

Offshore Oil & Gas Licensing
26th Seaward Round
Central North Sea
Block 16/03d

Appropriate Assessment

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1 Introduction

1.1 Background and purpose

On 27th January 2010, the Secretary of State for the Department of Energy and Climate Change (DECC) invited applications for licences in the 26th Seaward Licensing Round.

To comply with obligations under the *Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001* (as amended) (OPAR 2001), in summer 2010, the Secretary of State undertook a screening assessment to determine whether the award of any of the Blocks applied for would be likely to have a significant effect on a relevant European conservation site, either individually or in combination with other plans or projects (DECC 2010).

In so doing, the amplification of the Habitats Directive test provided by the European Court of Justice in the Waddenzee case (Case C-127/02) was used, as follows:

Any plan or project not directly connected with or necessary to the management of a site must be subject to an Appropriate Assessment if it cannot be excluded, on the basis of objective information, that it will have a significant effect on that site, either individually or in combination with other plans or projects.

Where a plan or project not directly connected with or necessary to the management of the site is likely to undermine the site's conservation objectives, it must be considered likely to have a significant effect on that site. The assessment of that risk must be made in the light, inter alia, of the characteristics and specific environmental conditions of the site concerned by such a plan or project.

An initial screening assessment (including consultation with the statutory agencies/bodies), identified 99 whole or part Blocks as requiring further assessment prior to decisions on whether to grant licences. Because of the wide distribution of these Blocks around the UKCS, the Appropriate Assessments (AA) in respect of each potential licence award, are contained in seven regional reports as follows:

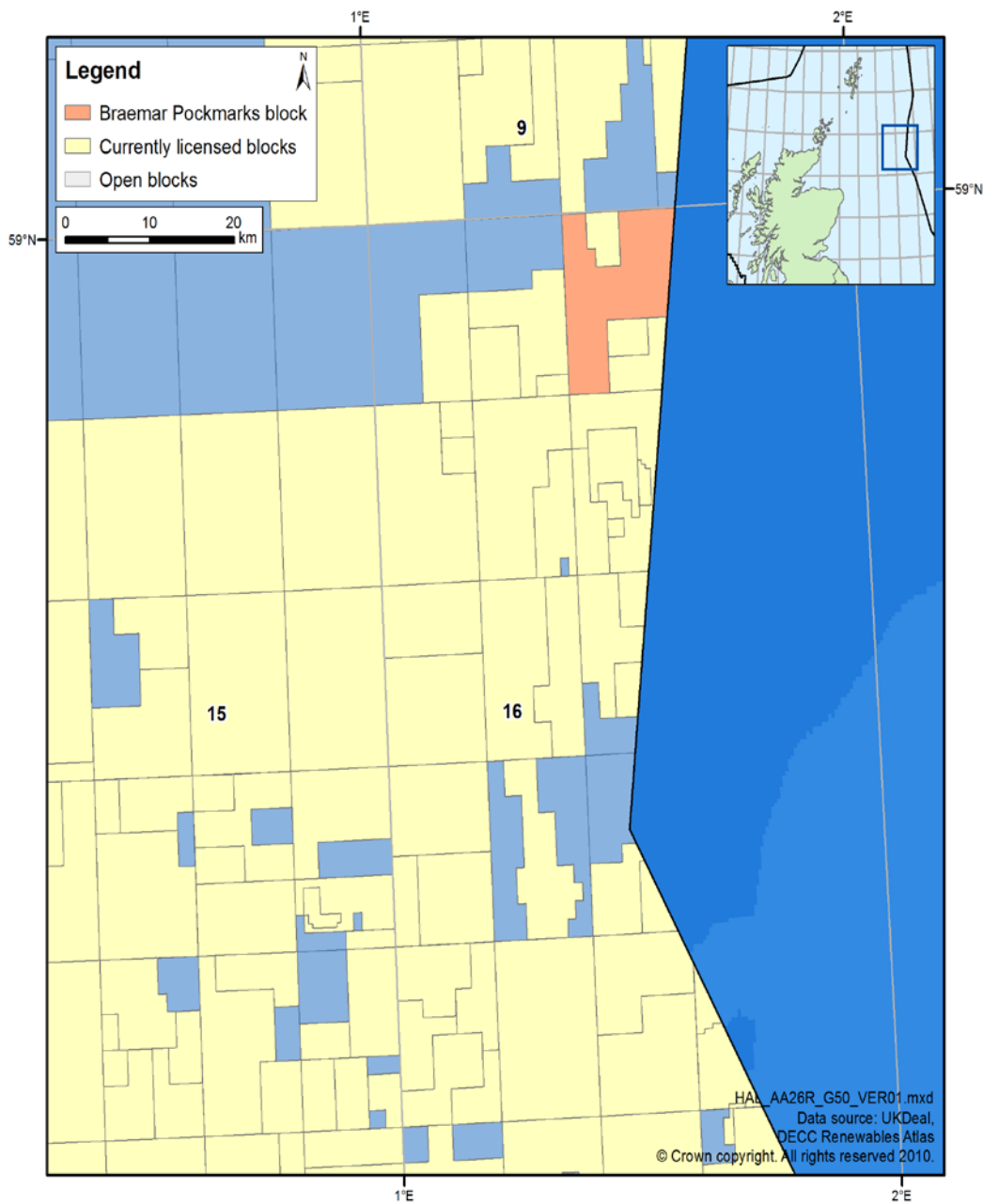
- Southern North Sea
- Outer Moray Firth
- Central North Sea
- Fair Isle Channel
- Northern Ireland
- Eastern Irish Sea
- Central English Channel

This report documents the further assessment in relation to a single Block in the central North Sea (see Section 1.2).

1.2 Central North Sea Block

The central North Sea Block applied for in the 26th Round considered in this document is 16/03d, shown in dark orange in Figure 1.1.

Figure 1.1: Location of Block 16/03d in the central North Sea



2 Licensing and activity

2.1 Licensing

The exclusive rights to search and bore for and get petroleum in Great Britain, the territorial sea adjacent to the United Kingdom and on the UK Continental Shelf (UKCS) are vested in the Crown and the *Petroleum Act 1998* (as amended) gives the Secretary of State the power to grant licences to explore for and exploit these resources. The main type of offshore Licence is the Seaward Production Licence. Offshore licensing for oil and gas exploration and production commenced in 1964 and has progressed through a series of Seaward Licensing Rounds. A Seaward Production Licence may cover the whole or part of a specified Block or a group of Blocks. A Licence grants exclusive rights to the holders “to search and bore for, and get, petroleum” in the area covered by the Licence. A Licence does not confer any exemption from other legal/regulatory/fiscal requirements.

