Department for Business, Energy & Industrial Strategy

OFFSHORE OIL & GAS LICENSING
2016 SUPPLEMENTARY ROUND

Habitats Regulations Assessment

Screening & Appropriate Assessment: Blocks 9/18e, 10/1b, 12/28, 16/18c, 21/30e, 43/21b, 44/16b, 48/1d, 48/25a, 211/8, 211/19a

July 2017

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1 Introduction

1.1 Background and purpose

The Oil and Gas Authority (OGA) launched a supplementary Seaward Licensing Round for 14 Blocks on 6th December 2016[1]. This closed for applications on 7th March 2017 attracting 15 applications for 11 Blocks. The Blocks applied for are outside of the frontier areas covered by the 29th Licensing Round, which closed for applications in October 2016 (Figure 1.1).

Before awarding licences, the Department for Business, Energy and Industrial Strategy[2] (BEIS) is undertaking a Habitats Regulations Assessment (HRA) to comply with obligations under the *Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001* (as amended)[3]. This consists of determining (or screening) whether the award of any of the Blocks applied for is likely to have a significant effect on a relevant Natura 2000 site, either individually or in-combination[4] with other plans or projects. Where a significant effect is deemed likely, an Appropriate Assessment (AA) is made to determine whether the activities could have any adverse effects on the integrity of the site. Licences will only be awarded where it has been ascertained that there will be no adverse effect on the integrity of Natura 2000 sites. This document describes the HRA process (incorporating screening and AA as appropriate) of the 11 Blocks applied for in the Supplementary Round including Blocks 9/18e, 10/1b, 12/28, 16/18c, 21/30e, 43/21b, 44/16b, 48/1d, 48/25a, 211/8 and 211/19a.

1.2 Approach

BEIS has completed an HRA screening (BEIS 2016) and AA (BEIS 2017a) for relevant sites in relation to Blocks applied for in the 29th Licensing Round; the relevant statutory nature conservation bodies (SNCBs) were consulted on drafts of both documents. The approach and much of the text in the 29th Round HRA is applicable to this HRA and to avoid duplication of information, this document cross refers to the relevant sections of those assessments. The same approach is used here to consider the potential for likely significant effect (LSE) and adverse effects on site integrity, in relation to the award of licences for Blocks 9/18e, 10/1b,

[1] https://www.ogauthority.co.uk/news-publications/news/2016/oga-launches-an-offshore-2016-supplementary-round/

[2] Note that while certain licensing and regulatory functions have been passed to the OGA, environmental regulatory functions are retained by BEIS, and are administered by the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED).

[3] The Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001 (as amended) (OPAR 2001) implement the requirements of Articles 6(3) and 6(4) of the Habitats Directive with respect to oil and gas activities in UK territorial waters and on the UK Continental Shelf.

[4] 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 (2014) and Judd *et al.* (2015).

12/28, 16/18c, 21/30e, 43/21b, 44/16b, 48/1d, 48/25a, 211/8 and 211/19a. Both the screening and AA stages are described within this document. Section 2 describes the initial screening of the Blocks applied for using criteria developed for the 29th Round HRA to identify Blocks and relevant sites for further AA. Section 3 details the further assessment of those Blocks and sites screened in to determine whether potential activities could have an adverse effect on site integrity.

As part of this HRA process, the draft HRA document was subject to statutory consultation and has been amended as appropriate in light of comments received. Both the draft and final HRA documents are available via the Appropriate Assessment section of the offshore energy strategic environmental assessment webpage.

1.3 Summary of licensing and potential activities

Relevant information on seaward oil and gas licensing is provided in Section 2.1 of BEIS (2017a) and the OGA website[5]. 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 Blocks, nor does it confer any exemption from other legal or regulatory requirements (i.e. even if licences are awarded, subsequent activities cannot be undertaken without activity specific assessment, which may include further HRA, and consent/approval).

Applicants can apply for an Innovate Licence which was introduced for the 29th Licensing Round. The Innovate Licence includes three Phases to the Initial Term of the licence, 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 have the flexibility to choose the Phase that they wish to initially apply for, the phase combinations they wish to undertake, and the duration of these Phases. For example all phases may be undertaken or a combination of selected phases, or in some instances where it can be demonstrated that no exploration is required (e.g. development of an existing discovery or field re-development), licence award would go straight to the Second Term. A firm commitment to drill a well will normally only be considered for applicants who propose to start at Phase C (i.e. at the point where the drilling decision does not require any more analysis).

[5] https://www.ogauthority.co.uk/licensing-consents/offshore-licences/

It should be noted that this assessment is being undertaken during the licence application process and therefore agreed work programmes are not yet available for those Blocks subject to further assessment. Notional work programmes have been submitted for 11 Blocks across 15 applications. Of these applications four (with potentially a fifth) are proposing to go straight to the Second Term. Currently, the nature, extent and timescale of development, if any, which may result from the licensing of these Blocks 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. Moreover, once project plans are in place, subsequent permitting processes relating to exploration, development and decommissioning, would require assessment (including HRA) as appropriate, allowing the opportunity for further mitigation measures to be identified as necessary, and 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.

The approach used in the AA is to consider an indicative work programme for each Block applied for, consisting of the drilling of a single well. None of the work programmes proposed for the Blocks screened in for further assessment (Section 2) include conducting a new seismic survey. The nature and scale of potential environmental impacts from the drilling of development wells are similar to those of exploration and appraisal wells and thus the evidence base described in Section 4 of BEIS (2017a) is applicable to the potential effects of development well drilling.

Completion of the work programme is likely to involve one or more of the activities summarised in Table 1.1 below. The table also highlights a series of assumptions on the nature and scale of these potential activities which inform the AA in Section 3. Subsequent development activity is contingent on successful exploration and appraisal and may or may not result in the eventual installation of infrastructure. Where relevant, such future activities will themselves be subject to activity specific screening procedures and tests under the Habitats Directive (see Section 2.2 of BEIS 2017a). It is the licensee's responsibility to be aware of, and comply with, all regulatory controls and legal requirements.

1.4 Existing regulatory requirements and controls

The HRA 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 further mitigation measures which may be identified and employed to avoid likely significant effects on relevant sites (see Section 3).

Figure 1.1: Blocks offered and applied for in the Offshore 2016 Supplementary Round

