

OFFSHORE OIL & GAS LICENSING 31ST SUPPLEMENTARY ROUND

Habitats Regulations Assessment

Block and Site Screening

June 2019



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1 Introduction

1.1 Background and purpose

The plan/programme covering this and future seaward licensing rounds has been subject to a Strategic Environmental Assessment (OESEA3), completed in July 2016. The SEA Environmental Report was subject to an 8-week public consultation period, and a post-consultation report summarising comments and factual responses was produced as an input to the decision to adopt the plan/programme. This decision has allowed the Oil & Gas Authority (OGA) to progress with further seaward oil and gas licensing rounds. The OGA is offering 12 Blocks for licensing as part of a 31st supplementary Seward Licensing Round covering the Greater Buchan Area (Figure 1.1). The Blocks are adjacent to areas covered by the 31st Seaward Licensing Round, which closed for applications in November 2018.

As the petroleum licensing aspects of the plan/programme are not directly connected with or necessary for nature conservation management of European (Natura 2000¹) sites, to comply with its obligations under the *Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001* (as amended), the Department for Business, Energy and Industrial Strategy² (BEIS) is undertaking a Habitats Regulations Assessment (HRA).

In this HRA, the Department has applied the Habitats Directive test³ (elucidated by the European Court of Justice in the case of Waddenzee (Case C-127/02)⁴) which is:

...any plan or project not directly connected with or necessary to the management of the site is to be subject to an appropriate assessment of its implications for the site in view of the site's conservation objectives 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 a 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

¹ This includes Special Areas of Conservation (SAC) and Special Protection Areas (SPA), and potential sites for which there is adequate information on which to base an assessment. ² Note that while certain licensing and related regulatory functions were passed to the OGA (a government

² Note that while certain licensing and related regulatory functions were passed to the OGA (a government company wholly owned by the Secretary of State for BEIS) on 1 October 2016, environmental regulatory functions are retained by BEIS, and are administered by the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED).

³ See Article 6(3) of the Habitats Directive.

⁴ Also see the Advocate General's Opinion in the recent 'Sweetman' case (Case C-258/11), which confirms those principles set out in the Waddenzee judgement.

in the light inter alia of the characteristics and specific environmental conditions of the site concerned by such a plan or project.

1.2 Approach

BEIS has completed an HRA screening (BEIS 2018) and a series of Appropriate Assessments (AA)⁵ for relevant sites in relation to Blocks applied for in the 31st Seaward Licensing Round; the relevant statutory nature conservation bodies (SNCBs) were consulted on a draft of the HRA screening report, and the SNCBs and the public were consulted on the AA documents. The approach and content of the 31st Round HRA screening is applicable to this assessment. In view of the limited updates to the information base on which that HRA was undertaken, and to avoid unnecessary duplication, this document cross refers to the relevant sections of the screening assessment.

This screening assessment is the first stage of the HRA to determine whether licensing of any of the Blocks offered in the 31st supplementary Seaward Round may have a significant effect on a relevant site, either individually or in combination⁶ with other plans or projects. The approach taken to screening has been to identify all relevant European sites with the potential to be affected by exploration/appraisal activities that could follow licensing (i.e. those sites with marine qualifying features or with a marine ecological linkage such as anadromous and catadromous fish) (see Section 3). These sites are screened for the likelihood of significant effects based on the nature and scale of potential activities (as outlined in Section 2). Consideration is also given as appropriate to the site-specific advice on operations. Any Blocks which are screened in will be subject to a second stage of HRA, Appropriate Assessment, if they are applied for and before licensing decisions are taken. It should be noted that even when a licensing decision has been taken, any activities that may follow licensing will be subject to activity-specific assessment and where necessary, an HRA.

A draft of this HRA screening assessment was subject to consultation with the SNCBs and has been amended as appropriate in light of comments received.

⁵ <u>https://www.gov.uk/government/consultations/31st-seaward-licensing-round-appropriate-assessment</u>

⁶ Note that "in-combination" and "cumulative" effects have similar meanings, but for the purposes of HRA, and in keeping with the wording of Article 6(3) of the Habitats Directive, "in-combination" is used to describe the potential for such effects throughout. More information on the definitions of "cumulative" and "in-combination" effects are available in MMO (2014a) and Judd *et al.* (2015).

2 Blocks offered and potential activities

2.1 Summary of licensing

All offshore Blocks on offer in the 31st supplementary Seaward Licensing Round have been considered in this screening assessment and are listed in Table 2.1 and shown on Figure 2.1. The Blocks are considered by the OGA as part of the Greater Buchan Area Plan⁷.

Relevant information on seaward oil and gas licensing is provided in Section 2.1 of BEIS (2018) and the OGA website⁸. A Seaward Production Licence grants exclusive rights to the holders "*to search and bore for, and get, petroleum*" in the area covered by the Licence but does not constitute any form of approval for activities to take place in the Block, nor does it confer any exemption from other legal or regulatory requirements (i.e. even if licences are awarded). Offshore activities that may follow licensing are subject to a range of statutory permitting and consenting requirements including, where relevant, activity specific Appropriate Assessment as required under Article 6(3) of the Habitats Directive (Directive 92/43/EC).

Applicants can apply for an "Innovate" licence⁹. The Innovate licence is made up of three terms covering exploration (Initial Term), appraisal and field development planning (Second Term), and development and production (Third Term). The lengths of the first two terms are flexible but have a maximum duration of 9 and 6 years respectively. The Third Term is granted for 18 years but may be extended if production continues beyond this period. The Initial Term includes three Phases, covering:

- Phase A: geotechnical studies and geophysical data reprocessing (note that the acquisition of new seismic could take place in this phase for the purpose of defining a 3D survey as part of Phase B, but normally this phase will not involve activities in the field)
- Phase B: shooting of new seismic and other geophysical data
- Phase C: exploration and appraisal drilling

Applicants may propose the Phase combination in their submission to the OGA. Phase A and Phase B are optional and may not be appropriate in certain circumstances, but every application must propose a Phase C, except where the applicant does not think any exploration is needed (e.g. in the development of an existing discovery or field re-development)

⁷ https://www.ogauthority.co.uk/exploration-production/area-plans/

⁸ https://www.ogauthority.co.uk/licensing-consents/licensing-rounds/

⁹ The Petroleum and Offshore Gas Storage and Unloading Licensing (Amendment) Regulations 2017 amend the Model Clauses to be incorporated in Seaward Production Licences.

and proposes to go straight to development (i.e. 'straight to Second Term'). The duration of the Initial Term and the Phases within it are agreed between the OGA and the applicant. Applicants may choose to spend up to 4 years on a single Phase in the Initial Term but cannot take more than 9 years to progress to the Second Term. Failure to complete the work agreed in a Phase, or to commit to the next Phase means the licence ceases, unless the term has been extended by the OGA.

					•
Greater Buchan Area					
14/30b	15/26a	15/27b	20/4c	20/5a	20/5d
21/1a	21/2a	20/9	20/10	21/6c	21/7

Table 2.1: List of Blocks offered in the 31st Supplementary Seaward Licensing Round

2.2 Activity

Relevant information on the nature and scale of activity that could follow the licensing of Blocks in the 31st supplementary Round is provided in Section 2.3 of BEIS (2018). As part of the licence application process, applicants provide the OGA with details of work programmes they propose in the Initial Term. These work programmes are considered along with a range of other factors by the OGA before arriving at a decision on whether to license the Blocks and to whom. The OGA general guidance¹⁰ makes it clear that an award of a Production Licence does not automatically allow a licensee to carry out any offshore petroleum-related activities from then on (this includes those activities outlined in initial work programmes, particularly Phases B and C). Offshore activities (see Table 2.2) such as seismic survey or drilling are subject to relevant activity-specific environmental assessments by BEIS, and there are other regulatory provisions exercised by the Offshore Safety Directive Regulator and 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, and work offshore cannot proceed until the relevant consents/approvals are in place.

