



UK Government

2nd Offshore Carbon Dioxide Storage Licensing Round

Marine Conservation Zone Assessment



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1 Introduction

1.1 Background and overview of plan

The plan/programme covering this carbon dioxide storage licensing round has been subject to a Strategic Environmental Assessment (OESEA4), completed in September 2022. The SEA Environmental Report includes detailed consideration of the status of the natural environment and potential effects of the range of activities which could follow licensing, including potential effects on conservation sites. Public consultation on OESEA4 concluded on 27th May 2022 and the Government Response was published on 22nd September 2022, which summarised the comments received and provided further clarifications, at which time, the plan/programme was also adopted.

The Oil and Gas Authority¹ (OGA, now operating as the North Sea Transition Authority (NSTA)) launched a carbon storage licensing round (also termed the 2nd carbon dioxide storage licensing round) on 9th December 2025 and invited applications for a number of offshore areas in the northern North Sea, central North Sea, southern North Sea, English Channel and east Irish Sea. The licensing round closed for applications on 24th March 2026.

1.2 Licensing

The *Energy Act 2008* (the Act) established a licensing regime for the storage of carbon dioxide in a controlled place including areas within UK territorial seas, and in areas beyond those waters which have been designated as the Exclusive Economic Zone (EEZ), formerly the Gas Importation and Storage Zone (GISZ). The Act prohibits the storage of carbon dioxide (with a view to its permanent disposal) except in accordance with a licence granted under the Act. The NSTA is the licensing authority responsible for granting licences and storage permits. In addition to a licence, a lease from The Crown Estate and Crown Estate Scotland is required for carbon dioxide storage related activities.

Licensing regulations made under the Act include the *Storage of Carbon Dioxide (Licensing etc.) Regulations 2010* (the Regulations) which sets out requirements for making licence applications. A carbon dioxide storage licence grants exclusive rights for the exploration and appraisal of potential storage sites in the territorial sea adjacent to the UK (with the exception of Scottish Territorial Seas) and on the UK EEZ, before making an application for a storage permit. The area of a carbon dioxide storage licence reflects the potential size of the storage site that is being subject to appraisal, however, as part of this licensing offer, applications for licences may cover all or part of the area offered, but not extend beyond this. A licence grants exclusive rights to the holders to undertake exploration and appraisal activities with a view to evaluate the potential for carbon dioxide storage, but it does not constitute any form of approval for activities to take place in the licence area, nor does it confer any exemption from other legal or regulatory requirements.

¹ OGA, now operating as the North Sea Transition Authority (NSTA), a government company wholly owned by the Secretary of State.

Carbon dioxide storage licences contain three terms covering exploration and appraisal (Appraisal or Initial Term²), operation, and post-closure. The appraisal term includes a work programme which may cover the drilling of appraisal wells, seismic survey, and other work such as geotechnical and geophysical studies. The length of the initial/appraisal term is not defined in the Regulations other than it is not to exceed “...*the period necessary to (a) generate the information necessary to select a storage site, and (b) prepare the documents required for an application under regulation 6*” (storage permit); recent applications have had appraisal terms of between four and eight years. The initial/appraisal term may be extended under conditions laid down in the licence but will expire if no permit application is made to the NSTA by the date of its expiry or if a permit application is refused.

1.3 Purpose

The *Marine and Coastal Access Act 2009* (MCAA) contain general duties for public authorities (in this case the Department for Energy Security and Net Zero, hereafter, the Department³) in relation to the protection of Marine Conservation Zones (MCZ), this includes Pilot Highly Protected Marine Areas (HPMAs⁴) designated as MCZ under the MCAA. Section 125 of the Act applies to public authorities which have any function, the exercise of which is capable of affecting (other than insignificantly):

- the protected features of an MCZ;
- any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent.

Where it is considered that the exercise of a function would or might significantly hinder the achievement of the conservation objectives for an MCZ, the public authority must inform the appropriate statutory nature conservation bodies (SNCBs).

This assessment has been undertaken by the Department to ascertain whether its function in agreeing to the licensing of areas for carbon dioxide storage is capable of affecting any MCZ, and if so, whether the effect would be significant, and whether this would hinder achieving the conservation objectives of the site.

² The name ‘appraisal term’ applies where there is a work programme in place, when there is no such work programme it is termed the ‘initial term’. This assessment covers both appraisal or initial terms.

³ Note that while certain licensing and related regulatory functions were passed to the OGA (now operating as the NSTA) on 1 October 2016, environmental regulatory functions are retained by the Secretary of State, and are administered by the Offshore Petroleum Regulator for Environment and Decommissioning (OPRED), which is part of the Department, on behalf of the Secretary of State. Functions include the giving of agreement (on behalf of the Secretary of State) to the grant by the NSTA of carbon dioxide storage licences. This assessment therefore proceeds on the basis that the Department is a public authority that should consider the potential for effects on MPAs and MCZs under section 125 of the *Marine and Coastal Access Act 2009*.

⁴ HPMAs are MCZs which have conservation objectives to achieve full recovery of the features for which it is designated, and to prevent further degradation and damage to these features. A more precautionary approach to site management is advised for such sites which may include prohibiting extractive, destructive and depositional uses and allowing only non-damaging levels of other activities to the extent permitted by international law.

2 Areas applied for, potential activities and relevant sites

2.1 Areas applied for

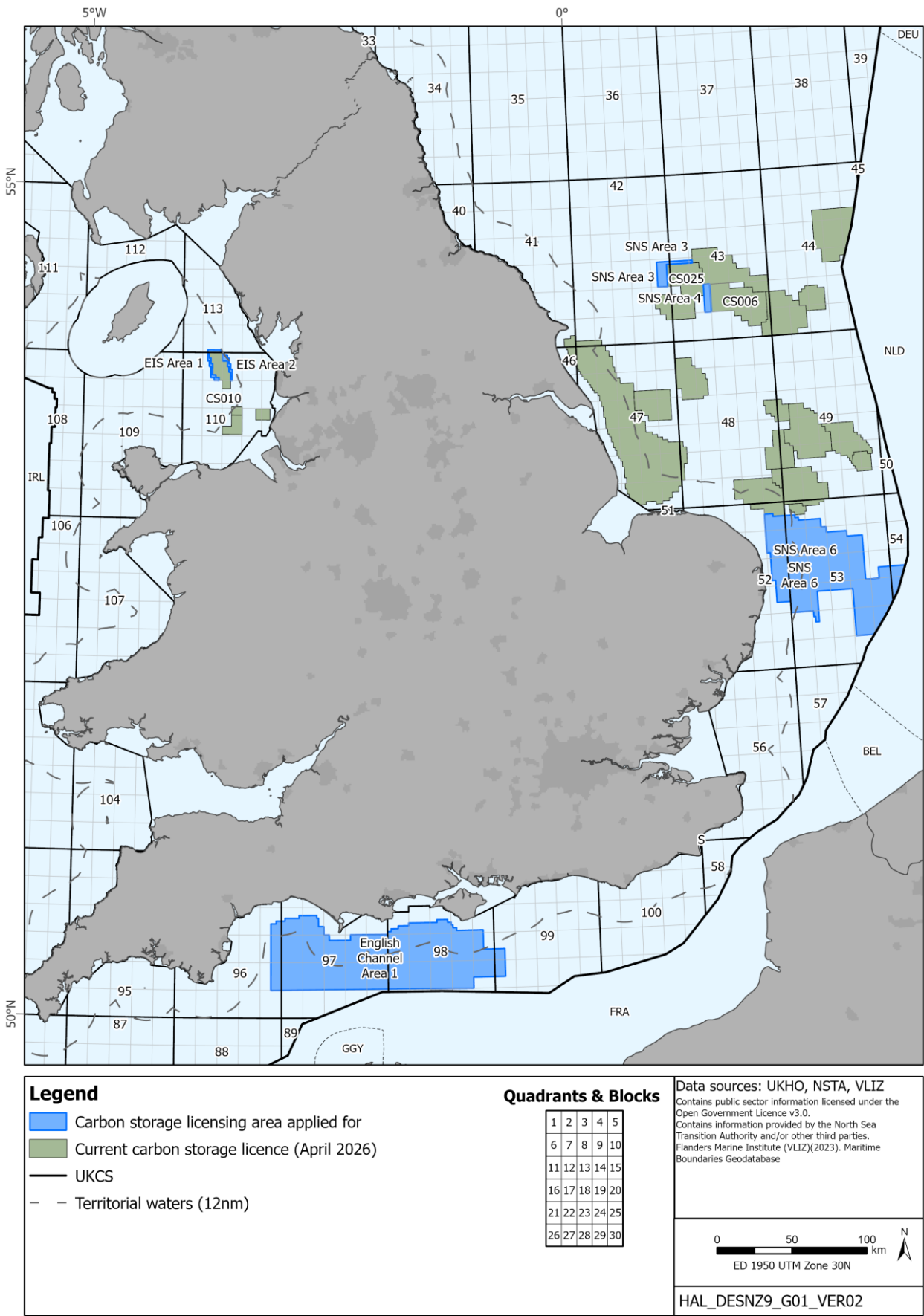
Areas applied for in the 2nd carbon storage licensing round and considered in this screening assessment are shown on Figure 2.1. The areas are located in the southern North Sea, English Channel and east Irish Sea.

The NSTA generally divide the Appraisal term into four stages with associated work programme activities and a formal stewardship engagement process. These are:

- Early Risk Assessment (identification of the critical risks, project and engagement plan)
- Site Characterisation (definition of the proposed Storage Site and Complex, geophysical surveys, exploration and appraisal wells)
- Assess (initial storage development planning, including of the development drilling, construction & commissioning, where applicable)
- Define (Storage Permit Application submission)

Financial viability and exploration operator competence is considered prior to licence award. The applicant must demonstrate that it has the technical competence to carry out the activities that could be permitted under the licence in the appraisal term, and the financial capacity to complete the work programme commitments, before the licence is granted.

Figure 2.1: Location of areas applied for in the context of existing carbon storage licences



2.2 Activity

As part of the licence application process, applicants provide the NSTA with details of work programmes they propose in the Appraisal/Initial Term. These work programmes are considered along with a range of other factors by the NSTA before arriving at a decision on whether to license the area. There are two levels of commitment in the work programme, though elements of the work programme would usually be firm commitments:

- A Firm Commitment is a commitment to the NSTA to perform an element of the work programme. The fact that a licensee has been awarded a licence on the basis of a “firm commitment” to undertake a specific activity should not be taken as meaning that the licensee will actually be able to carry out that activity. This will depend upon the outcome of all relevant activity-specific environmental assessments. Failure to carry out firm commitments may result on the licence being revoked.
- A Contingent Commitment is also a commitment to the NSTA to perform an element of the work programme, but it includes specific provision for the NSTA to agree that the activity need not be carried out if the NSTA considers that the requirement for that element is no longer appropriate.

As above, it should be noted that the award of a carbon storage licence does not automatically allow a licensee to carry out any offshore activities from then on. Offshore activities (see Table 2.1) such as seismic survey or drilling are subject to relevant activity-specific environmental assessments by the Department, and there are other regulatory provisions exercised by other Regulatory 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 proposed work programmes for the appraisal term are detailed in the licence applications. For some activities, such as seismic survey, the potential impacts associated with noise could occur some distance from the areas applied for and the degree of activity is not necessarily proportional to the size of the area. In the case of direct physical disturbance, the area being applied for is relevant.

2.2.1 Likely scale of activity

As this is only the second carbon dioxide storage licensing round and there is uncertainty as to the potential of any of the areas to proceed to the permit application stage. Licensees that fulfil the Appraisal/Initial Terms and progress to applying for a storage permit may require further drilling, installation of infrastructure such as wellheads, pipelines and possibly fixed platform injection facilities. The nature and scale of potential environmental impacts from the drilling of injection wells are similar to those of oil and gas exploration and appraisal wells and thus the screening criteria described in Section 4 are applicable to the potential effects of development well drilling within any of the areas applied for.

2.2.2 Carbon storage appraisal activities considered by the MCZ assessment

Activity after the Appraisal Term is much harder to predict, as this depends on the results of the Appraisal Term, which is, by definition, exploratory. The nature, extent and timescale of development, if any, which may ultimately result from the licensing of the areas 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) cannot be made. In relation to potential developments in the future, the licence areas applied for include those which are partly overlapping with or entirely within national site network boundaries. The first category present opportunities for a potential development to be sited without impinging on relevant sites or features, and the Department will expect this to be done where feasible. Should a development be proposed that would involve the placement of infrastructure in a relevant site, further assessment at the storage site development stage would ensure that site conservation objectives are not hindered, or that measures of equivalent environmental benefit are applied should it be concluded that the project would hinder site conservation objectives. Based on the sources of effect relevant to the oil and gas industry (which is analogous to carbon dioxide storage activities) (see BEIS 2022, Section 4), impacts resulting in permanent habitat change in sites designated for benthic habitats (sandbanks, reefs) are considered to be of most relevance. The Department has engaged with the NSTA and the industry to raise awareness of the status of relevant sites, the potential for the conclusions that effects on sites might hinder their conservation objectives in relation to activities which could follow licensing, and the need to identify potential mitigation and/or measures of equivalent environmental benefit.

Potential accidental events, including spills (diesel, chemicals), are not considered in this screening assessment as they are not part of the work plan at this stage. Additionally, the potential effects from spills associated with carbon dioxide storage, along with their frequency and likelihood, and preventative measures which are mandatory, were considered in OESEA4 Environmental Report (BEIS 2022, see Sections 5.13.4 and 5.13.5 of that Report). As the approach to carbon storage exploration and appraisal is similar to that for oil and gas, the frequency and scale of spills from that industry provide a useful context. Considering spills associated only with mobile facilities, chiefly rigs used for exploration, appraisal, and production well drilling, across the UKCS spills (between 2015-2025) total on average 2 tonnes per year of oil, and 25 tonnes per year of chemicals. Taking the wider set of data for spills associated with all oil and gas exploration and production activities (as individual data is not available for exploration/appraisal), the majority (45%) of chemical spills reported in 2024 were those considered to Pose Little or No Risk (PLONOR), with a further 30% being in Offshore Chemical Notification Scheme (OCNS) groups D and E, these being the lowest ecotoxicity groupings, with the majority of remaining spills (25%) being of OCNS groups B and C, of medium ecotoxicity (OEUK 2025). Taking the average of available data over the period of 2016-2020, the vast majority of chemical spills (>98%) were either on the PLONOR list or were low risk categories (OSPAR 2021).

The Department considers that for oil and chemical spills, the risk of relevant impacts is low because; there is a detailed regulatory regime in place to prevent spills and to reduce the impact of spills should they occur (see Section 5.13 of BEIS 2022); minor spills are localised around the vicinity of the well site; and the risk of a major spill occurring is extremely low. There is insufficient data to quantitatively assess the risk in the UKCS for large spills due to their extremely low frequency (BEIS 2022), and this is particularly the case with carbon storage as target storage formations may not be former hydrocarbon fields (e.g. saline aquifers) and few carbon appraisal wells have been drilled to date.

This assessment does not consider those activities that may be related to the installation and operation of a carbon dioxide storage site, should a storage permit be granted following the appraisal stage. Potential sources of accidental events associated with carbon dioxide storage (e.g. pipeline ruptures and loss of storage site containment) and their related environmental effects are assessed in Section 5.13.3.1 and 5.13.3.2 of OESEA4 (BEIS 2022) respectively.

The areas applied for are large (18-6,212km²) relative to the potential scale of appraisal activities (Table 2.1). Measures to prevent accidental events, response plans and potential impacts in the receiving environment are considered as part of the environmental impact assessment (EIA) 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.

For the purposes of this assessment, the implications of geophysical survey and drilling are considered in a generic way for all the areas applied for; a generic description of the nature and scale of these activities is given in Table 2.1. Table 2.1 draws heavily on experience from oil and gas activities which are considered useful proxies for the potential activities that could take place during the appraisal term. The assessment takes an approach based on the maximum likely work programme associated with the appraisal term. A series of assumptions have been developed on the nature and scale of activities to be assessed which have been informed by an evidence base for potential effects in OESEA4 (BEIS 2022) and the HRA exercise for the 2nd carbon dioxide storage licensing round (DESNZ 2026).

The assessment considers:

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

Relevant sites may be affected by other pressures in addition to those sources of likely significant effect from the work programmes, and cumulative sources of effect from other relevant plans and projects. The effects of climate change on the marine environment and its biota, which are possible in the coming decades (as summarised in BEIS 2022). Of most relevance to conservation sites are effects on the benthic environment (e.g. as summarised in Moore & Smale 2020), and while some evidence exists of species responses to climate change, the range of available studies and those regions studied are few and the level of confidence and consensus on the evidence remains low. Additionally, there have been range shifts in marine mammals in the north-east Atlantic (Martin *et al.* 2023) which have been linked to changes in temperature and prey distribution, and for HPMAs which include a range of features, impacts on birds (as summarised in Hakkinen *et al.* 2022, Searle *et al.* 2022, Burton *et al.* 2023), are also relevant. The Department acknowledges the potential effects of climate change on the status of site features, and the significant impact of avian influenza on bird mortality, and will maintain awareness their implications through the literature, and advice from the SNCBs.

While this assessment considers potential activities which may follow licensing, the licence grants exclusive rights to the holders to undertake exploration and appraisal activities to evaluate the potential of the licensed area for carbon dioxide storage and does not constitute any form of approval for activities to take place within that area, nor does it confer any exemption from other legal or regulatory requirements. Offshore activities are subject to a range of statutory permitting and consenting requirements, and activities will be subject to further assessment as part of consenting decisions.

Table 2.1: Indicative overview of potential activities that could arise during the appraisal term

Potential activity	Description	Assumptions used for assessment
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 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 geological structures suitable for carbon dioxide storage. 3D seismic survey is similar but uses several hydrophone streamers towed by the survey vessel. Thus, closely spaced 2D lines (typically between 25 and 75m apart) can be achieved by a single sail line.	These deep-geological surveys tend to cover large areas (300-3,000km 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 broadband 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.
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 ⁵ 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). Studies (Crocker & Fratantonio 2016, Halvorsen & Heaney 2018 (also see Labak 2019), Pace <i>et al.</i> 2021) of the acoustic characteristics of example geophysical survey equipment types including through open water testing, have provided a better understanding of the source levels, frequencies, and potential effects of using such equipment.	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.
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.

⁵ JNCC (2025) categorise mini airguns as being <12 in³, with those of greater size being classed as for seismic survey.

Potential activity	Description	Assumptions used for assessment
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. 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 injection facilities, which are not considered in this assessment.	It is assumed that jack-up rigs will be three or four-legged rigs with 20m diameter spudcans with an approximate seabed footprint of 0.001km² 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) and scour protection footprint⁶. A short review of 20 Environmental Statements⁷, 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 0.001-0.004km² per rig siting. Of 47 applications relating to rig siting on the UKCS between 2015 and 2022 which included an allowance for rig stabilisation materials, 36 did not use the allowance applied for, and a further six used less than the quantity applied for. The majority of the applications (41) were for wells in the southern North Sea, with the remaining applications (6) being in the central North Sea. Nine further applications covering areas in the central and northern North Sea included other minor deposits, such as mattresses and hessian bags, with deposits actually occurring in four cases. Rock applied for rig stabilisation and scour protection would not normally be removed at the end of a drilling campaign, however, the potential to remove rock from the seabed in other scenarios is noted (e.g. see Jan de Nul 2018). If rock were to be removed, the rock and associated sediment would be deposited at a licensed disposal site. Potential alternatives to rock placement for scour protection during drilling could include the application of rock bags or frond mattresses, however, the potential to use such methods would need to be considered at a project-specific level.

⁶ The types and nature of rig stabilisation that could occur are summarised in HSE (2004) which highlights the safety risks and provides guidance on the safe siting of jack-up rigs. The guidance notes the need to understand site soil conditions as a key approach to prevent foundation problems, and in relation to scour protection, notes that mitigation includes, amongst other things, the application of rock, sandbags, and the use of frond mattresses to reduce current velocity.

⁷ Note that this review was of oil and gas wells. Approaches to rig placement for carbon dioxide appraisal would be the same.

