SCOTTISH NATURAL HERITAGE

Moray Firth
Special Area of Conservation

Advice under Regulation 33(2)

of The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended)

30 March 2006

About this Package:

Section 1 of this document provides a general introduction and Sections 2 and 3 fulfil Scottish Natural Heritage's duties under Regulation 33(2) of The Conservation (Natural Habitats, &c.) Regulations 1994 (Habitats Regulations) (as amended by The Conservation (Natural Habitats, &c.) Amendment (Scotland) Regulations 2004). This requires that SNH advises other relevant authorities as to the conservation objectives of the site (see Section 2) and any operations which may cause deterioration of natural habitats or the habitats of species, or disturbance of species, in so far as such disturbance could be significant, for which the site has been designated (see Section 3).

Annexes A and B provide supplementary, non-statutory information. Annex A gives information on the sensitivity and vulnerability of the qualifying interests: 'Bottlenose dolphins *Tursiops truncatus*' and 'Sandbanks which are slightly covered by sea water all the time'. Annex B gives some indication as to the extent, distribution, structure, function and processes that affect the qualifying interests. It should be noted that this is indicative and not definitive, and as more site information is gathered these sections may be updated.

The Moray Firth was designated by Scottish Ministers as a Special Area of Conservation (SAC) on 17th March 2005. This site is also referred to as a 'European site' (Regulation 10(1)). A 'European marine site' is a 'European site' which is wholly or in part marine (Regulation 2(1)) and is hereafter referred to as a marine SAC.

Although the following statutory information is for the benefit of relevant authorities (see below for explanation of their role), it can also be used by other competent authorities when assessing plans or projects.

1 Introduction

1.1 Background

The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended by The Conservation (Natural Habitats, &c.) Amendment (Scotland) Regulations 2004), commonly referred to as the Habitats Regulations, transpose the EC Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats Directive) into domestic legislation. Regulation 33(2) gives Scottish Natural Heritage a statutory responsibility to advise other relevant authorities as to the conservation objectives for marine SACs in Scotland, and any operations which may cause deterioration of natural habitats or the habitats of species, or disturbance of species for which the site has been designated.

This document presents the Regulation 33 advice, plus supporting information, for the Moray Firth SAC to assist relevant and competent authorities, local interest groups and individuals in considering management (including the management scheme) of the site. This advice, plus supporting information, will also help to determine the scope and nature of any "appropriate assessment", which the Habitats Directive requires to be undertaken for proposed plans and projects that are not connected to the conservation management of the site and are considered likely to have a significant effect. Where necessary Scottish Natural Heritage will also provide more detailed advice to relevant, and other competent, authorities to inform assessment of the implications of any such plans or projects.

1.2 Relevant and competent authorities

Within the context of a marine SAC, a relevant authority is a body or authority that has a function in relation to land or waters within or adjacent to the site (Regulation 5) and include: a nature conservation body; a local authority; water undertakers; a navigation authority; a harbour authority; a lighthouse authority; a river purification board (SEPA); a district salmon fishery board; and a local fisheries committee. All r*elevant authorities* are c*ompetent authorities*.

A competent authority is defined in Regulation 6 as "any Minister, government department, public or statutory undertaker, public body of any description or person holding a public office". In the context of a plan or project, the *competent authority* is the authority with the power or duty to determine whether or not the proposal can proceed.

1.3 The role of relevant authorities

The Habitats Regulations require relevant authorities to exercise their functions so as to secure compliance with the Habitats Directive. A management scheme may be drawn up for each marine SAC by the relevant authorities as described under Regulation 34. For marine SACs with overlapping interests, a single management scheme may be developed.

Where a management scheme is in place the relevant authorities must ensure that all plans for the area integrate with it. Such plans may include shoreline

management plans, Sites of Special Scientific Interest (SSSI) management plans, local Biodiversity Action Plans (BAPs) and sustainable development strategies for estuaries. This must occur to ensure that only a single management scheme is produced through which all relevant authorities exercise their duties under the Habitats Regulations.