There are three types of Seaward Production Licences:

- Traditional Production Licences are the standard type of Seaward Production Licences and run for three successive periods or Terms. 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. The Initial Term lasts for four years and the Licence will only continue into a Second Term of four years if the agreed Work Programme has been completed and if 50% of the acreage has been relinquished. The Licence will only continue into a Third Term of 18 years if a development plan has been approved, and all the acreage outside that development has been relinquished.
- Frontier Production Licences are a variation of the Traditional Production Licence with longer terms. A Frontier Production Licence has a longer Initial Term (six years as opposed to four) with the objective of allowing companies to screen larger areas. After 3 years, the licensee must relinquish 75% of the licensed acreage. At the end of the Initial Term, the exploration Work Programme must have been completed and the licensee must relinquish 50% of what is left (i.e. leaving one eighth of the original licensed area).
- In the 21st Round (2002) the Department introduced Promote Licences. The general concept of the Promote Licence is that the licensee is given two years after award to attract the technical, environmental and financial capacity to complete an agreed Work Programme. In effect, DECC will defer (not waive) its financial, technical and environmental checks until the preset Check Point. Promote licensees are not allowed to carry out field operations until they have met the full competence criteria. The way this is implemented is that each Promote Licence carries a "Drill-or-Drop" Initial Term Work Programme. The Licence will therefore expire after two years if the licensee has not made a firm commitment to DECC to complete the Work Programme (e.g. to drill a well). By the same point, it must also have satisfied DECC of its technical, environmental and financial capacity to do so.

The model clauses and terms and conditions which are attached to Licences are contained in Regulations.

It is noted that the environmental management capacity and track record of applicants is considered by DECC, through written submissions and interviews, before licences are awarded.

2.2 Activity

As part of the licence application process, applicant companies provide DECC with details of work programmes they propose in the first term to further the understanding or exploration of the Block(s) in question. These work programmes are considered with a range of other factors in DECC's decision on whether to license the Blocks and to whom. There are three levels of drilling commitment:

- A **Firm Drilling Commitment** is a commitment to the Secretary of State to drill a well. Applicants are required to make firm drilling commitments on the basis that, if there were no such commitment, the Secretary of State could not be certain that potential licensees would make full use of their licences. However, the fact that a licensee has been awarded a licence on the basis of a "firm commitment" to undertake a specific activity should not be taken as meaning that the licensee will actually be able to carry out that activity. This will depend upon the outcome of all relevant environmental assessments.
- A **Contingent Drilling Commitment** is also a commitment to the Secretary of State to drill a well, but it includes specific provision for DECC to waive the commitment in light of further technical information.
- A **Drill or Drop (D/D) Drilling Commitment** is a conditional commitment with the proviso, discussed above, that the licence is relinquished if a well is not drilled.

Note that Drill-or-Drop and Contingent work programmes (subject to further studies by the licensees) will probably result in a well being drilled in less than 50% of the cases.

It is made clear in the application guidance that a Production Licence does not allow a licensee to carry out all petroleum-related activities from then on. Field activities, such as seismic survey or drilling, are subject to further individual controls by DECC, and a licensee also remains subject to controls by other bodies such as the Health and Safety Executive. It is the licensee's responsibility to be aware of, and comply with, all regulatory controls and legal requirements.

The proposed work programmes for the first four-year period (six years in the case of Frontier licences) are detailed in the licence applications. For some activities, such as seismic survey noise and oil spills, the impacts can occur some distance from the licensed Blocks and the degree of activity is not necessarily proportional to the size or number of Blocks in an area. For the case of direct physical disturbance, the licence Blocks being applied for are relevant, although there may still be pipelines that cross unlicensed Blocks should any significant development ensue after the initial four-year exploratory period.

The approach used here has been to take the proposed activity for the Block as being the maximum of any application for that Block, and to assume that all activity takes place as a result of the structuring of licences. The estimates of work commitments for the Block derived by DECC from the range of applications received is as follows:

- Block 16/03d – a firm well.

On past experience, less activity actually takes place than is bid at the licence application stage and some awarded Blocks may be relinquished without any field activities occurring.

Activity after the initial term is much harder to predict, as this depends on the results of the initial phase, which is, by definition, exploratory. Typically less than half the wells drilled reveal hydrocarbons, and of that half, less than half again will yield an amount significant enough to warrant development. Depending on the expected size of finds, there may be further drilling to appraise the hydrocarbons (appraisal wells). Discoveries that are developed may require further drilling, wellhead infrastructure, pipelines and possibly production facilities such as platforms, although most recent developments are tiebacks to existing production facilities rather than stand alone developments.

The extent and timescale of development, if any, which may ultimately result from the licensing of this Block is therefore uncertain and would be subject to further, project level assessment (incorporating Habitats Regulations Assessment (HRA) where appropriate) prior to any consent being issued.

DECC has issued guidance on Block specific issues and concerns and Licensees should expect these concerns to affect DECC's decision whether or not to approve particular activities. The seasonal concerns indicated for Block 16/03 are for seismic activity (January to April) and drilling (September to November).

3 Relevant Natura 2000 Sites

The Natura 2000 sites to be considered in this assessment were identified based on their location in relation to the Block (see Section 1.2 above) which is the subject of a licence application and in terms of the foreseeable possibility of interactions. Sites considered include designated Natura 2000 sites (also referred to as 'European Sites') and potential sites for which there is adequate information on which to base an assessment.

The sites considered are listed and mapped in Appendix A, and Appendix B presents the results of a screening exercise of these sites to identify the potential effects of activities that could follow the licensing of the Block in question. In accordance with Government policy (as set out in Planning Policy Statement 9 (ODPM 2005a¹)) and revised guidance updating Scottish office Circular No. 6/1995 (Scottish Government 2000), the relevant sites considered include classified and potential SPAs, designated and candidate SACs and Sites of Community Importance² (SCIs). Guidance in relation to sites which have not yet been submitted to the European Commission is given by Circular 06/2005 (ODPM 2005b) which states that: *"Prior to its submission to the European Commission as a cSAC, a proposed SAC (pSAC) is subject to wide consultation. At that stage it is not a European site and the Habitats Regulations do not apply as a matter of law or as a matter of policy. Nevertheless, planning authorities should take note of this potential designation in their consideration of any planning applications that may affect the site."*

The relevant sites are listed in Table 3.1 below, shown in Figure 3.1 overleaf and detailed in Appendix A.