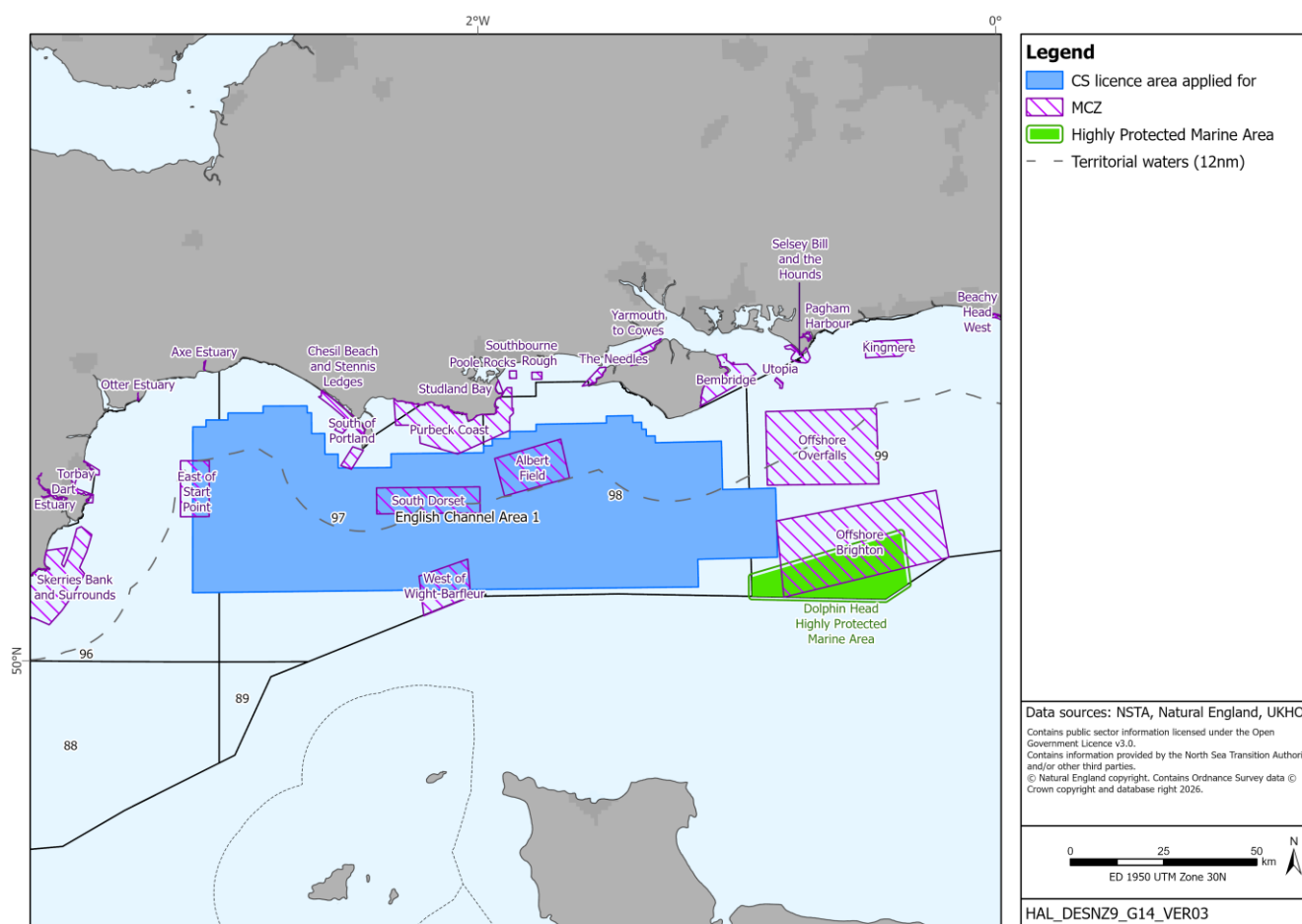
Potential activity	Description	Assumptions used for assessment
Marine discharges	Typically, around 1,000 tonnes of cuttings (primarily rock chippings) result from drilling an exploration well. Water-based mud cuttings are typically discharged at, or relatively close to sea surface during “closed drilling” (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. Typical chemical use and discharge for a well includes cements which are used to fix casings and liners into place inside the well, with the vast majority retained downhole and not discharged to the marine environment. Brines and clean up chemicals, designed to remove mud and cuttings traces from the well bore, and other chemicals such as rig washes, hydraulic fluids and pipe dopes, are essential during drilling programmes.	The distance from source within which smothering or other effects may be considered possible 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 0.8km². Typically, the majority of chemicals used and discharged are either PLONOR (Pose Little or No Risk to the Environment) or have a risk assessment banding of E or Gold and contain no additional warnings (i.e. they do not contain components which have been identified for substitution, for example due to toxicity, biodegradation, bioaccumulation). Chemicals are risk assessed prior to their use and discharge offshore, with those chemicals identified with warnings and/or a poorer environmental profile, requiring additional justification in order to obtain approval. Effects from chemical discharge will typically be localised to the well area.
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 support a 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. Peak frequency was around 200Hz, dropping off rapidly above 1kHz; hammering was undertaken at a	The need to pile conductors is well-specific and is not routine. It is anticipated that a conductor piling event would last between 4-6 hours, during which time impulses sound would be generated primarily in the range of 100-1,000Hz, with each impulse of a sound pressure level of approximately 150dB re 1µPa at 500m from the source.

Potential activity	Description	Assumptions used for assessment
	stable power level of 85 ± 5 kJ but the pile diameter was not specified (Jiang <i>et al.</i> 2015). MacGillivray (2018) reported underwater noise measurements during the piling of six 26" conductors at a platform, six miles offshore of southern California in 365m water depth. After initially penetrating the seabed under its own weight, each conductor was driven approximately 40m further into the seabed (silty-clay and clayey-silt) with hammer energies that increased from 31 ± 7 kJ per strike at the start of driving to 59 ± 7 kJ per strike. Between 2.5-3 hours of active piling was required per conductor. Sound levels were recorded by fixed hydrophones positioned at distances of 10-1,475m from the source and in water depths of 20-370m, and by a vessel-towed hydrophone. The majority of sound energy was between 100-1,000Hz, with peak sound levels around 400Hz. Broadband sound pressure levels recorded at 10m from source and 25m water depth were between 180-190dB re 1 μ Pa (SEL = 173-176dB re 1 μ Pa·s), reducing to 149-155dB re 1 μ Pa at 400m from source and 20m water depth (SEL = 143-147dB re 1 μ Pa·s).	
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. A review of Environmental Statements for exploratory drilling suggests that the rig could be on location for, on average, 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 1 μ Pa@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 generation (>10dB) when compared to the same vessel in transit (Rutenko & Ushchipovskii 2015).
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. The ability of rock strata to accept injected fluids such as dense phase carbon dioxide may be investigated by an injectivity test.	VSP surveys are of short duration (one or two days at most).

3 Relevant sites

Sites were considered for inclusion/exclusion based on whether there was an impact pathway⁸ between the marine features for which they are designated and potential exploration/appraisal activities which could arise following licensing (see Table 2.1). In view of the significant distance between any of the areas applied for and any MPA in Scottish waters (at least 150km), it was concluded that there were no impact pathways between activities which could follow licensing (Table 2.1) and these MPAs. The sites considered therefore include relevant designated MCZs and HPMA. All sites considered in this assessment are mapped in Figure 3.1 to Figure 3.3 and further details including their designation type and protected features are provided in Appendix A. The sources of site data include the JNCC⁹ and Natural England¹⁰ websites.

Figure 3.1: Areas applied for and relevant sites: English Channel



⁸ Based on knowledge of potential sources of effect resulting from the activities and pathways by which these effects may impact receptors present on the site (from previous Department SEAs, SNCB advice on operations and literature sources etc). Also refer to Section 4.2.

⁹ <https://jncc.gov.uk/our-work/marine-conservation-zones/>

¹⁰ <https://designatedsites.naturalengland.org.uk/>

Figure 3.2: Areas applied for and relevant sites: southern North Sea

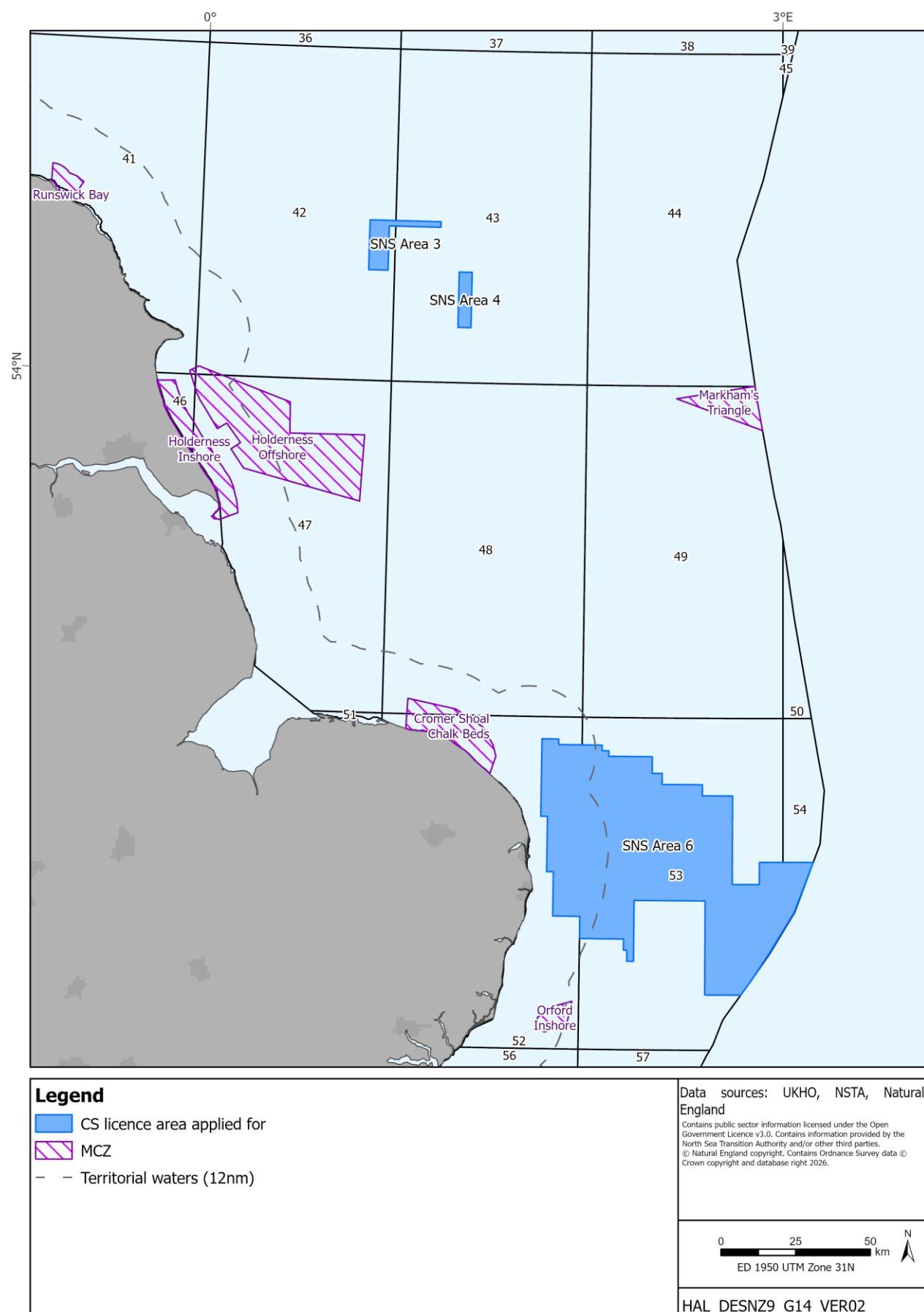
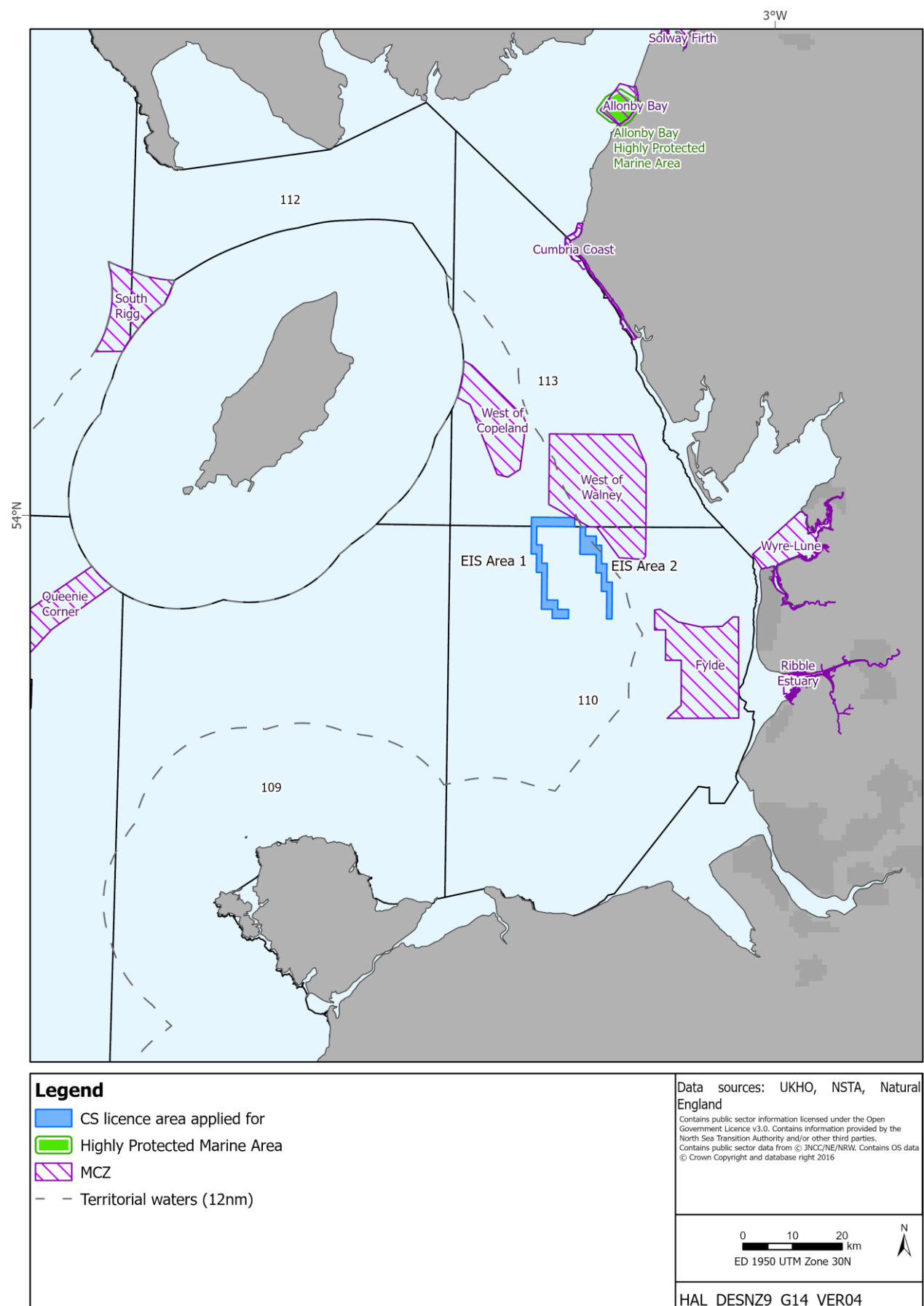


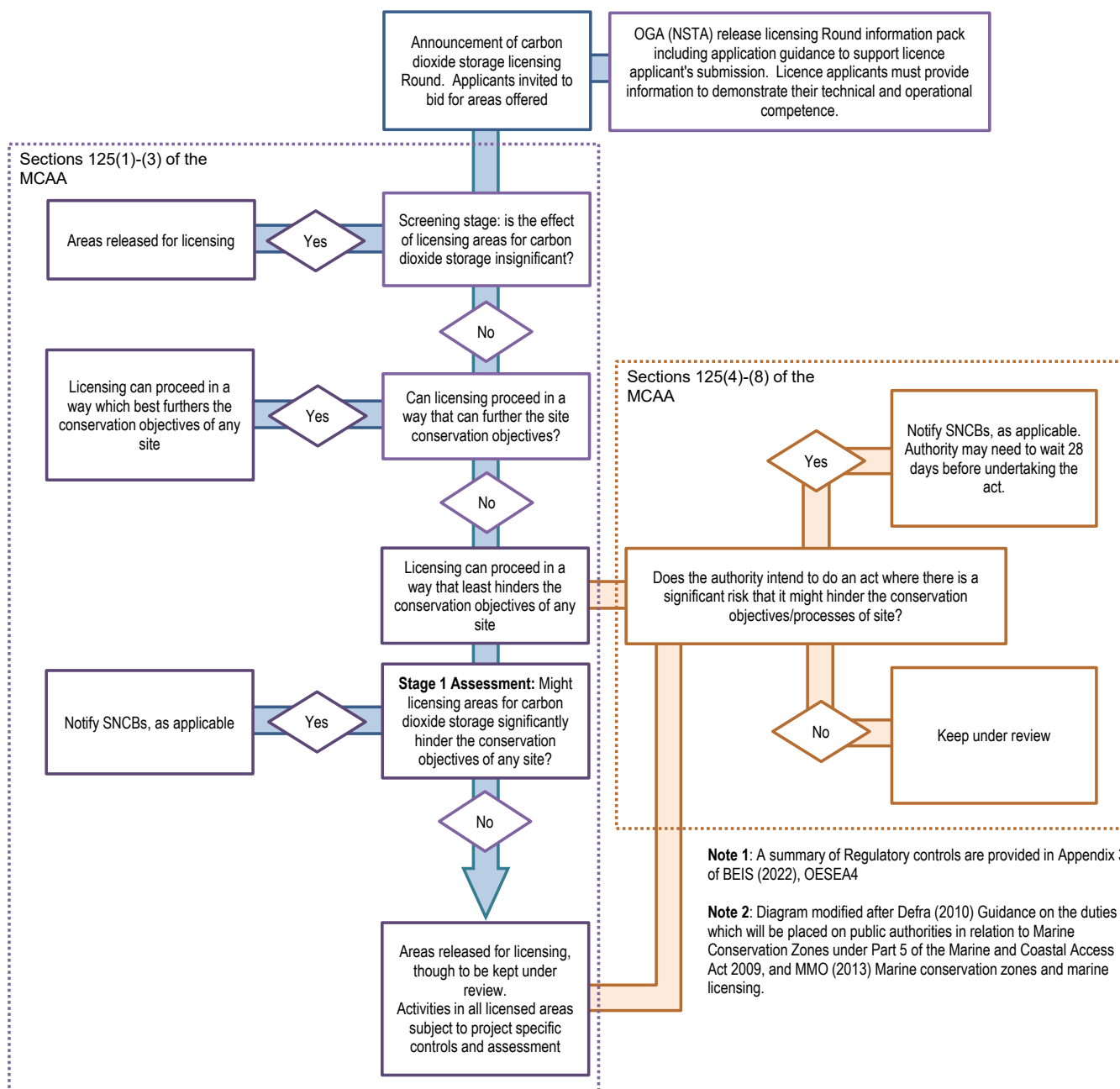
Figure 3.3: Areas applied for and relevant sites: eastern Irish Sea



4 Assessment Process

The assessment has considered available guidance on the assessment of MCZs (Defra 2010, MMO 2013), however, in view of the stage at which the licensing decision is taken, Section 126 of the MCAA, to which MMO (2013) relates, would be relevant at the project level. In the absence of other guidance, this assessment takes account of the general framework provided in MMO (2013), Defra (2010), and the wording of Section 125 of the MCAA. A high-level overview of the MCZ assessment process modified after Defra (2010) and MMO (2013) is shown in Figure 4.1. Note that while Section 125 of the Act is covered in this diagram for completeness, they are not considered to apply to this assessment.

Figure 4.1: Stages of the MCZ assessment



4.1 Screening

The screening is intended to determine the sites and related carbon storage licensing areas applied for that should be subject to further “Stage 1” assessment. MMO (2013) provides the following tests to ascertain whether further assessment is required, which are:

- the licensable activity is taking place within or near an area being put forward or already designated as an MCZ; and
- the activity is capable of affecting (other than insignificantly) either (i) the protected features of an MCZ; or (ii) any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependant¹¹.