1.4 Responsibilities under other conservation designations

Other designations within or adjacent to the Moray Firth marine SAC include: Dornoch Firth and Morrich More SAC; Culbin Bar SAC; Special Protection Areas (SPAs) (Cromarty Firth; Inner Moray Firth; Moray and Nairn Coast; Dornoch Firth and Loch Fleet); Ramsar sites (Cromarty Firth; Dornoch Firth and Loch Fleet; Inner Moray Firth; Moray and Nairn Coast); Sites of Special Scientific Interest (SSSIs) (Beauly Firth; Clashach-Covesea; Cromarty Firth; Culbin Sands, Forest and Findhorn Bay; Dornoch Firth; Dunrobin Coast; Helmsdale Coast; Inverbrora; Loch Fleet; Longman and Castle Stuart Bays; Lossiemouth Shore; Masonshaugh; Morrich More; Rosemarkie to Shandwick Coast; Tarbat Ness; Whiteness Head). The obligations of relevant, and other competent authorities and organisations under such designations and legislation are not affected by the advice contained in this document.

1.5 Conservation objectives

Section 2 of this document contains the conservation objectives for the Moray Firth marine SAC, a site which consists entirely of marine qualifying interests. The conservation objectives have been developed to ensure that the obligations of the Habitats Directive are met.

1.6 Advice as to operations

The operations, set out in Section 3, are those which SNH advise may cause deterioration of natural habitats or the habitats of species, or disturbance of species, for which the site has been designated. This does not necessarily mean that the operations are *presently* ongoing or, if they are, that they are at levels incompatible with the conservation objectives.

1.7 Plans and projects

The Habitats Regulations require that, where an authority concludes that a development proposal is unconnected with the nature conservation management of a Natura site and is likely to have a significant effect on that site, it must undertake an appropriate assessment of the implications for the qualifying interest for which the area has been designated.

1.8 Review of Consents

Competent authorities are required by the Habitats Regulations to undertake a review of all consents and permissions for activities affecting the site as soon as reasonably practicable after it becomes a European site. This will have implications for discharge and other consents, which will need to be reviewed in the light of the conservation objectives.

2 Statutory advice given by SNH under Regulation 33(2) Conservation Objectives

2.1 Introduction

This section provides conservation objectives, which have been developed by SNH in agreement with the Scottish Executive and are to be provided to the relevant authorities in fulfilment of the requirements under Regulation 33(2) of The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended by The Conservation (Natural Habitats, &c.) Amendment (Scotland) Regulations 2004).

The conservation objectives ensure that the obligations of the Habitats Directive are met; that is, there should not be deterioration or significant disturbance of the qualifying interest. This will also ensure that the integrity of the site is maintained and that it makes a full contribution to achieving favourable conservation status for its qualifying interests.

The Moray Firth marine SAC has been designated for the species 'Bottlenose dolphin *Tursiops truncatus'* which is listed on Annex II of the Habitats Directive, as well as for the Annex I habitat 'Sandbanks which are slightly covered by sea water all the time'.

The Moray Firth SAC consists entirely of marine qualifying interests.

The conservation objectives for the Moray Firth marine SAC are as follows:

To avoid deterioration of the habitats of the qualifying species (**Bottlenose dolphin *Tursiops truncatus***) or significant disturbance to the qualifying species, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for the qualifying interest.
To ensure for the qualifying species that the following are established then maintained in the long term:
• Population of the species as a viable component of the site
• Distribution of the species within the site
• Distribution and extent of habitats supporting the species
• Structure, function and supporting processes of habitats supporting the species
• No significant disturbance of the species

To avoid deterioration of the qualifying habitat (**Sandbanks which are slightly covered by sea water all the time**) thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to achieving favourable conservation status for the qualifying interest.
To ensure for the qualifying habitat that the following are maintained in the long term:
• Extent of the habitat on site
• Distribution of the habitat within site
• Structure and function of the habitat
• Processes supporting the habitat
• Distribution of typical species of the habitat
• Viability of typical species as components of the habitat
• No significant disturbance of typical species of the habitat

3 Statutory advice given by SNH under Regulation 33(2) Operations

The following advice as to operations to be considered by relevant authorities is provided by SNH with respect to the Moray Firth marine SAC in fulfilment of the requirements under Regulation 33(2)(b) of The Conservation (Natural Habitats, &c.) Regulations 1994 (as amended by The Conservation (Natural Habitats, &c.) Amendment (Scotland) Regulations 2004). The advice identifies those operations, either on or affecting the SAC, which may cause deterioration of the marine natural habitats or the habitats of species, or disturbance of species, for which the site has been designated. These include operations that may not be currently affecting the Moray Firth marine SAC.