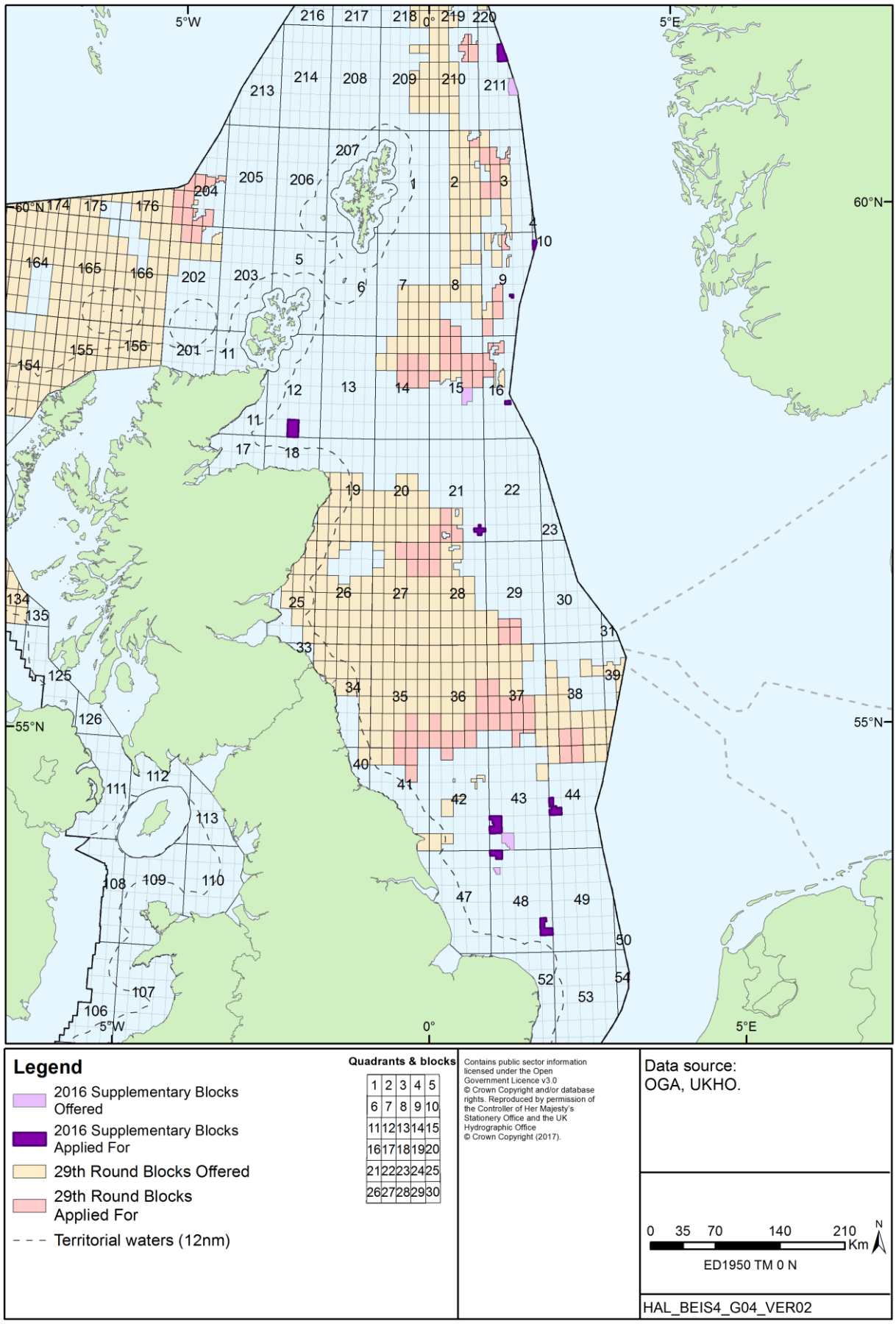


Table 1.1: Potential activities and assessment assumptions

Potential activity	Description	Assumptions used for assessment
Initial Term Phase B: Geophysical survey		
Deep geological seismic (2D and 3D) survey	2D seismic involves a survey vessel towing a single airgun array and a single 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 *ca*. 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 more than one source and several hydrophone streamers towed by the survey vessel. Thus closely spaced 2D lines (typically between 25 and 50m apart) can be achieved by a single sail line. Typical airgun arrays for deep geological surveys involve 12-48 airguns and have a total array volume of 3000-8000 in^3	Assuming a survey vessel sailing speed of 4.5 knots and 500 line km of seismic shot per Block, this activity would take at least 2.5 days to complete. Total survey duration could vary between 3 and 11 days depending on its location and time of year (e.g. assuming shooting is undertaken only in daylight hours and suitable sea state is available).
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.
Rig placement/ anchoring	Jack-up rigs are used in shallower waters (normally <120m) and jacking the rig legs to the seabed supports the drilling deck. Each of the rig legs terminates in a spud-can (base plate) to prevent excessive sinking into the seabed.	Given that water depths over the Blocks screened in for AA (see Section 3) are relatively shallow (<100m), jack-up rigs will be used to drill wells. 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 *ca*. 50m of the rig centre. For the assessment it is assumed that effects may occur within 500m of a jack-up rig which would take account of any additional rig stabilisation (rock placement) footprint. A short review of 18 Environmental Statements which included drilling operations in the southern North Sea since 2007 (specifically in quadrants 42, 43, 44, 47, 48, 49 and 53) indicated that rig stabilisation was either not considered necessary and/or assessed as a worst case contingency option. Where figures were presented, the spatial scale of potential rock placement operations was estimated at between 0.001-0.004km^2 per rig siting. A BEIS study due to report later this year will compare the rock volumes estimated in operator applications (e.g. drilling application) with those actually used (from returns).
Marine discharges	Typically around 1,000 tonnes of cuttings (primarily rock chippings) result from drilling an exploration well. Water-based mud cuttings	The footprint of cuttings and other marine discharges, or the distance from source within which smothering or other effects may be

Potential activity	Description	Assumptions used for assessment
	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.	considered is generally a few hundred metres. For the assessment it is assumed that effects may occur within 500m of the well location covering an area in the order of 0.8km^2.
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.
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. The rig site survey vessel may also be used to characterise seabed habitats, biota and background contamination.	Rig site survey typically covers 2-3km^2. 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 of ~500 in^3 and a maximum of 1,200 in^3) is deployed from the rig, and measurements are made using a series of geophones deployed inside the wellbore.	Vertical Seismic Profiling (VSP) surveys are static and of short duration (one or two days at most).

1.4.1 Physical disturbance and drilling

The routine sources of potential physical disturbance and drilling effects associated with exploration are assessed and controlled through a range of regulatory processes, such as Environmental Impact Assessment (EIA) under the *Offshore Petroleum Production and Pipe-lines (Assessment of Environmental Effects) Regulations 1999* (as amended) as part of the Drilling Operations Application through the Portal Environmental Tracking System and, where relevant, HRA to inform decisions on those applications[6].

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)[7]. 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 operation to be undertaken, and

[6] https://www.gov.uk/guidance/oil-and-gas-offshore-environmental-legislation
[7] See DECC (2011). Guidance notes on the Offshore Petroleum Production and Pipelines (Assessment of Environmental Effects) Regulations 1999 (as amended).

the identification of sensitive habitats by such survey (including those under Annex I of the Habitats Directive) would inform 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 muds and 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 EIAs, (where necessary through HRAs) and chemical risk assessments under existing permitting procedures.

1.4.2 Acoustic disturbance

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), sub-bottom 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); this is due to recent research development in the field of marine mammal acoustics and the publication in the US of a new set of criteria for injury (NMFS 2016, referred to as NOAA thresholds).

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 mitigation 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* (& 2007 Amendments) 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 *Offshore Marine*

Conservation (Natural Habitats, &c.) Regulations 2007 (as amended)[8]. JNCC have recently updated their guidelines (2017) and reaffirm that compliance with 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 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 of OGA's Other Regulatory Issues[9] which accompanied the Supplementary Round offer) 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.

[8] 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.

[9] https://www.ogauthority.co.uk/media/2213/other_regulatory_issues-230816.pdf

2 Block and site screening

2.1 Screening assessment process

The Block and site screening process follows BEIS (2016), in relation to those sources of effect generally considered to have the potential to affect relevant Natura 2000 sites, namely:

- Physical disturbance and drilling effects (e.g. rig siting, marine discharges, rig/vessel presence and movement)
- Underwater noise
- In-combination effects

Potential accidental events, including spills, are not considered 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 environmental impact assessment process for specific projects that could follow licensing when the location, nature and timing of the proposed activities are available to inform a meaningful assessment of such risks.

Sections 4.3 and 4.4 of BEIS (2016) describe relevant screening criteria with respect to the sources of effect above and include:

- With respect to **physical disturbance and drilling effects**, any Block should be screened in that is within or impinges on 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.
- With respect to **underwater noise effects**, any Block should be screened in that is within 15km of a SAC with qualifying features regarded as sensitive to underwater noise (e.g. marine mammals and migratory fish). In the context of established injury threshold criteria (e.g. Southall *et al*. 2007), and the outcome of studies on the effects of seismic activity on marine mammal species in the UKCS (e.g. Thompson *et al*. 2013, Pirotta e*t al.* 2013), this 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 geological seismic survey activities. Blocks within 15km of an SPA designated for deep diving birds (e.g. auks, gannets) should also be screened in.