The nature, extent and timescale of development, if any, which may ultimately result from the licensing the Blocks in the Greater Buchan Area is uncertain, and therefore it is regarded that at this stage a meaningful assessment of development-level activity (e.g. pipelay, placement of jackets, subsea templates or floating installations) cannot be made. Once project plans are in place, subsequent permitting processes relating to exploration, development and decommissioning would require assessment including an HRA where appropriate, allowing for permits to be refused if necessary. In this way the opinion of the Advocate General in ECJ (European Court of Justice) case C-6/04, on the effects on Natura sites, "*must be assessed at every relevant stage of the procedure to the extent possible on the basis of the precision of the plan. This assessment is to be updated with increasing specificity in subsequent stages of the procedure"* is addressed. Therefore, only activities as part of the work programmes associated

¹⁰ https://www.ogauthority.co.uk/media/4950/general-guidance-31st-seaward-licensing-round-july-2018.docx

with the Initial Term and its associated Phases A-C will be considered in this HRA (see Table 2.2).

For the purposes of this screening assessment, the implications of geophysical survey and drilling are considered in a generic way for all the Blocks offered; a generic description of the nature and scale of these activities is given in Table 2.2 below.

2.3 Existing regulatory requirements and controls

The HRA screening assumes that the high-level controls described below are applied as standard to activities since they are legislative requirements which if not adhered to would constitute an offence. These are distinct from mitigation measures which may be identified and employed at a project-specific level to avoid adverse effects on site integrity.

2.3.1 Physical disturbance and drilling effects

There is a mandatory requirement to have sufficient recent and relevant data to characterise the seabed in areas where activities are due to take place (e.g. rig placement)¹¹. If required, survey reports must be made available to the relevant statutory bodies on submission of a relevant permit application or Environmental Statement for the proposed activity, and the identification of any potential sensitive habitats by such survey (including those under Annex I of the Habitats Directive) may influence BEIS's decision on a project-level consent.

Discharges from offshore oil and gas facilities have been subject to increasingly stringent regulatory controls over recent decades (see review in DECC 2016, and related Appendices 2 and 3). As a result, oil and other contaminant concentrations in the major streams (drilling wastes and produced water) have been substantially reduced or eliminated (e.g. the discharge of oil based mud contaminated cuttings is effectively banned), with discharges of chemicals and oil exceeding permit conditions or any unplanned release, potentially constituting a breach of the permit conditions and an offence. Drilling chemical use and discharge is subject to strict regulatory control through permitting, monitoring and reporting (e.g. the mandatory Environmental Emissions Monitoring System (EEMS) and annual environmental performance reports). The use and discharge of chemicals must be risk assessed as part of the permitting process (e.g. Drilling Operations Application) under the *Offshore Chemicals Regulations 2002* (as amended), and the discharge of chemicals which would be expected to have a significant negative impact would not be permitted.

At the project level, discharges would be considered in detail in project-specific environmental impact assessments, (where necessary through HRAs) and chemical risk assessments under existing permitting procedures.

¹¹ See BEIS (2019). The Offshore Petroleum Production and Pipelines (Assessment of Environmental Effects) Regulations 1999 (as amended) – a guide.

2.3.2 Underwater noise effects

Controls are in place to cover all significant noise-generating activities on the UKCS, including geophysical surveying. Seismic surveys (including VSP and high-resolution site surveys), subbottom profile surveys and shallow drilling activities require an application for consent under the *Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001* (as amended) and cannot proceed without consent. These applications are supported by an EIA, which includes a noise assessment. Applications are made through BEIS's Portal Environmental Tracking System using a standalone Master Application Template (MAT) and Geological Survey Subsidiary Application Template (SAT). Regarding noise thresholds to be used as part of any assessment, applicants are encouraged to seek the advice of relevant SNCB(s) (JNCC 2017) in addition to referring to European Protected Species (EPS) guidance (JNCC 2010). Applicants should be aware of recent research development in the field of marine mammal acoustics, including the development of a new set of criteria for injury (NMFS 2018, referred to as NOAA thresholds), which were recently adopted as updated criteria thresholds in the peer-reviewed literature (Southall *et al.* 2019).

BEIS consults the relevant statutory consultees on the application for advice and a decision on whether to grant consent is only made after careful consideration of their comments. Statutory consultees may request additional information or risk assessment, specific additional conditions to be attached to consent (such as specify timing or other specific control measures) or advise against consent.

It is a condition of consents issued under Regulation 4 of the Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001 (as amended) for oil and gas related seismic and sub-bottom profile surveys that the JNCC Seismic Guidelines are followed. Where appropriate, EPS disturbance licences may also be required under the Conservation of Offshore Marine Habitats and Species Regulations 2017¹². JNCC have recently updated their guidelines (2017) and reaffirm that adherence to these guidelines constitutes best practice and will, in most cases, reduce the risk of deliberate injury to marine mammals to negligible levels. Applicants are expected to make every effort to design a survey that minimises sound generated and consequent likely impacts, and to implement best practice measures described in the guidelines.

In addition, potential disturbance of certain qualifying species (or their prey) may be avoided by the seasonal timing of offshore activities. For example, periods of seasonal concern for individual Blocks on offer have been highlighted with respect to seismic survey and fish spawning (see Section 2 of OGA's Other Regulatory Issues¹³ which accompanied the 31st Round and supplementary Round offers) which licensees should take account of. Licensees should also be aware that it may influence BEIS's decision whether or not to approve particular activities.

¹² Disturbance of European Protected Species (EPS) (i.e. those listed in Annex IV) is a separate consideration under Article 12 of the Habitats Directive, and is not considered in this assessment.

¹³ <u>https://www.ogauthority.co.uk/media/4942/other-regulatory-issues_june-2018.docx</u>