Operations (in alphabetical order)

Aquaculture
Finfish farming
Shellfish farming

Coastal Development
Agriculture
Civil engineering

Discharges / Waste Disposal
Discharge of commercial effluent
Discharge of sewage
Marine litter

Fishing
Hydraulic fishing
Mobile gear: Dredging
Mobile gear: Trawling
Static gear: Netting

Marine Development
Aggregate extraction
Maintenance dredging
Offshore renewable energy developments
Oil exploration

Marine Traffic
Boat maintenance and antifoulant use
Commercial vessels

Military Activity & Civil Aviation
Discharges & run-off
Sonic pollution

Recreational Activities
Boat anchorages
Boat moorings
Other recreational activities

Scientific Research
Scientific research

Annex A

Non-statutory advice given by SNH
Sensitivity and Vulnerability of the Moray Firth SAC 'Bottlenose dolphins *Tursiops truncatus*' and 'Sandbanks which are slightly covered by sea water all the time' to activities listed in Section 3

The comments below are general and should not be considered to be definitive. They are made without prejudice to any comments SNH may provide or any assessment that may be required for specific proposals to be considered by a relevant authority. The level of any impact will depend on the location and intensity of the relevant activity. This advice is provided to assist and focus the relevant authorities in their consideration of the management of these operations.

NB. References to deterioration in the comments section below should be taken to mean *deterioration of all the qualifying interests*. If specific qualifying interests are particularly at risk they may be referred to individually where relevant.

Operations	Comments
Aquaculture	
Finfish farming	**Dolphins:** Finfish farming has the potential to cause deterioration of the habitat supporting the dolphins mainly through discharge of toxic chemicals and fish medicines. These may affect water quality and subsequently affect dolphins using waters adjacent to finfish farm cages through impairment of reproductive or immune systems. Discharge of chemical treatments and medicines also has the potential to affect the distribution or abundance of dolphin prey species. In addition, hand-feeding discarded fish to dolphins may cause behavioural changes and lead to the transfer of fish pathogens and human pathogens to dolphins, and toxic chemicals or medicines along the food chain. Finfish farming also has the potential to cause disturbance to dolphin populations through the use of acoustic deterrent devices (ADDs) or the use of nets to re-capture escaped fish, the latter of which could result in entanglement.
	Sandbanks: Finfish farming has the potential to cause deterioration of sandbank habitats and communities through changes in water quality (organic enrichment), smothering from waste material and physical disturbance from moorings. There is also potential for accidental introduction of new non-native species and increasing the spread of existing non-native plants and animals (e.g. *Caprella mutica* Japanese skeleton shrimp), which are already widely distributed in the UK (although there are no records of this non-native occurring in the Moray Firth SAC). Invasive species have the potential to cause deterioration of the qualifying interests by altering community structure and quality. The associated environmental effects mentioned above are usually localised and may be exacerbated in areas of low tidal exchange.