The approach taken to assessment has been to:

- Define the likely location and nature of exploration/appraisal activities that could follow licensing (Section 2).
- Identify all relevant sites and their protected features with the potential to be affected by exploration/appraisal activities (i.e. those sites with marine features or with a marine ecological linkage) (Section 3).
- Screen the relevant sites based on their location relative to the areas applied for in the 2nd carbon dioxide storage licensing round, and the potential for their features, or ecological and geomorphological processes, to be significantly affected (Section 5).
- For those sites which are screened in, undertake a “Stage 1” assessment (Section 6).

The screening is informed by an evidence base on the environmental effects of carbon dioxide storage appraisal related activities and analogous oil and gas activities derived from the scientific literature, and relevant Strategic Environmental Assessments (e.g. DECC 2009, 2011, 2016, BEIS 2022). Particular use is made of the most recent Offshore Energy SEA (OESEA4), specifically Section 5, which covers a broad range of relevant effects, for example, those relating to the potential for physical damage effects on the historic environment, or the potential for effects on geomorphological processes. Additionally, the screening makes use of the information base presented in the Habitats Regulations Assessment (HRA) screening for the 2nd Carbon Dioxide Storage Licensing Round (DESNZ 2026), which is considered to be relevant to many aspects of this assessment, including relevant pressures identified in a review of the advice on operations/conservation management advice for the MCZ and nature conservation MPA site network. This evidence base allows for the identification of a set of distance-based screening criteria (Table 4.1). These can be taken to reflect what “near” means in relation to the first screening test in MMO (2013) for sites which do not overlap any of the areas applied for. Where sites are located within the screening distances set out in Table 4.1, it is considered that activities would be capable of affecting (other than insignificantly) a site’s features or functions and a Stage 1 assessment will be undertaken (Section 3.2).

¹¹ This part is consistent with Section 125(1) of the *Marine and Coastal Access Act 2009*

While a limited number of MCZ sites are designated for mobile species which may be present beyond site boundaries, a limited number are considered to be relevant to this assessment. Other protected species include smelt, giant goby and seahorse, however, the range of these species is limited, or the nature of the protection (e.g. habitat for nesting black seabream) is such that the distance based screening criteria below are considered to be relevant. The protected features of HMPAs are all encompassing, i.e. all marine habitats and all geological or geomorphological interests, including all abiotic elements and all supporting ecosystem functions and processes, in or on the sea bed, water column and the surface of the sea, and some mobile species may be relevant (e.g. Dolphin Head HMPA in relation to diving seabirds and cetaceans). The screening assessment refers to the ecological narrative developed for the candidate HPMA boundaries¹² as a guide to which mobile species may be present, and their sensitivities to any activity that may follow licensing.

Table 4.1: Screening criteria used in this assessment to determine the potential for sites to be significantly affected

Physical and drilling effects: any area applied for should be screened in if it is within or overlaps with a site, together with any area within a buffer of 10km from a MCZ where there is a potential interaction between site features and exploration/appraisal activities in the area.

Underwater noise effects: any area applied for that is within 15km of a MCZ with qualifying features regarded as sensitive to underwater noise (e.g. marine mammals, diving birds, and 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.

4.2 Approach to Stage 1 assessment

The information base referred to in Section 4.1 and the MCZ site-specific information has been used to inform the Stage 1 assessment to determine whether (MMO 2013¹³):

- the Department can exercise its functions to further the conservation objectives stated for the MCZ and;
- there is no significant risk of the activity hindering the achievement of the conservation objectives stated for the MCZ.

If the exercise of the function would or might significantly hinder the achievement of the conservation objectives for an MCZ, the appropriate SNCB's must be notified. As the Department's function at this stage is only in agreeing, or otherwise, to the issue of a carbon

¹² https://consult.defra.gov.uk/hpma/consultation-on-highly-protected-marine-areas/supporting_documents/HPMA%20consultation%20Annex%20H%20Ecological%20narratives%20.pdf

¹³ Modified here to relate the stage of assessment to Section 125 and Section 82 of the *Marine and Coastal Access Act*.

dioxide storage licence, it is not considered that Sections 125 (4)-(11) or Section 126 of the MCAA apply to this assessment.

The meaning of “hinder” has been taken to mean whether the Department’s function in licensing could, alone or cumulatively (MMO 2013):

- in the case of a conservation objective of “maintain”, increase the likelihood that the current status of a feature would go downwards (e.g. from favourable to degraded) either immediately or in the future (i.e. they would be placed on a downward trend); or
- in the case of a conservation objective of “recover”, decrease the likelihood that the current status of a feature could move upwards (e.g. from degraded to favourable) either immediately or in the future (i.e. they would be placed on a flat or downward trend).

Similarly, “further” can be taken to be where the Department’s functions could:

- in the case of a conservation objective of “maintain”, increase the likelihood that the current status of a feature would be maintained either immediately or in the future; or
- in the case of a conservation objective of “recover”, increase the likelihood that the current status of a feature could move upwards (e.g. from degraded to favourable) either immediately or in the future.

Based on the above definitions, the function to which this assessment relates is unlikely to further the conservation objectives for any site. It is therefore concluded at this stage, that those sites screened into the assessment (Section 5) would proceed to a Stage 1 assessment on the basis that the Department function in licensing would seek to proceed in a way that least hinders the conservation objectives of any site.

4.3 Cumulative effects

The Stage 1 assessment will consider the potential for cumulative effects, resulting from the interaction of exploration/appraisal activities in the carbon dioxide storage licence areas with activities resulting from other marine plans, programmes and activities, to lead to likely significant effects on relevant sites.

Marine planning has a key role in informing strategic and project level spatial considerations, with the Marine Policy Statement indicating, *“Marine Plans should reflect and address, so far as possible, the range of activities occurring in, and placing demands on, the plan area. The Marine Plan should identify areas of constraint and locations where a range of activities may be accommodated. This will reduce real and potential conflict, maximise compatibility between marine activities and encourage co-existence of multiple uses.”*

Marine plans adopted in England cover all of the carbon dioxide storage areas applied for. To date, the marine plans acknowledge the potential interactions between activities, map key resource areas, and provide policy context and direction in relation to potential activity interactions. They are not spatially prescriptive and provide a limited indication of the location of possible future development, how co-location may be accommodated, or any form of activity prioritisation.

The uncertainty over the scale and timing of activities which could follow licensing of areas in the 2nd carbon storage licensing round, and the activities resulting from other plans and programmes, is recognised. A GIS has been used to allow the areas applied for to be considered in the context of activities and proposals for a range of marine activities/potential activities.

4.4 Existing regulatory requirements and controls

This assessment assumes that the high-level controls described below are applied as standard to activities since they are legislative requirements. These are distinct from further control measures which may be identified and employed such that it least hinders the achievement of conservation objectives of the relevant sites. These further control measures will be identified in the Stage 1 Assessment. The legislation covering environmental regulation of *Petroleum Act* related activities was effectively amended to incorporate carbon dioxide storage by the *Energy Act (Consequential Modifications) (Offshore Environmental Protection) Order 2010*. Therefore, the regulatory requirements and controls for exploration and appraisal of carbon dioxide stores are broadly comparable to those for oil and gas exploration and appraisal.

4.4.1 Physical disturbance and marine discharges

The routine sources of potential physical disturbance and drilling effects associated with exploration and appraisal are assessed and controlled through a range of regulatory processes, such as the *Offshore Oil and Gas Exploration, Production, Unloading and Storage (Environmental Impact Assessment) Regulations 2020*¹⁴.

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)¹⁵. 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. The identification of any sensitive habitats by such survey (e.g. those under Annex I of the Habitats Directive or on the OSPAR List of Threatened and/or Declining Species and Habitats) may influence the Department's decision on a project-level consent.

Discharges from offshore facilities, including drilling rigs, are subject to stringent regulatory controls (see review in BEIS 2022, and related Appendices 2 and 3). 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 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. OSPAR have recognised the potential concerns associated with the use and discharge of microplastics during drilling operations. Recommendation 2010/03 and Agreement 2012-05 have been amended such that chemical suppliers are required to identify whether their offshore chemical products contain plastics, microplastics, or deliberately added nanomaterials. The related data will allow OSPAR to

¹⁴ <https://www.gov.uk/guidance/oil-and-gas-offshore-environmental-legislation>

¹⁵ BEIS (2021). The Offshore Oil and Gas Exploration, Production, Unloading and Storage (Environmental Impact Assessment) Regulations 2020 - A guide. July 2021 - Revision 3.

determine the extent of the use and discharge of substances, and where appropriate, develop management measures to control or eliminate their use.

At the project level, discharges would be considered in detail in project-specific EIAs and chemical risk assessments under existing permitting procedures.

4.4.2 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), sub-bottom profile surveys and shallow drilling activities require an application for consent under the *Offshore Petroleum Activities (Conservation of Habitats) Regulations 2001* and cannot proceed without consent. These applications are supported by an environmental assessment, which includes a noise assessment, and may include EIA. On the 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). Note that EPS guidance is relevant to this assessment as all cetaceans are listed on Annex IV of the Habitats Directive, and therefore any cetaceans which are protected features of MCZs would also be covered by this guidance.

The Department consults the relevant statutory consultees on the consent applications 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 specifying 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* for seismic and sub-bottom profile surveys that the JNCC guidelines for minimising the risk of injury to marine mammals from geophysical surveys are followed. Where appropriate, EPS disturbance licences may also be required under the *Conservation of Offshore Marine Habitats and Species Regulations 2017*¹⁶, and further assessment may be required under Section 126 of the MCAA. The JNCC guidelines (2017) 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.

4.5 Environmental Targets

As well as complying with the requirements of the MCAA in carrying out this assessment, the Department will take into account relevant environmental targets set under the *Environment Act 2021*. In particular, the Department will consider the outcome of the Stage 1 Assessment against the targets set out in the *Environmental Targets (Marine Protected Areas) Regulations 2023*, which are that, before the end of December 2042, the number of protected features in favourable condition within all relevant Marine Protected Areas (MPA) is not less than 70% of the total number of all protected features within relevant MPAs; and all other protected features within relevant MPAs are in recovering condition. The Department will also consider the

¹⁶ 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.

interim target set out in the Government's 2025 Environmental Improvement Plan, which is that 49% of protected features in MPAs should be in favourable condition, and at least 46% in recovering condition, by December 2030¹⁷.

Those targets only apply in respect of the English part of UK seas¹⁸. The effects of this carbon dioxide storage licensing on other national network sites have been assessed separately, and it was concluded that the proposed licensing would not result in likely significant effects on relevant sites that had been screened out (DESNZ 2026). For sites screened in, the potential for adverse effects on the integrity of the relevant sites from the proposed licensing are the subject of AA.

If it can be concluded that there will be no adverse effects on the integrity of any site, or that the achievement of the conservation objectives of relevant MCZs will not be significantly hindered, the Department considers that the granting of the proposed licences would not hinder the meeting of the applicable targets.

¹⁷ <https://www.gov.uk/government/publications/environmental-improvement-plan-2025>

¹⁸ i.e. the "English inshore region" and "English offshore region" as defined in section 322(1) of the *Marine and Coastal Access Act 2009*.

5 Screening

The screening criteria (see Section 4.1) were applied which led to the identification of a number of site/area combinations for which it was considered that effects of licensing could be significant (Table 5.1 and, Figure 5.1 and Figure 5.2). A Stage 1 assessment has been undertaken for these sites (Section 5). In view of the nature of the features screened in, effects relating to physical disturbance and marine discharges are considered to be possible for all sites other than Dolphin Head HPMA, where both physical and underwater noise effects are considered possible.

Table 5.1: Sites screened into the Stage 1 assessment

Site Name	Designated features	Feature status	CS Area
Irish Sea			
West of Walney	Sea-pen and burrowing megafauna communities, Subtidal mud, Subtidal sand	Feature condition assessment is not available. The vulnerability assessment for the site suggests it is unlikely to be moving towards its conservation objectives, but site condition monitoring is required to improve this assessment. Recovery targets have been set for the attributes, "Distribution: presence and spatial distribution of biological communities, Structure: species composition of component communities" – site specific notes indicate this target is based on the vulnerability assessment.	EIS Area 1, EIS Area 2
Fylde	Subtidal sand, subtidal mud	Feature condition assessment is not available. The attributes considered in the site SACO indicate a "maintain" target for most features, inferring favourable status ¹ . The attribute, "Structure and function: presence and abundance of key structural and influential species" has a target to maintain, or recover, or restore, suggesting uncertainty in the status of this attribute for all relevant site features.	EIS Area 2
West of Copeland	Subtidal coarse sediment, Subtidal sand, Subtidal mixed sediments	Subtidal coarse sediment and Subtidal sand are considered to be in unfavourable condition; Subtidal mixed sediments considered to be in favourable condition.	EIS Area 1
English Channel			
Dolphin Head HPMA	No specific features are identified, but the designation covers all marine flora and fauna, all marine habitats and all geological or geomorphological interests, including all abiotic elements and all supporting ecosystem functions and processes, in or on the sea bed, water column and the surface of the sea.	Unfavourable	English Channel 1
South Dorset	High energy circalittoral rock Moderate energy circalittoral rock Subtidal chalk Subtidal coarse sediment	All features are unfavourable recovering other than subtidal coarse sediment which is in favourable condition.	English Channel 1
Offshore Overfalls	Subtidal coarse sediments Subtidal mixed sediments Subtidal sand English Channel outburst flood features (Quaternary fluvio-glacial erosion features)	All features are unfavourable other than the English Channel outburst feature which is in favourable condition.	English Channel 1

Site Name	Designated features	Feature status	CS Area
Offshore Brighton	High energy circalittoral rock Subtidal coarse sediment Subtidal mixed sediments	Unfavourable.	English Channel 1
The Needles	High energy infralittoral rock Moderate energy circalittoral rock Moderate energy infralittoral rock Native oyster (<i>Ostrea edulis</i>) Peacock's tail (<i>Padina pavonica</i>) Seagrass beds Sheltered muddy gravels Stalked jellyfish (<i>Calvadosia campanulata</i>) Subtidal chalk Subtidal coarse sediment Subtidal mixed sediments Subtidal mud Subtidal sand	Not assessed.	English Channel 1
Chesil Beach and Stennis Ledges	High energy circalittoral rock High energy infralittoral rock High energy intertidal rock Intertidal coarse sediment Native oyster (<i>Ostrea edulis</i>) Pink sea-fan (<i>Eunicella verrucosa</i>) Subtidal coarse sediment Subtidal mixed sediments Subtidal sand	Not assessed.	English Channel 1
Albert Field	Subtidal coarse sediment Subtidal mixed sediments	Not assessed.	English Channel 1
East of Start Point	Subtidal sand	Not assessed.	English Channel 1
Purbeck Coast	Black seabream (<i>Spondyllosoma cantharus</i>) High energy intertidal rock Intertidal coarse sediment Maerl beds Moderate energy intertidal rock Peacock's tail (<i>Padina pavonica</i>) Stalked jellyfish (<i>Haliclystus</i> spp) Subtidal coarse sediment Subtidal mixed sediments	Not assessed.	English Channel 1
South of Portland	High energy circalittoral rock Moderate energy circalittoral rock Portland Deep geological feature Subtidal coarse sediment Subtidal mixed sediments Subtidal sand	Not assessed.	English Channel 1
Bembridge	Maerl beds Native oyster (<i>Ostrea edulis</i>) Peacock's tail (<i>Padina pavonica</i>) Seagrass beds Sea-pen and burrowing megafauna communities Sheltered muddy gravels Short snouted seahorse (<i>Hippocampus hippocampus</i>) Stalked jellyfish (<i>Calvadosia campanulata</i>) Stalked jellyfish (<i>Haliclystus</i> spp) Subtidal coarse sediment Subtidal mixed sediments Subtidal mud Subtidal sand	Not assessed.	English Channel 1

Site Name	Designated features	Feature status	CS Area
West of Wight-Barfleur	Subtidal coarse sediment Subtidal mixed sediments	Unfavourable.	English Channel 1

¹No site-specific supporting notes are available to better understand these targets.

The conclusion of the screening stage is that of the six areas applied for, only three (EIS Areas 1 and 2, English Channel Area 1) had a pathway that could potentially lead to significant effects on a site and its features. All other areas applied for (see Figures 2.1 to 2.3) were screened out.