These screening criteria have been applied to those Blocks applied for: 9/18e, 10/1b, 12/28, 16/18c, 21/30e, 43/21b, 44/16b, 48/1d, 48/25a, 211/8 and 211/19a. The Natura 2000 sites and relevant Blocks identified as requiring further assessment (described in Section 3) are indicated in Table 2.1 and Figure 2.1. Potential effects on mobile species (primarily seabirds, marine mammals and fish) outside of relevant Natura 2000 sites are not considered likely

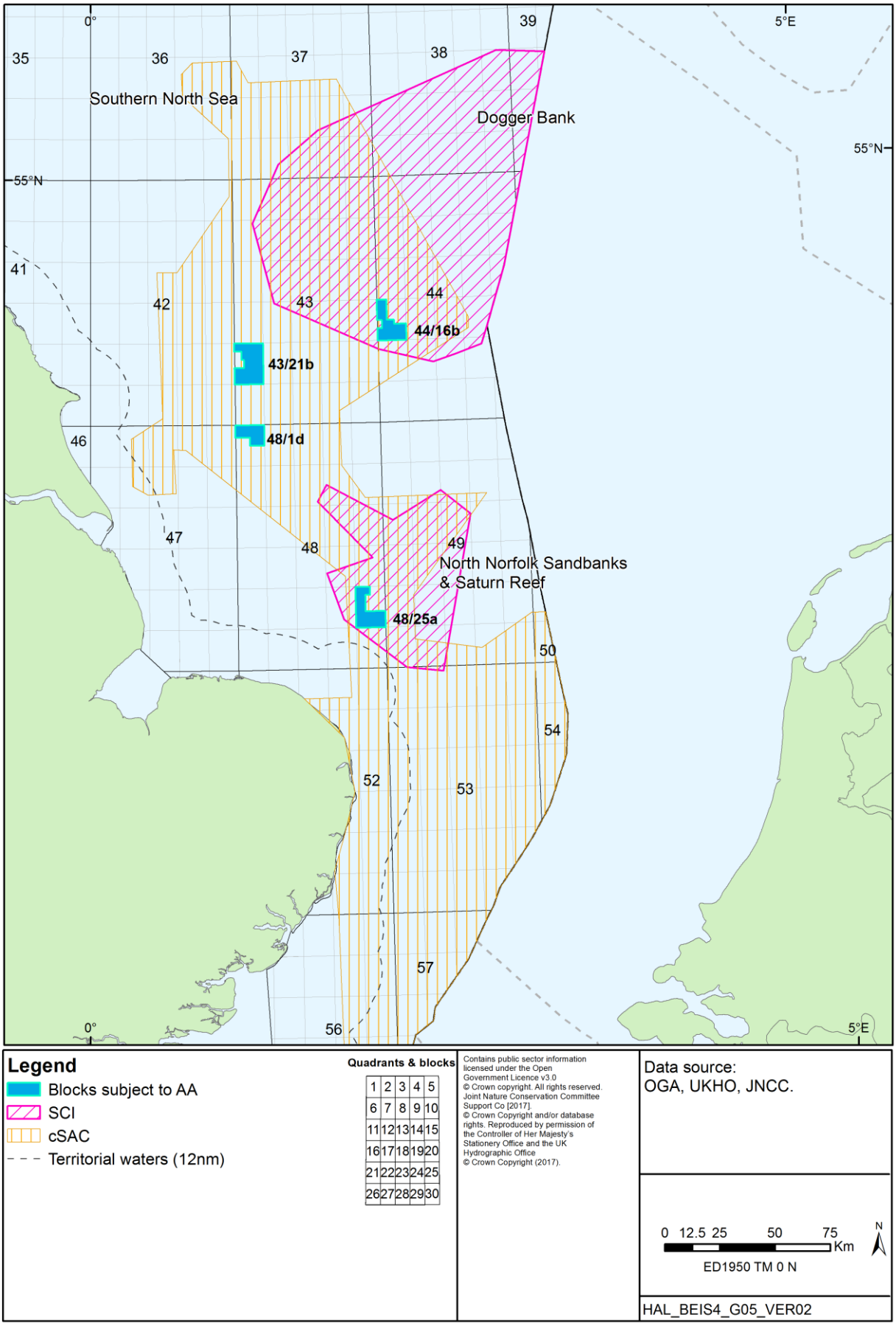
based on the information provided in Section 4.5 of BEIS (2016). The potential for in-combination effects on relevant sites has been screened in and is considered in Section 3.4.

Table 2.1: Relevant sites and Blocks requiring further assessment

Relevant site	Features	Relevant Blocks	Potential effects
Dogger Bank SCI	Annex I habitat: Sandbanks which are slightly covered by sea water all the time	44/16b	Physical disturbance and drilling
North Norfolk Sandbanks and Saturn Reef SCI	Annex I habitat: Sandbanks which are slightly covered by sea water all the time, Reefs	48/25a	Physical disturbance and drilling
Southern North Sea cSAC	Annex II species: Harbour porpoise *Phocoena phocoena*	43/21b, 44/16b, 48/1d, 48/25a	Physical disturbance and drilling; Underwater noise

Note that having applied the screening criteria used in BEIS (2016), no sites designated for birds (Special Protection Areas) were screened in and are not considered further in the HRA.

Figure 2.1: Relevant sites and Blocks requiring further assessment



3 Appropriate assessment

3.1 Appropriate assessment process

The AA process follows that described in Section 3 of BEIS (2017a). This process has been informed by an evidence base on the environmental effects of oil and gas activities (Section 4 of BEIS 2017a), and has utilised a number of assumptions on the nature and scale of potential activities that could follow licensing of the Blocks (Table 1.1), along with the characteristics and specific environmental conditions of the relevant sites. 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 sites are discussed under the following broad headings:

- Physical disturbance and drilling effects (Section 3.2)
- Underwater noise effects (Section 3.3)
- In-combination effects (Section 3.4)

3.2 Assessment of physical disturbance and drilling effects

3.2.1 Blocks and sites to be assessed

The screening assessment identified likely significant physical disturbance and drilling effects for four Blocks in respect of three sites, Dogger Bank SCI, North Norfolk Sandbanks and Saturn Reef SCI and the Southern North Sea cSAC (Table 2.1 and Figure 2.1).

The Dogger Bank in the southern North Sea was formed by glacial processes before being submerged through sea level rise during the last marine transgression (by *ca*. 8,000 years BP). The southern part of the bank is covered by water seldom deeper than 20m and extends within the SAC in UK waters down to 35-40m deep. The bank structure slopes down to greater than 50m deep in UK, Dutch and German waters and its location in open sea exposes the bank to substantial wave energy preventing the colonisation of the sand by vegetation on the shallower parts of the bank. Large parts of the Dogger Bank are situated above the storm-wave base (Connor *et al.* 2006) and it is estimated that during a storm event, sediment up to medium sand particles can be mobilised in 60m water depth at the northern slope of the Dogger Bank (Klein *et al*. 1999). Models of natural disturbance have estimated that the Dogger Bank is disturbed to 4cm depth at least once every year by tides and waves (Diesing *et al*. 2013). Spatial variability in both sediments and biological communities are apparent across the site; sediments range from slightly gravelly sands containing many shell fragments on top of the bank to muddy sands at greater depths (Eggleton *et al.* 2017). Sand eels are an important prey resource found at the bank supporting a variety of species including fish, seabirds and cetacean. Occasional, discrete areas of coarser sediments (including pebbles) are dominated

by the soft coral *Alcyonium digitatum*, the bryozoan *Alcyonidium diaphanum* and serpulid worms[10].

The North Norfolk Sandbanks and Saturn Reef SCI encloses the most-extensive example of offshore linear-ridge sandbank feature in UK waters and encompasses an area, named Saturn reef, where previous seabed surveys identified an extensive biogenic reef created by the ross worm (*Sabellaria spinulosa*) (Jenkins *et al*. 2015). The sandbanks are subject to a range of current strengths which are strongest on the banks closest to shore, reducing offshore. Using data and analysis from a 2013 JNCC/Cefas survey of the site (Vanstaen & Whomersley 2015, Jenkins *et al.* 2015), Parry *et al*. (2015) indicate that the sand fraction dominated the particle size composition of all stations, with those located on 'crests' consistently comprising >80% sand, whilst stations in the troughs/areas between 'banks' had a slightly wider range of sediment grades, but still typically contained 70-80% sand. With respect to the community groups found, the most widespread community group was associated with sandy sediment. The coarse and mixed sediment community groups shared many of the same species as the sand group, although the abundance attributed to individual taxa was generally higher in the coarser sediment. The coarse and mixed sediment groups were mostly recorded in the troughs adjacent to the banks and the deeper areas between the banks (Parry *et al.* 2015). Whilst the sandbanks are very similar in terms of the biological communities present, increasing species numbers have been recorded on the outer most banks likely related to the change in hydrodynamic regime with increasing distance from the coast[11]. First discovered in 2002, the Saturn reef covered an area approximately 750m by 500m just to the south of Swarte Bank. More recent surveys failed to identify the extensive areas of *S. spinulosa* reef previously identified but did find reefs in the area which highlights the ephemeral nature of the feature and indicates that favourable conditions for *S. spinulosa* formation occur within the site (see http://jncc.defra.gov.uk/page-6537 and Jenkins *et al*. 2015).

