reviewed by BERR and its statutory advisers who may recommend consent conditions. Consideration is given to the requirement for an Appropriate Assessment in relation to the potential for effects on SACs. The PON14A is subject to a wider notification process involving fishermen and others who may have interests in the area. Application of JNCC guidelines for minimising acoustic disturbance to marine mammals from seismic surveys is mandatory. A report of the survey and marine mammal observations is submitted to the JNCC.

Shallow gas (rig site) surveys are subject to the consenting requirements for geophysical surveys and JNCC marine mammal guidelines – see above.

Exploration and appraisal drilling

Consent to locate a rig

Consent to locate - *The Coast Protection Act 1949* (as amended), provides that where obstruction or danger to navigation is caused or is likely to result, the prior written consent of the Secretary of State for BERR is required for the siting of the offshore installation - whether mobile or permanent. In practice, this means that consent must be obtained for each drilling operation and for all offshore production facilities. The application process includes risk assessment and consultation.

A Crown Estate lease may also be required in territorial waters.

Environmental Imact Assessment

The *Offshore Petroleum Production and Pipe-lines (Assessment of Environmental Effects) Regulations 1999 (as amended)* require an environmental impact assessment and a public consultation document, an Environmental Statement (ES) to be submitted for certain projects. Some projects (including the drilling of wells, extended well tests) may not need an ES to be prepared if a preliminary assessment demonstrates to the satisfaction of the Secretary of State that the project is unlikely to cause a significant adverse environmental impact. In such circumstances a direction from the Secretary of State may be sought that an ES is not required using a PON15B. The PON15B must contain sufficient information about the proposed project, its expected location and an environmental assessment to provide a basis for a determination to be made. An Environmental Statement (ES) is required for exploration drilling in environmentally sensitive areas. In addition, the Offshore Petroleum Activities (Conservation of Habitats) Regulations, 2001 (as amended 2007) implement European Directives for the protection of habitats & species in relation to offshore oil & gas activities.

Consent to use and discharge chemicals during drilling

A permit is required in advance for the use of drilling and other chemicals offshore (*Offshore Chemicals Regulations 2002*). Permit application (the PON15B is the mechanism for this) includes mandatory risk assessment. All chemicals must have been tested and pre-screened and included on the approved CEFAS list. Any variation in use from the permit must have prior approval. Operators must report any permit breach to the regulator if prior approval has not been obtained. Chemical use and discharge must be reported at the end of the activity.

No organic phase drilling fluids may be used without prior authorisation (normally through the PON 15/Environmental Statement process), and discharge of cuttings to sea with a concentration >1% by weight of oil on dry cuttings is prohibited. (OSPAR Decision 2000/3 on the Use of Organic-Phase Drilling Fluids (OPF) and the Discharge of OPF-Contaminated Cuttings). Such OPF cuttings are reinjected to deep rock strata or shipped to shore for treatment/oil recovery and disposal at licensed sites.

Consent to make discharges containing reservoir fluids

The *Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations* came into force during 2005 and have updated and largely superseded the *Prevention of Oil Pollution Act, 1971* (POPA). A system of permits for oil discharges has been introduced to replace the POPA exemptions and more wide-ranging powers have been given to inspectors. Operators are required to regularly make reports of actual oil discharge. A Term Permit is required for any discharge of reservoir oil.

Machinery space drainage

The *Merchant Shipping (Prevention of Oil Pollution) Regulations, 1996 (as amended)* give effect to Annex I of MARPOL 73/78 (prevention of oil pollution) in UK waters. They address oily drainage from machinery spaces on vessels and installations. Vessels and installations are required to hold a valid UKOPP (UK Oil Pollution Prevention) or IOPP (International Oil Pollution Prevention) Certificate.

Oil spill contingency planning for mobile drilling units

An Approved Oil Spill Contingency Plan is required to cover the drilling of a well. The plan must meet the requirements of the *Merchant Shipping (Oil Pollution Preparedness, Response and Co-operation Convention) Regulations, 1998*, and the *Offshore Installations (Emergency Pollution Control) Regulations 2002*. It must include an assessment of spill risk, response arrangements, and details of actions, interfaces training and exercises.

Vessels and drilling rigs are required to hold a current, approved Shipboard Oil Pollution Emergency Plan (SOPEP) in accordance with guidelines issued by the Marine Environment Protection Committee of the International Maritime Organisation.