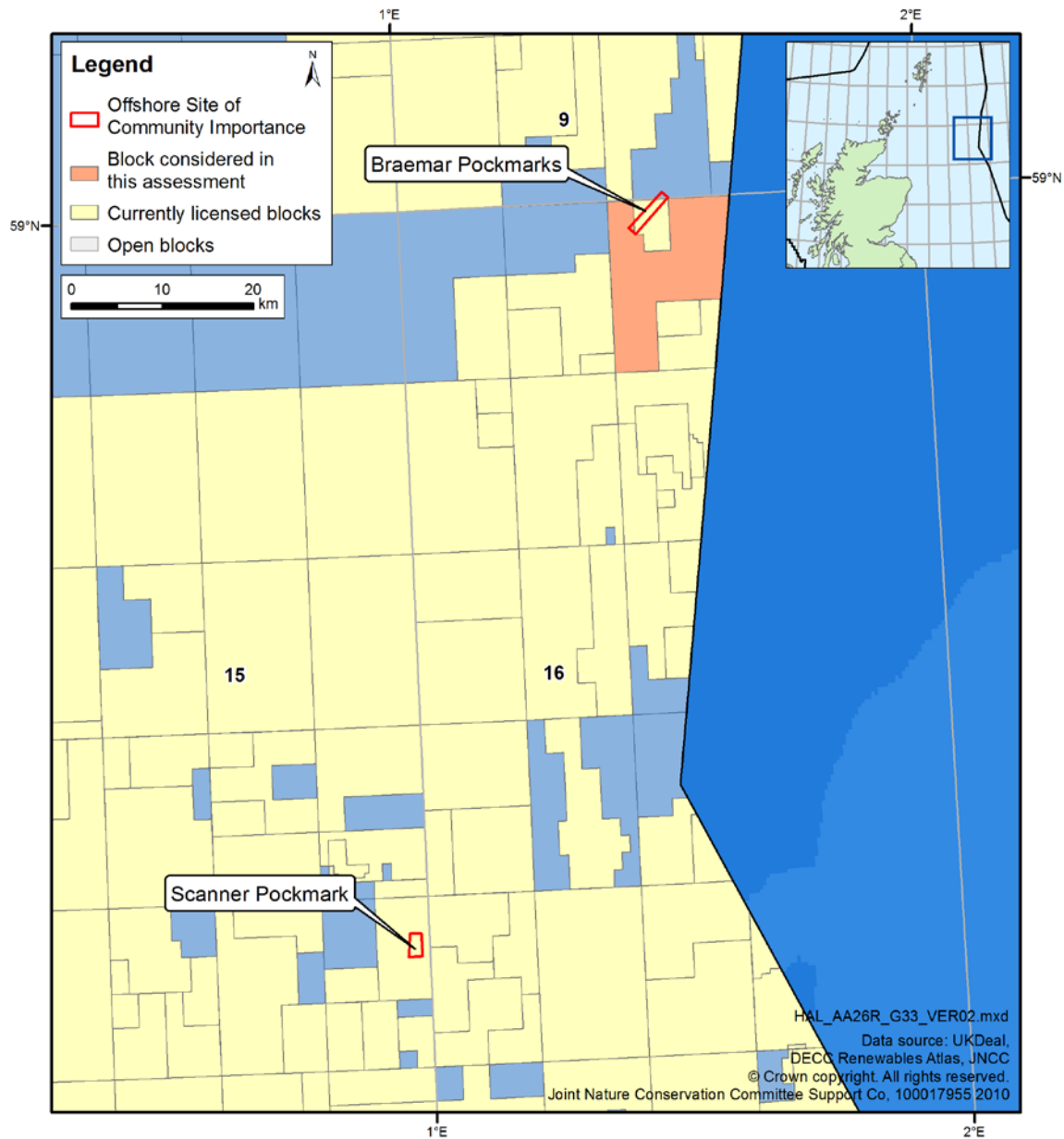
Table 3.1: SAC sites and qualifying features under Annex 1 and Annex 2, relevant to this Appropriate Assessment

Site Name	Annex I Habitat	Annex II Species
Braemar Pockmarks SCI	Submerged structures made by leaking gases	N/A
Scanner Pockmark SCI	Submerged structures made by leaking gases	N/A

¹ Which states that "Listed Ramsar sites, also as a matter of policy, should receive the same protection as designated SPAs and SACs". UK coastal Ramsar sites are typically coincident with SACs and/or SPAs.

² Sites of Community Importance (SCIs) are more advanced in designation than cSACs in that they have been adopted by the European Commission but not yet formally designated by the government of the relevant country.

Figure 3.1: SACs relevant to this Appropriate Assessment



4 Assessment of the effects of the plan on site integrity

4.1 Process

In carrying out this AA so as to determine whether it is possible to grant a licence in accordance with Regulation 5(1) of OPAR 2001 (as amended), DECC has:

- Considered, on the basis of the precautionary principle, whether it could be concluded that the integrity of relevant European Sites would not be affected. This impact prediction involved a consideration of the cumulative and in-combination effects.
- Examined, in relation to elements of the plan where it was not possible to conclude that the integrity of relevant sites would not be affected, whether appropriate mitigation measures could be designed which cancelled or minimised any potential adverse effects identified.
- Considered the comments received from statutory advisers and others on the draft AA
- Completed the AA, including DECC's conclusion on whether or not it is possible to go ahead with the plan.

In considering the above, DECC used the clarification of the tests set out in the Habitats Directive in line with the ruling of the ECJ in the Waddenzee case (Case C-127/02), namely that:

- Prior to the grant of any licence all activities which may be carried out following the grant of such a licence, and which by themselves or in combination with other activities can affect the site's conservation objectives, are identified in the light of the best scientific knowledge in the field.
- A licence can only be granted if DECC has made certain that the activities to be carried out under such a licence will not adversely affect the integrity of that site (i.e. cause deterioration to a qualifying habitat or habitat of qualifying species, and/or undermine the conservation objectives of any given site). That is the case where no reasonable scientific doubt remains as to the absence of such effects.