The Southern North Sea cSAC has been recognised as an area with predicted persistent high densities of harbour porpoise (see Section 3.3.1). As part of the site identification process, analysis of the observed density of harbour porpoise against different environmental variables (Heinänen & Skov 2015) indicated that the coarseness of the seabed sediment was an important determinant of porpoise density, with porpoises showing a preference for coarser sediments (such as sand/gravel) rather than fine sediments (e.g. mud). Sandeels which are known prey for harbour porpoises, exhibit a strong association with sandy substrates. The majority of the substrate types within the site are categorised as sublittoral sand and sublittoral coarse sediment. Water depths within the site range between 10m and 75m, with the majority of the site shallower than 40m – depths across Blocks relevant to this site are between 10m and 60m. Moderate energy levels at the seabed (including wave and tidal energy) are estimated across the majority of the site[12].

[10] http://jncc.defra.gov.uk/page-6508
[11] http://jncc.defra.gov.uk/page-6537
[12] http://jncc.defra.gov.uk/pdf/SouthernNorthSeaSelectionAssessmentDocument.pdf

3.2.2 Implications for site integrity of relevant sites

The conservation objectives of relevant sites and other information relating to site selection and advice on operations has been considered against indicative Block work programmes to determine whether they could adversely affect site integrity. The results are given in Table 3.1 below. In terms of mitigation, all mandatory requirements (see Section 1.4.1) are assumed to be in place for all activities assessed here.

Table 3.1: Consideration of potential physical disturbance and drilling effects and relevant site conservation objectives

Dogger Bank SCI
Site information
Area (ha): 1,233,115 **Relevant qualifying features:** Sandbanks which are slightly covered by sea water all the time **Conservation objectives:** Subject to natural change, restore the sandbanks to favourable condition, such that: • The natural environmental quality is restored • The natural environmental processes and the extent are maintained • The physical structure, diversity, community structure and typical species, representative of sandbanks which are slightly covered by seawater all the time, in the southern North Sea, are restored **Draft Conservation objectives (currently being trialled)[13]:** For the feature to be in favourable condition thus ensuring site integrity in the long term and contribution to Favourable Conservation Status of Annex 1 sandbanks. This contribution would be achieved by maintaining or restoring, subject to natural change: • The extent and distribution of the qualifying habitat in the site; • The structure and function of the qualifying habitat in the site; and • The supporting processes on which the qualifying habitat relies.
Relevant Blocks for physical disturbance and drilling effects
44/16b
Assessment of effects on site integrity
JNCC considers the qualifying feature to be in unfavourable condition based on a proxy assessment of the level of exposure of the site to pressures from human activities which are occurring within or near the site, and assumed sensitivity of the feature to those pressures. The consideration below takes into account formal statutory advice as well as draft advice currently being trialled for the site[14]. **Rig siting** The qualifying feature is moderately sensitive to physical damage through disturbance or abrasion by the placement of spud cans as part of rig siting. The moderate sensitivity is associated with the soft coral *Alcyonium digitatum* and the bryozoan, *Alcyonidium diaphanum*, occasionally found in discrete areas of coarser sediments (Diesing *et al*. 2009)[15]. With respect to Block 44/16b, the maximum seabed footprint associated with jack-up rig siting (0.001km^2) is very small compared to the large site (covering <0.0001%), and its offshore location and relatively shallow depth (15-40m) exposes it to substantial wave energy, particularly during storm events which may cause significant natural disturbance of sediments (see Section 3.2.1). Recovery from physical damage of the scale associated with rig placement is expected to be rapid. The small scale and temporary nature of the potential physical damage and the available additional mitigation measures (e.g. rig siting to ensure sensitive seabed surface features are avoided, see Section 3.2.3) will ensure that site conservation objectives are not undermined. There may be a requirement for rig stabilisation depending on local seabed conditions. The qualifying feature is

[13] http://jncc.defra.gov.uk/pdf/Draft_Dogger_Bank_CO_WEB.pdf
[14] http://jncc.defra.gov.uk/page-6508
[15] http://jncc.defra.gov.uk/PDF/DoggerBank_ConservationObjectivesAdviceonOperations_6.0.pdf

considered highly sensitive to obstruction caused by any construction over the feature[17]. In soft sediments, rock placement may cover existing sediments resulting in a physical change of seabed type. Sandy sediment dominates the site covering approximately 80% of the seabed. This facies forms mobile sand streaks, which comprise a thin veneer actively being transported across the seabed, with mobile sand ripples and small sand waves forming where the seabed sediment is thicker (Diesing *et al.* 2009). Of note is that coarse sediment patches including pebbles and cobbles are present within the site, most of which are relatively small but a few larger patches are present towards its western and southern edges (Diesing *et al.* 2009). It is assumed that rock placement (if required) would have a spatial footprint of *ca*. 0.001-0.004km^2 (Table 1.1). Hence, the potential loss of extent of sandy sediment is very small compared to the predominance of this sediment type across the large site (12,331km^2). Moreover, further mitigation measures are available which include removable mud mats or anti-scour mats as an alternative to rock placement (Section 3.2.3), allowing the conclusion that the site conservation objectives will not be undermined, and that drilling in the initial term associated with Block 44/16b will not adversely affect the site integrity of the Dogger Bank.

Drilling discharges
The qualifying feature has a low sensitivity to smothering from drilling discharges, and though it is exposed to drill cuttings from existing oil and gas operations, given the limited duration and extent, exposure to this pressure is considered to also be low. Modelling of WBM cuttings discharges for an exploration well in Block 44/19b in *ca*. 27m water depth (Tullow Oil UK 2010), indicated that cuttings deposition decreased from the well location with <400mm thickness predicted within the first 4m of the well, falling to ~10mm covering a 140x65m area. Beyond this, cuttings deposition was predicted to be less than 1mm thick. In energetic areas such as the Dogger Bank discharged drill cuttings would disperse rapidly due to the strong tidal and wave generated currents in the area and not form large cuttings piles (see also Daan & Mulder 1996). With respect to Block 44/16b, the maximum spatial footprint within which smothering by drilling discharges may occur (0.8km^2) is small (representing 0.006% of the total site area) and given the site's exposure to wave energy, redistribution of drilling discharges and recovery from smothering would be rapid. The small scale and temporary nature of potential smothering, the low sensitivity of the qualifying feature and mandatory mitigation requirements with respect to drilling chemical use and discharge (Section 1.4.1) will ensure that site conservation objectives are not undermined.

In-combination effects
No intra-plan in-combination effects likely given that Block 44/16b is the only Block applied for of relevance to the site. Section 3.4 provides a consideration of potential Block activities in-combination with other relevant plans and projects.

North Norfolk Sandbanks and Saturn Reef SCI

Site information

Area (ha): 360,341
Relevant qualifying features: Sandbanks which are slightly covered by sea water all the time, reefs

Conservation objectives:
Subject to natural change, restore the sandbanks to favourable condition, such that:

- The natural environmental quality, natural environmental processes and extent are maintained
- The physical structure, diversity, community structure and typical species, representative of sandbanks which are slightly covered by seawater all the time and reefs in the southern North Sea are restored

Relevant Blocks for physical disturbance and drilling effects

48/25a

Assessment of effects on site integrity

Rig siting
Both the sandbank and reef qualifying features are moderately sensitive to physical damage through disturbance or abrasion[16] by the placement of spud cans as part of rig siting. The dynamic nature of the site causes regular disturbance to the fauna present and species are likely to be well adapted to fluctuations in suspended sediments. With respect to Block 48/25a, the maximum seabed footprint associated with jack-up rig siting (0.001km^2) is very small compared to the large site (covering <0.0001%). Recovery from physical damage of the scale associated with rig placement is expected to be rapid given the dynamic nature of the site and the available additional mitigation measures (e.g. rig siting to ensure sensitive seabed surface features are avoided, see Section 3.2.3),

[16] http://jncc.defra.gov.uk/PDF/NNSandbanksandSaturnReef_ConservationObjectives_AdviceonOperations_6.0.pdf

will ensure that site conservation objectives are not undermined.

There may be a requirement for rig stabilisation depending on local seabed conditions. The sandbanks and reefs features are considered highly sensitive to obstruction caused by any construction over them[17]. In soft sediments, rock placement may cover existing sediments resulting in a physical change of seabed type. As indicated by Parry *et al*. (2015), sandy sediment dominates the site covering approximately 80% of the seabed. Of note is that patches of coarse and mixed sediment including pebbles and cobbles are present within the site (see Section 3.2.1). It is assumed that rock placement (if required) would have a spatial footprint of *ca*. 0.001-0.004km^2 (Table 1.1). Hence, the potential loss of extent of sandy sediment is very small compared to the predominance of this sediment type across the large site (3,603.4km^2). Moreover, further mitigation measures are available which include removable mud mats or anti-scour mats as an alternative to rock placement (Section 3.2.3), allowing the conclusion that the site conservation objectives will not be undermined, and that drilling in the initial term associated with Block 48/25a will not adversely affect site integrity.