Figure 5.1: Areas applied for and sites screened in, English Channel

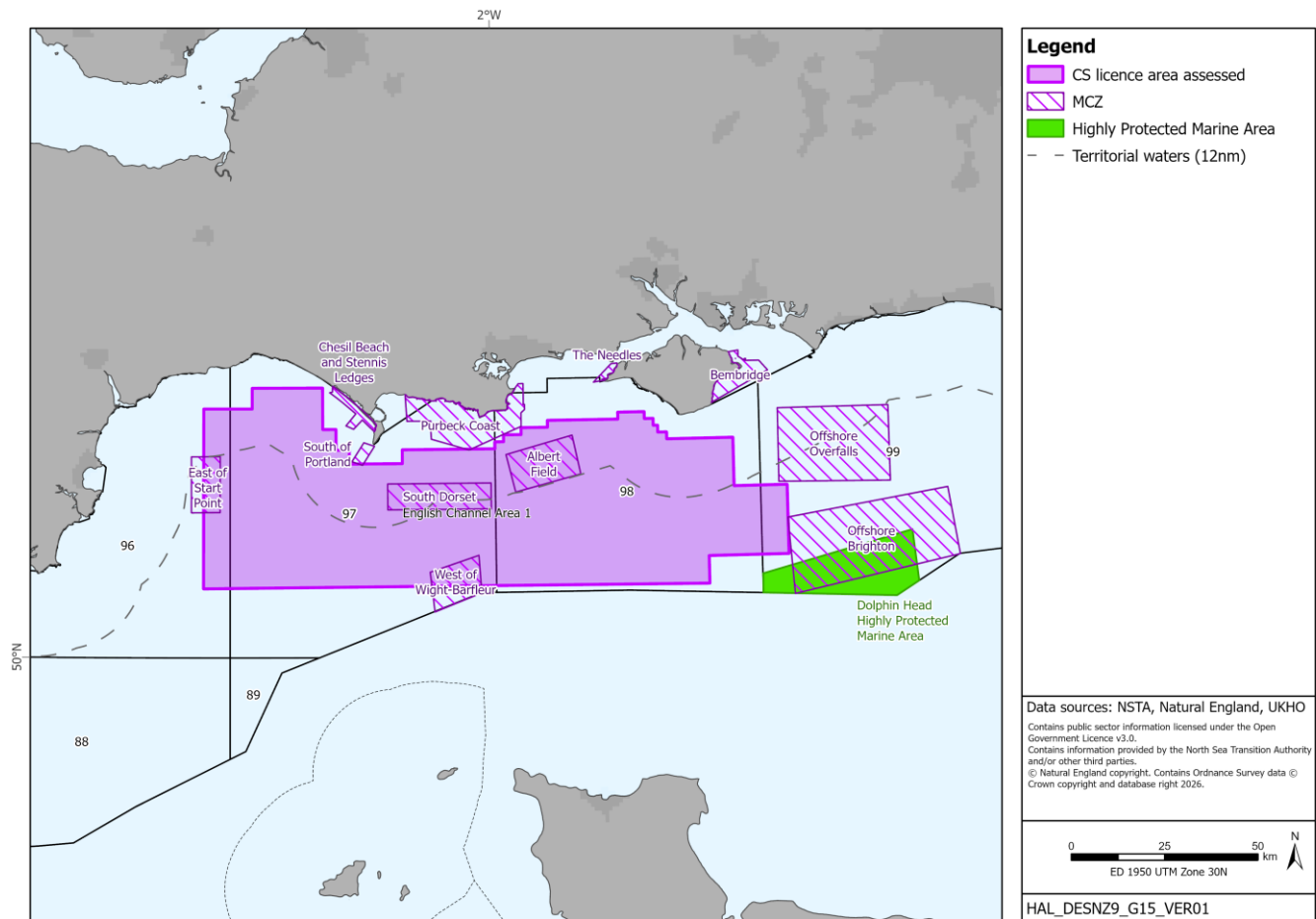
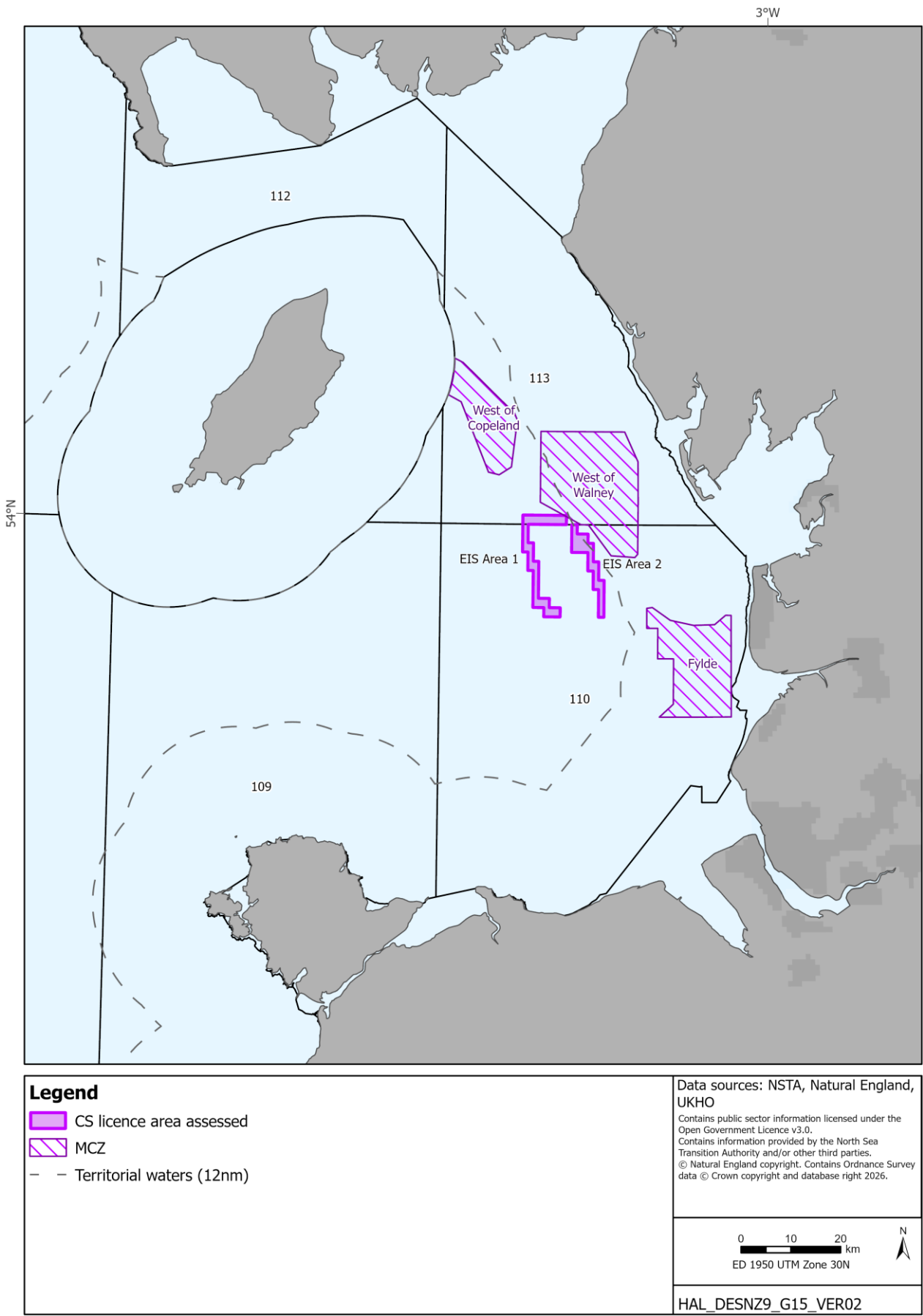


Figure 5.2: Areas applied for and sites screened in, eastern Irish Sea



6 Stage 1 Assessment

The approach used in the Stage 1 assessment has been to take the proposed activity for each of the carbon storage licence areas as being the maximum of any application for that area, and to assume that all activity takes place. The maximum estimates of work commitments for the relevant areas derived from the applications to the NSTA or that may be considered by the NSTA to be required to enable appropriate appraisal of the areas are shown in Table 6.1.

Table 6.1: High case work programmes relevant to the areas considered in this assessment

Area	Obtain ¹⁹ and/or reprocess 2D or 3D seismic data	Shoot 3D seismic	Appraisal/exploration wells
English Channel Area 1	✓	✓ (contingent)	Two (contingent)

The applications for two of the areas screened into Stage 1 assessment (EIS Area 1 and EIS Area 2) had no associated work programmes. It is therefore concluded that there is no pathway that could potentially lead to significant effects on a site and its features from the licensing of these areas and they are not considered further.

Completion of the work programme is likely to involve one or more of the activities summarised in Table 2.1. Subsequent development activity is contingent on successful exploration and appraisal and may or may not result in the eventual installation of infrastructure, but a meaningful assessment of development level activity is not possible at this time. Where relevant, future activities will themselves be subject to activity specific assessment.

6.1 English Channel

6.1.1 Relevant sites

South Dorset MCZ

The site is located some 17.5km south of St Alban's Head and covers an area of 193km² with depths ranging between 30 and 60m. The designated broadscale features are high energy circalittoral rock, moderate energy circalittoral rock, subtidal coarse sediment, and subtidal chalk. The subtidal chalk is located in deeper waters (>50m), which is not typical of the UK.

The eastern half of the site has longitudinal furrows of alternating cobbles and gravel, oriented in the direction of the tide. Bryozoans such as the sea mat (*Electra pilosa*) and hornwrack (*Flustra foliacea*), sea squirts such as orange sea grapes (*Stolonica socialis*) and the baked bean ascidian (*Dendrodoa grossularia*), and encrusting sponges dominate rocky areas within the site. Crustaceans such as the long-clawed porcelain crab (*Pisidia longicornis*) and common spider crab (*Maja brachydactyla*) hide in the crevices and cobbles in the furrows. In addition, the great scallop (*Pecten maximus*), common sunstar (*Crossaster papposus*) and goose foot starfish

¹⁹ To obtain seismic data means purchasing or otherwise getting the use of existing data and does not involve shooting new seismic.

(*Anseropoda placenta*) can be found in areas of subtidal coarse sediment, and the small-spotted catshark (*Scyliorhinus canicula*) has also been found at the site.

Offshore Overfalls MCZ

The site is located ~18km southeast of the Isle of Wight and covers an area of 593km², with depth ranges from 20 to 80m. The site is designated for three broadscale habitats (subtidal coarse sediments, subtidal mixed sediments, subtidal sand) and one geomorphological feature (English Channel outburst flood features). The infauna biological communities appear to be dominated by a diverse range of burrowing worms (polychaetes). Bivalves such as the Queen scallop (*Aequipecten opercularis*) occur in smaller numbers along with the long-clawed porcelain crab (*Pisidia longicornis*) and the common brittlestar (*Ophiothrix fragilis*). The epifauna are dominated by hydroids and bryozoans and also include a range of sponges (Porifera), sea anemones (Actinaria) and sea stars such as the common starfish (*Asterias rubens*) and the common sun star (*Crossaster papposus*). Various species of fish are also present including thornback ray (*Raja clavata*), red gurnard (*Chelidonichthys cuculus*), small-spotted catshark (*Scyliorhinus canicula*), and bib (*Trisopterus luscus*).

The English Channel Outburst Flood Features were formed during the Pleistocene Epoch more than 200,000 years ago when sea levels were much lower than they are today, and the English Channel was not yet covered by seawater. A large glacial meltwater lake, in part of the area now occupied by the southern North Sea, burst its retaining bank to the south, creating a vast discharge of sediment and water that carved out large-scale longitudinal valleys which were later submerged by seawater as sea levels rose after the ice age.

Offshore Brighton MCZ

The site covers 862km², is located ~45km south of Selsey Bill in 40-80m of water and is designated for the broadscale habitats high energy circalittoral rock, subtidal coarse sediment, subtidal mixed sediments. The regional sediment distribution is influenced by the English Channel Palaeovalley System, with subtidal mixed sediments found in the eastern third of the site which occupy 27% of the area, and high energy circalittoral rock is exposed where a tributary channel merges with the deeper palaeo-valley in the northwest, occupying 15% of the site.

Based on survey data JNCC concluded that the diverse infauna matched the community A5.451 Polychaete-rich deep Venus community in offshore mixed sediments. The epifaunal community appeared to be dominated by two biotopes including A5.444 *Flustra foliacea* and *Hydrallmania falcata* on tide-swept circalittoral mixed sediment, which represents part of a transition between sand-scoured circalittoral rock and a sediment biotope. The second possible biotope was identified as A5.445 *Ophiothrix fragilis* and/or *Ophiocomina nigra* brittlestar beds on sublittoral mixed sediment, dominated by brittlestars (hundreds or thousands per square metre).

The Needles MCZ

The site is located to the west of the Isle of Wight and covers 11km², following the mean high-water mark along the coast, extending seawards by up to 3km, and covering three sheltered bays (Alum Bay, Colwell and Totland). The site is designated for 13 features (Table 5.1), which include both broadscale habitats (e.g. subtidal chalk) and individual species (e.g. native oyster *Ostrea edulis*). Various habitats are found in Totland and Colwell Bays, including seagrass beds established in subtidal sand which are considered to be one of the top three seagrass beds around the Isle of Wight. Totland Bay also supports species such as brill (*Scophthalmus rhombus*), spider crab (*Inachus* sp.), the eggs of common squid (*Loligo vulgaris*), and cuttlefish (*Sepia officinalis*). Sheltered muddy gravels are found 200-500 metres off the coasts of Totland and Alum Bays, and subtidal mud is found off Alum Bay.

Subtidal chalk is a prominent feature of the site and is associated with The Needles geological features. The chalk has been scoured by strong currents and formed deep gullies, with scattered large chalk boulders present in the flat areas. It is often extensively bored by bivalves and the holes created provide additional shelter to other species which further adds to habitat diversity. The wealth of refuges and varied topography including vertical and overhanging faces of a reef structure, allows mixed species communities to grow, for example, the goosebump sponge (*Dysidea fragilis*), the soft coral (*Alcyonium digitatum*) and algae such as furbelows kelp (*Saccorhiza polyschides*). The reef in this site supports a range of fish species including bib, common dragonet and pollock, as well as crabs, prawns and the edible common whelk, (*Buccinum undatum*). This habitat also provides hard substrate for the habitat forming native oyster (*Ostrea edulis*) to attach to.

Chesil Beach and Stennis Ledges MCZ

The site covers an area of ~37km² along Chesil Beach from Abbotsbury to Weston on the Isle of Portland and extends seawards to include the rocky ridges and rugged seabed reefs of Stennis Ledges. The site is designated for seven broadscale habitats and two species (Table 5.1), which include the native oyster and pink sea-fan (*Eunicella verrucosa*), and covers both intertidal and subtidal features. Chesil Bank is a 28km shingle structure which has developed over the past 7,000 years, with the shingle sorted from coarse to fine in a westerly direction. Subtidal mixed sediment habitats cover a large proportion of the site (46%) and are located along the full length of the site, bordering rocky. Sampling indicated that infauna was dominated by the basket shell (*Corbula gibba*), polychaete worms *Mediomastus fragilis*, Polynoidae sp., *Lumbrineris gracilis*, mud lobster (*Upogebia deltaura*), and ribbon (nemertean) worms, and mobile species included queen scallops (*Aequipecten opercularis*), king scallops (*Pecten maximus*), brittlestars (*Ophiothrix fragilis* and *Ophiura* sp.), and hermit crabs (Paguridae).

Exposed rocky shore habitats within the site are found at the eastern end and are dominated by barnacles and limpets. Below the low water mark, high energy circalittoral rock habitats extends out to approximately 5km over the characterising Stennis Ledges, an area of rocky ledges with sediment-filled gullies in between that range down to depths of 40m. The habitat is dominated by mixed faunal turf communities which grow attached to the rock and are characteristic of the high energy levels found within this habitat complex. Species recorded include sponges *Raspailia* sp., crater sponge (*Hemimycale columella*), yellow hedgehog sponge (*Polymastia boletiformis* and *Stelligera* sp.), sea squirts (*Dendrodia grossularia* and *Polyclinidae* sp.), sea anemones such as dahlia anemone (*Urticina felina*) and jewel anemone (*Corynactis viridis*), bryozoans (*Cellaria* sp. and *Sertularella* sp.), and hydroids (*Tubularia* sp. and *Nemertesia* sp.). The soft coral dead men's fingers (*Alcyonium digitatum*) and the bryozoan Ross coral (*Pentapora foliacea*) are present on rocky outcrops and boulders, and the pink sea fan (*Eunicella verrucosa*) and branching sponge (*Adreus fascicularis*) have also been recorded at this site. Rocky habitats on the seabed also provide a suitable habitat for inshore commercial fish species, such as common lobster and brown crab. Native oysters have also been recorded.

Albert Field MCZ

Located ~20km south of the entrance to Poole Harbour, the site extends from the 6nm limit to the 12nm limit and covers an area of ~192 km². The two broadscale habitats covered by the site are subtidal coarse and subtidal mixed sediments. The former occurs throughout the majority of the site and occurs as a mosaic alongside other habitat types and comprise coarse sand, gravel, pebbles, shingle, cobbles and bedrock exposures including chalk and clay. The diverse and mixed nature of these substrates support a wide variety of communities that include species, such as tube building worms, bivalve molluscs (e.g. mussels and oysters), barnacles, anemones, starfish, sea cucumbers, urchins, sea firs and sea mats and can provide a nursery

ground for many ecologically and commercially important fish species including sea bass and flat fish such as sole and plaice.

East of Start Point MCZ

The site is located ~19km south of Lyme Bay in relatively shallow waters (25-50m) and covers an area of ~116km². The site is dominated by the broadscale habitat, subtidal sand, and is a spawning and nursery ground for a number of fish species such as lemon sole, sand eels, mackerel, thornback ray and spotted ray, as well as being used by a number of other species including worms, and bivalve molluscs such as razor clams.

Purbeck Coast MCZ

The site covers an area of 282km² and is located between Ringstead Bay in the west and Swanage Bay in the east, stretching along the Jurassic Coast World Heritage Site. The site is designated for a number of intertidal and subtidal broadscale features (Table 5.1), and several species including Peacock's tail (*Padina pavonica*), Stalked jellyfish (*Haliclystus* spp.), black seabream (*Spondylus cantharus*) and maerl beds which are located in the east of the site.

In a number of locations, the rocky reef is covered by a thin veneer of sediment, and it is this habitat that makes this an important site for nesting black seabream, which congregate each year to excavate their nests and breed during the spring and summer months. The intertidal rock features provide supporting habitat for a variety of species, including sponges, bryozoans and hydroids, and the rock pools exposed by the retreating tide provide habitat for fish and foraging areas for birds. The intertidal rock habitat also provides a critical habitat for peacock's tail seaweed.

Subtidal sediments within Purbeck Coast MCZ are comprised of cobbles, pebbles, coarse sand and gravel, which supports a range of species such as barnacles, algae, sea cucumbers, tube worms and anemones. In the shallow subtidal areas, coarse sediment with seaweeds provides the key habitat for stalked jellyfish.

South of Portland MCZ

The site is located ~0.5km to the south of Portland Bill and is made up of high energy and moderate energy rocky reefs and dynamic sediment habitats which are exposed to extremely strong tides, currents and wave action. The site also contains a portion of the geomorphological feature of importance, Portland Deep, which takes the form of a linear depression in the seabed that reaches depths of up to 100m within the site, generated and maintained by strong currents off Portland Bill. High and moderate energy circalittoral rock cover over half of the site, characterised by bedrock, boulders and cobbles which support a diverse range of marine life that include hydroids (e.g. *Tubularia* sp., and *Nemertesia* sp.), sea anemones (e.g. *Urticina* sp. and *Actinotoe sphyrodeta*), sponges (e.g. *Hemimycale columella* and *Dysidea fragilis*), and sea squirts (Ascidacea), and provide a suitable environment for edible crabs (*Cancer pagurus*) and spider crabs (*Maja brachydactyla*). In the north-eastern corner of the site, mussel (*Mytilus edulis*) beds on bedrock have also been recorded.

Subtidal coarse sediment and subtidal sand also cover much of the site and support diverse communities of infaunal species that include polychaete worms (*Glycera lapidum*, *Polygordius*, *Sabellaria spinulosa* and *Pisone remota*), brittle stars (*Amphipholis squamata*) and bivalve molluscs (*Sphenia binghami*). Mobile species like hermit crabs (Paguridae), gastropod snails and scallops (e.g. *Pecten maximus*) also occur. Due to the dynamic nature of the site the areas of sedimentary habitat may be prone to natural change in presence and extent.

Bembridge MCZ

The site is located to the east of the Isle of Wight between Nettlestone Point to Ventnor, and follows the mean high-water mark, covering an area of 75km². The site encompasses the intertidal and subtidal areas extending to the edge of the deep water channel approach into the Eastern Solent, and is designated for 13 features (Table 5.1) including a range of broadscale habitats (including sea-pen and burrowing megafauna communities, sheltered muddy gravels, subtidal mud, sand, and coarse and mixed sediments) and species (including stalked jellyfish (*Calvadosia campanulata*, *Haliclystus* spp.), and short-snouted seahorse (*Hippocampus hippocampus*)). Bembridge is the only known site in the region where maerl can be found, and the site also covers seagrass beds which provide refuge for the short-snouted seahorse and stalked jellyfish.

West of Wight-Barfleur MCZ

The site is located approximately 50km off the Dorset coast, and covers an area of 138km², with depths of between 50 and 100m. The site is designated for the broadscale habitats subtidal coarse sediment and subtidal mixed sediments, which provide a habitat to a diverse range of species, living both on and within the seabed, including worms, bivalve molluscs, starfish and anemones.

Dolphin Head HPMAs

The Dolphin Head HPMAs comprises of a mix of three broad-scale habitats (BSHs): high-energy circalittoral rock, sublittoral coarse sediment and sublittoral mixed sediments. Annex I Reefs, which are of significant conservation importance are also present within this site and include bedrock, stony and biogenic Ross-worm (*Sabellaria spinulosa*) reefs. Ross worm reefs are considered to be an extremely variable habitat type that consists of a diverse community structure. The wide-ranging habitat types in the area more broadly support a range of benthic, demersal and mobile species such as sponges, tube worms, anemones and bivalves. Sublittoral coarse sediments and sublittoral mixed sediments present within the site are known to be important habitats for attracting seabirds and marine mammals due to the common occurrence of prey species.

There are limited data available to support the relative importance of the area for seabirds. At least three species, common guillemot (*Uria aalge*), lesser black-backed gull (*Larus fuscus*), and northern gannet (*Morus bassanus*), are considered to be notably present within the site because they occur within the HPMAs at higher than average densities by comparison to the wider region and English waters. Additionally, grey seal (*Halichoerus grypus*) and harbour porpoise (*Phocoena phocoena*) were identified to have greater presence in the area. In addition, the site has been recognised for its importance for the nursery and spawning behaviour of commercially important species of fish, such as Atlantic cod (*Gadus morhua*) and European plaice (*Pleuronectes platessa*)²⁰.

As the HPMAs overlap with Offshore Brighton MCZ, the conservation objectives for the HPMAs will also apply to the protected features of that site in the overlapping area.

6.1.2 Assessment

The conservation objectives of relevant sites and information relating to site selection and advice on operations have been considered against the work programme for the areas applied for to determine whether site conservation objectives could be hindered. The results are given

²⁰ <https://hub.jncc.gov.uk/assets/13a2a94a-6842-4947-a980-b4c8899a6f86>

in Table 6.2 below. All mandatory control requirements (Section 4.4) are assumed to be in place as a standard for all activities assessed.