Shellfish farming	**Sandbanks:** This activity has the potential to cause deterioration of the sandbank habitats and communities through physical disturbance (e.g. installation of mooring blocks and continued scouring by riser chains) and changes in community structure caused by smothering from pseudo-faeces (undigested waste products) and debris (including dead shells) falling from the farm. There is also potential for accidental introduction of new non-native species and increasing the spread within the UK of existing non-native plants and animals (e.g. *Sargassum muticum* Wireweed) through importation and translocation of shellfish stocks. Invasive species have the potential to cause deterioration of the qualifying interests by altering community structure and quality. The associated environmental effects mentioned above are usually localised and may be exacerbated in areas of low tidal exchange.
Coastal Development	
Agriculture	**Dolphins:** Diffuse run-off of from agricultural practices (such as pesticides and fertilisers) has the potential to cause deterioration through impairment of dolphin's reproductive or immune systems. There is also potential to affect prey availability through toxic impacts caused by nutrient enrichment from discharge of organic and inorganic pollutants.
	Sandbanks: Diffuse run-off from agricultural practices has the potential to cause deterioration of sandbank habitats and communities through the smothering of qualifying interests, and / or altering water quality through discharge of organic and inorganic pollutants.
Civil engineering	**Dolphins:** The construction and maintenance of structures, both within and adjacent to the sea have the potential to cause disturbance to dolphin populations, especially if undertaken at critical times of the year. Excessive underwater noise has the potential to cause disturbance to dolphin populations through: interference with communication, navigation and foraging; or disruption of social bonds. Sudden loud noise or harassment may elicit a stress response in the dolphins. Increased / prolonged periods of turbidity resulting from civil engineering activities may affect availability of prey species or the dolphins' ability to catch them. Impoverishment of seabed communities may lead to degradation of food chains.
	Sandbanks: The construction and maintenance of structures, both within and adjacent to the sea have the potential to cause direct loss and / or disturbance of sandbank habitats and communities as tidal currents, and therefore coastal processes, may be affected. For example coastal structures such as linear coastal defences or erosion control measures (e.g. gabions) can affect local sediment suspension and deposition patterns and therefore have the potential to cause deterioration of sandbank habitat through smothering. Installation, replacement and maintenance of undersea cables or pipes have the potential to cause direct loss or disturbance of sandbank habitats as well as local deterioration of associated habitats and communities.
Discharges / Waste Disposal	
Discharge of commercial effluent	**Dolphins:** Commercial effluent has the potential to cause deterioration of dolphin populations through impairment of their reproductive or immune systems, carcinogenic effects, increased risk of disease, or through toxic impacts on prey species. This would be through the effects of toxic effluents and / or nutrient enrichment, which may cause subsequent changes in community structure.
	Sandbanks: Commercial effluent has the potential to cause deterioration of sandbank habitats and communities. This would be through the effects of pollution and / or nutrient enrichment, which may cause subsequent changes in community structure.

Discharges / Waste Disposal contd.		
Discharge of sewage		**Dolphins:** Sewage effluent (whether treated or untreated) has the potential to cause deterioration of dolphin populations, particularly in areas frequented by this species, through increased risk of disease or through adverse impacts on prey species. This could be through the effects of toxic effluents or chemicals used in the treatment process, pathogens and / or nutrient enrichment, which may cause subsequent changes in community structure.
		Sandbanks: Sewage effluent (whether treated or untreated) has the potential to cause deterioration of sandbank habitats and communities. This would be through the effects of pollution and / or nutrient enrichment, which may cause subsequent changes in community structure.
Marine litter		**Dolphins:** Marine litter has the potential to cause deterioration of the dolphin population through entanglement or ingestion. Larger pieces of debris floating on the surface or on the seabed may cause injury through collision.
Fishing		
N.B. Dolphins: The taking of fish as a commercial activity can result in increased competition for food resources and this in turn may lead to a reduction in prey availability for dolphins. This could result in reduced survival and breeding success of the dolphins and / or the relocation of dolphins to other areas.		
Hydraulic fishing		**Sandbanks:** Hydraulic fishing has the potential to cause deterioration of the sandbank habitats and communities by disturbing large volumes of sediment, which could result in smothering or direct loss of the qualifying interests. This activity also has the potential to cause deterioration of sandbanks by affecting target species and associated communities.
Mobile gear: Dredging		**Sandbanks:** Benthic dredging has the potential to cause deterioration of sandbank habitats and communities through direct contact with dredge gear. Other issues include impacts on water quality or target species, which may indirectly cause deterioration to the sandbanks.
Mobile gear: Trawling		**Sandbanks:** Benthic trawling has the potential to cause deterioration of sandbank habitats and communities through direct contact with trawling gear, and disturbance and affects on the water column, target species and associated animal and plant communities.
Static gear: Netting		**Dolphins:** Activities involving nets, particularly gill, tangle, drift and bottom set nets have the potential to cause disturbance, injury and mortality to dolphins through entanglement.
Marine Development		
Aggregate extraction		**Sandbanks:** Extraction of subtidal sand and gravel has the potential to cause deterioration of the sandbank habitats and communities through direct loss and impact within the extraction site. Such operations could also result in the redistribution and deposition of fine particulate sediment, which could alter the sediment characteristics of adjacent areas and their associated plant and animal communities.