Potential activity	Description			
Initial Term Phase B:	Geophysical survey			
Seismic (2D and 3D) survey	2D seismic involves a survey vessel with an airgun array and a towed hydrophone streamer (up to 12 km long), containing several hydrophones along its length. The reflections from the subsurface strata provide an image in two dimensions (horizontal and vertical). Repeated parallel lines are typically run at intervals of several kilometres (minimum <i>ca</i> . 0.5km) and a second set of lines at right angles to the first to form a grid pattern. This allows imaging and interpretation of geological structures and identification of potential hydrocarbon reservoirs.			
3D seismic survey is similar but uses several hydrophone streamers towed by the survey vessel. Thus, closely spaced 2D lines (typical between 25 and 75m apart) can be achieved by a single sail line.				
	These deep-geological surveys tend to cover large areas $(300-3,000 \text{km}^2)$ and may take from several days up to several weeks to complete. Typically, large airgun arrays are employed with 12-48 airguns and a total array volume of 3,000-8,000 in ³ . From available information across the UKCS, arrays used on 2D and 3D seismic surveys produce most energy at frequencies below 200Hz, typically peaking at 100Hz, and with a peak source level of around 256dB re 1µPa @ 1m (Stone 2015). While higher frequency noise will also be produced which is considerably higher than background levels, these elements will rapidly attenuate with distance from source; it is the components < 1,000Hz which propagate most widely.			
Initial Term Phase C:	Drilling and well evaluation			
Rig tow out & de- mobilisation	Mobile rigs are towed to and from the well site typically by 2-3 anchor handling vessels. The physical presence of a rig and related tugs during tow in/out is both short (a number of days depending on initial location of rig) and transient. Water depths over the Greater Buchan Area (~80-140m) are such that either a jack-up or semi-submersible rig could be used depending on location.			
Rig placement/ anchoring	Semi-submersible rigs use either anchors (deployed and recovered by anchor handler vessels) or dynamic positioning (DP) to manoeuvre into and stay in position over the well location. Eight to 12 anchors attached to the rig by cable or chain are deployed radially from the rig (anchor spreads are typically up to 1.5km long in the North Sea); part of the anchoring hold is provided by a proportion of the cables or chains lying on the seabed (catenary).			
	Jack-up rigs are used in shallower waters (normally <120m, for example in the southern and central North Sea – note that water depths across the Buchan Area Blocks vary from approximately 90m in the south to 140m in the north) and jacking the rig legs to the seabed supports the drilling deck. It is assumed that jack-up rigs will be three or four-legged rigs with 20m diameter spudcans with an approximate seabed footprint of 0.001km ² within a radius of <i>ca</i> . 50m of the rig centre. Unlike semi-submersible rigs, jack-up rigs do not require anchors to maintain station and these are not typically deployed for exploration activities, with positioning achieved using several tugs, with station being maintained by contact of the rig spudcans with the seabed. Anchors may be deployed to achieve precision siting over fixed installations or manifolds at production facilities, which are not considered in this assessment.			
	A review of 16 Environmental Statements which included drilling operations in quadrants 14, 15, 20 and 21 found that most wells drilled used semi-submersible rigs, with only two indicating that a jack-up would or could be used, and in a single instance the potential for stabilisation material was noted.			

Table 2.2: Indicative overview of potential activities that could arise from Block licensing

Potential activity	Description
Marine discharges	Typically, around 1,000 tonnes of cuttings (primarily rock chippings) result from drilling an exploration well. Water-based mud cuttings are typically discharged at, or relatively close to sea surface during "closed drilling" (i.e. when steel casing in the well bore and a riser to the rig are in place), whereas surface hole cuttings are normally discharged at seabed during "open-hole" drilling. Use of oil-based mud systems, for example in highly deviated sections or in drilling water reactive shales, would require onshore disposal or treatment offshore to the required standards prior to discharge.
	The distance from source within which smothering or other effects may be considered possible is generally a few hundred metres. For the purposes of the screening assessment it is assumed that effects may occur within 500m of the well location covering an area in the order of 0.8km ² .
Conductor piling	Well surface holes are usually drilled "open-hole" with the conductor subsequently inserted and cemented in place to provide a stable hole through which the lower well sections are drilled. Where the nature of the seabed sediment and shallow geological formations are such that they would not be stable open-hole (i.e. risking collapse), the conductor may be driven into the sediments. In North Sea exploration wells, the diameter of the conductor pipe is usually 26" or 30" (<1m), which is considerably smaller than the monopiles used for offshore wind farm foundations (>3.5m diameter), and therefore require less hammer energy and generate noise of a considerably lower amplitude. For example, hammer energies to set conductor pipes are in the order of 90-270kJ (see: Matthews 2014, Intermoor website), compared to energies of up to 3,000kJ in the installation of piles at some southern North Sea offshore wind farm sites. Direct measurements of underwater sound generated during conductor piling are limited. Jiang <i>et al.</i> (2015) monitored conductor piling operations at a jack-up rig in the central North Sea in 48m water depth and found peak sound pressure levels (L_{pk}) not to exceed 156dB re 1 µPa at 750m (the closest measurement to source) and declining with distance.
Rig/vessel presence and movement	On site, the rig is supported by supply and standby vessels, and helicopters are used for personnel transfer. Supply vessels typically make 2-3 supply trips per week between rig and shore. Helicopter trips to transfer personnel to and from the rig are typically made several times a week. Given the location of the Blocks relative to supply ports in North East Scotland and the presence of helicopter main routes to the wider mature central and northern North Sea basins ¹⁴ , support traffic is likely to use established routes. A review of Environmental Statements for exploratory drilling suggests that the rig could be on location for up to 10 weeks. Support and supply vessels (50-100m in length) are expected to have broadband source levels in the range 165-180dB re 1µPa@1m, with the majority of energy below 1kHz (OSPAR 2009). Additionally, the use of thrusters for dynamic positioning has been reported to result in increased sound and the presence of the supervisional (10 dP) when compared to the came weeked in transit (Puterke % Liebebrouwkii 2015).

¹⁴ <u>https://www.aurora.nats.co.uk/htmlAIP/Publications/2019-01-31-AIRAC/graphics/41001.pdf</u>

Potential activity	Description
Rig site survey	Rig site surveys are undertaken to identify seabed and subsurface hazards to drilling, such as wrecks and the presence of shallow gas. The surveys use a range of techniques, including multibeam and side scan sonar, sub-bottom profiler, magnetometer and high-resolution seismic involving a much smaller source (mini-gun or four airgun cluster of 160 in ³) and a much shorter hydrophone streamer. Arrays used on site surveys and some Vertical Seismic Profiling (VSP) operations (see below) typically produce frequencies predominantly up to around 250Hz, with a peak source level of around 235dB re 1μPa @ 1m (Stone 2015). A rig site survey typically covers 2-3km ² . The rig site survey vessel may also be used to characterise seabed habitats, biota and background contamination. Survey durations are usually of the order of four or five days.
Well evaluation (e.g. Vertical Seismic Profiling)	Sometimes conducted to assist with well evaluation by linking rock strata encountered in drilling to seismic survey data. A seismic source (airgun array, typically with a source size around 500 in ³ and with a maximum of 1,200 in ³ , Stone 2015) is deployed from the rig, and measurements are made using a series of geophones deployed inside the wellbore. VSP surveys are of short duration (one or two days at most).

3

Relevant Natura 2000 sites

Sites were considered for inclusion/exclusion in the screening process with respect to whether there was an impact pathway¹⁵ between the marine features for which they are designated and potential exploration/appraisal activities which could arise following Block licensing (see Table 2.2). Sites considered include designated Natura 2000 sites and potential sites for which there is adequate information on which to base an assessment.

Guidance in relation to sites which have not yet been submitted to the European Commission is given by Circular 06/2005 (ODPM 2005) 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." In accordance with Scottish Planning Policy (Scottish Government 2014) and the Marine Policy Statement (HM Government 2011), the relevant sites considered here include classified and potential SPAs, designated and candidate SACs and Sites of Community Importance (SCIs), and any proposed site extensions. The full details of all sites considered in this screening including their type, status and qualifying features are provided in Appendix A.*

If further Natura 2000 sites are established during this HRA process, they will be subject to screening and if necessary, included in subsequent Appropriate Assessment stages. The primary sources of site data were the latest JNCC SAC¹⁶ and SPA¹⁷ summary data (versions as of 26th March 2018). All relevant sites are shown in Figures 3.1 to 3.2 (also see Appendix A).

¹⁵ Based on knowledge of potential sources of effect resulting from the activities (from previous BEIS AAs and SEAs), and pathways by which these effects may impact receptors present on the site (from previous BEIS AAs and SEAs, Statutory Nature Conservation Body advice on operations and literature sources etc).