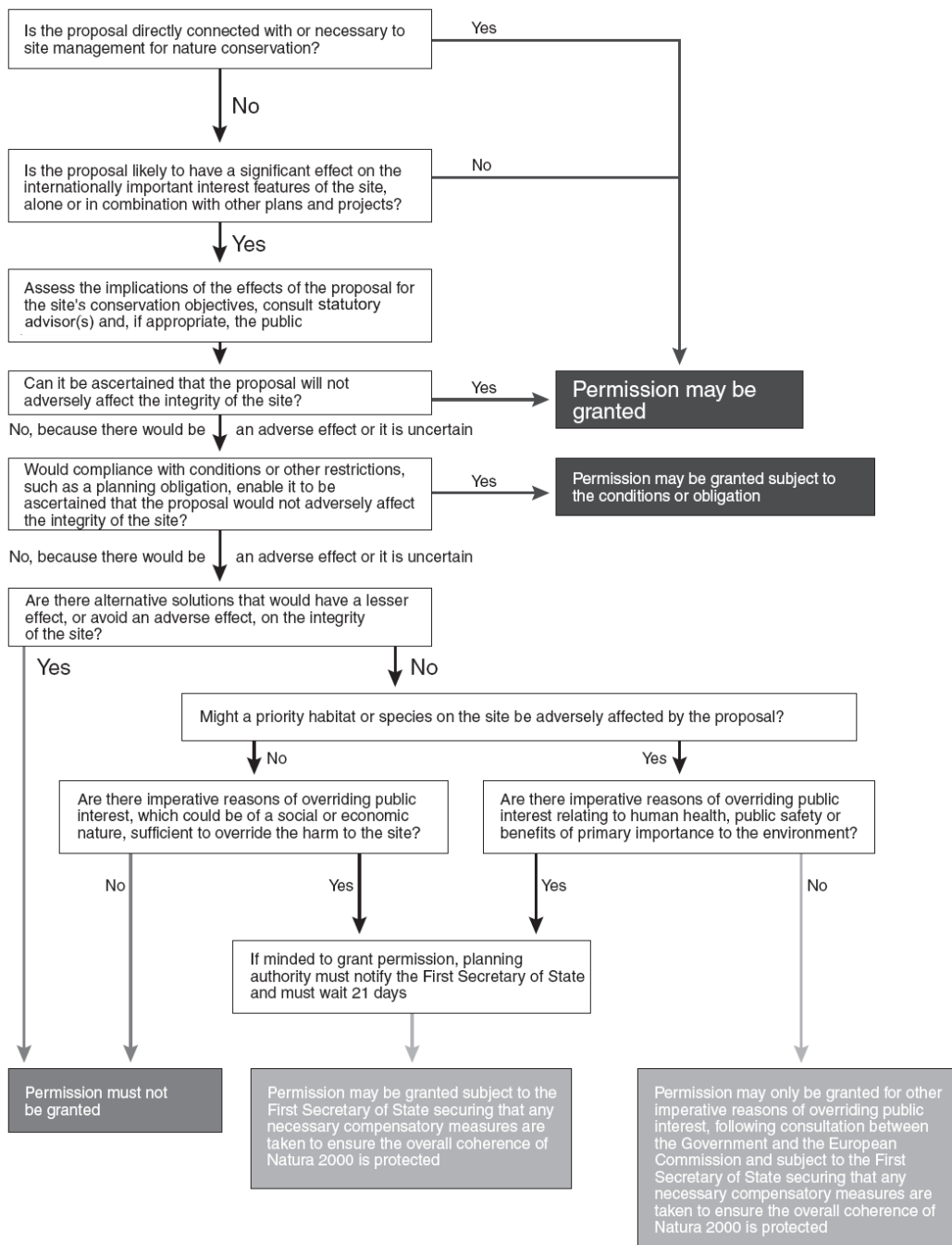
A flowchart summarising the process is shown in Figure 4.1.

4.1.1 Site integrity

Site integrity is defined by the ODPM Circular 06/2005 to accompany PPS9 (ODPM 2005b) as follows: "The integrity of a site is the coherence of its ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it was classified." As clarified by Section 4.6.3 of the EC Guidance (2000), the integrity of a site relates to the site's conservation objectives. These objectives are assigned at the time of designation to ensure that the site continues, in the long-term, to make an appropriate contribution to achieving favourable conservation

status for the qualifying interest features. For example, it is possible that a plan or project will adversely affect the integrity of a site only in a visual sense or only habitat types or species other than those listed in Annex I or Annex II. In such cases, the effects do not amount to an adverse effect for purposes of Article 6(3), provided that the coherence of the network is not affected. The AA must therefore conclude whether the proposed activity adversely affects the integrity of the site, in the light of its conservation objectives (see Table 4.1 and Appendix A). For sites where the potential for adverse effects has been identified, their conservation objectives are listed in full within Appendix C.

Figure 4.1: Summary of procedures under the Habitats Directive for consideration of plans or projects affecting Natura 2000 sites



Note: 'Statutory advisor(s)' refers to the relevant statutory Government advisor(s) on nature conservation issues. Source: After ODPM (2005b).

4.2 Assessment

The approach to ascertaining the absence or otherwise of adverse effects on the integrity of a European Site is set out in Section 4.1 above. This assessment has been undertaken in accordance with the European Commission Guidance (EC 2000), and with reference to various other guidance and reports including the Habitats Regulations guidance notes (e.g. SEERAD 2000), the Planning and Policy Statement note 9 (ODPM 2005a & b), the English Nature Research Reports, No 704 (Hoskin & Tyldesley 2006) and the Scottish Natural Heritage Habitats Regulations Appraisal of Plans, No 1739 (Tyldesley & Associates 2010).

Appendix A lists and summarises the relevant European Sites as defined in Section 3. Appendix B then presents the results of a screening exercise of these sites to identify the potential effects of activities that could follow the licensing of the Block in question. Where potential effects are identified, more detailed information on the relevant sites is provided in Appendix C.

Detailed assessments are made in Sections 5 and 6 of the implications for the integrity of the relevant European Sites and their qualifying features and species, were a licence for the Block to be granted. The assessment is based on an indication of the potential work programme for the Block and likely hydrocarbon resources if present (crude oil), along with the characteristics of the relevant sites as described in the Appendices. As noted in Section 2.2, the potential work programme is taken as the maximum of any application for that Block; however, on past experience, less activity actually takes place than is bid at the licence application stage. Activities which may be carried out following the grant of a licence, and which by themselves or in combination with other activities can affect the conservation objectives of relevant European Sites, are discussed under the following broad headings:

- Physical disturbance and other effects (e.g. pipeline trenching, marine discharges)
- In-combination effects (e.g. cumulative and synergistic and secondary/indirect effects).