Marine Development contd.		
Maintenance dredging		**Dolphins:** Dredging and disposal of materials containing contaminants e.g. heavy metals, oils, TBTs, PCBs and pesticides have the potential to cause deterioration through impairment of dolphin's reproductive or immune systems, particularly in areas frequented by this species, and / or at times of the year when dolphins are most likely to be present. Disposal of material could result in physical injury or mortality through collisions. Excessive underwater noise has the potential to cause disturbance to dolphin populations through: interference with communication, navigation and foraging; or disruption of social bonds. Sudden loud noise may elicit a stress response in the dolphins. Increased / prolonged periods of turbidity resulting from maintenance dredging activities could affect availability of prey species or the dolphins' ability to catch them. Impoverishment of seabed communities may lead to degradation of food chains.
		Sandbanks: Capital and maintenance dredging and subsequent disposal has the potential to cause deterioration of sandbank habitats and communities through direct loss, smothering, possible contamination and disturbance of the qualifying interests.
Offshore renewable energy developments		**Dolphins:** Offshore renewable energy developments e.g. wind farms, both within and adjacent to the SAC, have the potential to cause disturbance or injury to dolphins during construction, maintenance and operation of such developments.
		Sandbanks: Offshore renewable energy developments e.g. wind farms, both within and adjacent to the SAC have the potential to cause direct loss and / or deterioration of sandbank habitats and communities as tidal currents, and therefore coastal processes, are affected.
Oil exploration		**Dolphins:** Oil exploration has the potential to cause disturbance or deterioration of dolphin populations or their prey through oil-related development and activities, especially those that may result in seismic activities, the accidental discharge of oil, increased vessel movements, de-fouling of rigs and de-commissioning of installations and infrastructure. Local authority emergency plans and oil spill contingency plans should take into account specific qualifying interests and recognise the importance of marine SACs should such incidents occur.
		Sandbanks: Activities associated with oil exploration and maintenance include the laying and maintenance of oil pipelines, de-fouling of ships and rigs, transfer of oil from vessels. Such activities have the potential to cause deterioration of sandbank habitats and communities through direct loss and localised impact. These activities may also affect hydrographic patterns of erosion and deposition. Accidental or deliberate discharge of oil by any type of operation has the potential to cause deterioration of sandbanks through toxic contamination of seabed communities, or the smothering of the seabed. Seismic surveys associated with oil exploration can affect fish spawning areas on coarse substrate. Local authority emergency plans and oil spill contingency plans should take into account specific qualifying interests and recognise the importance of marine SACs should such incidents occur.

Marine Traffic		
Boat maintenance and antifoulant use		**Dolphins:** Most antifoulant products are designed to kill or discourage naturally occurring organisms and, as such, cause damage to the water environment if used carelessly. Under such circumstances use of antifoulant has the potential to impair dolphin reproductive or immune systems or cause toxic impacts on prey species.
		Sandbanks: Most antifoulant products are designed to kill or discourage naturally occurring organisms and, as such, cause damage to the water environment if used carelessly. Under such circumstances use of antifoulant has the potential to cause deterioration of sandbank habitats and communities.
Commercial vessels		**Dolphins:** The introduction of non-native species through discharge of ballast or through attachment to ships' hulls could occur within or close to this SAC. The introduction of non-native species has the potential to cause deterioration of the dolphin population through the spread of disease or toxic effects in the receiving waters, or impacts on prey availability. General activity of commercial vessels has the potential to cause disturbance to dolphins through noise interference, collision, and the use of sonar systems, navigational depth sounders, or other fish-finding devices.. Noise interference may mask marine mammal communication, navigation, foraging, and may disrupt social bonds. All forms of disturbance or harassment may elicit a stress response. The pumping of bilges, discharge of ballast, accidental grounding or spillage of oil (or other chemical) could occur within or close to this SAC. Such incidents have the potential to cause deterioration of dolphins. Local authority emergency plans and oil spill contingency plans should take into account specific qualifying interests and recognise the importance of marine SACs should such incidents occur.
		Sandbanks: The introduction of non-native species through, for example, the discharge of ballast and attachment to ships' hulls could occur within or close to the SAC. Such introductions are already known to have occurred (e.g. Australian barnacle *Eliminus modestus* – now widespread and common throughout the UK, and the South American or Magellan mussel *Aulacomya ater* – found within the Moray Firth). Non-natives have the potential to cause deterioration of sandbank habitats and communities through alteration of community and substrate characteristics (e.g. through stabilising former mobile areas / destabilising former stable areas) or through competing with native species. The pumping of bilges, accidental grounding, or accidental oil (or other chemical) spillage from commercial vessels could occur within or close to this SAC. Such incidents have the potential to cause deterioration of sandbank habitats and communities through direct and / or indirect impacts. Local authority emergency plans and oil spill contingency plans should take into account specific qualifying interests and recognise the importance of marine SACs should such incidents occur.
Military Activity & Civil Aviation		
Discharges & run-off		**Dolphins:** Jettison of aircraft fuel and run-off of fuel or de-icing chemicals from airfields have the potential to cause deterioration of dolphins by causing direct carcinogenic effects or having toxic impacts on their prey.