¹⁶ <u>http://jncc.defra.gov.uk/page-1461</u>

¹⁷ http://jncc.defra.gov.uk/page-1409









4 Screening Assessment Process

4.1 Introduction

The Block and site screening process follows BEIS (2018). The sources of effect that may arise during exploration or appraisal activities following licensing which are considered to have the potential to affect relevant Natura 2000 sites, are:

- The potential physical disturbance and drilling effects associated with the drilling of an exploration or appraisal well within each Block offered.
- The potential underwater noise effects associated with undertaking a seismic survey within each Block offered (as well as undertaking site-specific seismic operations including rig site survey and Vertical Seismic Profiling).
- The potential for in-combination effects.

Potential accidental events, including spills, are not considered in this HRA screening as they are not part of the work plan. Measures to prevent accidental events, response plans and potential impacts in the receiving environment would be considered as part of the EIA process for specific projects that could potentially follow licensing when the location, nature and timing of the proposed activities are available to inform a meaningful assessment of such risks.

4.2 Screening assessment

Sections 4.4-4.5 of BEIS (2018) provide a comprehensive information base which underpins a set of screening criteria for physical disturbance and drilling, and underwater noise effects, which have been applied in successive seaward licensing round HRAs. These criteria are:

- With respect to **physical and drilling effects**, any Block should be screened in that is within or overlaps with a Natura 2000 site, together with any Block within a buffer of 10km from a Natura 2000 site where there is a potential interaction between site features and exploration/appraisal activities in the Block. The site(s) leading to the screening in of any blocks should themselves be screened in for further assessment.
- With respect to underwater noise effects, any Block that is within 15km of a SAC with qualifying features regarded as sensitive to underwater noise (e.g. marine mammals, diving birds and migratory fish) should be screened in. In the context of measurements and modelling for the different sound sources; established injury threshold criteria; and, relevant studies of observed effects, including those in the UKCS, 15km is considered to be a conservative estimate of a maximum distance within which likely significant effects could be expected from the loudest noise sources associated with seismic survey activities. Blocks within 15km of an SPA designated for diving birds (see Box 4.1 in BEIS

2018) should also be screened in. The site(s) leading to the screening in of any blocks should themselves be screened in for further assessment.

The screening criteria were applied to those Blocks offered as part of the 31st supplementary Round; **no Blocks were identified as requiring further assessment.**

The potential for interactions of mobile qualifying species (primarily seabirds, marine mammals and fish) with exploration and appraisal activities when outside of relevant Natura 2000 site boundaries, and beyond those criteria set out above, has also been considered with regard to the information base presented in Section 4.6 of BEIS (2018).

Analyses of survey data towards identifying and designating offshore aggregations of foraging seabirds, either in the breeding or non-breeding season (Kober *et al.* 2010, 2012), have not identified any potential SPAs in the Greater Buchan Area. This area is some distance from seabird breeding colony SPAs (the closest is Buchan Ness to Collieston Coast SPA, ~80km distant), and is therefore not within the primary foraging range of relevant qualifying seabird features or features of seabird assemblages of the relevant sites.

Maps of predicted habitat use of kittiwake, razorbill and guillemot, based on tracking data (Cleasby *et al.* 2018), show that coastal waters on the east coast of Scotland are of high importance to these species during the breeding season, but limited use of areas east of the outer Moray Firth, where the relevant blocks are located. During the non-breeding season, seabirds are more widely dispersed throughout coastal and offshore waters. For example, combined geolocator and stable isotope analyses of auks at the Isle of May (Forth Islands SPA) show birds to be widely distributed in the North Sea outside of the breeding season during different moult periods (St. John Glew *et al.* 2018). While these data suggest overlap between the habitat use of puffin and, to a lesser extent, guillemot (both qualifying features of the Forth Islands SPA) and the Greater Buchan Area, they are subject to a high degree of spatial uncertainty (geolocators have an error of the order of ±200km). Furthermore, they illustrate the wide-ranging nature of seabirds during the non-breeding season; any offshore aggregations of seabirds during these months are likely to comprise individuals from several colony SPAs, spanning several hundred kilometres of coastline.

Though interactions with qualifying features may take place, physical, visual or acoustic disturbance from exploration drilling and seismic survey is not regarded to result in significant effects. This is due to: the relatively small seabed footprint and transitory nature of rig placement/installation and drilling discharges, coupled with the relatively low densities of seabirds in offshore waters; that none of the species that are likely to be present offshore are particularly vulnerable to disturbance by shipping (Garthe & Hüppop 2004) and are therefore unlikely to be significantly disturbed by the presence and movement of vessels associated with exploration activities. The likely low density of diving birds in offshore areas, and their limited exposure time and likely low sensitivity to underwater noise (see Section 4.5 of BEIS 2018) would indicate that significant disturbance from seismic surveys in the Greater Buchan Area is unlikely.

Relevant sites for seal species include those for grey seal (Isle of May SAC, Faray & Holm of Faray SAC) and harbour seal (Firth of Tay and Eden Estuary SAC Dornoch Firth and Morrich More SAC, Sanday SAC, Mousa SAC, Yell Sound Coast SAC). Telemetry data from several hundred seals tagged in the UK indicate that grey seals use coastal waters and offshore areas (up to 100km from the coast) connected to their haul-out sites by prominent corridors, while harbour seals primarily stay within 50km of the coastline (Jones *et al.* 2015, Russell *et al.* 2017). For both species, estimated density is greatest in coastal waters adjacent to colonies and very low within the Greater Buchan Area (the closest relevant site, Sanday SAC, is at least 160km away), and significant effects for relevant sites are not considered likely.

The Bottlenose dolphin feature of the Moray Firth SAC ranges well beyond the boundaries of the SAC as animals utilise waters off the southern Moray Firth, Grampian and Fife coasts (Cheney *et al.* 2013). Quick *et al.* (2014) showed that individual dolphins range up and down the coast, with much spatial and temporal variability in individual movements. Outside of the SAC, dolphins were most frequently encountered in waters less than 20m deep and within 2km of the coast in and around the Tay Estuary as well as along the coast between Montrose and Aberdeen. The Greater Buchan Area is distant from these coastal areas utilised by the bottlenose dolphin, and significant effects for the Moray Firth SAC are not considered likely.

Of those fish listed under Annex II of the EC Habitats Directive, only Atlantic salmon (River Naver SAC, River Thurso SAC, Berriedale and Langwell Waters SAC, River Oykel, River Spey SAC), sea lamprey (River Spey SAC) and river lamprey (River Tay SAC, River Spey SAC) are qualifying species of sites relevant to the 31st supplementary Round. Given their widespread and transient presence offshore, potential exploration activity in the Greater Buchan Area is unlikely to have a significant effect on relevant sites.

Whilst it is acknowledged that individuals of these mobile species could potentially interact with work programme activities associated with the Initial Term for Blocks offered in the 31st supplementary Round, significant effects on the populations of sites relating to such species, and therefore the conservation status of such sites, are not considered likely. Consequently, **no Blocks or sites have been identified for further assessment.** This is due to a combination of the small physical footprint and likely scale of potential activity, and the likely relative density of relevant features in relation to Greater Buchan Area.

The potential for in-combination effects are considered in Section 4.2.1 below.