Use has been made of advice prepared by the conservation agencies under the various Habitats Regulations, since this typically includes advice on operations that may cause deterioration or disturbance to relevant features or species. Advice given under Regulation 33 (now Regulation 35 of the 2010 Regulations) includes an activities/factors matrix derived from MarLIN (www.marlin.ac.uk) where applicable. Several of the “probable” effects highlighted in the MarLIN matrices are not inevitable consequences of oil and gas exploration and production, since through the regulatory Environmental Impact Assessment (EIA) and permitting processes they are mitigated by timing, siting or technology requirements (or a combination of one or more of these). There is a requirement that these options would be evaluated in the environmental assessments required as part of activity consenting.

The conservation objectives identified for features of the SCI sites considered in the Appropriate Assessment are listed in Table 4.1 overleaf. These objectives, in relation to the specific qualifying features of each site, and the conservation status of these features, have been considered during this Appropriate Assessment.

Table 4.1: Conservation objectives for Annex I habitats represented in SCI sites

Conservation objectives	
For Annex I Habitats	For the Annex I Habitat: ‘Submarine structures made by leaking gases’: subject to natural change, maintain* the feature in favourable condition, such that: The natural environmental and ecological processes* are maintained The extent, distribution, diversity and characteristic species composition of biological communities representative of Submarine structures made by leaking gases in the northern North Sea are maintained.

A set of high level mitigation measures have been identified with regards to each of the broad sources of effect listed above (see Table 4.2). These mitigation measures, which are discussed in more detail in Sections 5 and 6, should *inter alia* help to avoid the deterioration of any qualifying habitats, and habitats supporting species, and seek to prevent undermining any of the conservation objectives for a given site in relation to the features for which it is designated. These high-level mitigation measures can be partly interpreted as “...conditions or other restrictions such as a planning obligation, [compliance with which would] enable it to be ascertained that the proposal would not adversely affect the integrity of the site” (see Figure 4.1, above), though also represent other non-statutory guidance etc. with regards to the avoidance of significant effects on sites. Where it is considered that no effect can arise from any of the given sources of effect for a particular species or habitat (e.g. due to animal behaviour and/or the location/characteristics of a particular habitat), certain sites may be screened out of the assessment, and these are listed in the relevant section (5-8) where this is the case (also see Appendix B).

Table 4.2: High level mitigation measures identified for potential sources of effect

High level Mitigation	
Physical disturbance	The block under consideration is far offshore and remote from coastal Natura 2000 sites. The block is close to the Braemar Pockmark SCI and drilling and other activities could cause potential physical disturbance to the Annex I habitat. However, there are well proven methods to prevent significant impacts and mitigation would be defined at the project level, and activities would be subject to project specific EIA and HRA as necessary.
Marine Discharges	Discharges from offshore oil and gas facilities have been subject to increasingly stringent regulatory controls over recent decades, and oil and other contaminant concentrations in the major streams (drilling wastes and produced water) have been substantially reduced or eliminated. Discharges would be considered in detail in project-specific EIA and HRA as necessary and chemical risk assessments under existing permitting procedures.
Other effects	The IMO International Convention for the Control of Ballast Water and Sediment, serves to mitigate against the possible introduction of invasive alien species through shipping ballast, which may degrade sensitive local habitats and communities. Measures include the mid-ocean exchange of ballast water (with ultra-violet irradiation of ballast a proposed alternative). The potential for disruption or interruption of the gas or fluid flow on which the pockmark features depend would be assessed during project specific EIA and HRA as necessary.
Underwater noise	Application for consent to conduct seismic and other geophysical surveys – PON14 Seismic operators are required, as part of the application process, to justify that their proposed activity is not likely to cause a disturbance etc. under the <i>Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001</i> (as amended) and <i>Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007</i> (as

High level Mitigation	
	<p>amended).</p> <p>It is a condition of consents issued under Regulation 4 of the <i>Petroleum Activities (Conservation of Habitats) Regulations 2001 (& 2007 Amendments)</i> for oil and gas related seismic surveys that the JNCC, <i>Guidelines for minimising the risk of disturbance and injury to marine mammals from seismic surveys</i>, are followed.</p> <p>European Protected Species (EPS) disturbance licences can also be issued under the <i>Offshore Marine Conservation (Natural Habitats, &c.) Regulations 2007</i>.</p> <p>DECC will expect that passive acoustic monitoring (PAM) will be routinely used as a mitigation tool.</p> <p>Potential disturbance of certain species may be avoided by the seasonal timing of noisy activities.</p> <p>Potential disturbance of certain species may be avoided by the seasonal timing of noisy activities, and periods of seasonal concern for individual Blocks on offer have been highlighted (See Section 2.2) for which licensees should expect to affect DECCs decision whether or not to approve particular activities.</p>
Oil Spills	<p>Oil Pollution Emergency Plans (OPEPs): regulatory requirements on operators to prepare spill prevention and containment measures, risk assessment and contingency planning – these are reviewed by DECC, MCA, JNCC, MMO, and relevant SNCB.</p> <p>Additional conditions imposed by DECC, through block-specific licence conditions (i.e. “Essential Elements”), and seasonal periods of concern for drilling (in this case from September to November), within which there is a presumption for drilling activity to be refused unless appropriate mitigation measures can be agreed (defined at the project level).</p> <p>Project level mitigation through permitting/HRA of specific activities (including conditions attached to consents/permits or potentially consent/permit refusal).</p> <p>MCA is responsible for a National Contingency Plan and maintains aerial spraying and surveillance aircraft based at Coventry and Inverness and counter-pollution equipment (booms, adsorbents etc.). The MCA presently has four Emergency Towing Vessels stationed around the UK which remain on standby at sea³.</p>
In-combination effects	<p>The competent authorities will assess the potential for in-combination effects during Habitats Regulations Assessments of project specific consent applications; this process will ensure that mitigation measures are put in place to ensure that subsequent to licensing, specific projects (if consented) will not result in adverse effects on integrity of European sites.</p>

³ The future of these vessels is presently subject to debate as a new funding stream is required for their maintenance, with the present contract to be terminated in 2011. The role of these vessels may be filled by a commercial alternative (see: <http://www.parliament.uk/business/committees/committees-a-z/commons-select/transport-committee/inquiries/coastguard/>).