Military Activity & Civil Aviation contd.		
Discharges & run-off contd.		**Sandbanks:** Run-off of fuel or de-icing chemicals from airfields has the potential to cause deterioration of the plant and animal communities associated with the sandbank habitat.
Sonic pollution		**Dolphins:** Noise from low flying jets or helicopters, or noise from explosives have the potential to cause deterioration of dolphin populations through: direct disturbance; interference with communication, navigation and foraging; disruption of social bonds. All forms of disturbance may also elicit a stress response in the animals.
Recreational Activities		
Boat anchorages		**Sandbanks:** Anchors and continual scouring by riser chains have the potential to cause deterioration of sandbank habitats and communities through direct contact with the qualifying interests and associated sensitive seabed communities.
Boat moorings		**Sandbanks:** Moorings and continual scouring by riser chains have the potential to cause deterioration of sandbank habitats and communities through direct contact with the qualifying interest.
Other recreational activities		**Dolphins:** Motorised water sports and wildlife cruise boats have the potential to cause disturbance to dolphins through the creation of underwater noise, movement and presence of boats, and the use of sonar systems and navigational depth sounders. Such activities may result in noise disturbance, harassment or collision with the dolphins. Human contact, including swimming with or feeding dolphins, has the potential to cause disturbance by disrupting normal dolphin behaviour patterns.
Scientific Research		
Scientific research		**Dolphins:** Boat-based scientific research activities have the potential to cause disturbance or deterioration through underwater noise or collision with dolphins, particularly if boats spend long periods of time in the vicinity of dolphins or where craft actively follow the animals. Disturbance may also result from sonar systems, navigational depth sounders, and other fish-finding devices. Dolphins are a European Protected Species, as well as a qualifying interest within this SAC. Researchers may require a licence; advice should be sought from SNH accordingly if there is any doubt as to this requirement.

Annex B

Non-statutory Advice given by SNH
Site account

Site description

The Moray Firth marine SAC encompasses the Beauly / Inverness Firth and the outer reaches of the Dornoch and Cromarty Firths. The boundary of the site extends to the Mean Low Water Mark of Spring Tides. Much of the coastline immediately adjacent to the SAC is characterised by sweeping sandy beaches and dunes that lie within predominantly agricultural land, although cliffs and rocky shores occur where high ground meets the coast. The site extends eastwards to a seaward boundary between the River Helmsdale on the north coast of the Moray Firth and Lossiemouth on the south coast.

This site is one of the largest marine SACs in the UK and physical conditions vary considerably within the site. The sea floor banks gently from the coast to a depth of around 40m at the seaward limit of the site and there is a narrow north-east-trending channel, which is a continuation of the Beauly and Ness valleys. There is a deep water channel in the Cromarty Firth with a maximum depth of 55m between the North and South Sutor. The mean spring tidal range is approximately 3m, and tidal streams are generally weak, reaching less than 1 knot at springs, but moderately strong to very strong currents occur at the narrow entrances to the inner Firths. There is a gradual transition from the more estuarine and sheltered conditions at the mouths of the three inner Firths to the open sea of the Moray Firth. Salinity is likely to be a key factor in determining biodiversity in the brackish inner Firths, especially in shallow water. The inner Firths are very sheltered from wave action. In contrast, fetches to the north-east are considerable and the open coasts of the Moray Firth are generally indicative of exposed conditions.