Drilling discharges
The sandbank feature has a low sensitivity to smothering from drilling discharges whilst the *Sabellaria* reef is moderately sensitive as it is probable that the reef can tolerate smothering for some time, although feeding, growth and possibly reproduction will be curtailed. With respect to Block 48/25a, the maximum spatial footprint within which smothering by drilling discharges may occur (0.8km^2) is small (representing 0.02% of the total site area) and given the site's dynamic nature, redistribution of drilling discharges and recovery from smothering would be rapid. The small scale and temporary nature of potential smothering and low to moderate sensitivity of the qualifying features, and mandatory mitigation requirements with respect to drilling chemical use and discharge (Section 1.4.1) will ensure that site conservation objectives are not undermined

In-combination effects
No intra-plan in-combination effects likely given that Block 48/25a is the only Block applied for of relevance to the site. Section 3.4 provides a consideration of potential Block activities in-combination with other relevant plans and projects.

Southern North Sea cSAC

Site information

Area (ha): 3,695,766
Relevant qualifying features: Harbour porpoise

Conservation objectives:
To avoid deterioration of the habitats of the harbour porpoise or significant disturbance to the harbour porpoise, thus ensuring that the integrity of the site is maintained and the site makes an appropriate contribution to maintaining Favourable Conservation Status (FCS) for the UK harbour porpoise. To ensure for harbour porpoise that, subject to natural change, the following attributes are maintained or restored in the long term:

- The species is a viable component of the site.
- There is no significant disturbance of the species.
- The supporting habitats and processes relevant to harbour porpoises and their prey are maintained.

Relevant Blocks for physical disturbance and drilling effects

43/21b, 44/16b, 48/1d, 48/25a

Assessment of effects on site integrity

Rig siting
The delineation of the cSAC was based on the prediction of 'harbour porpoise habitat' within the North Sea (Heinänen & Skov 2015). The analysis indicated a preference for water depths between 30 and 50m throughout the year, and in general, the coarseness of the seabed sediment was important, with porpoises showing a preference for coarser sediments (such as sand/gravel)[17]. Physical damage to benthic habitats through disturbance or abrasion by the placement of spud cans as part of rig installation has the potential to impact on the extent of supporting habitat within the site. The maximum seabed footprint associated with jack-up rig siting (0.001km^2) is very small compared to the large site (covering <0.0001%), and recovery from physical damage in relevant sand/gravel habitats across the relatively shallow site (majority of site less than 40m) is expected to be relatively rapid. The small scale and temporary nature of the potential physical damage, and the mobile nature of the qualifying features will ensure that site conservation objectives are not undermined and therefore no adverse

[17] http://jncc.defra.gov.uk/pdf/SouthernNorthSeaSelectionAssessmentDocument.pdf

effect on site integrity.

The requirement for rig stabilisation measures would be determined by site survey of local conditions. In soft sediments, rock placement may cause smothering of existing sediments and a physical change of seabed type. The majority of the substrate types within the site are categorised as sublittoral sand and sublittoral coarse sediment. It is assumed that rock placement (if required) would have a spatial footprint of *ca*. 0.001-0.004km^2 (Table 5.1). Hence, the potential loss of extent of sandy sediment is very small compared to the widespread nature of this sediment type across the large site (36,958km^2). Moreover, further mitigation measures are available which include removable mud mats or anti-scour mats as an alternative to rock placement (Section 3.2.3), allowing the conclusion that the site conservation objectives will not be undermined, and that drilling in the initial term associated with Blocks 43/21b, 44/16b, 48/1d, 48/25a will not adversely affect site integrity.

Drilling discharges
It is assumed that effects relating to drilling discharges occur within 500m of the well location. The maximum spatial footprint within which smothering by drilling discharges may occur (0.8km^2) is small (representing 0.002% of the total site area) and recovery from smothering in relevant sand/gravel habitats across the relatively shallow site is expected to be relatively rapid. The small scale and temporary nature of potential smothering and mandatory mitigation requirements with respect to drilling chemical use and discharge (Section 1.4.1) will ensure that site conservation objectives are not undermined and therefore no adverse effect on site integrity.

In-combination effects
Intra-plan in-combination effects are possible although spatial footprints associated with rig installation and drilling discharges in Blocks 43/21b, 44/16b, 48/1d and 48/25a are localised and temporary, and unlikely to overlap between Blocks either spatially or temporally. The combined spatial footprint within which physical disturbance and drilling effects could occur across the four Blocks is estimated at 3.2km^2 (<0.01% of the site). The relatively small spatial extent and temporary nature of the disturbance and the mobile nature of the qualifying feature will ensure that site conservation objectives are not undermined. Section 3.4 provides a consideration of potential Block activities in-combination with other relevant plans and projects.

3.2.3 Further mitigation measures

Further mitigation measures are available which are identified through the EIA process and operator's environmental management and the BEIS permitting processes. These considerations are informed by specific project plans and the nature of the sensitivities identified from detailed seabed information collected in advance of field activities taking place. Site surveys are required to be undertaken before drilling rig placement (for safety and environmental reasons) and the results of such surveys (survey reports) allow for the identification of further mitigation including the re-siting of activities (e.g. wellhead, rig leg) to ensure sensitive seabed surface features are avoided and potential rig stabilisation issues (e.g. from scouring around spud cans, or soft sediment conditions) are minimised. Where rig stabilisation is required, BEIS will expect operators to provide adequate justification for the stabilisation option proposed, minimise the volume of rock deposited[18] or consider utilising systems (e.g. anti-scour mats, mud mats) that can be removed following drilling.

[18] This will be informed by a BEIS study currently underway comparing rock volumes estimated in operator applications with those actually used (from returns) which will report later this year.

Survey reports are used to underpin operator environmental submissions (e.g. EIAs) and where requested, survey reports are made available to nature conservation bodies during the consultation phases of these assessments[19].

In all instances, consent for project-level activities will not be granted unless the operator can demonstrate that the proposed exploration activities will not have an adverse effect on the integrity of relevant sites. The information provided by operators in their applications must be detailed enough for BEIS to make a decision on whether the activities could lead to a likely significant effect.

3.2.4 Conclusions

Likely significant effects identified with regards to physical disturbance and drilling effects when considered along with project level mitigation and relevant activity permitting (see Sections 1.4.1 and 3.2.3), will not have an adverse effect on the integrity of the Natura 2000 sites considered in this assessment. Consent for activities will not be granted unless the operators can demonstrate that the proposed activities which may include the drilling of a number of wells and any related activity including the placement of drilling rigs, will not have an adverse effect on the integrity of relevant sites.

3.3 Assessment of underwater noise effects

3.3.1 Blocks and sites to be assessed

The screening assessment identified that potential significant underwater noise effects were likely for four Blocks in respect of the Southern North Sea cSAC (see Table 2.1 and Figure 2.1).

The harbour porpoise is the most common cetacean in UK waters; it is wide-ranging and abundant throughout the UK shelf seas, both coastally and offshore. It is protected in European waters under the provisions of Annex IV and Article 12 of the Habitats Directive and within the UK its conservation status is favourable[20]. Individuals in the UK are part of the north east Atlantic population which is mainly considered to be a single 'continuous' population, even though some degree of genetic differentiation has been observed (Andersen *et al.* 1997, 2001, Tolley *et al.* 2001, Fontaine *et al.* 2007); from a management and conservation perspective however, three distinct UK Management Units (MU) have been identified; the North Sea, West Scotland and the Celtic & Irish Seas (IAMMWG 2015). The Southern North Sea cSAC is the largest of the possible SACs proposed for the conservation of harbour porpoise; it was selected primarily on the basis of preferential and prolonged use by harbour porpoises in contrast to other areas of the North Sea, but variability in numbers within the site and across the North Sea (seasonally and between years) is known to be high. For example, a large

[19] Whether within or outside an SAC, rig site survey typically includes a consideration of the presence of, amongst other sensitivities, Annex I habitats.
[20] JNCC (2013). Species conservation status reports. Third Report by the United Kingdom under Article 17 of the EU Habitats Directive. Joint Nature Conservation Committee, Peterborough. http://jncc.defra.gov.uk/page-6564 (accessed August 2015).

southerly shift in distribution was reported across the North Sea between 1994 and 2005 when SCANS and SCANS II surveys took place (Hammond *et al*. 2013).