5 Consideration of sites and potential physical and other effects

5.1 Introduction

Several activities associated with oil and gas exploration and production can lead to physical disturbance, damage, alteration or contamination of seabed habitats and geomorphological features, with consequent effects on benthic communities. The prime potential sources of effect are summarised below, followed by a consideration of the foreseeable effects on the European Site assessed to be at potential risk (the Braemar pockmarks SCI).

5.1.1 Physical damage at the seabed

The main sources of physical disturbance of the seabed from oil and gas activities are:

- **Anchoring of semi-submersible rigs.** Semi-submersible rigs use anchors to hold position, typically between 8 and 12 in number at a radius depending on the water depth, and cause seabed disturbance from the anchors and chain or cables, and in cohesive sediments, leave 'anchor mounds' after their retrieval. The water depth in the Block is considered too deep for a jack-up rig to be used.
- **Drilling of wells and wellhead removal.** The surface hole sections of exploration wells are typically drilled riserless, producing a localised (and transient) pile of surface-hole cuttings around the surface conductor. After installation of the surface casing (which will result in a small quantity of excess cement returns being deposited on the seabed), the blowout preventer (BOP) is positioned on the wellhead housing. These operations (and associated activities such as ROV operations) may result in physical disturbance of the immediate vicinity (a few metres) of the wellhead. When an exploration well is abandoned, the conductor and casing are plugged with cement and cut below the mudline (sediment surface) using a mechanical cutting tool deployed from the rig and the wellhead assembly is removed. The seabed "footprint" of the well is therefore removed.
- **Production platform jacket installation.** Limited physical footprint similar to a drilling rig, but present on site for longer period. Physical disturbance associated with platform removal during decommissioning is comparable to that of installation.
- **Subsea template and manifold installation.** Limited physical footprint at seabed, smaller than a drilling rig, but present on site for longer period. Physical disturbance associated with subsea template and manifold removal during decommissioning is comparable to that of installation.
- **Pipeline, flowline and umbilical installation, trenching and potentially, placement of rock armour.** Anticipated hydrocarbons are oil and gas and given the location of the Block, it is anticipated that new field developments will be 'tied back' to existing infrastructure. Large pipes (greater than 16" diameter) do not have to be trenched according to a general industry agreement as they will not be moved by fishing gear, but they may still need to be trenched for reasons of temperature loss or upheaval buckling (due to buoyancy). Trenches may require several passes before they are of the required depth, or it may be impossible to achieve the required depth due to obstructions, in which case rock is usually placed on the pipeline (rock dump) to protect and stabilise it.

DECC oil and gas SEAs have compared the physical disturbance effects of oilfield activities to those of fishing and natural events in shallow water (e.g. storm wave action), and concluded that oilfield effects are typically minor on a regional scale. It is generally accepted that the principal source of human physical disturbance of the seabed and seabed features is bottom trawl fishing. Trawl scarring is a major cause of concern with regard to conservation of shelf and slope habitats and species (e.g. Witbaard & Klein 1993, de Groot and Lindeboom 1994, Kaiser *et al.* 2002a, Kaiser *et al.* 2002b, Gage *et al.* 2005). Seabed faunal recovery from oil industry anchor scarring, anchor mounds and cable scrape is likely to be relatively rapid (1-5 years) based on the life histories of the abundant species present. The physical footprint of the activity will take longer to fade as the area is relatively sheltered from wave action (by deeper waters) and has weak tidal currents.

Within the boundaries of the Braemar pockmarks SCI the occurrence of habitats of conservation importance is known with precision as a result of earlier oil industry surveys of the area, with the broadscale distribution of large scale biotopes in the wider area having been recently characterised in McBreen *et al.* (2010). The routine sources of potential physical damage are controlled by a range of statutory measures including Consent to Locate, PON15B, Environmental Statement, Pipeline Works Authorisation and, where relevant, AA. Provisions under the Marine and Coastal Access Act (2009) and Marine Scotland Act (2010) include certain activities previously covered by the Food and Environment Protection Act; guidance on these is pending. Based on the results of the assessments including AA, DECC may require additional mitigation measures to avoid or minimise any adverse effects, or where this is not possible, refuse consent.

In addition to direct physical damage, features of pockmark SACs may be affected by the interruption of the gas or fluid flow on which they depend. Holmes & Stoker (2005) investigated the origin of shallow gas in Blocks 15/20c and 15/25d, the latter containing the Challenger Pockmark Complex, the Scanner Pockmark Complex (now an SCI) and the Scotia Pockmark and concluded that "if suitable precautions are taken, drilling operations in these areas should not significantly affect the supply of shallow gas to the active pockmarks". The findings of Holmes & Stoker (2005) are relevant to the consideration of the gas supply to the Braemar pockmarks; they recommended that future development operations should not disturb the shallow gas reservoir and that where a geological fault is the conduit for gas transfer from depth to the overlying gas-charged sediments and to active pockmarks that drilling operations should not disturb such faults. These recommendations provide for specific mitigation measures to ensure that the conservation objectives for the SCI are not compromised by oilfield activities which could follow licensing. An understanding of the location of shallow gas reservoir(s) and transfer routes to active pockmarks, allows for mitigation measures to be implemented such as the location of the well and its trajectory to prevent interruption of the flow of shallow gas supplying and maintaining the features. Such measures would also be identified during the activity consenting process and could include consent refusal.

5.1.2 Marine discharges

As described in previous oil and gas SEAs, marine discharges from exploration and production activities include produced water, sewage, cooling water, drainage, drilling wastes and surplus water based mud (WBM), which in turn may contain a range of hydrocarbons in dissolved and suspended droplet form, various production and utility chemicals, metal ions or salts (including Low Specific Activity radionuclides). In addition to these mainly platform-derived discharges, a range of discharges is associated with operation of subsea infrastructure (hydraulic fluids), pipeline testing and commissioning (treated seawater), and support vessels (sewage, cooling and drainage waters). Discharges from

offshore oil and gas facilities have been subject to increasingly stringent regulatory controls over recent decades, and oil concentrations in the major streams (drilling wastes and produced water) have been substantially reduced or eliminated. Amendments to the Offshore Chemical Regulations (2002) in 2011 mean that additional activities are now captured within a permit. The seabed effects of marine discharges are judged to be negligible in the context of proposed licensing and the Braemar pockmarks SCI. They would be considered in detail in project-specific Environmental Statements, AA (where necessary) and chemical risk assessments under existing permitting procedures; these mechanisms would ensure that mitigation in terms of discharge composition, location and volumes are implemented to prevent adverse effects on site integrity.