4.2.1 In-combination effects

All blocks offered as part of the 31st supplementary Round were considered further in terms of the potential for likely significant effects to arise from activities following licensing, incombination with those from other marine activities. Relevant marine activities were identified based on those referred to in Appendix 1h of OESEA3 (DECC 2016)¹⁸ and where it was considered that a relevant pathway of in-combination effect was present.

The sources of in-combination effect are regarded to be largely related to physical disturbance and underwater noise, noting that a likely significant effect was not identified for the licensing of any Block, and the comparatively low density of activity in the Greater Buchan Area.

The Greater Buchan Area contains the Buchan (ceased production), Hannay (ceased production), Tweedsmuir and Rochelle oil fields and related infield and export pipelines. Additionally, two gas export pipelines (Beryl Alpha to St Fergus and Britannia to St Fergus) traverse the Greater Buchan Area in a NE-SW direction. The only surface infrastructure within the area is Goldeneye (Block 14/29), which has ceased production and is subject to planning for decommissioning¹⁹. The proposed NorthConnect interconnector between Scotland to Norway traverses the Greater Buchan Area in a southwest-northeast direction, for which consent was granted in February 2019. It is proposed that the project will commence offshore construction in 2021. Like other cables, the surface area of these is extremely small, and in view of the likely scale of disturbance from 31st supplementary Round activities, and the location of the area relative to any relevant sites, significant in-combination effects are not predicted.

Shipping density is very low to moderate over the Blocks offered, with only a minor increment (Table 2.2) considered likely to result from activities following licensing. At present, no offshore wind or other renewables developments have been proposed in proximity to the Blocks (closest is at least 130km to the west). However, the Greater Buchan Area is immediately adjacent to, or close to, a number of offshore wind plan option areas identified by the Scottish Government. In keeping with the Scottish National Marine Plan policy RENEWABLES 1, on adoption, proposals for future offshore wind are likely to be made in these areas. As the draft sectoral plan is yet to complete its formal SEA process, these areas are not finalised, and the timing and nature of any subsequent development is unknown but are unlikely to overlap with 31st supplementary Round activities.

As noted above and in Section 4.6 of BEIS (2018), there is the potential for individuals from several coastal SPAs to interact with activities that may follow the licensing of Blocks in the Greater Buchan Area during foraging or following post-breeding dispersal. Such individuals could also interact with other activities across their range. For example, features of the Outer Firth of Forth and St Andrews Bay Complex SPA and East Caithness Cliffs SPA have the potential to interact both with the Greater Buchan Area and consented or operating offshore wind farms (e.g. Neart Na Gaoithe, Inch Cape, Seagreen, Beatrice), and broader North Sea shipping activity. Despite this, in view of the spatially and temporally limited scale of the

¹⁸ The relevant marine planning portal for <u>Scotland</u> was also referred to, in addition to other sources of the latest spatial data on marine activities including data.gov.uk and the information contained in the OESEA3 review.
¹⁹ <u>https://www.gov.uk/guidance/oil-and-gas-decommissioning-of-offshore-installations-and-pipelines#table-of-draft-decommissioning-programmes-under-consideration</u>

activities covered by this HRA, and the relative sensitivity of seabird species to these, significant in-combination effects are not considered to be likely.

In view of the current activities and other relevant plans and projects in proximity to the Greater Buchan Area, **no likely significant in-combination effects have been identified.** For activity specific assessments, it is the licensee's responsibility to identify potential in-combination effects and undertake early engagement with other stakeholders.











5 Conclusion

This screening assessment is based on the Blocks offered in the 31st supplementary Round as part of the Greater Buchan Area plan and has considered the likelihood for significant effects on Natura 2000 sites from exploration/appraisal activities that could follow licensing of Blocks. The screening, which does not take account of mitigation, concluded that licensing would not have the potential to cause significant effects on any Natura 2000 sites.

As described in Section 1.1, the award of a licence does not constitute any form of approval for activities to take place in the Blocks, nor does it confer any exemption from other legal or regulatory requirements. Offshore activities that may follow licensing are subject to a range of statutory permitting and consenting requirements, including, where relevant, activity specific Appropriate Assessment as required under Article 6(3) of the Habitats Directive (Directive 92/43/EC).

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Appendix A – The Designated Sites

A1 Introduction

The following maps and tables show the locations of potentially relevant European sites and their qualifying features with respect to the Blocks offered as part of the 31st Supplementary Seaward Licensing Round.

The primary sources of site data were the latest JNCC SAC and SPA summary data²⁰ and interest features and site characteristics were filtered for their coastal and marine relevance. The websites of the relevant Statutory Nature Conservation Bodies (SNCBs) were also reviewed to verify and augment site information including that of Scottish Natural Heritage (SNH)²¹.

The sites in this Appendix are ordered thus:

- A2 Coastal and marine Special Protection Areas
- A3 Coastal and marine Special Areas of Conservation
- A4 Sites in the adjacent waters of other member states
- A5 Ramsar sites

²⁰ Version as of 17th September 2018 - <u>http://jncc.defra.gov.uk/page-1409</u>

²¹ <u>http://gateway.snh.gov.uk/sitelink/index.jsp</u>

A2 Coastal and Marine Special Protection Areas

Special Protection Areas (SPAs) are protected sites classified in accordance with Article 4 of the EC Birds Directive (2009/147/EC). Sites are classified for rare and vulnerable birds and for regularly occurring migratory birds. The SPAs included in this section are coastal sites selected for the presence of one or more of the bird species listed in Box A.1 (below).

A number of marine SPAs, some of which provide marine extensions to existing sites, are presently at the proposed stage in Scottish inshore and offshore waters having undergone public consultation in 2016 and early 2017²². All relevant SPAs are included on Map A.1.

Divers and grebes	Waders
Great northern diver Gavia immer	Oystercatcher Haematopus ostralegus
Red-throated diver Gavia stellata	Avocet Recurvirostra avosetta
Black-throated diver Gavia arctica	Stone curlew Burhinus oedicnemus
Little grebe Tachybaptus ruficollis	Ringed plover Charadrius hiaticula
Great crested grebe Podiceps cristatus	Dotterel Charadrius morinellus
Slavonian grebe Podiceps auritus	Golden plover Pluvialis apricaria
	Grey plover Pluvialis squatarola
Saahirda	Lapwing Vanellus vanellus
	Knot <i>Calidris canutus</i>
Fulmar Fulmarus glacialis	Sanderling Calidris alba
Manx shearwater Puttinus puttinus	Purple sandpiper Calidris maritima
Storm petrel Hydrobates pelagicus	Dunlin <i>Calidris alpina alpina</i>
Leach's petrel Oceanodroma leucorhoa	Ruff Philomachus pugnax
Gannet Morus bassanus	Snipe <i>Gallinago gallinago</i>
Cormorant Phalacrocorax carbo carbo	Black-tailed godwit Limosa limosa (breeding)
Shag Phalacrocorax aristotelis	Black-tailed godwit Limosa limosa islandica (non-breeding)
	Bar-tailed godwit Limosa lapponica
Razorbill Alca torda	Whimbrel Numenius phaeopus
Puttin Fratercula arctica	Curlew Numenius arquata
	Redshank Tringa totanus
Gulls, terns and skuas	Greenshank Tringa nebularia
Arctic skua Starcorarius parasiticus	Wood sandpiper <i>Tringa glareola</i>
Great skua Stercorarius skua	Turnstone Arenaria interpres
Mediterranean gull Larus melanocenhalus	Red-necked phalarope Phalaropus lobatus
Black-beaded gull Chroicocenhalus ridibundus	Waterfowl
Common gull Larus canus	
Lesser black-backed gull Larus fuscus	Bewick's swan Cygnus columbianus bewickli
Herring gull Larus argentatus	whooper swan Cygnus cygnus
Great black-backed gull Larus marinus	PINK-1001ed goose Anser brachyrnynchus
Kittiwake Rissa tridactyla	Greenland white-fronted goose Anser albifrons flavirostris
	Greater white-ironted goose Anser albitrons albitrons