The current draft conservation objectives[21] indicate that the concept of 'site population' may not be appropriate for this species. It highlights the need to assess impacts on the site based on how the proposed activities translate into effects on the relevant MU population. In the case of this AA, it refers to the North Sea Management Unit ranging from the east coast of the UK to part of Denmark (Skagerrak and northern Kattegat).

3.3.2 Implications for site integrity of relevant sites

None of the notional work programmes for the Blocks screened in for AA propose the undertaking of new 2D or 3D seismic survey (Phase B). However, there are a number of other potential activities associated with the indicative Block work programmes which utilise seismic sources and may have underwater noise effects including rig site survey and VSP (see Table 1.1). These have been considered against the site conservation objectives and other relevant information relating to site selection and advice on operations to determine whether they could adversely affect site integrity. The results are given in Table 3.2 below. In terms of mitigation, all mandatory requirements (see Section 1.4.2) are assumed to be in place for all activities assessed here.

Table 3.2: Consideration of potential underwater noise effects and relevant site conservation objectives

Southern North Sea cSAC
Site information
Area (ha): 3,695,766 **Relevant qualifying features:** Harbour porpoise **Conservation objectives:** See Table 3.1 above.
Relevant Blocks for underwater noise effects
43/21b, 44/16b, 48/1d, 48/25a
Assessment of effects on site integrity
2D or 3D deep-geological seismic survey No deep geological seismic survey proposed by the notional work programmes for the Blocks screened in for AA. **VSP** The recent OESEA (DECC 2016) concluded it was reasonable to assume that firing of airguns during seismic surveys would affect individual harbour porpoises within 10km of a vessel, resulting in changes in distribution and reduction of foraging activity but that the effect was short-lived. Therefore, the much smaller source size, static nature and shorter duration of a VSP survey (see Table 1.1), would likely affect individuals within a smaller area for a shorter period of time. Based on potential displacement of individual porpoises from an area of less than 10km radius (314km^2, representing less than 1% of the total site or just over 1% of the summer area) for 1-2 days and given the mandatory mitigation measures in place (see Section 1.4.2), a VSP survey associated with the drilling of a well in any of the Blocks will not result in an adverse effect on site integrity. **Rig site survey** As for VSP above. The intensity, duration and spatial footprint of activities associated with rig site survey are less than for the deep-geological survey, and it is not regarded that such activity in any of the Blocks will result in an

[21] http://jncc.defra.gov.uk/pdf/SouthernNorthSeaConservationObjectivesAndAdviceOnActivities.pdf

Southern North Sea cSAC
adverse effect on site integrity. **In-combination effects** Whilst a rig site survey and VSP (if required) would be undertaken in the same spatial area (drilling location), they would be temporally separated given their likely timing at either end of the drilling programme. There is the theoretical possibility that consecutive rig site surveys and VSP could occur across the four Blocks. The localised nature of both surveys means that the area surveyed across the four Blocks would be very small (*ca*. 12km^2) and of limited duration (*ca*. 28 days). Given the limited spatial and temporal displacement of harbour porpoises associated with each survey and the distance between each of the Blocks, there will be no in-combination effects associated with consecutive surveys across the Blocks. The potential for in-combination effects with other plans and projects is discussed in Section 3.4.

3.3.3 Conclusion

With respect to the Southern North Sea cSAC, it is concluded that the likely level of activity expected to take place within Blocks 43/21b, 44/16b, 48/1d and 48/25a when considered along with mandatory project level mitigation and relevant activity permitting (see Section 1.4.2), will not be expected to cause an adverse effect on site integrity. Consent for activities will not be granted unless the operator can demonstrate that the proposed activities which may include the drilling of a single well and any related activity including rig site survey and VSP, will not have an adverse effect on the integrity of relevant sites. These activities will be subject to activity level EIA and where appropriate, HRA.

3.4 In-combination effects

3.4.1 Introduction

Potential incremental, cumulative, synergistic and secondary effects from a range of operations, discharges and emissions (including noise) were considered in the latest Offshore Energy SEA (DECC 2016; see also OSPAR 2000, 2010). Appendix 1h of DECC (2016) included a description of the range of potentially interacting activities for the southern North Sea (Regional Sea 2 area), and those wider legislative and policy requirements of relevance (e.g. the Inshore and East Offshore Marine Plans) were discussed in Appendix 2. In view of the conclusions of these publications and a review of the most up-to-date data, the range of foreseeable interactions with the Blocks are limited (see below and Figures 3.2 and 3.3).

Much of the discussion provided in Section 6.4.1 of BEIS (2017a) is relevant to the consideration of in-combination effects of the Blocks applied for, and therefore this document is cross-referenced where appropriate.

3.4.2 Physical disturbance and physical presence

Table 3.1 indicated that potential in-combination effects with other relevant plans and projects should be considered with respect to those Blocks and sites where physical disturbance and drilling effects were likely. Those activities which have been identified as having foreseeable interactions with activity associated with the indicative work programmes for Blocks 44/16b (Dogger Bank SCI), 48/25a (North Norfolk Sandbanks and Saturn Reef SCI), 43/21b, 44/16b, 48/1d and 48/25a (Southern North Sea cSAC) for which physical disturbance or presence effects could be generated include:

- Proximity to other existing infrastructure or potential exploration activity associated with oil and gas development in the area. Note that the southern North Sea basin is mature and much of the infrastructure present is well established, with some areas (e.g. certain Viking area platforms) also subject to decommissioning. Though existing oil and gas infrastructure is widespread in the southern North Sea (Figure 3.2), the relative density and footprint of these is small. Existing export pipelines are present in a number of the Blocks (Figure 3.3) which are well-established and charted. With regard to potential exploration activity, there are 20 Blocks that have been applied for as part of the 29th Licensing Round identified as having likely significant physical disturbance and drilling effects (based on their location and indicative work programmes) on the Dogger Bank SCI (37/28b, 37/29b, 38/27, 38/28, 44/2 and 44/3) and Southern North Sea cSAC (36/20, 36/24, 36/25, 37/16, 37/17, 37/18, 37/19, 37/21, 37/22, 37/23, 37/24, 37/28b, 37/29b, 44/2). However, the AA concluded no adverse effects on the integrity of the sites (BEIS 2017a). Subsequent licence awards for the 29th Round indicate that work programmes for 2 and 4 drill or drop wells have been agreed for licences covering those Blocks relevant to the Dogger Bank SCI and Southern North Sea cSAC, respectively[22]. A further 3 Blocks (49/25c, 49/29a, 49/30e – with one well to be drilled as part of proposed work programme) applied for out of round are also of relevance to the cSAC (BEIS 2017b). With respect to the Dogger Bank site, the combined spatial footprint within which physical disturbance and drilling effects could occur (within 500m of the rig/well location in the single Block applied for as part of this round) is estimated at 2.4km^2 (0.02% of the site). For the Southern North Sea cSAC, the combined spatial footprint is estimated at 7.2km^2 (0.02% of the site). Given the small and temporary seabed footprint associated with drilling activities, the potential for relatively rapid recovery due to the shallow and dynamic nature of both sites and those standard and additional mitigation measures available (see Sections 1.4.1 and 3.2.3), significant in-combination effects associated with other oil and gas activities are not expected. For the relevant 29th Round and out of round Blocks, drilling activities proposed as part of actual work programmes will be subject to activity specific permitting, including HRA where appropriate. The 30th Licensing Round may offer Blocks within the site but this will not be confirmed until the round is announced (anticipated Q2 2017) and these would be assessed as part of an associated HRA process.

- A CCS agreement for lease (CS001) covers part of Block 43/21b, and is related to the Yorkshire and Humber offshore pipeline and storage project. There is a high level of uncertainty with regard to whether this project will progress following the closure of the former DECC CCS Commercialisation Competition, and the refusal of development consent for the Yorkshire and Humber CCS Cross Country Pipeline which is integral to the offshore scheme[23].

[22] https://www.ogauthority.co.uk/media/3491/29th-round-table-of-potential-awards-by-block-march-2017.xlsx
[23] https://infrastructure.planninginspectorate.gov.uk/projects/yorkshire-and-the-humber/yorkshire-and-humber-ccs-cross-country-pipeline/

- Shipping densities are moderate to high across the Blocks. Any additional vessels associated with drilling or seismic survey will represent a small incremental increase to existing traffic. The siting of any rig will require individual consenting at the activity level, including vessel traffic survey and a collision risk assessment. Additionally, charting, advertising through notices to mariners, and fisheries liaison raise awareness of the nature and timing of any proposed activity. Activities are typically restricted to within a statutory 500m safety zone around the rig, and the presence of the rig and standby vessel would be temporary (days to a few months).