5.1.3 Other effects

Through the transport and discharge of vessel ballast waters (and associated sediment), and to a lesser extent fouling organisms on vessel/rig hulls, non-native species may be introduced to the marine environment. Should these introduced species survive and form established breeding populations, they can exert a variety of negative effects on the environment. These include: displacing native species by preying on them or out-competing them for resources such as prey and habitat; irreversible genetic pollution through hybridisation with native species; increased occurrence of toxic algal blooms. The economic repercussions of these ecological effects can also be very significant. In response to these risks, a number of technical and procedural measures have been proposed (such as the use of ultraviolet radiation to treat ballast water) or introduced such as a mid-ocean exchange of ballast water (the most common mitigation against introductions of non-native species). International management of ballast waters is addressed by the International Maritime Organisation (IMO) through the International Convention for the Control and Management of Ships Ballast Water & Sediments, which was ratified in 30 States in 2005. The Convention includes Regulations with specified technical standards and requirements (IMO Globallast website). Further oil and gas activity is unlikely to change the risk of the introduction of non-native species as the vessels typically operate in a geographically localised area, de-ballasting is unlikely to take place in these areas and the risk from hull fouling is low, given the geographical working region and scraping of hulls for regular inspection.

5.2 Implications for relevant European Sites

The screening process (Appendix B) identified the potential for physical disturbance, discharge effects and in-combination effects at the Braemar pockmarks SCI. The draft conservation objectives for the site are “subject to natural change, maintain the feature in favourable condition, such that:

- The natural environmental and ecological processes are maintained
- The extent, distribution, diversity and characteristic species composition of biological communities representative of Submarine structures made by leaking gases in the northern North Sea are maintained.”

However, there is only a very small overlap of the Block with the southwest corner of the site, and therefore there is the opportunity to locate a well, drilling rig, its anchors, discharges, and possible future development facilities in such ways that site integrity would not be affected.

Any potentially damaging exploration, appraisal and development activities that could following licensing of Block 16/03d would be subject to statutory risk assessment, mitigation and permitting measures, which would include assessment of the potential effects on the integrity of the Braemar pockmarks SCI.

5.3 Conclusions

Block 16/03d has a small area of overlap with the Braemar pockmarks SCI. There is a legal framework, via e.g. EIA regulations and those implementing the Habitats Directive, to ensure that there are no adverse effects on this Natura 2000 site. In addition, a condition would be attached to the licence for Block 16/03d to ensure protection of the sensitive features. This condition is:

- The operator will liaise with the JNCC and Marine Scotland in advance of any activities within the Block

Taking into account the information presented above and in the Appendices, it is concluded that activities arising from the licensing of Block 16/03d will not cause an adverse effect on the integrity of the Braemar pockmarks SCI by undermining the conservation objectives identified for the qualifying feature, *Submarine structures made by leaking gases*.

6 In-combination effects

In addition to the activities which may follow licensing of Block 16/03d, there are a variety of other existing (e.g. oil and gas production, fishing, shipping, military exercise areas) and planned (e.g. oil and gas exploration and production) activities in overlapping or adjacent areas. There is currently no infrastructure deployed in the region associated with the extraction of wind, wave or tidal energy, and none is envisaged in the foreseeable future. However, DECC is not aware of any projects or activities which are likely to cause cumulative or synergistic effects that when taken in-combination with the activities discussed above would adversely affect the integrity of the relevant European Site. This is because there are effective regulatory mechanisms in place to ensure that operators, DECC and other relevant consenting authorities take such considerations into account during activity permitting. In respect of oil and gas activities and other developments with the potential to affect Natura 2000 sites, these mechanisms also include project specific Habitats Regulations Assessment.

It is concluded that the in-combination of effects from activities that could arise from the licensing of Block 16/03d with those from existing and planned activities in this region of the North Sea will not cause an adverse effect on the integrity of the relevant European Site.

7 Overall conclusion

Taking account of all the matters discussed, the Secretary of State is able to grant consent to the plan/programme (as defined) under the Habitats Directive and award the licence for Block 16/03d. This is because there is certainty, within the meaning of the ECJ Judgment in the *Waddenzee* case, that implementation of the plan will not adversely affect the integrity of relevant European Sites, taking account of the mitigation measures that can be imposed through existing permitting mechanisms on the planning and conduct of activities.

These mitigation measures are incorporated in respect of the habitat interest features through the range of legislation and guidance (see https://www.og.decc.gov.uk/environment/environ_leg_index.htm and <https://www.og.decc.gov.uk/regulation/pons/index.htm>) which apply to developer activities which could follow plan adoption. These mitigation measures include, where necessary, project-specific Appropriate Assessments based on detailed project proposals which would be undertaken by the competent authority before the granting of a permit/consent. The competent authority needs to be satisfied that the proposed activity will not result in adverse effects on integrity of European sites.

Even where a site/interest feature has been screened out in the plan level assessment, or where a conclusion of no adverse effect on integrity has been reached at plan level, project level assessment will be necessary if, for example, new European sites have been designated after the plan level assessment; new information emerges about the nature and sensitivities of interest features within sites, new information emerges about effects including in-combination effects; or if plan level assumptions have not been met at the project level.