Developments and production

Installation of production facilities

The *Petroleum Act, 1998* provides the basis for granting licences to explore for and produce oil and gas. Under the terms of a Production Licence, licence holders require the authorisation of the Secretary of State before installing facilities for producing hydrocarbons and other activities.

Environmental impact assessment for developments

Approval for **field development plans** and **consent for wells**, **extended well tests**, **incremental projects** and **production consents** are contingent on complying with the requirements of the *Offshore Petroleum Production and Pipe-lines (Assessment of Environmental Effects) Regulations 1999 (as amended).*

Environmental Statement (ES) is mandatory for certain projects including new developments with expected production >500 tonnes of oil/day or 500,000 cubic metres of gas/day and new pipelines with expected production >40km in length and 800mm in diameter.

A number of projects (including the drilling of development wells) may not need an ES to be prepared if a preliminary assessment demonstrates to the satisfaction of the Secretary of State that the project is unlikely to cause a significant adverse environmental impact. In such circumstances a direction from the Secretary of State may be sought that an ES is not required using the appropriate Petroleum Operations Notice (PON15). The PON15 must, as far as possible, be a stand alone document and contain sufficient information about the proposed project, its expected location and an environmental assessment to provide a basis for a determination to be made.

Consent to locate facilities

The *Coast Protection Act 1949 (as amended*), provides that where obstruction or danger to navigation is caused or is likely to result, the prior written consent of the Secretary of State for the Department for BERR is required for the siting of the offshore installation - whether mobile or permanent. In practice, this means that consent must be obtained for each drilling operation and for all offshore production facilities. The application process includes risk assessment and consultation.

A Crown Estate lease may also be required in territorial waters.

Safety zones

When surface structures (fixed and floating installations) become operational, safety zones with a radius of 500m are automatically created under the *Petroleum Act, 1998*. In the case of subsea facilities, application must be made to the Secretary of State requesting that a safety zone be established.

Use and discharge of chemicals

A permit is required in advance for the use of chemicals offshore including drilling, well workover, production and pipeline chemicals (*Offshore Chemicals Regulations 2002*). Permit application (PON15B,C,D or F is the mechanism for this) includes mandatory risk assessment. Any variation in use from permit must have prior approval. Chemical use and discharge must be reported at the end of the activity. Chemicals are ranked by hazard, based on a PEC:PNEC (Predicted Effect Concentration : Predicted No Effect Concentration) approach.

Authorisation to install and operate a pipeline

Pipeline Works Authorisation is required from BERR for the use of, or works for, the construction of a submarine pipeline. The authorisation may include conditions for the design, route, construction and subsequent operation of the pipeline and requires a full consultation process.

A licence is required under the *Food and Environment Protection Act 1985* for all deposits in the marine environment (on or under the seabed), unless specifically exempt from the requirement (*Deposits in the Sea (Exemptions) Order 1985*), or the deposits are controlled by other legislation. For example, licences are required for injection of produced water or drill cuttings away from the site of production, and the deposit of rock on the seabed following pipeline installation.

Produced water

OSPAR Recommendation 2001/1 (as amended) for the Management of Produced Water from Offshore Installations provides for a reduction in the discharge of oil in produced water by 15% over a five year period and a lowering of the discharge concentration from each installation to 30mg/l over the same period. The recommendation also includes a presumption against the discharge to sea of oil in produced water from new developments.

The *Offshore Petroleum Activities (Oil Pollution Prevention and Control) Regulations* came into force during 2005 and have updated and largely superseded the *Prevention of Oil Pollution Act, 1971* (POPA).

A system of permits for oil discharges has been introduced to replace the POPA exemptions, as well as introducing a Dispersed Oil in Produced Water Trading Scheme and more wide-ranging powers have been given to inspectors. Operators are required to make regular reports of actual oil discharge.

The guidance to these regulations states that "…*the point of departure for consideration of a new tie-back or drilling centre (which has commenced production after the commencement of this Scheme) is that there shall be no discharges of dispersed oil in produced water from the host offshore installation attributable to the new tie-back or and drilling centre*."

The regulations are a mechanism to continue implementation on the UKCS of OSPAR Recommendation 2001/1 (as amended) and made provision for the introduction of the dispersed oil in produced water trading scheme.