Box A.1: Migratory and/or Annex I bird species for which SPAs are selected in the UK

²² <u>http://www.snh.gov.uk/protecting-scotlands-nature/protected-areas/proposed-marine-spas/</u>

Sandwich tern Thalasseus sandvicensis	Icelandic greylag goose Anser anser
Roseate tern Sterna dougallii	Greenland barnacle goose Branta leucopsis
Common tern Sterna hirundo	Svalbard barnacle goose Branta leucopsis
Arctic tern Sterna paradisaea	Dark-bellied brent goose Branta bernicla bernicla
Little tern Sternula albifrons	Canadian light-bellied brent goose Branta bernicla hrota
	Svalbard light-bellied brent goose Branta bernicla hrota
Crokes and rolls	Shelduck Tadorna tadorna
Crakes and rails	Wigeon Anas penelope
Corncrake Crex crex	Gadwall Anas strepera
	Teal Anas crecca
Birds of prev and owls	Mallard Anas platyrhynchos
	Pintail Anas acuta
Marsh harrier Circus aeruginosus	Shoveler Anas clypeata
Hen narrier Circus cyaneus	Pochard Aythya ferina
Golden eagle Aquila chrysaetos	Tufted duck Aythya fuligula
Osprey Pandion haliaetus	Scaup Aythya marila
Merlin Falco columbarius	Eider Somateria mollissima
Peregrine Falco peregrinus	Long-tailed duck Clangula hyemalis
Short-eared owl Asio flammeus	Common scoter Melanitta nigra
	Velvet scoter Melanitta fusca
Other bird species	Goldeneye Bucephala clangula
Fair Isle wren. Troglodytes troglodytes fridariensis	Red-breasted merganser Mergus serrator
Chough Durrhocoray purchagoray	Goosander Mergus merganser
	o o

Map A.1: Location of SPAs



Table A.1:	SPAs and	their	Qualifying	Features
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Site Name	Area (ha)	Article 4.1 Species	Article 4.2 Migratory Species	Article 4.2 Assemblages ²³
Hermaness, Saxa Vord and Valla Field SPA	6832.36	Breeding: Red-throated diver	Breeding: Gannet Great skua Puffin	Breeding: Seabirds
Bluemull and Colgrave Sounds pSPA	3823.27	Breeding: Red-throated diver	N/A	N/A
Fetlar SPA	16964.69	Breeding: Arctic tern Red-necked phalarope	Breeding: Dunlin Great skua Whimbrel	Breeding: Seabirds
Otterswick and Graveland SPA	2239.59	Breeding: Red-throated diver	N/A	N/A
East Mainland Coast, Shetland pSPA	25646.67	Breeding: Red-throated diver Over winter: Great northern diver Slavonian grebe	Over winter: Eider Long-tailed duck Red-breasted merganser	N/A
Noss SPA	3338.38	N/A	Breeding: Gannet Great skua Guillemot	Breeding: Seabirds
Mousa SPA	196.85	Breeding: Arctic tern Storm petrel	N/A	N/A
Lochs of Spiggie and Brow SPA	140.66	Over winter: Whooper swan	N/A	N/A
Sumburgh Head SPA	2478.91	Breeding: Arctic tern	N/A	Breeding: Seabirds
Fair Isle SPA	6825.1	Breeding: Arctic tern Fair Isle wren	Breeding: Guillemot	Breeding: Seabirds
Papa Westray (North Hill and Holm) SPA	245.94	Breeding: Arctic tern	N/A	N/A
West Westray SPA	3780.16	Breeding: Arctic tern	Breeding: Guillemot	Breeding: Seabirds
East Sanday Coast SPA	1508.2	N/A	Over winter: Purple sandpiper Turnstone	N/A
Calf of Eday SPA	2671.77	N/A	N/A	Breeding: Seabirds
Rousay SPA	5480.84	Breeding: Arctic tern	N/A	Breeding: Seabirds
North Orkney pSPA	22695.17	Breeding: Red-throated diver Over winter: Great northern diver Slavonian grebe	Over winter: Eider Long-tailed duck Velvet scoter Red-breasted merganser Shag	N/A

²³ A seabird assemblage of international importance: the area regularly supports at least 20,000 seabirds. Or, a wetland of international importance: the area regularly supports at least 20,000 waterfowl.

Site Name	Area (ha)	Article 4.1 Species	Article 4.2 Migratory Species	Article 4.2 Assemblages ²³
Marwick Head SPA	475.54	N/A	Breeding: Guillemot	Breeding: Seabirds
Orkney Mainland Moors SPA	5342.44	Breeding: Hen harrier Red-throated diver Short-eared owl Over winter: Hen harrier	N/A	N/A
Auskerry SPA	103.11	Breeding: Arctic tern Storm petrel	N/A	N/A
Copinsay SPA	3607.7	N/A	N/A	Breeding: Seabirds
Sule Skerry & Sule Stack SPA	3909.45	Breeding: Leach's storm petrel Storm petrel	Breeding: Gannet Puffin	Breeding: Seabird
Hoy SPA	18123.91	Breeding: Peregrine Red-throated diver	Breeding: Great skua	Breeding: Seabirds
Switha SPA	57.0	Over winter: Barnacle goose	N/A	N/A
Scapa Flow pSPA	37065.53	Breeding: Red-throated diver Over winter: Great northern diver Black-throated diver Slavonian grebe	Over winter: Shag Eider Long-tailed duck Goldeneye Red-breasted merganser	N/A
Pentland Firth Islands SPA	170.0	Breeding: Arctic tern	N/A	N/A
Pentland Firth pSPA	97325	Breeding: Arctic tern	N/A	Breeding: Seabirds
Caithness & Sutherland Peatlands SPA	145312.97	Breeding: Black-throated diver Golden eagle Golden plover Hen harrier Merlin Red-throated diver Short-eared owl Wood sandpiper	Breeding: Dunlin	N/A
North Caithness Cliffs SPA	14628.77	Breeding: Peregrine	Breeding: Guillemot	Breeding: Seabird
East Caithness Cliffs SPA	11696.37	Breeding: Peregrine	Breeding: Razorbill Herring gull Shag Kittiwake Guillemot	Breeding: Seabird
Caithness Lochs SPA	1381.65	Over winter: Greenland white-fronted goose Whooper swan	Over winter: Greylag goose	N/A
Lairg and Strathbrora Lochs SPA	286.14	Breeding: Black-throated diver	N/A	N/A