Table 6.2: Consideration of potential physical disturbance and drilling effects and relevant site conservation objectives

South Dorset MCZ ²¹	
Site Information	
Area (ha/km²): 19,300/193 Designated features: High energy circalittoral rock, Moderate energy circalittoral rock, Subtidal chalk, Subtidal coarse sediment Conservation objectives: The conservation objective is that the habitats: - so far as already in favourable condition, remain in such condition; and; - so far as not already in favourable condition, be brought into such condition, and remain in such condition. For each protected feature, favourable condition means that, within the MCZ: - Its extent is stable or increasing; - Its structure and functions, its quality, and the composition of its characteristic biological communities (including diversity and abundance of species forming part or inhabiting the habitat) are sufficient to ensure that its condition remains healthy and does not deteriorate. Any temporary deterioration in condition is to be disregarded if the habitats are sufficiently healthy and resilient to enable its recovery. Any alteration to the features brought about entirely by natural processes is to be disregarded. Site condition: All features are unfavourable recovering other than subtidal coarse sediment which is in favourable condition.	
Activities associated with the proposed work programmes within the relevant licence areas	
Drilling up to two wells involving - siting of rig, drilling discharges	
Assessment of effects on site integrity	
Rig siting (Relevant pressures: <i>penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion; physical change (to another sediment/seabed type), introduction or spread of non-indigenous species)</i> The carbon storage licence area entirely overlaps the site. The advice on operations for the site indicate that all of the site features are sensitive to the above pressures, which are relevant to the siting of drilling rigs and related exploration drilling. Should a rig be located within the site, the maximum spatial footprint of the penetration and/or disturbance pressure associated with jack-up rig siting is small (0.8km², see Table 2.1) compared to the site (covering 0.4%). It is noted that, with the exception of subtidal coarse sediment, that the site's features are judged to be in unfavourable recovering condition, the reasons for which are set out in the site feature condition assessment and site SACO, which relate to the sensitivities of the site's features to pressures, which are identified to be primarily from demersal fisheries. Damaging fishing practices have been effectively banned within the site by the <i>South Dorset Marine Conservation Zone (Specified Area) Bottom Towed Fishing Gear Byelaw 2022</i>. While it is assumed that the features are recovering following the removal of this activity²², monitoring will be required to confirm this. Given the available space within the wider licence area, there is considerable scope available to site the rig away from the site, such that any effect can be avoided, and it would be expected that this would form the basis of any mitigation required as part of assessment at the project level, in order to avoid effects which could significantly hinder the achievement of the site's conservation objectives. There may be a requirement for rig stabilisation depending on local seabed conditions. In soft sediments, deposited rock may cover existing sediments resulting in a physical change (to another seabed type), and the protected features which have the potential to be impacted by rig siting are considered to be sensitive to this pressure, which assumes a permanent change of habitat. The potential change of sediment/seabed type from	

²¹ <https://jncc.gov.uk/our-work/south-dorset-mpa/>

²² <https://designatedsites.naturalengland.org.uk/MarineCondition/publicFeatures.aspx?SiteCode=UKMCZ0022>

rig stabilisation is small (estimated area of 0.001-0.004km² per rig siting, see Table 2.1). The SACO for the site does not consider the potential for habitat change from infrastructure or the use of protection materials, mainly as the site is not presently subject to such pressures, however, the sensitivity of the site to such activity is noted in advice on operations. The use of rock placement for rig stabilisation would likely result in a localised but permanent change in habitat, representing up to 0.002% of the site area. If required, the extent of rock placement should be minimised. Given the available space within the wider licence area, there is considerable scope available to site the rig away from the site, such that any effect can be avoided, and it would be expected that this would form the basis of any mitigation required as part of assessment at the project level, in order to avoid effects which could significantly hinder the achievement of the site's conservation objectives.

Management of the spread of non-native species from vessels and rigs is being progressed through international measures, and the risk is limited by the operational range of rigs on the UKCS.

Drilling discharges

(Relevant pressures: *abrasion/disturbance of the substrate on the surface of the seabed; habitat structure changes - removal of substratum (extraction), contaminants, smothering and siltation rate changes*)

The advice on operations indicates that the protected features are sensitive to the above pressures, most of which relate to seabed disturbance and habitat changes associated with smothering by drill cuttings near the well location, and that these cuttings can accumulate in piles where currents are generally weak. It is assumed that effects relating to drilling discharges occur within 500m of the well location (Table 2.1). Therefore, given the available space outside of the site boundaries within which to place a rig, drilling discharges will not significantly impact the extent, structure, or function of the protected features. Should a rig be located within the site boundaries, the maximum spatial footprint within which smothering by drilling discharges and associated habitat structure changes may occur (0.8km²) is small (representing 0.4% of the total site area) and given the site's exposure to high tidal current speeds and energies, and moderate wave exposure, redistribution of drilling discharges and recovery from smothering would be rapid, and any change can be considered to be temporary and not significant. Therefore, drilling discharges will not hinder the achievement of the site's conservation objectives.

Cumulative effects

Intra-plan in-combination effects are possible although spatial footprints associated with rig installation and drilling discharges are localised and temporary, and unlikely to overlap between areas applied for either spatially or temporally. The combined spatial footprint within which physical disturbance and drilling effects could occur (within 500m of the rig/well location) in the relevant licence areas applied for is estimated at 1.6km² (0.8% of the site area). The temporary nature of the disturbance, energetic nature of the environment, required controls and mitigation (Sections 2.2 and 4.4.1), will ensure that the activities do not hinder the achievement of the site's conservation objectives. Section 6.1.3 provides a consideration of potential activities cumulatively with other relevant plans and projects.

Conclusion

The siting of a rig in the area applied for will not hinder the achievement of the South Dorset MCZ site conservation objectives. Further assessment would be undertaken at the project level, at which stage the assessment would be informed by specific rig siting information and project-level mitigation.

Offshore Overfalls²³

Site Information

Area (ha/km²): 59,300/593

Designated features: Subtidal coarse sediments, Subtidal mixed sediments, Subtidal sand, English Channel outburst flood features (Quaternary fluvio-glacial erosion features)

Conservation objectives:

Subject to natural change, the broad-scale habitats Subtidal coarse sediment, Subtidal sand and Subtidal mixed sediments features are to remain in or be brought into favourable condition, such that its:

- Extent is stable or increasing; and
- Structures and functions, its quality, and the composition of its characteristic biological communities are such as to ensure that it is in a condition which is healthy and not deteriorating.

²³ <https://jncc.gov.uk/our-work/offshore-overfalls-mpa/>

Subject to natural change, the English Channel Outburst Flood Features (Quaternary fluvio-glacial erosion features) geomorphological interest feature is to remain in or be brought into favourable condition, such that its:

- Extent, component elements and integrity are maintained;
- Structure and functioning are unimpaired; and
- Surface remains sufficiently unobscured for the purposes of determining whether the conditions in the points above are satisfied.

Any temporary deterioration in condition is to be disregarded if the habitats are sufficiently healthy and resilient to enable its recovery. Any alteration to the features brought about entirely by natural processes is to be disregarded.

Activities associated with the proposed work programmes within the relevant licence areas

Drilling up to two wells involving - siting of rig, drilling discharges

Assessment of effects on site integrity

Rig siting

(Relevant pressures: *penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion; physical change (to another sediment/seabed type), introduction or spread of non-indigenous species*)

The area applied for does not overlap the Offshore Overfalls MCZ and is also not within the assumed distance from a jack-up rig within which effects may occur (500m, see Table 2.1), being a minimum of ~800m from the site. It is therefore concluded that the licensing of the area applied for will not result in any effects in which the achievement of the conservation objectives of the site will be hindered.

Management of the spread of non-native species from vessels and rigs is being progressed through international measures, and the risk is limited by the operational range of rigs on the UKCS.

Drilling discharges

(Relevant pressures: *abrasion/disturbance of the substrate on the surface of the seabed; habitat structure changes - removal of substratum (extraction), contaminants, smothering and siltation rate changes*)

The area applied for does not overlap the Offshore Overfalls MCZ and is also not within the assumed distance from a jack-up rig within which effects may occur (500m, see Table 2.1), being a minimum of ~800m from the site. Therefore, drilling discharges will not hinder the achievement of the site's conservation objectives.

Cumulative effects

No intra-plan cumulative effects are foreseeable, as none of the activities which could follow licensing have the potential to impact the site in a significant way.

Conclusion

The siting of a rig in the area applied for will not hinder the achievement of the Offshore Overfalls MCZ site conservation objectives.

The Needles²⁴

Site Information

Area (ha/km²): 1,100/11

Designated features: High energy infralittoral rock, Moderate energy circlittoral rock, Moderate energy infralittoral rock, Native oyster (*Ostrea edulis*), Peacock's tail (*Padina pavonica*), Seagrass beds, Sheltered muddy gravels, Stalked jellyfish (*Calvadosia campanulata*), Subtidal chalk, Subtidal coarse sediment, Subtidal mixed sediments, Subtidal mud, Subtidal sand.

Conservation objectives:

The conservation objectives are that the protected habitats:

- are maintained in favourable condition if they are already in favourable condition
- be brought into favourable condition if they are not already in favourable condition

For each protected feature, favourable condition means that, within a zone:

- its extent is stable or increasing

²⁴ <https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UKMCZ0040>

- its structure and functions, its quality, and the composition of its characteristic biological communities (including diversity and abundance of species forming part or inhabiting the habitat) are sufficient to ensure that its condition remains healthy and does not deteriorate

Any temporary deterioration in condition is to be disregarded if the habitat is sufficiently healthy and resilient to enable its recovery.

For each species of marine fauna, favourable condition means that the population within a zone is supported in numbers which enable it to thrive, by maintaining:

- the quality and quantity of its habitat
- the number, age and sex ratio of its population

Any temporary reduction of numbers of a species is to be disregarded if the population is sufficiently thriving and resilient to enable its recovery.

Any alteration to a feature brought about entirely by natural processes is to be disregarded when determining whether a protected feature is in favourable condition.

Activities associated with the proposed work programmes within the relevant licence areas

Drilling up to two wells involving - siting of rig, drilling discharges

Assessment of effects on site integrity

Rig siting

(Relevant pressures: *penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion; physical change (to another sediment/seabed type), introduction or spread of non-indigenous species)*

The area applied for does not overlap the Needles MCZ and is also not within the assumed distance from a jack-up rig within which effects may occur (500m, see Table 2.1), being a minimum of 9km from the site. It is therefore concluded that the licensing of the area applied for will not result in any effects in which the achievement of the conservation objectives of the site will be hindered.

Management of the spread of non-native species from vessels and rigs is being progressed through international measures, and the risk is limited by the operational range of rigs on the UKCS.

Drilling discharges

(Relevant pressures: *abrasion/disturbance of the substrate on the surface of the seabed; habitat structure changes - removal of substratum (extraction), contaminants, smothering and siltation rate changes)*

The area applied for does not overlap the Needles MCZ and is also not within the assumed distance from a jack-up rig within which effects may occur (500m, see Table 2.1), being a minimum of 9km from the site. Therefore, drilling discharges will not hinder the achievement of the site's conservation objectives.

Cumulative effects

No intra-plan cumulative effects are foreseeable, as none of the activities which could follow licensing have the potential to impact the site in a significant way.

Conclusion

The siting of a rig in the area applied for will not hinder the achievement of the Needles MCZ site conservation objectives.

Chesil Beach and Stennis Ledges²⁵

Site Information

Area (ha/km²): 3,700/37

Designated features: High energy circalittoral rock, High energy infralittoral rock, High energy intertidal rock, Intertidal coarse sediment, Native oyster (*Ostrea edulis*), Pink sea-fan (*Eunicella verrucosa*), Subtidal coarse sediment, Subtidal mixed sediments, Subtidal sand.

Conservation objectives:

The conservation objectives are that the protected habitats:

²⁵ <https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UKMCZ0040>

- are maintained in favourable condition if they are already in favourable condition
- be brought into favourable condition if they are not already in favourable condition

For each protected feature, favourable condition means that, within a zone:

- its extent is stable or increasing
- its structure and functions, its quality, and the composition of its characteristic biological communities (including diversity and abundance of species forming part or inhabiting the habitat) are sufficient to ensure that its condition remains healthy and does not deteriorate

Any temporary deterioration in condition is to be disregarded if the habitat is sufficiently healthy and resilient to enable its recovery.

For each species of marine fauna, favourable condition means that the population within a zone is supported in numbers which enable it to thrive, by maintaining:

- the quality and quantity of its habitat
- the number, age and sex ratio of its population

Any temporary reduction of numbers of a species is to be disregarded if the population is sufficiently thriving and resilient to enable its recovery.

Any alteration to a feature brought about entirely by natural processes is to be disregarded when determining whether a protected feature is in favourable condition.

Activities associated with the proposed work programmes within the relevant licence areas

Drilling up to two wells involving - siting of rig, drilling discharges

Assessment of effects on site integrity

Rig siting

(Relevant pressures: *penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion; physical change (to another sediment/seabed type), introduction or spread of non-indigenous species*)

The area applied for does not overlap the Chesil Beach and Stennis Ledges MCZ and is also not within the assumed distance from a jack-up rig within which effects may occur (500m, see Table 2.1), being a minimum of 2km from the site. It is therefore concluded that the licensing of the area applied for will not result in any effects in which the achievement of the conservation objectives of the site will be hindered.

Management of the spread of non-native species from vessels and rigs is being progressed through international measures, and the risk is limited by the operational range of rigs on the UKCS.

Drilling discharges

(Relevant pressures: *abrasion/disturbance of the substrate on the surface of the seabed; habitat structure changes - removal of substratum (extraction), contaminants, smothering and siltation rate changes*)

The area applied for does not overlap the Chesil Beach and Stennis Ledges MCZ and is also not within the assumed distance from a jack-up rig within which effects may occur (500m, see Table 2.1), being a minimum of 2km from the site. Therefore, drilling discharges will not hinder the achievement of the site's conservation objectives.

Cumulative effects

No intra-plan cumulative effects are foreseeable, as none of the activities which could follow licensing have the potential to impact the site in a significant way.

Conclusion

The siting of a rig in the area applied for will not hinder the achievement of the Chesil Beach and Stennis Ledges MCZ site conservation objectives.

Albert Field²⁶

Site Information

Area (ha/km²): 19,200/192

²⁶ <https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UKMCZ0051>

Designated features: Subtidal coarse sediment, Subtidal mixed sediments

Conservation objectives:

The conservation objectives are that the protected habitats:

- are maintained in favourable condition if they are already in favourable condition
- be brought into favourable condition if they are not already in favourable condition

For each protected feature, favourable condition means that, within a zone:

- its extent is stable or increasing
- its structure and functions, its quality, and the composition of its characteristic biological communities (including diversity and abundance of species forming part or inhabiting the habitat) are sufficient to ensure that its condition remains healthy and does not deteriorate

Any temporary deterioration in condition is to be disregarded if the habitat is sufficiently healthy and resilient to enable its recovery.

Any alteration to a feature brought about entirely by natural processes is to be disregarded when determining whether a protected feature is in favourable condition.

Activities associated with the proposed work programmes within the relevant licence areas

Drilling up to two wells involving - siting of rig, drilling discharges

Assessment of effects on site integrity

Rig siting

(Relevant pressures: *penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion; physical change (to another sediment/seabed type), introduction or spread of non-indigenous species*)

The carbon storage licence area entirely overlaps the site. The advice on operations for the site indicate that all of the site features are sensitive to the above pressures, which are relevant to the siting of drilling rigs and related exploration drilling. Should a rig be located within the site, the maximum spatial footprint of the penetration and/or disturbance pressure associated with jack-up rig siting is small (0.8km², see Table 2.1) compared to the site (covering 0.4%). The condition of site features is not available, however, the SACO includes a number of targets to recover attributes (e.g. presence and spatial distribution of biological communities) in relation to both site features, that relates to the site's sensitivity to demersal fisheries. Unlike certain other sites affected by fisheries, Albert Field MCZ is not presently subject to a byelaw prohibiting bottom towed fishing gear, however, stage 3 of the MMO's plan to manage fisheries in MPAs is presently ongoing, and has the aim of considering the impacts on sites with seabed features not already covered under stages 1 and 2, and proposes a bylaw prohibiting the use of bottom towed gear across the whole of the MPA²⁷. Given the available space within the wider licence area, there is considerable scope available to site the rig away from the site, such that any effect can be avoided, and it would be expected that this would form the basis of any mitigation required as part of assessment at the project level, in order to avoid effects which could significantly hinder the achievement of the site's conservation objectives.

There may be a requirement for rig stabilisation depending on local seabed conditions. In soft sediments, deposited rock may cover existing sediments resulting in a physical change (to another seabed type), and the protected features which have the potential to be impacted by rig siting are considered to be sensitive to this pressure, which assumes a permanent change of habitat. The potential change of sediment/seabed type from rig stabilisation is small (estimated area of 0.001-0.004km² per rig siting, see Table 2.1). The SACO for the site does not consider the potential for habitat change from infrastructure or the use of protection materials, mainly as the site is not presently subject to these pressures, however, the sensitivity of the site to such activity is noted in advice on operations. The use of rock placement for rig stabilisation would likely result in a localised but permanent change in habitat, representing up to 0.002% of the site area, however, the site and wider area within which the site is located, is dominated by coarse sediments, and thin sediments with rock exposure. While the character of any stabilisation material (e.g. grade, rock type) may not be equivalent to the seabed substrates within the site (e.g. which include exposures of chalk and clay), their use would not necessarily result in a significant change in available habitat extent. If required, the extent of rock placement should be minimised. Given the available space within the wider licence area, there is considerable scope available to site the rig away from the site, such that any effect can be avoided, and it would be expected that this would form the basis of any

²⁷ <https://www.gov.uk/government/publications/the-eastern-channel-marine-protected-areas-fishing-gear-byelaw-2024>

mitigation required as part of assessment at the project level, in order to avoid effects which could significantly hinder the achievement of the site's conservation objectives.

Management of the spread of non-native species from vessels and rigs is being progressed through international measures, and the risk is limited by the operational range of rigs on the UKCS.

Drilling discharges

(Relevant pressures: *abrasion/disturbance of the substrate on the surface of the seabed; habitat structure changes - removal of substratum (extraction), contaminants, smothering and siltation rate changes*)

The advice on operations indicates that the protected features are sensitive to the above pressures, most of which relate to seabed disturbance and habitat changes associated with smothering by drill cuttings near the well location, and that these cuttings can accumulate in piles where currents are generally weak. It is assumed that effects relating to drilling discharges occur within 500m of the well location (Table 2.1). Therefore, given the available space outside of the site boundaries within which to place a rig, drilling discharges will not significantly impact the extent, structure, or function of the protected features. Should a rig be located within the site boundaries, the maximum spatial footprint within which smothering by drilling discharges and associated habitat structure changes may occur (0.8km²) is small (representing 0.4% of the total site area) and given the site's exposure to high tidal current speeds and energies, and moderate wave exposure, redistribution of drilling discharges and recovery from smothering would be rapid, and any change can be considered to be temporary and not significant. Therefore, drilling discharges will not hinder the achievement of the site's conservation objectives.

Cumulative effects

Intra-plan in-combination effects are possible although spatial footprints associated with rig installation and drilling discharges are localised and temporary, and unlikely to overlap between areas applied for either spatially or temporally. The combined spatial footprint within which physical disturbance and drilling effects could occur (within 500m of the rig/well location) in the relevant licence areas applied for is estimated at 1.6km² (0.8% of the site area). The temporary nature of the disturbance, energetic nature of the environment, required controls and mitigation (Sections 2.2 and 4.4.1), will ensure that the activities do not hinder the achievement of the site's conservation objectives. Section 6.1.3 provides a consideration of potential activities cumulatively with other relevant plans and projects.

Conclusion

The siting of a rig in the area applied for will not hinder the achievement of the Albert Field MCZ site conservation objectives.

East of Start Point²⁸

Site Information

Area (ha/km²): 11,600/116

Designated features: Subtidal sand

Conservation objectives:

The conservation objective is that the habitats:

- so far as already in favourable condition, remain in such condition; and;
- so far as not already in favourable condition, be brought into such condition, and remain in such condition.

For each protected feature, favourable condition means that, within the MCZ:

- Its extent is stable or increasing;
- Its structure and functions, its quality, and the composition of its characteristic biological communities (including diversity and abundance of species forming part or inhabiting the habitat) are sufficient to ensure that its condition remains healthy and does not deteriorate.