- Fishing effort has been low to moderate in recent years in the Blocks. The discussion provided in Section 6.3.3 of BEIS (2017a) covers fisheries activity in relation to potential management measures for European sites, and also the potential for interaction given the availability of fisheries liaison and the mutual exclusivity of oil and gas activity and fisheries within statutory safety zones.

- Offshore wind will introduce disturbance sources (particularly during construction) and present an additional physical presence in the marine environment. Offshore wind zones (e.g. Round 3) have already been subject to SEA and HRA, and any related projects have been or will be subject to their own individual assessment and HRA processes[24]. There is the potential for interaction with wind farm activity (particularly during construction), notably the Hornsea Project Four wind farm area overlaps with Block 43/21b and is adjacent to Block 48/1d. This project is at a pre-application stage and the consenting timescale is not known at present[25]. Installation may involve foundations including monopile, jacket or gravity base structures for up 300 turbines. Any subsequent construction and operation timetables are subject to uncertainty, but there is significant scope to avoid interactions with such construction activity through activity timing/phasing.

- The East Marine Plans have identified areas of potential aggregates resource which could be exploited in the future, and Block 43/21b interacts with the area defined as of “high potential aggregate resource” in marine plan policy AGG3 and its related policy map. At present there are no option, application or licence areas within any Block offered (Figure 3.3).

- Previous SEAs have considered the majority of behavioural responses e.g. in fish, birds and marine mammals (see Section 5.6 of DECC 2016) resulting from interactions with offshore oil and gas infrastructure (whether positive or negative) to be insignificant. Potential displacement and barrier effects have been an important consideration at the project level for the large offshore wind developments that are planned for the southern North Sea and

[24] For those sites having already been subject to HRA, note that the competent authority is under an obligation to reconsider and review consents for projects that are likely to have a significant effect either alone or in-combination with other plans or projects on new SAC and SPA sites once they become a candidate site. Nothing in such a review can affect anything done in pursuance of the consent prior to the candidate stage of designation. See: https://www.gov.uk/government/publications/guidance-on-when-new-marine-natura-2000-sites-should-be-taken-into-account-in-offshore-renewable-energy-consents-and-licences.

[25] RenewableUK (2016). Offshore Wind Project Timelines, 2pp.

formed an important part of associated HRAs. Incremental shipping associated with drilling or seismic survey will represent a small increment to existing traffic, and the transient nature of exploration drilling and the timing of OWF construction activities are such that any activity associated with the work programmes could be phased in such a way as to avoid in-combination effects from physical presence on any qualifying features of relevant European sites (also see Section 6.3.4 of BEIS 2017a).

Figure 3.2: Location of Blocks in relation to other projects

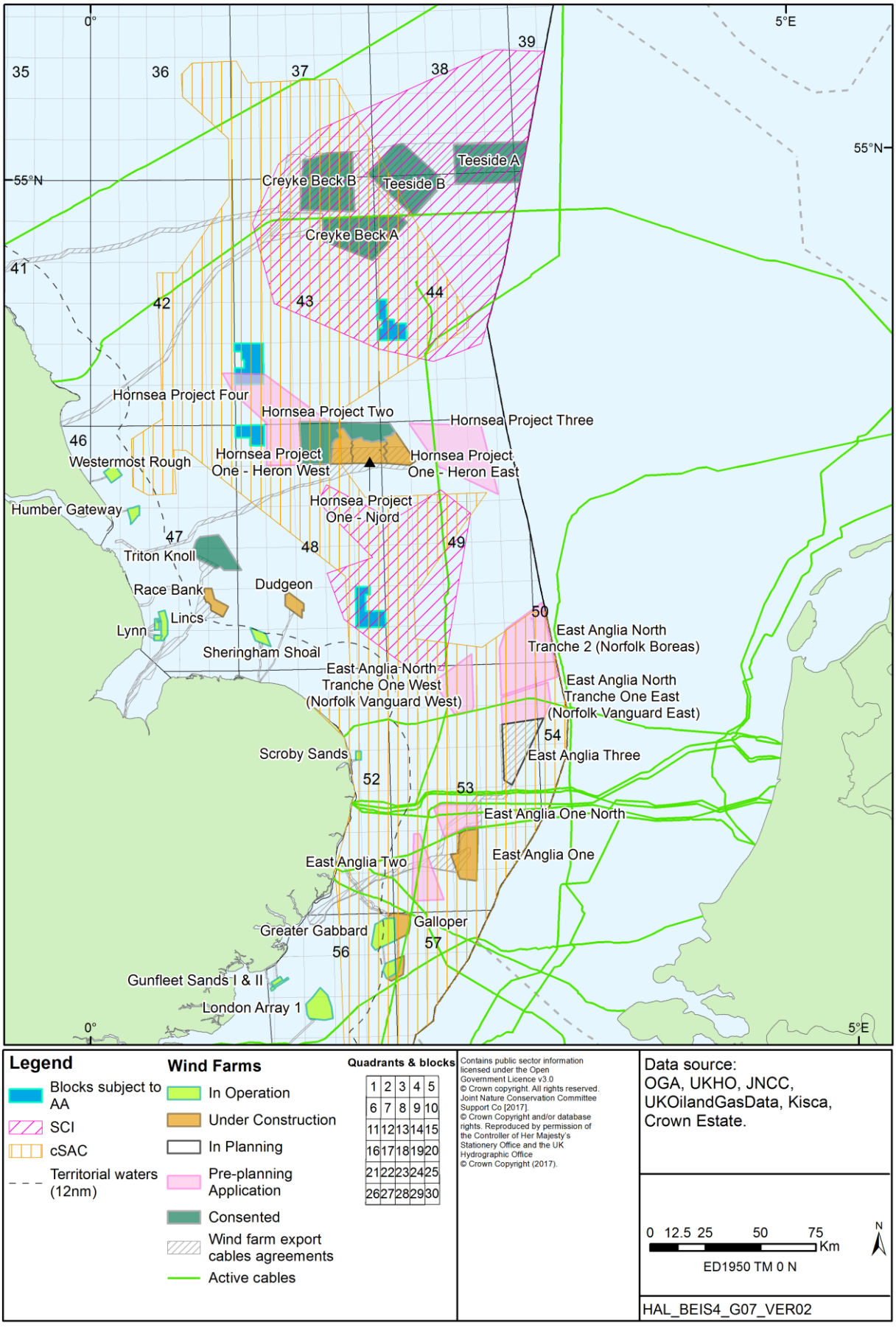
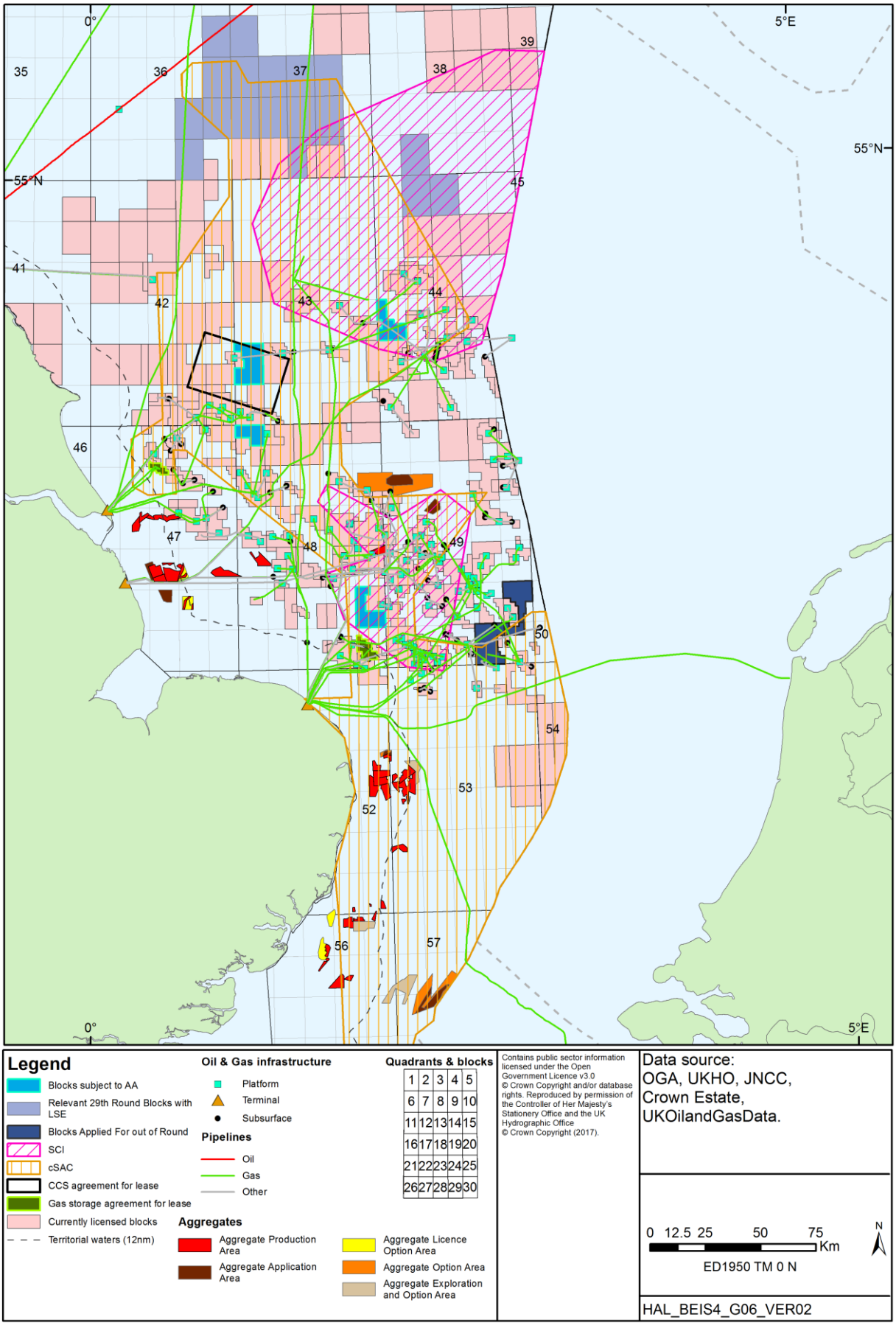