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Site Name	Area (ha)	Article 4.1 Species	Article 4.2 Migratory Species	Article 4.2 Assemblages ²³
Moray Firth pSPA	176235.95	Over winter: Great northern diver Red-throated diver Slavonian grebe	Breeding: Shag Over winter: Scaup Eider Long-tailed duck Common scoter Velvet scoter Common goldeneye Red-breasted merganser Shag	N/A
and Loch Fleet	7656.54	Osprey Over winter: Bar-tailed godwit	Greylag goose Wigeon	Waterfowl
Loch Eye SPA	204.88	Over winter: Whooper swan	Over winter: Greylag goose	N/A
Cromarty Firth SPA	3247.95	Breeding: Common tern Osprey Over winter <i>:</i> Bar-tailed godwit Whooper swan	Over winter: Greylag goose	Over winter: Waterfowl
Inner Moray Firth SPA	2290.25	Breeding: Common tern Osprey Over winter: Bar-tailed godwit	Over winter: Greylag goose Red-breasted merganser Redshank	N/A
Moray and Nairn Coast SPA	2325.67	Breeding: Osprey Over winter: Bar-tailed godwit	Over winter: Greylag goose Pink-footed goose Redshank	Over winter: Waterfowl
Troup, Pennan and Lion's Heads SPA	3365.2	N/A	Breeding: Guillemot	Breeding: Seabirds
Loch of Strathbeg SPA	616.26	Breeding: Sandwich tern Over winter: Whooper swan	Over winter: Teal Greylag goose Pink-footed goose Goldeneye	Over winter: Waterfowl
Buchan Ness to Collieston Coast SPA	5400.76	N/A	N/A	Breeding: Seabirds
Ythan Estuary, Sands of Forvie and Meikle Loch SPA	1014.62	Breeding: Common tern Little tern Sandwich tern	Over winter: Pink-footed goose	Over winter: Waterfowl
Ythan Estuary, Sands of Forvie and Meikle Loch (extension) pSPA	6051.39	Breeding: Sandwich tern Little tern	N/A	N/A
Fowlsheugh SPA	1303.23	N/A	Breeding: Guillemot Kittiwake	Breeding: Seabirds

Site Name	Area (ha)	Article 4.1 Species	Article 4.2 Migratory Species	Article 4.2 Assemblages ²³
Montrose Basin SPA	981.19	N/A	Over winter: Greylag goose Knot Pink-footed goose Oystercatcher Redshank	Over winter: Waterfowl
Firth of Tay and Eden Estuary SPA	6947.62	Breeding: Little tern Marsh harrier Over winter: Bar-tailed godwit	Over winter: Greylag goose Pink-footed goose Redshank	Over winter: Waterfowl
Outer Firth of Forth and St Andrews Bay Complex pSPA	272068.09	Breeding: Common tern Arctic tern Over-winter: Red-throated diver Little gull Slavonian grebe	Breeding: Shag Gannet Over-winter: Eider	Breeding: Seabirds Over winter: Seabirds Waterfowl
Firth of Forth Islands SPA	9795	Breeding: Roseate tern Common tern Sandwich tern Arctic tern	Breeding: Puffin Lesser black-backed gull Gannet Shag	Breeding: Seabirds
Firth of Forth SPA	6317.69	Over winter: Red-throated diver Bar-tailed godwit Golden plover Slavonian grebe Oystercatcher On passage: Sandwich tern	Over winter: Pink-footed goose Turnstone Knot Shelduck Redshank	Over winter: Waterfowl
St Abb's Head to Fast Castle SPA	1736.75	N/A	N/A	Breeding: Seabirds

A3 Coastal and Marine Special Areas of Conservation

This section includes coastal and marine Special Areas of Conservation (SAC) which contain one or more of the Annex I habitats listed in Box A.2 (below) or Annex II qualifying marine species. All relevant SACs are included on Map A.2.

Abbreviations for the Annex I habitats used in SAC site summaries (Table A.2) are listed in Box A.2. Common names of Annex II species are used in SAC site summaries with corresponding scientific names listed in Box A.3.

Annex I habitat (abbreviated)	Annex I habitat(s) (full description)
Bogs	Blanket bogs * Priority feature Transition mires and quaking bogs Depressions on peat substrates of the <i>Rhynchosporion</i> Active raised bogs * Priority feature Degraded raised bogs still capable of natural regeneration Bog Woodland * Priority feature
Coastal dunes	Shifting dunes along the shoreline with <i>Ammophila arenaria</i> ("white dunes") Fixed coastal dunes with herbaceous vegetation ("grey dunes") * Priority feature Humid dune slacks Embryonic shifting dunes Decalcified fixed dunes with <i>Empetrum nigrum</i> * Priority feature Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>) * Priority feature Dunes with <i>Salix repens</i> ssp. <i>argentea</i> (<i>Salicion arenariae</i>) Coastal dunes with <i>Juniperus</i> spp. Dunes with <i>Hippophae rhamnoides</i> Fixed dunes with herbaceous vegetation (`grey dunes`) * Priority feature
Coastal lagoons	Coastal lagoons * Priority feature
Estuaries	Estuaries
Fens	Alkaline fens Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> * Priority feature Petrifying springs with tufa formation (<i>Cratoneurion</i>) * Priority feature
Forest	Western acidic oak woodland Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion, Alnion incanae, Salicion albae</i>) * Priority feature <i>Taxus baccata</i> woods of the British Isles *Priority feature <i>Tilio-Acerion</i> forests of slopes, screes and ravines * Priority feature Old sessile oak woods and <i>llex</i> and <i>Blechnum</i> in the British Isles Old sessile oak woods with <i>Quercus robur</i> on sandy plains

Box A.2: Annex I habitat abbreviations used in site summaries

Annex I habitat (abbreviated)	Annex I habitat(s) (full description)
Grasslands	Alpine and subalpine calcareous grasslands Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels Siliceous alpine and boreal grasslands Species-rich <i>Nardus</i> grassland, on siliceous substrates in mountain areas (and submountain areas in continental Europe) * Priority feature Alpine pioneer formations of the <i>Caricion bicoloris-atrofuscae</i> * Priority feature Calaminarian grasslands of the <i>Violetalia calaminariae</i> <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>) Semi-natural dry grasslands and scrubland facies: on calcareous substrates (<i>Festuco- Brometalia</i>) (important orchid sites) * Priority feature
Heaths	Northern Atlantic wet heaths with <i>Erica tetralix</i> European dry heaths Alpine and Boreal heaths Dry Atlantic coastal heaths with <i>Erica vagans</i>
Inlets and bays	Large shallow inlets and bays
Limestone pavements	Limestone pavements * Priority feature
Machairs	Machairs
Mudflats and sandflats	Mudflats and sandflats not covered by seawater at low tide
Reefs	Reefs
Rocky slopes	Calcareous rocky slopes with chasmophytic vegetation Calcareous and calcshist screes of the montane to alpine levels (<i>Thlaspietea rotundifolii</i>) Siliceous rocky slopes with chasmophytic vegetation
Running freshwater	Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation
Saltmarsh and salt meadows	Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornetea fruticosi</i>) <i>Salicornia</i> and other annuals colonising mud and sand <i>Spartina</i> swards (<i>Spartinion maritimae</i>)
Sandbanks	Sandbanks which are slightly covered by sea water all the time
Scree	Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>) Calcareous and calcshist screes of the montane to alpine levels (<i>Thlaspietea rotundifolii</i>)
Scrub	<i>Juniperus communis</i> formations on heaths or calcareous grasslands Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornetea fruticosi</i>)
Sea caves	Submerged or partially submerged sea caves
Sea cliffs	Vegetated sea cliffs of the Atlantic and Baltic Coasts
Standing freshwater	Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the <i>Isoëto-Nanojuncetea</i> Natural dystrophic lakes and ponds Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp. Natural eutrophic lakes with <i>Magnopotamion</i> or <i>Hydrocharition</i> - type vegetation Oligotrophic waters containing very few minerals of sandy plains (<i>Littorelletalia uniflorae</i>)
Vegetation of drift line	Annual vegetation of drift lines
Vegetation of stony banks	Perennial vegetation of stony banks