Machinery space drainage

The *Merchant Shipping (Prevention of Oil Pollution) Regulations, 1996* give effect to Annex I of MARPOL 73/78 (prevention of oil pollution) in UK waters and address oily drainage from machinery spaces on vessels and installations.

Consent to flare or vent any gas

Gas may not be vented or flared unless under a flare or vent consent from BERR. The presumption is against disposal of gas by flaring.

Emissions from power generation etc

The *Offshore Combustion Installations (Prevention and Control of Pollution) Regulations, 2001 (as amended)* introduced Integrated Pollution Prevention and Control (IPPC) to offshore oil and gas combustion installations (power generation, turbines, fired heaters etc) with a combined total rated thermal input exceeding 50 MW. IPPC Permit conditions include provisions based on best available techniques, emission limits, and monitoring requirements.

Emissions trading

Under the *Greenhouse Gas Emissions Trading Scheme Regulations 2003 and Greenhouse Gas Emissions Trading Scheme Regulations 2005*, combustion installations > 20 MW(th) input require a permit to discharge CO_2. National Allocation Plan sets out caps for all UK installations in the Scheme based on CO_2. The first Phase I will end in December 2007 and includes emissions from turbines, diesels and fired heaters form offshore oil and gas. Phase II of the Scheme covers the Kyoto commitment period 2008 to 2012. For Phase II, the UK intends to extend the scheme to include flaring from offshore oil and gas as well.

Oil spill contingency planning for developments

An **Approved Oil Spill Contingency Plan** is required to cover all offshore installations and oil handling facilities (e.g. pipelines). The plan must be submitted for approval at least two months in advance of operations. It must include an assessment of spill risk, response arrangements, and details of actions, interfaces, training and exercises as required by the *Merchant Shipping (Oil Pollution Preparedness, Response and Co-operation Convention) Regulations, 1998*, and the *Offshore Installations (Emergency Pollution Control) Regulations 2002.*

Reporting of oil or chemical spills

Operators are required to **report all oil and chemical spills**, regardless of size to the Coastguard, BERR and other relevant authorities using **PON1**.

Items lost overboard

Every reasonable attempt should be made to recover other items lost overboard (PON2).

Radioactive Substances Act

Onshore and offshore storage and disposal of **naturally occurring radioactive materials** (NORM) is regulated under the *Radioactive Substances Act 1993* and operators are required to hold, for each relevant installation, **an authorisation** to store and dispose of radioactive waste such as low specific activity (LSA) material deposited in vessels and pipework or discharged in produced water. The Authorisation specifies the route and method of disposal. Records of disposals are required. The use, storage and disposal of **radioactive sources** are regulated under the same legislation.

A **registration certificate** is required to keep and use sources and records must be kept.

The regulators are in Scotland, the Scottish Environment Protection Agency; in England and Wales, the Environment Agency and in Northern Ireland, the Industrial Pollution & Radiochemical Inspectorate (DoENI).

Waste disposal

Wastes, except ground food waste, must be stored and taken to shore for disposal (*Merchant Shipping (Prevention of Pollution by Garbage) Regulations, 1998*). Food ground to particles 25mm or less may be discharged overboard but only if 12 nautical miles or more offshore. Installations and vessels are required to have a Garbage Management Plan or equivalent.

Although the *Environmental Protection Act 1990* does not extend to offshore installations, operators must ensure that offshore waste is handled and disposed onshore in accordance with the **Duty of Care** introduced by the Act and other onshore legislation such as Regulations applying to Special Waste (Hazardous Waste in England and Wales).

Wastes for onshore disposal must be identified, described and labelled accurately, kept securely and safely during storage and transferred only to authorised persons with records of transfers (waste transfer notes) which are kept for at least two years (longer for Special/Hazardous Wastes). Carriers and waste handling sites require licensing.

Decommissioning programmes

Under the *Petroleum Act 1998*, operators proposing to decommission an installation must submit a **Decommissioning Programme** including an Environmental Impact Statement to BERR for approval prior to any works being commenced. Consultation and monitoring is also required. BERR guidance indicates a presumption that offshore installations will be re-used, recycled or disposed of on land and that any exceptions to that general rule will be assessed individually in accordance with the provisions of OSPAR Decision 98/3.