Any temporary deterioration in condition is to be disregarded if the habitat is sufficiently healthy and resilient to enable its recovery.

Any alteration to a feature brought about entirely by natural processes is to be disregarded when determining whether a protected feature is in favourable condition.

²⁸ <https://jncc.gov.uk/our-work/east-of-start-point-mpa/>

Activities associated with the proposed work programmes within the relevant licence areas
Drilling up to two wells involving - siting of rig, drilling discharges
Assessment of effects on site integrity
Rig siting (Relevant pressures: <i>penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion; physical change (to another sediment/seabed type), introduction or spread of non-indigenous species)</i> Conservation advice, including advice on operations, is not available for East of Start Point MCZ, however, on the basis of available evidence (see Section 4) the subtidal sand feature of the site is considered to be sensitive to all of the above pressures. Approximately just over half of the site overlaps with the carbon storage area applied for (~64km²), however this represents a small proportion of the overall area applied for (~6,200km²), and there is considerable scope to avoid interaction with the site. Should a rig be located within the site, the maximum spatial footprint of the penetration and/or disturbance pressure associated with jack-up rig siting is small (0.8km², see Table 2.1) compared to the site (covering 0.7%). The placement of a rig within the site, should this occur, would result in temporary effects, with the depressions arising from spud can placement likely to infill and be reworked relatively rapidly (for example see Section 4.4.1 of BEIS 2022), noting the relatively dynamic nature of the site. Unlike certain other sites affected by fisheries, East of Start Point MCZ is not presently subject to a byelaw prohibiting bottom towed fishing gear, however, stage 3 of the MMO's plan to manage fisheries in MPAs is presently ongoing, and has the aim of considering the impacts on sites with seabed features not already covered under stages 1 and 2, and proposes a bylaw prohibiting the use of bottom towed gear across the whole of the MPA²⁹. It is not considered likely that the temporary placement of a rig within the site will affect the extent, structure, or function of any of the features of the East of Start Point MCZ in a way in which the achievement of the conservation objectives of the site will be significantly hindered. Given the available space within the wider licence area, there is considerable scope available to site the rig away from the site, such that any effect can be avoided, and it would be expected that this would form the basis of any mitigation required as part of assessment at the project level. There may be a requirement for rig stabilisation depending on local seabed conditions. In soft sediments, deposited rock may cover existing sediments resulting in a physical change (to another seabed type), and the protected features which have the potential to be impacted by rig siting are considered to be sensitive to this pressure, which assumes a permanent change of habitat. Should a rig be sited within the East of Start Point MCZ and stabilisation material be required, the potential change of sediment/seabed type is small (estimated area of 0.001-0.004km² per rig siting, see Table 2.1), at up to 0.003% of the site area. The use of rock placement for rig stabilisation would likely result in a localised but permanent change in habitat given the dominant sediment type within the site. If required, the extent of rock placement should be minimised. In view of the very small scale of potential impact on the site, and the potential for mitigation through avoiding drilling within the site, it is concluded that the licensing of the area will not significantly hinder the achievement of the site's conservation objectives. Given the available space within the wider licence area, there is considerable scope available to site the rig away from the site, such that any effect can be avoided, and it would be expected that this would form the basis of any mitigation required as part of assessment at the project level. Management of the spread of non-native species from vessels and rigs is being progressed through international measures, and the risk is limited by the operational range of rigs on the UKCS. Drilling discharges (Relevant pressures: <i>abrasion/disturbance of the substrate on the surface of the seabed; habitat structure changes - removal of substratum (extraction), contaminants, smothering and siltation rate changes)</i> Conservation advice, including advice on operations, is not available for East of Start Point MCZ, however, on the basis of available evidence (see Section 4) the subtidal sand feature of the site is considered to be sensitive to all of the above pressures, most of which relate to seabed disturbance and habitat changes associated with smothering by drill cuttings near the well location, and that these cuttings can accumulate in piles where currents are generally weak. It is assumed that effects relating to drilling discharges occur within 500m of the well location (Table 2.1). Should a rig be located within the site boundaries, the maximum spatial footprint within which smothering by drilling discharges and associated habitat structure changes may occur (0.8km²) is small (representing 0.7% of the total site area) and given the site's exposure to high tidal current speeds and energies, and moderate wave exposure, redistribution of drilling discharges and recovery from smothering would be rapid,

²⁹ <https://www.gov.uk/government/publications/the-western-channel-and-southwest-marine-protected-areas-fishing-gear-byelaw-2024>

and any change can be considered to be temporary and not significant. Therefore, drilling discharges will not hinder the achievement of the site's conservation objectives.

Cumulative effects

Intra-plan in-combination effects are possible although spatial footprints associated with rig installation and drilling discharges are localised and temporary, and unlikely to overlap between areas applied for either spatially or temporally. The combined spatial footprint within which physical disturbance and drilling effects could occur (within 500m of the rig/well location) in the relevant licence areas applied for is estimated at 1.6km² (1.4% of the site area). The temporary nature of the disturbance, energetic nature of the environment, required controls and mitigation (Sections 2.2 and 4.4.1), will ensure that the activities do not hinder the achievement of the site's conservation objectives. Section 6.1.3 provides a consideration of potential activities cumulatively with other relevant plans and projects.

Conclusion

The siting of a rig in the area applied for will not hinder the achievement of the East of Start Point MCZ site conservation objectives.

Purbeck Coast³⁰

Site Information

Area (ha/km²): 28,200/282

Designated features: Black seabream (*Spondyllosoma cantharus*), High energy intertidal rock, Intertidal coarse sediment, Maerl beds, Moderate energy intertidal rock, Peacock's tail (*Padina pavonica*), Stalked jellyfish (*Haliclystus* spp), Subtidal coarse sediment, Subtidal mixed sediments.

Conservation objectives:

The first conservation objective of the zone is that the protected features:

- are maintained in favourable condition if they are already in favourable condition
- be brought into favourable condition if they are not already in favourable condition

For the protected habitats high energy intertidal rock, intertidal coarse sediment, moderate energy intertidal rock, subtidal coarse sediment, subtidal mixed sediments, and maerl beds, favourable condition means that within the zone both:

- its extent is stable or increasing
- its structure and functions, its quality, and the composition of its characteristic biological communities (including diversity and abundance of species forming part of, or inhabiting the habitat) are sufficient to ensure that its condition remains healthy and does not deteriorate

For the protected species stalked jellyfish and peacock's tail, favourable condition means that the population within the zone is supported in numbers which enable it to thrive, by maintaining:

- the quality and quantity of its habitat
- the number, age and sex ratio of its population

Any temporary reduction of numbers is to be disregarded if the population is sufficiently thriving and resilient to enable its recovery.

The second conservation objective of the zone is that, in relation to black seabream:

- the habitat used by individuals of that species for the purposes of spawning (spawning habitat); (a) are maintained in favourable condition if they are already in favourable condition, or (b) be brought into favourable condition if they are not already in favourable condition.
- the population (whether temporary or otherwise) of that species occurring in the zone be free of disturbance likely to significantly affect the survival of its members or their ability to aggregate, nest, or lay, fertilise or guard eggs during breeding.

For the spawning habitat of black seabream within the zone, favourable condition means that the habitat is of sufficient quality and quantity to enable individuals of this species using the habitat to survive, aggregate, nest, lay, fertilise or guard eggs during breeding.

Any alteration to a feature brought about entirely by natural processes is to be disregarded when determining whether a protected feature is in favourable condition.

³⁰ <https://designatedsites.naturalengland.org.uk/ConservationAdvice.aspx?SiteCode=UKMCZ0066>

Activities associated with the proposed work programmes within the relevant licence areas
Drilling up to two wells involving - siting of rig, drilling discharges
Assessment of effects on site integrity
Rig siting (Relevant pressures: <i>penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion; physical change (to another sediment/seabed type), introduction or spread of non-indigenous species)</i> The advice on operations for the site indicate that all of the site features are sensitive to the above pressures, which are relevant to the siting of drilling rigs and related exploration drilling, with the exception of some intertidal components. Site feature conditions have not been assessed, however, the SACO includes a number of targets suggesting that recovery is needed for some feature attributes, mainly related to the black seabream feature, or water quality effects in relation to habitats, which is largely related to WFD targets. The area applied for overlaps a very small area of the site (~0.09km², or 0.03% of the site area). While this overlap is such that effects from rig placement could occur, there is considerable scope for a rig to be located away from the site boundaries such that direct physical impacts on the site can be completely avoided. It would be expected that rig site selection would allow for complete avoidance of the site and effects on it, and that this would form the basis of any mitigation required as part of assessment at the project level, in order to avoid effects which could significantly hinder the achievement of the site's conservation objectives. There may be a requirement for rig stabilisation depending on local seabed conditions. In soft sediments, deposited rock may cover existing sediments resulting in a physical change (to another seabed type), and the protected features which have the potential to be impacted by rig siting are considered to be sensitive to this pressure, which assumes a permanent change of habitat. The potential area of change in sediment/seabed type from rig stabilisation is small (estimated at 0.001-0.004km² per rig siting, see Table 2.1), and analogous to the consideration above for rig siting, it would be expected that rig site selection would allow for complete avoidance of the site given the very small area of overlap with the site, and that this would form the basis of any mitigation required as part of assessment at the project level, in order to avoid effects which could significantly hinder the achievement of the site's conservation objectives. Management of the spread of non-native species from vessels and rigs is being progressed through international measures, and the risk is limited by the operational range of rigs on the UKCS. Drilling discharges (Relevant pressures: <i>abrasion/disturbance of the substrate on the surface of the seabed; habitat structure changes - removal of substratum (extraction), contaminants, smothering and siltation rate changes)</i> The advice on operations indicates that the protected features are sensitive to the above pressures, most of which relate to seabed disturbance and habitat changes associated with smothering by drill cuttings near the well location, and that these cuttings can accumulate in piles where currents are generally weak. It is assumed that effects relating to drilling discharges occur within 500m of the well location (Table 2.1). As considered above, while there is a small overlap between the area applied for and the site boundary, the area is so small that it would be expected that rig site selection would allow for complete avoidance of the site, and that this would form the basis of any mitigation required as part of assessment at the project level, in order to avoid effects which could significantly hinder the achievement of the site's conservation objectives. Cumulative effects Intra-plan in-combination effects are considered highly unlikely due to the lack of site overlap and that the spatial footprints associated with rig installation and drilling discharges are localised and temporary, and unlikely to overlap between areas applied for either spatially or temporally. The temporary nature of the disturbance, energetic nature of the environment, required controls and mitigation (Sections 2.2 and 4.4.1), will ensure that the activities do not hinder the achievement of the site's conservation objectives, and as noted above, due to the limited site overlap, complete avoidance of the site would be expected to form the basis of any mitigation required as part of assessment at the project level. Section 6.1.3 provides a consideration of potential activities cumulatively with other relevant plans and projects. Conclusion The siting of a rig in the area applied for will not hinder the achievement of the Purbeck Coast MCZ site conservation objectives.

South of Portland³¹

Site Information

Area (ha/km²): 1,747/17.47

Designated features: High energy circalittoral rock, Moderate energy circalittoral rock, Portland Deep geological feature, Subtidal coarse sediment, Subtidal mixed sediments, Subtidal sand

Conservation objectives:

The conservation objective of each of the zones is that the protected habitats:

- are maintained in favourable condition if they are already in favourable condition
- be brought into favourable condition if they are not already in favourable condition

For each protected feature, favourable condition means that, within a zone:

- its extent is stable or increasing
- its structure and functions, its quality, and the composition of its characteristic biological communities (including diversity and abundance of species forming part or inhabiting the habitat) are sufficient to ensure that its condition remains healthy and does not deteriorate

For the feature of geological interest, favourable condition means that, within a zone:

- its extent, component elements and integrity are maintained
- its structure and functioning are unimpaired
- its surface remains sufficiently unobscured for the purposes of determining whether the conditions in the paragraphs above are satisfied.

Any temporary deterioration in condition is to be disregarded if the habitat is sufficiently healthy and resilient to enable its recovery.

Any alteration to a feature brought about entirely by natural processes is to be disregarded when determining whether a protected feature is in favourable condition.

Activities associated with the proposed work programmes within the relevant licence areas

Drilling up to two wells involving - siting of rig, drilling discharges

Assessment of effects on site integrity

Rig siting

(Relevant pressures: *penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion; physical change (to another sediment/seabed type), introduction or spread of non-indigenous species*)

The advice on operations for the site indicates that all of the site features are sensitive to the above pressures, which are relevant to the siting of drilling rigs and related exploration drilling, with the exception of the Portland Deep geological feature, for which sensitivity has not been assessed. Site feature conditions have not been assessed, however, the targets for most feature attributes in the SACO are to maintain rather than recover, though some are uncertain (e.g. maintain, or recover, or restore). The area applied for has a small overlap with the South of Portland MCZ at the most southerly end of the site, covering an area of some 0.2km². There is considerable scope for a rig to be located outside and away from the site boundaries such that physical impacts on the site can be avoided. The overlap of the site with the area applied for is so small, that rig site selection would allow for complete avoidance of the site, and it would be expected that this would form the basis of any mitigation required as part of assessment at the project level, in order to avoid effects which could significantly hinder the achievement of the site's conservation objectives.

There may be a requirement for rig stabilisation depending on local seabed conditions. In soft sediments, deposited rock may cover existing sediments resulting in a physical change (to another seabed type), and the protected features which have the potential to be impacted by rig siting are considered to be sensitive to this pressure, which assumes a permanent change of habitat. The potential area of change in sediment/seabed type from rig stabilisation is small (estimated at 0.001-0.004km² per rig siting, see Table 2.1), and analogous to the consideration above for rig siting, it would be expected that rig site selection would allow for complete avoidance of the site, and that this would form the basis of any mitigation required as part of assessment at the project level, in order to avoid effects which could significantly hinder the achievement of the site's conservation objectives.

³¹ <https://designatedsites.naturalengland.org.uk/ConservationAdvice.aspx?SiteCode=UKMCZ0070>

Management of the spread of non-native species from vessels and rigs is being progressed through international measures, and the risk is limited by the operational range of rigs on the UKCS.

Drilling discharges

(Relevant pressures: *abrasion/disturbance of the substrate on the surface of the seabed; habitat structure changes - removal of substratum (extraction), contaminants, smothering and siltation rate changes*)

The advice on operations indicates that the protected features are sensitive to the above pressures, most of which relate to seabed disturbance and habitat changes associated with smothering by drill cuttings near the well location, and that these cuttings can accumulate in piles where currents are generally weak. It is assumed that effects relating to drilling discharges occur within 500m of the well location (Table 2.1). As considered above, while there is a small overlap between the area applied for and the site boundary, the area is so small that it would be expected that rig site selection would allow for complete avoidance of the site, and that this would form the basis of any mitigation required as part of assessment at the project level, in order to avoid effects which could significantly hinder the achievement of the site's conservation objectives.

Cumulative effects

Intra-plan in-combination effects are considered highly unlikely due to the scale of site overlap (0.2km²) and that the spatial footprints associated with rig installation and drilling discharges are localised and temporary, and unlikely to overlap between areas applied for either spatially or temporally. The temporary nature of the disturbance, energetic nature of the environment, required controls and mitigation (Sections 2.2 and 4.4.1), will ensure that the activities do not hinder the achievement of the site's conservation objectives, and as noted above, due to the limited site overlap, complete avoidance of the site would be expected to form the basis of any mitigation required as part of assessment at the project level. Section 6.1.3 provides a consideration of potential activities cumulatively with other relevant plans and projects.

Conclusion

The siting of a rig in the area applied for will not hinder the achievement of the South of Portland MCZ site conservation objectives.

Bembridge³²

Site Information

Area (ha/km²): 7,500/75

Designated features: Maerl beds, Native oyster (*Ostrea edulis*), Peacock's tail (*Padina pavonica*), Seagrass beds, Sea-pen and burrowing megafauna communities, Sheltered muddy gravels, Short snouted seahorse (*Hippocampus hippocampus*), Stalked jellyfish (*Calvadosia campanulata*), Stalked jellyfish (*Haliclystus* spp), Subtidal coarse sediment, Subtidal mixed sediments, Subtidal mud, Subtidal sand.

Conservation objectives:

The conservation objective of each of the zones is that the protected habitats:

- Are maintained in favourable condition if they are already in favourable condition
- Be brought into favourable condition if they are not already in favourable condition

For each protected feature, favourable condition means that, within a zone:

- Its extent is stable or increasing
- Its structure and functions, its quality, and the composition of its characteristic biological communities (including diversity and abundance of species forming part or inhabiting the habitat) are sufficient to ensure that its condition remains healthy and does not deteriorate.

Any temporary deterioration in condition is to be disregarded if the habitat is sufficiently healthy and resilient to enable its recovery.

For each species of marine fauna, favourable condition means that the population within a zone is supported in numbers which enable it to thrive, by maintaining:

- The quality and quantity of its habitat
- The number, age and sex ratio of its population

Any temporary reduction of numbers of a species is to be disregarded if the population is sufficiently thriving and resilient to enable its recovery.

³² <https://designatedsites.naturalengland.org.uk/Marine/MarineSiteDetail.aspx?SiteCode=UKMCZ0054>

Any alteration to a feature brought about entirely by natural processes is to be disregarded when determining whether a protected feature is in favourable condition. This should be read in conjunction with the accompanying supplementary advice section, which provides more detailed information to help achieve the objectives set out above, including which attributes should be maintained and which recovered.
Activities associated with the proposed work programmes within the relevant licence areas
Drilling up to two wells involving - siting of rig, drilling discharges
Assessment of effects on site integrity
Rig siting (Relevant pressures: <i>penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion; physical change (to another sediment/seabed type), introduction or spread of non-indigenous species)</i> The area applied for does not overlap the Bembridge MCZ and is also not within the assumed distance from a jack-up rig within which effects may occur (500m, see Table 2.1), being a minimum of 9.4km from the site. It is therefore concluded that the licensing of the area applied for will not result in any effects in which the achievement of the conservation objectives of the site will be hindered. Management of the spread of non-native species from vessels and rigs is being progressed through international measures, and the risk is limited by the operational range of rigs on the UKCS. Drilling discharges (Relevant pressures: <i>abrasion/disturbance of the substrate on the surface of the seabed; habitat structure changes - removal of substratum (extraction), contaminants, smothering and siltation rate changes)</i> The area applied for does not overlap the Bembridge MCZ and is also not within the assumed distance from a jack-up rig within which effects may occur (500m, see Table 2.1), being a minimum of 9.5km from the site. Therefore, drilling discharges will not hinder the achievement of the site's conservation objectives. Cumulative effects No intra-plan cumulative effects are foreseeable, as none of the activities which could follow licensing have the potential to impact the site in a significant way. Conclusion The siting of a rig in the area applied for will not hinder the achievement of the Bembridge MCZ site conservation objectives.
West of Wight-Barfleur³³
Site Information
Area (ha/km²): 13,800/138 Designated features: Subtidal coarse sediment, Subtidal mixed sediments Conservation objectives: The Conservation Objective for the West of Wight-Barfleur Marine Conservation Zone is that the protected features: - so far as already in favourable condition, remain in such condition; and - so far as not already in favourable condition, be brought into such condition, and remain in such condition With respect to Subtidal coarse sediment and Subtidal mixed sediments within the Zone, means that: - Its extent is stable or increasing; and - Its structures and functions, its quality, and the composition of its characteristic biological communities (which includes a reference to the diversity and abundance of species forming part of or inhabiting that habitat) are such as to ensure that it remains in a condition which is healthy and not deteriorating; Any temporary deterioration in condition is to be disregarded if the habitat is sufficiently healthy and resilient to enable its recovery. Any alteration to that feature brought about entirely by natural processes is to be disregarded.