Group	Annex II species common name (scientific name)
Plants	marsh saxifrage (<i>Saxifraga hirculus</i>) petalwort (<i>Petalophyllum ralfsii</i>) floating water-plantain (<i>Luronium natans</i>) shore dock (<i>Rumex rupestris</i>)
Invertebrates	marsh fritillary butterfly (<i>Euphydryas</i> (<i>Eurodryas</i> , <i>Hypodryas</i>) aurinia) freshwater pearl mussel (<i>Margaritifera margaritifera</i>) slender naiad (<i>Najas flexilis</i>) narrow-mouthed whorl snail (<i>Vertigo angustior</i>) white-clawed (or Atlantic stream) crayfish (<i>Austropotamobius pallipes</i>) Fisher's estuarine moth (<i>Gortyna borelii lunata</i>)
Amphibians	great crested newt (Triturus cristatus)
Fish	sea lamprey (<i>Petromyzon marinus</i>) brook lamprey (<i>Lampetra planeri</i>) river lamprey (<i>Lampetra fluviatilis</i>) Atlantic salmon (<i>Salmo salar</i>) bullhead (<i>Cottus gobio</i>)
Mammals	grey seal (<i>Halichoerus grypus</i>) harbour seal (<i>Phoca vitulina</i>) otter (<i>Lutra lutra</i>) harbour porpoise (<i>Phocoena phocoena</i>) bottlenose dolphin (<i>Tursiops truncatus</i>)

Box A.3: Annex II species common names used in site summaries and scientific names

Map A.2: Location of SACs



Site Name	Area (ha)	Annex I Habitat Primary	Annex I Habitat Qualifying	Annex II Species Primary	Annex II Species Qualifying
Braemar Pockmarks SAC	1143 (includes proposed extension)	Submarine structures made by leaking gases	N/A	N/A	N/A
Scanner Pockmark SAC	674 (includes proposed extension)	Submarine structures made by leaking gases	N/A	N/A	N/A
Pobie Bank Reef SAC	96575	Reefs	N/A	N/A	N/A
Cape Wrath SAC	1009.75	Sea cliffs	N/A	N/A	N/A
Durness SAC	1213.8	Coastal dunes Standing freshwater Grasslands Limestone pavements	Coastal dunes Heaths Grasslands Fens	N/A	Otter
Foinaven SAC	14853.66	Standing freshwater Heaths Grasslands Scree Rocky slopes	Grasslands Bogs Rocky slopes	N/A	Freshwater pearl mussel Otter
Invernaver SAC	287.67	Coastal dunes Heaths Grasslands	Coastal dunes Fens	N/A	N/A
River Naver SAC	1044.15	N/A	N/A	Freshwater pearl mussel Atlantic salmon	N/A
Strathy Point SAC	207	Sea cliffs	N/A	N/A	N/A
River Thurso SAC	348.25	N/A	N/A	Atlantic salmon	N/A
Caithness and Sutherland Peatlands SAC	143561.47	Standing freshwater Bogs	Heaths Bogs	Otter Marsh saxifrage	N/A
East Caithness Cliffs SAC	457.48	Sea cliffs	N/A	N/A	N/A
Berriedale and Langwell Waters SAC	58.25	N/A	N/A	Atlantic salmon	N/A
Moray Firth SAC	151273.99	N/A	Sandbanks	Bottlenose dolphin	N/A
River Oykel	921.46	N/A	N/A	Freshwater pearl mussel	Atlantic salmon
River Evelix	23.6	N/A	N/A	Freshwater pearl mussel	N/A
Dornoch Firth and Morrich More SAC	8701.22	Estuaries Mudflats and sandflats Saltmarsh and salt meadows Coastal dunes	Sandbanks Reefs	Otter Harbour seal	N/A
Culbin Bar SAC	580.99	Vegetation of stony banks	Saltmarsh and salt meadows Coastal dunes	N/A	N/A
Lower River Spey - Spey Bay SAC	654.26	Vegetation of stony banks Forests	N/A	N/A	N/A

Table A.2: SACs and their Qualifying Features

Site Name	Area (ha)	Annex I Habitat Primary	Annex I Habitat Qualifying	Annex II Species Primary	Annex II Species Qualifying
River Spey SAC	5759.72	N/A	N/A	Freshwater pearl mussel Sea lamprey Atlantic salmon Otter	N/A
Buchan Ness to Collieston SAC	206.03	Sea cliffs	N/A	N/A	N/A
Sands of Forvie SAC	735.48	Coastal dunes	N/A	N/A	N/A
River Dee SAC	2334.48	N/A	N/A	Freshwater pearl mussel Atlantic salmon Otter	N/A
Garron Point SAC	15.01	N/A	N/A	Narrow-mouthed whorl snail	N/A
River South Esk SAC	471.85	N/A	N/A	Freshwater pearl mussel Atlantic salmon	N/A
River Tay SAC	9461.63	N/A	Standing freshwater	Atlantic salmon	Sea lamprey Brook lamprey River lamprey Otter
Firth of Tay and Eden Estuary SAC	15441.63	Estuaries	Sandbanks Mudflats and sandflats	Harbour seal	N/A
Isle of May SAC	356.64	N/A	Reefs	Grey seal	N/A
St Abb's Head to Fast Castle SAC	122.63	Sea cliffs	N/A	N/A	N/A
Berwickshire and North Northumberland Coast SAC	65226.12	Mudflats and sandflats Inlets and Bays Reefs Sea caves	N/A	Grey seal	N/A

A5 Ramsar sites

The coastal Ramsar sites listed in Table A.3 and shown on Map A.3 are also SPAs and/or SACs (although site boundaries are not always strictly coincident and a Ramsar site may comprise one or more Natura 2000 sites), see tabulation below.

Ramsar Name	SPA Name	SAC Name
Caithness and Sutherland Peatlands	Caithness and Sutherland Peatlands	Caithness and Sutherland Peatlands
Cromarty Firth	Cromarty Firth	Moray Firth
Dornoch Firth and Loch Fleet	Moray Firth pSPA Dornoch Firth and Loch Fleet	Dornoch Firth and Morrich More Moray Firth
East Sanday Coast	East Sanday Coast	Sanday
Firth of Forth	Outer Firth of Forth and St Andrews Bay Complex pSPA Firth of Forth Forth Islands	-
Firth of Tay & Eden Estuary	Outer Firth of Forth and St Andrews Bay Complex pSPA Firth of Tay & Eden Estuary	Firth of Tay and Eden Estuary
Inner Moray Firth	Moray Firth pSPA Inner Moray Firth	Moray Firth
Loch of Strathbeg	Loch of Strathbeg	-
Montrose Basin	Montrose Basin	River South Esk
Moray and Nairn Coast	Moray Firth pSPA Moray and Nairn Coast	Culbin Bar Moray Firth Lower River Spey - Spey Bay River Spey
Ythan Estuary and Meikle Loch	Ythan Estuary, Sands of Forvie and Meikle Loch SPA Ythan Estuary, Sands of Forvie and Meikle Loch (extension) pSPA	Sands of Forvie

Table A.3: Coastal Ramsar sites and correspo	onding Natur	a 2000 sites
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Map A.3: Location of coastal Ramsar sites

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