Figure 3.3: Location of Blocks in relation to other projects (continued)



3.4.3 Underwater noise

A number of projects are relevant to the consideration of in-combination effects with activities which may follow the licensing of Blocks 43/21b, 44/16b, 48/1d and 48/25a as they have associated activities which can generate noise levels which are known to have the potential to result in disturbance or injury to animals in relation to the Southern North Sea cSAC, including:

- The construction phase of offshore wind farms (see DECC 2016 and Figure 3.2), particularly pile-driving of mono-pile foundations or pin piles used in jacket-type foundations. The final selection of foundation type is uncertain for some developments in the southern North Sea, and includes options for gravity base structures, as this will be subject to detailed design. As noted above, those wind farms in closest proximity to the Blocks (e.g. Hornsea Project Four) are due to commence construction in the early 2020s or later, though it is noted that several others within the wider Southern North Sea cSAC are due to commence construction before then (Hornsea Project One: Heron Wind and Njord, East Anglia One and Galloper Extension, Dogger Bank Creyke Beck and Teesside). Assessment of the integrity of the site must be undertaken with respect to the site contributing to maintaining the Favourable Conservation Status of the wider harbour porpoise population, and it therefore follows that projects across the whole North Sea Management Unit are also relevant. Given the spatially limited and temporary nature of potential activities, and that there is significant scope to avoid concurrent OWF construction (which may include some further site survey and UXO disposal) [26] and seismic activity either through dialogue with relevant leaseholders or by virtue of wind farm construction timelines, significant in-combination effects are considered to be unlikely. Additionally, mitigation measures (including HRA, where appropriate, at the activity specific level) are available to avoid such effects (also see Section 6.3.5 of BEIS 2017a).

- There is the potential for other seismic surveys to take place in adjacent Blocks, in existing licensed areas which are yet to be fully explored or which have been developed, and in any other area through the separate Seaward Exploration Licence. For example, as part of the 29th Licensing Round, 19 Blocks applied for were identified as having likely significant underwater noise effects with respect to the Southern North Sea cSAC (BEIS 2017a). The AA (BEIS 2017a) concluded that in-combination effects with respect to underwater noise (based on indicative rather than agreed work programmes) would not adversely affect the integrity of the cSAC. As indicated, licence awards for the 29th Round have recently been made and the 19 Blocks identified above are part of four licences for which the shooting of new 3D seismic is a contingency[27]. Significant in-combination effects with the four Blocks considered in this AA are considered unlikely given the limited and temporary nature of potential activities, and the mitigation measures available (Section 1.4.2). For the relevant 29th Round and Supplementary Round Blocks, any seismic surveys proposed as part of actual work programmes will be subject to activity specific permitting, including HRA where

[26] Note that the encounter rate of UXO and its nature is uncertain and disposal operations are subject to separate marine licensing.
[27] https://www.ogauthority.co.uk/media/3491/29th-round-table-of-potential-awards-by-block-march-2017.xlsx

appropriate. The 30th Licensing Round may offer Blocks within the site but this will not be confirmed until the round is announced (anticipated Q2 2017) and these would be assessed as part of an associated HRA process.

3.4.4 Conclusions

BEIS is not aware of any projects or activities which are likely to cause in-combination effects that, when taken in-combination with the number and scale of activities likely to result from licensing Blocks 43/21b, 44/16b, 48/1d and 48/25a would adversely affect the integrity of the relevant sites. This is due to the presence of effective regulatory mechanisms (Section 1.4. and also Appendix 3 of DECC 2016) which ensure that operators, BEIS and other relevant consenting authorities take such considerations into account during activity permitting. These mechanisms generally allow for public participation in the process, and this has been strengthened by Regulations amending the offshore EIA regime which are due to come into force in 2017. These will reflect Directive 2014/52/EU (amending the EIA Directive) which provides for closer co-ordination between the EIA and Habitats Directives, with a revised Article 3 indicating that biodiversity within EIA should be described and assessed "with particular attention to species and habitats protected under Directive 92/43/EEC and Directive 2009/147/EC".

Available evidence (see e.g. UKBenthos database[28] and OSPAR 2010) for the southern North Sea indicates that past oil and gas activity and discharges has not lead to adverse impacts on the integrity of European sites in the area. Any activities relating to the work programmes, and any subsequent development that may occur if site appraisal is successful, will be judged on its own merits and in the context of wider development in the North Sea (i.e. any potential incremental effects). The current controls on terrestrial and marine industrial activities, including oil and gas operations that could follow licensing, can be expected to prevent significant in-combination effects affecting relevant European sites.

BEIS will assess the potential for in-combination effects whilst considering project specific EIAs and, where appropriate, through HRAs; this process will ensure that mitigation measures are put in place to ensure that activities, if consented, will not result in adverse effects on integrity of European sites. Therefore, bearing this in mind, it is concluded that the in-combination effects from activities arising from the licensing of the Blocks with those from existing and planned activities in the southern North Sea area will not adversely affect the integrity of relevant European Sites.

[28] http://oilandgasuk.co.uk/ukbenthos-database.cfm

4 Overall conclusion

Taking account of the evidence and assessment presented above, the report determines that the licensing through the Supplementary Round of the four Blocks considered in the AA will not have a significant adverse effect on the integrity of the relevant sites (identified in Section 3), and BEIS have no objection to the OGA awarding seaward licences (subject to meeting application requirements) covering Blocks 43/21b, 44/16b, 48/1d and 48/25a. This is because there is certainty, within the meaning of the ECJ Judgment in the Waddenzee case (see Section 3.1 of BEIS 2017a), 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 (see Sections 1.4 and 3.2.3).

These mitigation measures are incorporated in respect of habitat and species interest features through the range of legislation and guidance (see https://www.gov.uk/guidance/oil-and-gas-offshore-environmental-legislation) which apply to activities which could follow licensing. Where necessary, project-specific HRA based on detailed project proposals would be undertaken by BEIS to ensure that permits/ consents are only granted where the proposed activity will not result in adverse effects on the integrity of relevant sites.

Even where a site/interest feature has been screened out, or where a conclusion of no adverse effect on integrity has been reached at the plan level, it is likely that a project level HRA will be necessary if, for example, new relevant 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 changed at the project level.

This HRA document was subject to statutory consultation and has been amended as appropriate in light of comments received. Both the draft and final HRA documents are available via the Appropriate Assessment section of the offshore energy strategic environmental assessment webpage.

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