³³ <https://jncc.gov.uk/our-work/west-of-wight-barfleur-mpa/>

Activities associated with the proposed work programmes within the relevant licence areas
Drilling up to two wells involving - siting of rig, drilling discharges
Assessment of effects on site integrity
Rig siting (Relevant pressures: <i>penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion; physical change (to another sediment/seabed type), introduction or spread of non-indigenous species)</i> The advice on operations for the site indicate that all of the site features are sensitive to the above pressures, which are relevant to the siting of drilling rigs and related exploration drilling. Should a rig be located within the site, the maximum spatial footprint of the penetration and/or disturbance pressure associated with jack-up rig siting is small (0.8km², see Table 2.1) compared to the site (covering 0.6%). It is noted that the site's features are judged to be in unfavourable condition, with the site conservation advice statement indicating that demersal fisheries and telecommunications cables should be managed to restore the site broadscale habitats, however, at present the SACO does not include details outlining evidence to support whether attributes related to site features need to be recovered or maintained. It is noted that only the Atlantic Crossing 1 cable, installed in 1999, interacts with the site (see Section 6.1.3 for a consideration of cumulative effects), and that the <i>Western Channel and Southwest Marine Protected Areas Fishing Gear Byelaw 2024</i> proposed to prohibit bottom towed fishing gear across the whole site³⁴. Given the available space within the wider area applied for, there is considerable scope available to site the rig away from the site, such that any effect can be avoided, and it would be expected that this would form the basis of any mitigation required as part of assessment at the project level, in order to avoid effects which could significantly hinder the achievement of the site's conservation objectives. There may be a requirement for rig stabilisation depending on local seabed conditions. In soft sediments, deposited rock may cover existing sediments resulting in a physical change (to another seabed type), and the protected features which have the potential to be impacted by rig siting are considered to be sensitive to this pressure, which assumes a permanent change of habitat. The potential change of sediment/seabed type from rig stabilisation is small (estimated area of 0.001-0.004km² per rig siting, see Table 2.1). The SACO for the site does not consider the potential for habitat change from infrastructure or the use of protection materials, mainly as the site is not presently subject to these pressures, however, the sensitivity of the site to such activity is noted in advice on operations. The use of rock placement for rig stabilisation would likely result in a localised but permanent change in habitat, representing up to 0.003% of the site area. If required, the extent of rock placement should be minimised. Given the available space within the wider area applied for, there is considerable scope available to site the rig away from the site, such that any effect can be avoided, and it would be expected that this would form the basis of any mitigation required as part of assessment at the project level, in order to avoid effects which could significantly hinder the achievement of the site's conservation objectives. Management of the spread of non-native species from vessels and rigs is being progressed through international measures, and the risk is limited by the operational range of rigs on the UKCS. Drilling discharges (Relevant pressures: <i>abrasion/disturbance of the substrate on the surface of the seabed; habitat structure changes - removal of substratum (extraction), contaminants, smothering and siltation rate changes)</i> The advice on operations indicates that the protected features are sensitive to the above pressures, most of which relate to seabed disturbance and habitat changes associated with smothering by drill cuttings near the well location, and that these cuttings can accumulate in piles where currents are generally weak. It is assumed that effects relating to drilling discharges occur within 500m of the well location (Table 2.1). Therefore, given the available space outside of the site boundaries within which to place a rig, drilling discharges will not significantly impact the extent, structure, or function of the protected features. Should a rig be located within the site boundaries, the maximum spatial footprint within which smothering by drilling discharges and associated habitat structure changes may occur (0.8km²) is small (representing 0.6% of the total site area) and given the site's exposure to high tidal current speeds and energies, and moderate wave exposure, redistribution of drilling discharges and recovery from smothering would be rapid, and any change can be considered to be temporary and not significant. Therefore, drilling discharges will not hinder the achievement of the site's conservation objectives. Cumulative effects

³⁴ <https://www.gov.uk/government/publications/the-western-channel-and-southwest-marine-protected-areas-fishing-gear-byelaw-2024>

Intra-plan in-combination effects are possible although spatial footprints associated with rig installation and drilling discharges are localised and temporary, and unlikely to overlap between areas applied for either spatially or temporally. The combined spatial footprint within which physical disturbance and drilling effects could occur (within 500m of the rig/well location) in the relevant licence areas applied for is estimated at 1.6km² (1.2% of the site area). The temporary nature of the disturbance, energetic nature of the environment, required controls and mitigation (Sections 2.2 and 4.4.1), will ensure that the activities do not hinder the achievement of the site's conservation objectives. Section 6.1.3 provides a consideration of potential activities cumulatively with other relevant plans and projects.

Conclusion

The siting of a rig in the area applied for will not hinder the achievement of the West of Wight-Barfleur MCZ site conservation objectives.

Offshore Brighton³⁵

Site Information

Area (ha/km²): 86,200/862

Designated features: High energy circalittoral rock, Subtidal coarse sediment, Subtidal mixed sediments

Conservation objectives:

The protected features:

- so far as already in favourable condition, remain in such condition; and
- so far as not already in favourable condition, be brought into such condition, and remain in such condition.

With respect to High energy circalittoral rock, Subtidal coarse sediment and Subtidal mixed sediments within the Zone, means that:

- Extent is stable or increasing; and
- Structures and functions, quality, and the composition of characteristic biological communities (which includes a reference to the diversity and abundance of species forming part of or inhabiting each habitat) are such as to ensure that they remain in a condition which is healthy and not deteriorating.

Any temporary deterioration in condition is to be disregarded if the habitats are sufficiently healthy and resilient to enable its recovery. Any alteration to the features brought about entirely by natural processes is to be disregarded.

Activities associated with the proposed work programmes within the relevant licence areas

Drilling up to two wells involving - siting of rig, drilling discharges

Assessment of effects on site integrity

Rig siting

(Relevant pressures: *penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion; physical change (to another sediment/seabed type), introduction or spread of non-indigenous species*)

The advice on operations for the site indicate that all of the site features are sensitive to the above pressures, which are relevant to the siting of drilling rigs and related exploration drilling. While the SACO indicates that objectives (e.g. recover) have not been set for site attributes (e.g. structure and function), the site conservation statement indicates that all features are in unfavourable condition and that the general management approach for each feature is to recover these to favourable condition. Additionally, as noted in Section 5.1, where there is an overlap between the Dolphin Head HPMA and Offshore Brighton MCZ, the latter would benefit from the same management measures as the HPMA. The area applied for has a small overlap with the Offshore Brighton MCZ (~160m overlap at the western end of the site, covering an area of some 0.15km² and outside of the area of overlap with the Dolphin Head HPMA), and there is considerable scope for a rig to be located outside and away from the site boundaries such that direct physical impacts on the site can be avoided. The overlap of the site with the area applied for is so small, that rig site selection would allow for complete avoidance of the site, and it would be expected that this would form the basis of any mitigation required as part of assessment at the project level, in order to avoid effects which could significantly hinder the achievement of the site's conservation objectives.

There may be a requirement for rig stabilisation depending on local seabed conditions. In soft sediments, deposited rock may cover existing sediments resulting in a physical change (to another seabed type), and the

³⁵ <https://jncc.gov.uk/our-work/offshore-brighton-mpa/>

protected features which have the potential to be impacted by rig siting are considered to be sensitive to this pressure, which assumes a permanent change of habitat. The potential area of change in sediment/seabed type from rig stabilisation is small (estimated at 0.001-0.004km² per rig siting, see Table 2.1), and analogous to the consideration above for rig siting, it would be expected that rig site selection would allow for complete avoidance of the site, and that this would form the basis of any mitigation required as part of assessment at the project level, in order to avoid effects which could significantly hinder the achievement of the site's conservation objectives.

Management of the spread of non-native species from vessels and rigs is being progressed through international measures, and the risk is limited by the operational range of rigs on the UKCS.

Drilling discharges

(Relevant pressures: *abrasion/disturbance of the substrate on the surface of the seabed; habitat structure changes - removal of substratum (extraction), contaminants, smothering and siltation rate changes*)

The advice on operations indicates that the protected features are sensitive to the above pressures, most of which relate to seabed disturbance and habitat changes associated with smothering by drill cuttings near the well location, and that these cuttings can accumulate in piles where currents are generally weak. It is assumed that effects relating to drilling discharges occur within 500m of the well location (Table 2.1). As considered above, while there is a small overlap between the area applied for and the site boundary, the area is so small that it would be expected that rig site selection would allow for complete avoidance of the site, and that this would form the basis of any mitigation required as part of assessment at the project level, in order to avoid effects which could significantly hinder the achievement of the site's conservation objectives.

Cumulative effects

Intra-plan in-combination effects are considered highly unlikely due to the scale of site overlap (0.15km²) and that the spatial footprints associated with rig installation and drilling discharges are localised and temporary, and unlikely to overlap between areas applied for either spatially or temporally. The temporary nature of the disturbance, energetic nature of the environment, required controls and mitigation (Sections 2.2 and 4.4.1), will ensure that the activities do not hinder the achievement of the site's conservation objectives, and as noted above, due to the limited site overlap, complete avoidance of the site would be expected to form the basis of any mitigation required as part of assessment at the project level. Section 6.1.3 provides a consideration of potential activities cumulatively with other relevant plans and projects.

Conclusion

The siting of a rig in the area applied for will not hinder the achievement of the Offshore Overfalls MCZ site conservation objectives.

Dolphin Head HPMA³⁶

Site Information

Area (ha/km²): 46,600/466

Designated features: No specific features are identified, but the designation covers all marine flora and fauna, all marine habitats and all geological or geomorphological interests, including all abiotic elements and all supporting ecosystem functions and processes, in or on the sea bed, water column and the surface of the sea.

Conservation objectives:

The conservation objective of the Dolphin Head Highly Protected Marine Area is to:

- achieve full recovery of the protected feature, including its structure and functions, its qualities and the composition of its characteristic biological communities present within the Dolphin Head Highly Protected Marine Area, to a natural state, and
- prevent further degradation and damage to the protected feature, subject to natural change.

Activities associated with the proposed work programmes within the relevant licence areas

Drilling up to two wells involving - siting of rig, drilling discharges; shooting of new seismic

Assessment of effects on site integrity

Rig siting

(Relevant pressures: *penetration and/or disturbance of the substratum below the surface of the seabed, including abrasion; physical change (to another sediment/seabed type), introduction or spread of non-indigenous species*)

³⁶ <https://jncc.gov.uk/our-work/dolphin-head-hpma/>

The area applied for does not overlap the Dolphin Head HPMA and is also not within the assumed distance from a jack-up rig within which effects may occur (500m, see Table 2.1), being a minimum of 3km from the site. It is therefore concluded that the licensing of the area applied for will not result in any effects in which the achievement of the conservation objectives of the site will be hindered.

Management of the spread of non-native species from vessels and rigs is being progressed through international measures, and the risk is limited by the operational range of rigs on the UKCS.

Drilling discharges

(Relevant pressures: *abrasion/disturbance of the substrate on the surface of the seabed; habitat structure changes - removal of substratum (extraction), contaminants, smothering and siltation rate changes*)

The area applied for does not overlap the Dolphin Head HPMA and is also not within the assumed distance from a jack-up rig within which effects may occur (500m, see Table 2.1), being a minimum of 3km from the site. Therefore, drilling discharges will not hinder the achievement of the site's conservation objectives.

Cumulative effects

No intra-plan cumulative effects are foreseeable, as none of the activities which could follow licensing have the potential to impact the site in a significant way.

Conclusion

The siting of a rig in the area applied for will not hinder the achievement of the Dolphin Head HPMA site conservation objectives.

Table 6.3: Consideration of underwater noise effects and relevant site conservation objectives

Dolphin Head HPMA ³⁷
Site Information
Area (ha/km²): 46,600/466 Designated features: No specific features are identified, but the designation covers all marine flora and fauna, all marine habitats and all geological or geomorphological interests, including all abiotic elements and all supporting ecosystem functions and processes, in or on the sea bed, water column and the surface of the sea. This assessment assumes the following features are relevant based on the ecological narrative associated with the site: Atlantic puffin, common guillemot, razorbill, northern gannet, harbour porpoise, short-beaked common dolphin, Risso's dolphin, minke whale, Atlantic cod, Atlantic herring, European plaice, sole, thornback ray, undulate ray. Conservation objectives: The conservation objective of the Dolphin Head Highly Protected Marine Area is to: • achieve full recovery of the protected feature, including its structure and functions, its qualities and the composition of its characteristic biological communities present within the Dolphin Head Highly Protected Marine Area, to a natural state, and • prevent further degradation and damage to the protected feature, subject to natural change.
Assessment of effects on site integrity
Rig siting Impulsive noise (2D/3D seismic survey, rig site survey, VSP, conductor piling) (Relevant pressures: <i>underwater noise change, vibration</i>) The ecological narrative associated with the site indicates that coarse sediments and sublittoral mixed sediments present in the HMPA are known to be important for seabirds and marine mammals due to their common prey occurrence. As noted in Table 6.2, there are no foreseeable physical impacts on the habitat features of the HMPA that would support prey, and by association, seabirds and marine mammals. While the site is protected for these features, the eastern English Channel tends to have a low diversity of marine mammals, it being a transition zone between the southern North Sea and western Channel/Celtic Sea, though the most frequent cetacean observations are of harbour porpoise (BEIS 2022). Individual harbour porpoise within approximately

³⁷ <https://jncc.gov.uk/our-work/dolphin-head-hpma/>

10km of the airgun arrays may be affected, through temporary local displacement and reduced foraging opportunities. While a 3D survey may take up to several weeks to complete, in many cases it would be of shorter duration, and airgun activity would not be continuous throughout this period. Further, as the survey vessel travels along transects, ensonification is variable across the area surveyed. The habitat is open in nature, and harbour porpoises are known to be able to travel over large distances (>20km) within a day. While habitat quality will not be uniform across the area, the spatial and temporal scale of potential displacement resulting from relevant activities is not expected to result in individuals losing access to suitable habitat. Considering: the maximum likely duration of the activity (Table 2.2); that the survey activity is likely to be spatially and/or temporally disparate across the area applied for and unlikely to result in long-term and large-scale displacement of porpoises from the area (Sarnocińska *et al.* 2020); that mandatory control measures (Section 4.4.2) would be in place and further mitigation measures are available (Section 7), and will be required where appropriate, it is concluded that a 3D seismic survey will not hinder the achievement of the Dolphin Head HPMa site conservation objectives.

Risso's dolphin and short-beaked common dolphin may be present in low densities (Waggitt *et al.* 2020, Gilles *et al.* 2025). Behavioural studies of bottlenose dolphin in the Moray Firth (Thompson *et al.* 2013) indicate likely displacement associated with seismic survey activity based on passive acoustic monitoring, however, there was no evidence of a reduction in dolphin occurrence, and photo-identification estimates of the number of dolphins using the Moray Firth SAC remained similar throughout the period 2009-2012. While there is the potential for some disturbance of individuals in the English Channel area, mandatory control measures (Section 4.4.2) would be in place and further mitigation measures are available (Section 7), and will be required where appropriate, such that it is concluded that a 3D seismic survey will not hinder the achievement of the Dolphin Head HPMa site conservation objectives.

While low-frequency baleen whales have often been considered to be more vulnerable to disturbance from seismic activity than odontocetes as the frequencies they use overlap with those produced by seismic airguns, few effects have been observed, though the reduced sightings of such whales (Kavanagh *et al.* 2019) or changes in vocalisation (Edwards *et al.* 2026) during surveys suggests the potential for impacts. Survey activity will not take place within the Dolphin Head HPMa, and propagation losses would limit the potential for injury for any animal within the site. While noted as an important species for the site, minke whale are generally rare in the eastern English Channel, and predicted densities of animals in the SCANS III (Lacey *et al.* 2022) and IV (Gilles *et al.* 2025) surveys suggest values of 0-0.005 individuals/km². Considering: the maximum likely duration of the activity (Table 2.2); that the survey activity is likely to be spatially and/or temporally disparate across the area applied for and unlikely to result in long-term and large-scale displacement of minke whale from the area; that mandatory control measures (Section 4.4.2) would be in place and further mitigation measures are available (Section 7), and will be required where appropriate, it is concluded that a 3D seismic survey will not hinder the achievement of the Dolphin Head HPMa site conservation objectives.

There is very little evidence of impacts of underwater noise on diving birds (BEIS 2022, DESNZ 2026). Mortality of seabirds has not been observed during extensive seismic operations in the North Sea and elsewhere, and flushing disturbance associated with the physical presence of survey vessels and rigs would be expected to displace most diving seabirds from close proximity to noise sources. Such avoidance behaviour is also expected to reduce the potential for diving birds to be exposed to noise levels which may result in potential behavioural disturbance, although it is noted that very little evidence for such effects exist and, should they occur, they would be expected to be short-term, temporary and of limited spatial extent. Like birds, there is limited evidence of physical injury to fish from exposure to high amplitude low-frequency seismic survey noise (DESNZ 2026), though there is some evidence of behavioural effects on cod (van der Knaap *et al.* 2021), and in a reduction in fish catches (MMS 2004), these are temporary in nature. The site is noted to be an important spawning and nursery area for those fish species listed above, and disturbance of sensitive spawning periods would be considered at the activity consenting stage. Any impacts on foraged fish used by diving birds or marine mammals would similarly be temporary.

The impulsive underwater noise produced should conductors need to be piled into the seabed is of significantly lower magnitude than that generated in the piling of offshore wind turbine monopile foundations (see Table 2.1); EDRs for porpoise (JNCC 2025) are 5km, limiting the potential to cause disturbance in view of the distance between the HPMa and the area applied for (at least 3.5km) and that there is considerable scope to avoid siting a well in close proximity to it (see Table 6.2). Considering the noise source characteristics, the short duration of the activity, and the uncommon use of this technique to meet technical requirements; when combined with mandatory control measures (Section 4.4.2), any disturbance to marine mammals within the site will be highly localised, short-term, and will not hinder the achievement of the Dolphin Head HPMa site conservation objectives.

Cumulative effects

No intra-plan cumulative effects are foreseeable, as none of the activities which could follow licensing have the potential to impact the site in a significant way.

Conclusion

The shooting of seismic in the area applied for will not hinder the achievement of the Dolphin Head HPMA site conservation objectives.

6.1.3 Cumulative effects

There are a number of potential interactions between activities that may follow licensing and those existing or planned activities, for instance in relation to renewable energy, fishing, shipping, and aggregate extraction. These activities are subject to individual permitting or consenting mechanisms or are otherwise managed at a national level. Interactions have been identified on the basis of the nature and location of existing or proposed activities and spatial datasets in a Geographic Information System (GIS). Projects relevant to this in-combination effects assessment, along with their status and relevant sites are tabulated in Table 6.4.

The areas applied for are located within the South Inshore and South Offshore Marine Plan Areas. The South Inshore and Offshore Marine Plan does not contain any policies of direct relevance to carbon dioxide storage, however, a number are of indirect relevance where these relate to co-location or co-existence with other activities. For example, in relation to aggregate extraction, policy S-AGG-2 indicates that proposals within exploration and option areas should not be supported unless the proposals are compatible with aggregate extraction, or should avoid, minimise, mitigate or justify proposals in areas of potential aggregate resource – a small number of these areas overlap the carbon dioxide storage licence area applied for. Policies of relevance to sites in the National Site Network (e.g. S-MPA-1) refer to the mitigation hierarchy with reference to proposals that may have adverse effects on sites. These, and other policies in relation to non-indigenous native species (S-NIS-1), underwater noise (S-UWN-1) and water quality (S-WQ-1), are effectively managed in relation to carbon dioxide storage appraisal activities through mandatory measures or are otherwise subject to mitigation.