Qualifying marine features

Annex I Habitat: Sandbanks which are slightly covered by sea water all the time

Sandbanks are made up of soft sediment types (including sand predominantly in the size range 0.0625mm to 2mm) that are permanently covered by shallow seawater. They are typically (but not exclusively) found at depths of less than 20m below chart datum. The Moray Firth marine SAC supports a significant presence of the sandbank feature and it encompasses a broad range of underwater sediments that are subject to a wide variety of environmental conditions.

The distribution of sediments in shallow water is linked to bathymetry and a close correlation exists between increased depth and decreasing grain size, with the exception of fine sand accumulating in the shallow sheltered waters of the inner Firths. Muddy sands and sandy sediments are dominant in the area seaward of the inner Firths. Tide-swept mixed sediments within the site are colonised by distinctive communities of algae and invertebrates, including

polychaete worms, bivalves and amphipods. Coarse sublittoral sediments, for example in the Dornoch Firth, have been found to support high numbers of the sand mason, the banded wedge-shell and clam species. Fine unstable sands off Whiteness, which are more exposed to wave action, contain sparse animal communities that are dominated by bivalves.

Within the Cromarty Firth the firm and sandy bottom sediments support polychaete worms, with a small sub-community of these worms found within the coarser deposits. Gravel sediments here are also colonised by the horse mussel, dead men's fingers, hydroids, bryozoans and barnacles. The sediment is finer in the open Moray Firth, 6 km east of the Sutors. At a depth of 20m, the diversity is less than within the Cromarty Firth, but includes some additional species of molluscs, sea potato, polychaete worms and amphipods. Pockets of coarse sediment occur in fast currents in the narrows between Chanonry Point and Fort George and these areas contain communities characterised by polychaete worms. Just outside the Inverness Firth at Fort George, the sediment is sandy and dominated by clams. In stable areas of the open coast within the site, the shallow sandy sediments support populations of bivalves, with sea potatoes, razor shells and the sabellid polychaete found at depth.

Subtidal sandbanks are often high-energy mobile environments which often support spawning grounds and nursery areas for juvenile fish species. This productivity in turn becomes an important food source for marine mammals and seabirds such as guillemots and razorbills. The conservation importance of these habitats centres on their intrinsic value based on the biological communities present, together with the predators which are dependent on those communities. Subtidal sandbanks also have an important role in maintaining sediment balance, and coastline protection.

Annex II Species: Bottlenose dolphin *Tursiops truncatus*

On present knowledge, the SAC hosts the only resident population of bottlenose dolphins in the North Sea, representing one of only two such populations currently known to occur within UK coastal waters. While the individuals may range further afield during certain times of the year, dolphins are present throughout the year within the Moray Firth marine SAC and individuals have been seen over periods of many years. While the dolphins range widely in the Moray Firth, they appear to favour particular areas and the marine SAC is a core part of the animals' range. Bottlenose dolphins are particularly known to frequent near-shore waters around the Sutors at the entrance to the Cromarty Firth, Chanonry Point and Fort George at the entrance to the Inverness Firth and North and South Kessock at the entrance to the Beauly Firth. Dolphins are also frequently recorded at other localities along the coast, including Findhorn Bay, Speybay, Burghead and Lossiemouth, and more recently as far as Aberdeen, the Firth of Tay and the Forth Estuary.

The shallow sandy sediments within the SAC provide important nursery, feeding or migration areas for fish and these in turn provide important prey

species for the dolphins such as salmon, sea trout, cod, herring, mullet, eels and squid.

The Moray Firth dolphin population is at the extreme northern end of its natural range and therefore subject to stress factors such as low temperatures. Current research estimates that there are around 130 bottlenose dolphins living in the Moray Firth and, due to its small size and relative isolation, the population is vulnerable to both natural and human influences.