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Appendix A - The sites

A1 Special Areas of Conservation

Map A.1: Location of offshore Special Areas of Conservation

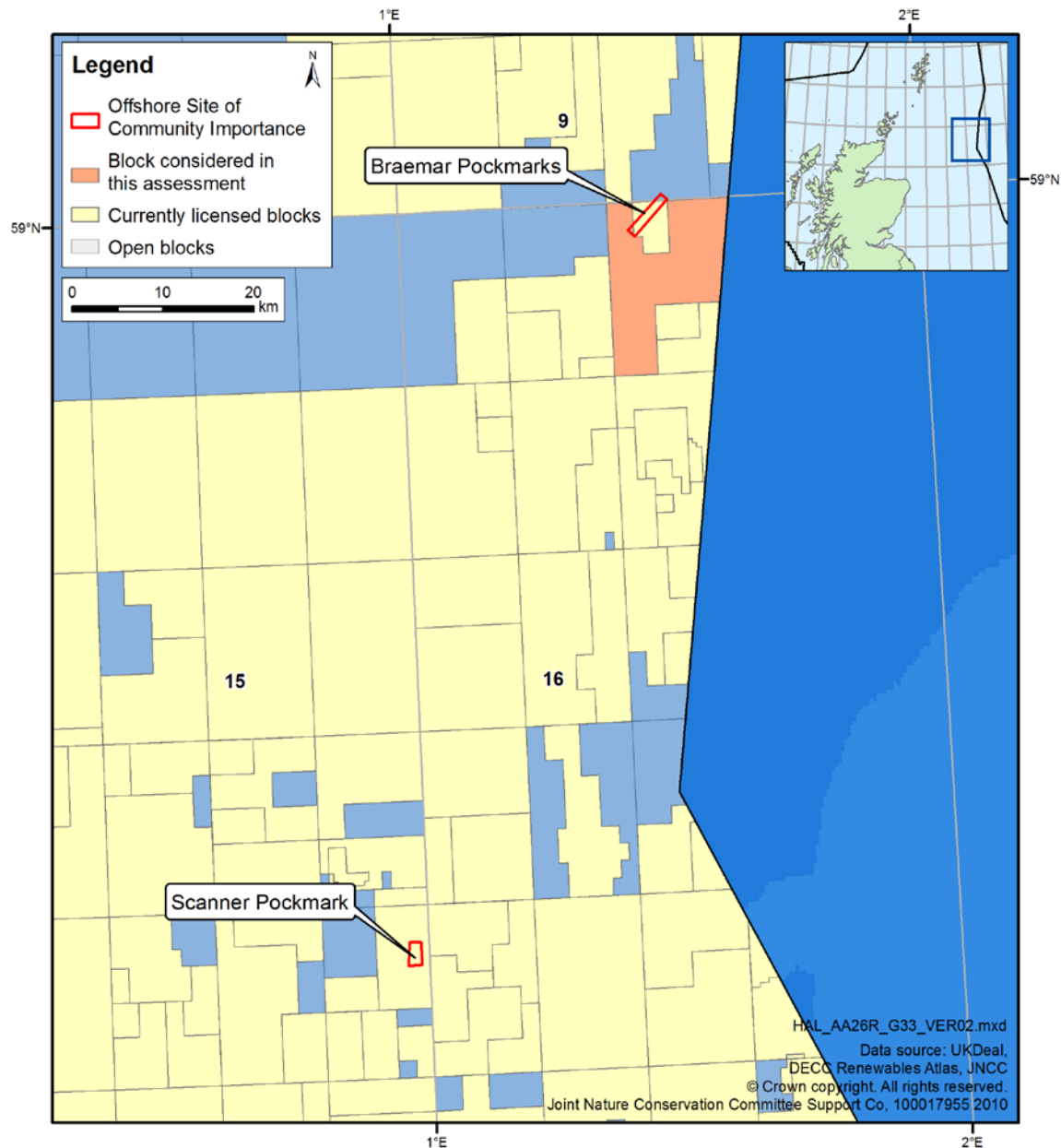


Table A.1: Offshore SACs in the Central North Sea and their Qualifying Features

Site Name	Area (ha)	Annex I Habitat	Annex II Species
Braemar Pockmarks SCI	518	Submerged structures made by leaking gases	N/A
Scanner Pockmark SCI	335	Submerged structures made by leaking gases	N/A

Appendix B – Screening tables for the identification of likely significant effects on the sites

B1 Offshore Special Areas of Conservation

Site name	Features present ¹			Effects ²			Consideration
	Habitats	Species	Oil spills ³	Physical Disturbance	Acoustic Disturbance	In-combination	
Braemar Pockmarks SCI	✓	-	-	✓	-	✓	Block 16/03d surrounds and overlaps with part of the site. Certain activities in, or related to, the Block could potentially undermine site conservation objectives through physical damage or loss from interruption or alteration of gas supply to the pockmarks, smothering by drilling discharges, the installation of infrastructure and cables. Mitigation is possible (see high level mitigation summarised in Table 4.2) and measures would be defined by subsequent Habitats Regulations Assessment once project plans are known.
Scanner Pockmark SCI	✓	-	-	-	-	-	The Block is some 65km from the site and no impact pathways have been identified

Notes: ¹ ✓ denotes feature present; ² ✓ denotes vulnerability to effect; ³ including diesel and/or lube oil

Appendix C – Detailed information on Natura 2000 site where the potential for effects have been identified

C1 Special Area of Conservation

Site Name: Braemar Pockmarks SCI ⁴	
Location	Latitude 58° 59'12"N Longitude 01° 28'34"E
Area (ha)	518
Summary	The Braemar pockmarks are a series of crater-like depressions, two of which contain submarine structures made by leaking gases. Also within the site boundary, and to the south-west of these pockmarks, there is an additional submarine structure that is not associated with a pockmark. These large carbonate blocks and pavement slabs are formed during the oxidation of methane gas. The habitat created supports chemosynthetic organisms that feed off the bubbling methane and provides shelter for fish species such as wolf-fish and cod.
Qualifying features for which the site is designated:	
Annex I Habitat Submarine structures made by leaking gases	
Annex II Species None	
Draft conservation objectives:	
For the Annex I Habitat: 'Submarine structures made by leaking gases': subject to natural change, maintain* the feature in favourable condition, such that: <ul style="list-style-type: none"> • The natural environmental and ecological processes* are maintained • The extent*, distribution*, diversity* and characteristic species composition of biological communities representative of Submarine structures made by leaking gases in the northern North Sea are maintained. 	
* For definitions of these terms, see the material presented in support of site selection by Natural England/JNCC: http://www.jncc.gov.uk/pdf/BraemarPockmarks_ConservationObjectives_AdviceonOperations_3.0_.pdf	
Note: These are high-level draft conservation objectives, which may be refined by Natural England/JNCC in light of increased understanding of the features. The draft objectives must be viewed in light of the material presented in support of site selection and relevant definitions of favourable conservation status (see link above).	

⁴ Site of Community Importance - For more information on this designation, see <http://www.jncc.gov.uk/page-1456>

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Department of Energy & Climate Change
3 Whitehall Place
London SW1A 2AW
www.decc.gov.uk

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