Table 6.4: Projects relevant to the cumulative effects assessment for the English Channel

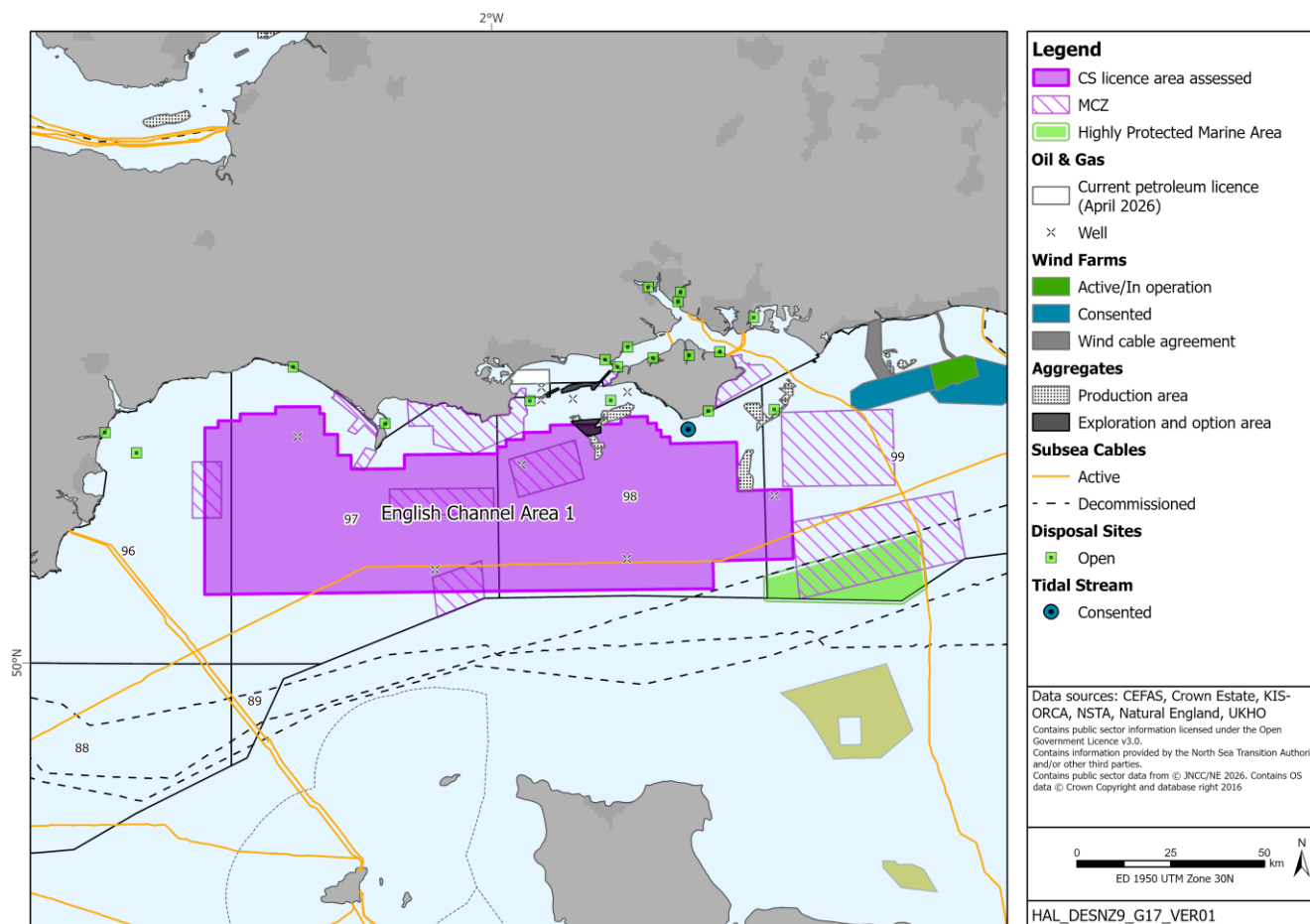
Relevant project	Project summary	Project status	Relevant sites ¹
Aggregate extraction areas 500/1, 500/2, 500/4, 127, 137, 407, 522/1 and 522/2	These areas are licensed for the extraction of marine aggregates as part of the wider South Coast region. In 2024, 90% of regional dredging took place in 6.3km ² , with dredging taking place overall across 15.8km ² of a total licenced area of 58.7km ² .	Active	Albert Field, Offshore Overfalls
Dolphin Sand Shingle Bank (2105/1 and 2)	Exploration and Option areas.	Licenced	The Needles, Purbeck Coast, Albert Field
West Isle of Wight (2021)		Licenced	
Atlantic Crossing 1	A fibre-optic telecommunications cable, connecting Germany, the Netherlands, the UK and USA. In operation since 1999.	In operation	West of Wight-Barfleur, Offshore Overfalls, Offshore Brighton

Source: TCE Open Data Portal

(<https://thecrownestate.maps.arcgis.com/apps/webappviewer/index.html?id=b7f375021ea845fcabd46f83f1d48f0b>), TCE & BMAPA (2025).

Notes: ¹ those sites considered to be relevant to any out of round carbon dioxide storage licence offer exploration/appraisal activities.

Figure 6.1: Area applied for in relation to other projects, English Channel



Physical disturbance and drilling effects

The areas on offer generally have few ongoing activities which could act cumulatively with exploration drilling such that effects could significantly hinder the achievement of the conservation objectives of the relevant MCZs. No other offshore energy activities (oil and gas exploration and production, offshore renewables) take place within the area on offer. A number of wells are present in the area, these have all been plugged and abandoned and will not have a surface component (i.e. they will have been cut below seabed level). Any disturbance associated with former wells is unlikely to be detectable and to have negligible cumulative ecological effect. For example, drill cuttings piles would not be expected to accumulate in the English Channel due to prevailing current strengths.

A number of aggregate extraction areas are present in the north and to the east of the area on offer, though none overlap with any relevant MCZ, the closest being areas 500/1, 500/2 and the Dolphin Sand Shingle Bank (2105/1 and 2) and West Isle of Wight (2021). The MCZ assessment for the 2021-22 Marine Aggregates Licensing Round (ABPmer 2023) associated with the most recent exploration and option areas (Figure 6.1) concluded that there was no significant risk of hindering the conservation objectives of site features either alone, or cumulatively with any other activity, with mitigation proposed for The Needles MCZ in the form

of early SNCB consultation and likely use of a buffer. Note that no effects were predicted for The Needles MCZ due to its distance from the area on offer (~9km). Aggregate exploration and production activities in the above areas would not be anticipated to result in cumulative effects with any exploration activities associated with the area on offer. As noted in Section 6.1.2, given the available space within the area on offer, there is considerable scope available to site the rig away from MCZs, such that any effect can be avoided, and it would be expected that this would form the basis of any mitigation required as part of assessment at the project level, in order to avoid effects which could significantly hinder the achievement of the site's conservation objectives, alone and cumulatively with other plans and projects.

The Atlantic Crossing 1 telecommunications cable, installed in 1999, passes through the southern portion of the area on offer, and also in the north of the West of Wight-Barfleur MCZ and Offshore Brighton MCZ. The potential for cumulative effects with exploration drilling associated with the area on offer is not considered to be likely. No interaction with the cable from activities that could follow licensing is expected, as they would avoid such charted features, and in relation to effects on West of Wight-Barfleur MCZ and Offshore Brighton MCZ, given the available space within the wider licence area, there is considerable scope to site the rig away from the site, such that any effect can be avoided, and it would be expected that this would form the basis of any mitigation required as part of assessment at the project level.

Fishing, and particularly bottom trawling, have historically contributed to seabed disturbance over extensive areas and was identified as an ongoing issue in the UK assessment of good environmental status³⁸. Depending on the nature of future measures (e.g. in relation to activity management in the wider environment and within MCZs), such effects are likely to be reduced and therefore some improvement in benthic habitats could be expected. A number of byelaws have been imposed on conservation sites which effectively prohibit the use of certain gears in all or part of certain MCZs, for example, those imposed by the MMO (South Dorset MCZ³⁹), and the Southern Inshore Fisheries and Conservation Authority (IFCA) (parts of South of Portland MCZ, Chesil Beach and Stennis Ledges MCZ, and Purbeck Coast MCZ⁴⁰), and others have been proposed for West of Wight Barfleur MCZ, East of Start Point MCZ and Albert Field MCZ. While there is limited information on the timescale under which the fisheries management measures could lead to a change in the condition of the features of sites (though see Sheehan *et al.* 2013, with reference to Lyme Bay and Torbay SAC), recovery would be expected in the coming years. In addition, given the available space within the wider licence area on offer outside of sites, including East of Start Point MCZ, South Dorset MCZ, Albert Field MCZ and West of Wight Barfleur MCZ, there is considerable scope available to site the rig away from relevant sites, such that any effect can be avoided, and it would be expected that this would form the basis of any mitigation required as part of assessment at the project level, in order to avoid effects. Further assessment, where appropriate, would be undertaken at the project level, at which stage the assessment would be informed by specific rig siting information.

It is concluded that none of the potential cumulative effects identified in relation the area applied for would hinder the conservation objectives of those sites for which a potential interaction was identified in Section 5.1, which are, the Albert Field, South Dorset, East of Start

³⁸ https://consult.defra.gov.uk/marine/updated-uk-marine-strategy-part-one/supporting_documents/UKmarinestrategy-part1consultdocumentfinal.pdf

³⁹ <https://www.gov.uk/government/publications/the-south-dorset-marine-conservation-zone-specified-area-bottom-towed-fishing-gear-byelaw-2022>

⁴⁰ <https://www.southern-ifca.gov.uk/all-regulations>

Point, South of Portland, Purbeck Coast, West of Wight-Barfleur Reef and Offshore Brighton MCZs.

7 Conclusion

It is concluded that the licensing of the areas applied for in the 2nd carbon storage licensing round, and in particular the areas screened in for detailed assessment, will not significantly hinder the achievement of the conservation objectives of relevant MCZs.

Even where a site/protected feature has been screened out, or where it was concluded that the licensing will not hinder the conservation objectives of a site being achieved at plan level, the potential for significant risk of a future act hindering the achievement of the conservation objectives on any relevant site would need to be revisited at the project level, once project plans are known, and as part of project specific consenting. New relevant site designations, extensions or the addition of protected features, new information on the nature and sensitivities of protected features within sites, and new information about effects including cumulative effects, may be available to inform such future assessments.

Mitigation measures can be imposed through existing permitting mechanisms (see Section 4.4) on the planning and conduct of activities which result in physical disturbance and underwater noise effects. Such measures are informed by project specific plans and the nature of the sensitivities identified which would be subject to further assessment as required. Further mitigation identified which goes beyond existing regulatory requirements and controls includes:

- the re-siting of activities (e.g. wellhead or rig leg positions) to ensure sensitive seabed surface features (such as reefs) are avoided and potential rig stabilisation issues (e.g. from scouring around spud cans, or soft sediment conditions) are minimised;
- where rig stabilisation or anti-scour protection is required, the Department will expect operators to provide adequate justification for the stabilisation option proposed (including for rig siting beyond site boundaries, if practical) and the use of systems that can be removed following drilling, where these meet the technical and safety requirements of rig placement;
- where rock placement is required, the Department will expect operators to minimise the volume of rock deposited;
- activity timing to avoid the most sensitive periods for noise sensitive species – operators must demonstrate how seasonal sensitivities have been taken into account when planning operations (see BEIS 2021), and use of existing shipping routes where proposed activities could result in the physical disturbance to sensitive species.

The Department has also considered the outcome of this assessment against the targets set out in the *Environmental Targets (Marine Protected Areas) Regulations 2023* and the interim targets set out in the Government's Environmental Improvement Plan (see Section 4.5). In light of the conclusion of this MCZ Assessment, the Department does not consider that the granting of carbon dioxide storage licences will affect the ability to reach the applicable targets.

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Appendix A – The Designated Sites

The following table lists the sites and protected features which are relevant to the regions in which areas were applied for in the 2nd carbon storage licensing round. The sources of site data were the JNCC⁴¹ and Natural England⁴² websites. The MCZs are mapped against the areas applied for in the 2nd carbon dioxide storage licensing round in Figure 3.2 to Figure 3.1.

Table A.1: Relevant sites and their designated features

Site Name	Area (ha)	Designated features
SOUTHERN NORTH SEA		
Holderness Inshore MCZ	30,887	High energy circalittoral rock, Intertidal sand and muddy sand, Moderate energy circalittoral rock, Subtidal coarse sediment, Subtidal mixed sediments, Subtidal mud, Subtidal sand, Spurn Head (Subtidal; geomorphological interest feature)
Holderness Offshore MCZ	117,600	Subtidal coarse sediment, Subtidal sand, Subtidal mixed sediments, Ocean quahog (<i>Arctica islandica</i>); North Sea glacial tunnel valleys (geological interest feature)
Markham's Triangle MCZ	20,000	Subtidal coarse sediment, Subtidal sand, Subtidal mud, Subtidal mixed sediments
Cromer Shoal Chalk Beds MCZ	32,048	High energy circalittoral rock, High energy infralittoral rock, Moderate energy circalittoral rock, Moderate energy infralittoral rock, North Norfolk coast (Subtidal), Peat and clay exposures, Subtidal chalk, Subtidal coarse sediment, Subtidal mixed sediments, Subtidal sand
Orford Inshore MCZ	7,200	Subtidal mixed sediments
Runswick Bay MCZ	6,551	High energy intertidal rock, Intertidal sand and muddy sand, Low energy intertidal rock, Moderate energy circalittoral rock, Moderate energy infralittoral rock, Moderate energy intertidal rock, Ocean quahog (<i>Arctica islandica</i>), Subtidal coarse sediment, Subtidal mixed sediments, Subtidal mud, Subtidal sand
IRISH SEA		
Cumbria Coast MCZ	1,800	High energy intertidal rock, Honeycomb worm (<i>Sabellaria alveolata</i>) reefs, Intertidal biogenic reefs, Intertidal sand and muddy sand, Intertidal under boulder communities, Moderate energy infralittoral rock, Peat and clay exposures, Razorbill (<i>Alca torda</i>)
West of Copeland MCZ	15,800	Subtidal coarse sediment, Subtidal sand, Subtidal mixed sediments
West of Walney MCZ	38,800	Sea-pen and burrowing megafauna communities, Subtidal mud, Subtidal sand
Fylde MCZ	26,060	Subtidal sand, subtidal mud
Wyre-Lune MCZ	9,231	Smelt (<i>Osmerus eperlanus</i>)
Ribble Estuary MCZ	1,544	Smelt (<i>Osmerus eperlanus</i>)
South Rigg	14,300	Moderate energy circalittoral rock, Subtidal coarse sediment, Subtidal sand, Subtidal mud, Subtidal mixed sediment, Sea-pen and burrowing megafauna communities
Queenie Corner	14,600	Sea-pen and burrowing megafauna communities, Subtidal mud
Allonby Bay HPMa	2,760	No specific features are identified, but the designation covers all marine flora and fauna, all marine habitats and all geological or geomorphological interests, including all abiotic elements and all supporting ecosystem functions and processes, in or on the sea bed, water column and the surface of the sea.
Allonby Bay MCZ	3,906	Blue mussel (<i>Mytilus edulis</i>) beds, High energy intertidal rock, Honeycomb worm (<i>Sabellaria alveolata</i>) reefs, Intertidal biogenic reefs, Intertidal coarse sediment, Intertidal sand and muddy sand, Low energy

⁴¹ <https://jncc.gov.uk/our-work/marine-conservation-zones/>

⁴² <https://designatedsites.naturalengland.org.uk/>

Site Name	Area (ha)	Designated features
		intertidal rock, Moderate energy infralittoral rock, Moderate energy intertidal rock, Peat and clay exposures, Subtidal biogenic reefs, Subtidal coarse sediment, Subtidal mixed sediments, Subtidal sand
Solway Firth MCZ	4,423	Smelt (<i>Osmerus eperlanus</i>)
ENGLISH CHANNEL		
South Dorset MCZ	19,300	High energy circalittoral rock, Moderate energy circalittoral rock, Subtidal chalk, Subtidal coarse sediment
Offshore Overfalls MCZ	59,300	Subtidal coarse sediments, Subtidal mixed sediments, Subtidal sand, English Channel outburst flood features, (Quaternary fluvio-glacial erosion features)
Offshore Brighton MCZ	86,200	High energy circalittoral rock, Subtidal coarse sediment, Subtidal mixed sediments
The Needles MCZ	1,100	High energy infralittoral rock, Moderate energy circalittoral rock, Moderate energy infralittoral rock, Native oyster (<i>Ostrea edulis</i>), Peacock's tail (<i>Padina pavonica</i>), Seagrass beds, Sheltered muddy gravels, Stalked jellyfish (<i>Calvadosia campanulata</i>), Subtidal chalk, Subtidal coarse sediment, Subtidal mixed sediments, Subtidal mud, Subtidal sand
Chesil Beach and Stennis Ledges MCZ	3,700	High energy circalittoral rock, High energy infralittoral rock, High energy intertidal rock, Intertidal coarse sediment, Native oyster (<i>Ostrea edulis</i>), Pink sea-fan (<i>Eunicella verrucosa</i>), Subtidal coarse sediment, Subtidal mixed sediments, Subtidal sand
Albert Field MCZ	19,200	Subtidal coarse sediment, Subtidal mixed sediments
East of Start Point MCZ	11,600	Subtidal sand
Purbeck Coast MCZ	28,200	Black seabream (<i>Spondylusoma cantharus</i>), High energy, Intertidal rock, Intertidal coarse sediment, Maerl beds, Moderate energy intertidal rock, Peacock's tail (<i>Padina pavonica</i>), Stalked jellyfish (<i>Haliclystus</i> spp), Subtidal coarse sediment, Subtidal mixed sediments
South of Portland MCZ	1,747	High energy circalittoral rock, Moderate energy circalittoral rock, Portland Deep geological feature, Subtidal coarse sediment, Subtidal mixed sediments, Subtidal sand
Bembridge MCZ	7,500	Maerl beds, Native oyster (<i>Ostrea edulis</i>), Peacock's tail (<i>Padina pavonica</i>), Seagrass beds, Sea-pen and burrowing megafauna communities, Sheltered muddy gravels, Short snouted seahorse (<i>Hippocampus hippocampus</i>), Stalked jellyfish (<i>Calvadosia campanulata</i>), Stalked jellyfish (<i>Haliclystus</i> spp), Subtidal coarse sediment, Subtidal mixed sediments, Subtidal mud, Subtidal sand
West of Wight-Barfleur MCZ	13,800	Subtidal coarse sediment, Subtidal mixed sediments
Dolphin Head HPMA	46,600	No specific features are identified, but the designation covers all marine flora and fauna, all marine habitats and all geological or geomorphological interests, including all abiotic elements and all supporting ecosystem functions and processes, in or on the sea bed, water column and the surface of the sea.
Otter Estuary MCZ	10.13	Coastal saltmarshes and saline reedbeds, Intertidal coarse sediment, Intertidal mud
Studland Bay MCZ	397	Intertidal coarse sediment, long snouted seahorse (<i>Hippocampus guttulatus</i>), Seagrass beds, Subtidal sand
Poole Rocks MCZ	400	Black seabream (<i>Spondylusoma cantharus</i>), Couch's goby (<i>Gobius couchi</i>), moderate energy circalittoral rock, native oyster (<i>Ostrea edulis</i>), Subtidal mixed sediments
Southbourne Rough MCZ	500	Black seabream (<i>Spondylusoma cantharus</i>)
Yarmouth to Cowes MCZ	16	Bouldnor Cliff geological feature, Estuarine rocky habitats, High energy circalittoral rock, High energy, infralittoral rock, Intertidal coarse sediment, Intertidal underboulder communities, Littoral chalk communities, Low energy intertidal rock, Moderate energy circalittoral rock, Moderate energy infralittoral rock, Moderate energy intertidal rock, Native oyster (<i>Ostrea edulis</i>), Peat and clay exposures, Sheltered muddy gravels, Subtidal chalk, Subtidal coarse sediment, Subtidal mixed sediments, Subtidal mud
Selsey Bill and the Hounds MCZ	1565	Bracklesham Bay, High energy infralittoral rock, Low energy infralittoral rock, Moderate energy circalittoral rock, Moderate energy infralittoral rock,

Site Name	Area (ha)	Designated features
		Peat and clay exposures, Short snouted seahorse (<i>Hippocampus hippocampus</i>), Subtidal mixed sediments, Subtidal sand
Pagham Harbour MCZ	283	Defolin's lagoon snail (<i>Caecum armoricum</i>), Lagoon sand shrimp (<i>Gammarus insensibilis</i>), Seagrass beds
Utopia MCZ	271	Fragile sponge and anthozoan communities on subtidal rocky habitats, High energy circalittoral rock, Moderate energy circalittoral rock, Subtidal coarse sediment, Subtidal mixed sediments, Subtidal sand
Kingmere MCZ	4784	Black seabream (<i>Spondylusoma cantharus</i>), Moderate energy infralittoral rock and thin mixed sediment, Subtidal chalk
Axe Estuary MCZ	40	Coastal saltmarshes and saline reedbeds, Estuarine rocky habitats, Intertidal coarse sediment, Intertidal mixed sediments, Intertidal mud

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