March 2026

Holistic Network Design Implementation Plan

Marine Conservation Zone Stage 2 Plan-Level Assessment

NESO
National Energy System Operator

Contents

Executive Summary **3**

Overview of NESO 4

Overview of Offshore Coordination 4

The Marine Conservation Zone Assessment for Offshore Coordination 4

This Stage 2 Assessment Report 5

1. Introduction **7**

2. Legislation and Guidance **9**

Legislation 10

Marine and Coastal Access Act (2009) 10

Policy and Guidance 11

Marine conservation zones and marine licensing (MMO, 2013) 11

3. Relevant Study Corridors and Associated MCZs **13**

4. Other Means of Proceeding **15**

HND 16

Ballantrae_to_Pentir 16

R4_5_to_Penwortham 17

R4_6_to_Penwortham 18

SW_E1a_to_Hawthorn_Pit 19

SW_NE7_to_Peterhead 22

SW_W1_to_Ballantrae 23

HNDFUE 24

SW_NE7_to_Peterhead_DCSS 24

INTOG 25

Peterhead_to_Cenos 25

5. Conclusions **28**

Glossary **30**

Executive Summary

Overview of NESO

The UK's 2023 Energy Act set the legislative framework for an independent system planner and operator to help accelerate Great Britain's energy transition. This led to the establishment of the National Energy System Operator (NESO).

An independent, public corporation at the centre of the energy system, NESO takes a whole system view to create a world where everyone has access to reliable, clean and affordable energy. NESO's work will be the catalyst for change across the global community, forging the path to a sustainable future for everyone.

Tackling climate change is truly the challenge of our generation, addressing energy security, sustainability and affordability for everyone is at the forefront of the global agenda and drive to meet net zero. It is NESO's job to transform the whole energy system to meet these challenges and transition to a low-carbon future, embracing new technologies and cleaner generation sources, always with the cost to the consumer in mind.

NESO's three primary duties are:

- Net zero - enable the government to deliver on its legally binding greenhouse emissions targets
- Efficiency and economy - promoting efficient, coordinated, and economic electricity and gas networks
- Security and supply - ensuring security of supply for current and future consumers of electricity and gas.

Overview of Offshore Coordination

The Offshore Coordination Team was set up by NESO (previously National Grid Electricity System Operator) with the support from Ofgem and the Department for Energy Security and Net Zero (DESNZ). Offshore Coordination contributes to the Offshore Transmission Network Review (OTNR) which was set up in July 2020. Its purpose is to enable the vital role of offshore wind in meeting the UK Government's targets for net zero. The Terms of Reference (ToR) for Offshore Coordination set out the ambition for NESO to design coordinated offshore wind recommendations for a variety of different offshore wind leasing rounds. These included ScotWind, Innovation Targeted Oil and Gas (INTOG) and Celtic Sea. The completion of these design recommendations totals over 53GW across 34 different projects of offshore wind across the HND Implementation Plan.

The Marine Conservation Zone Assessment for Offshore Coordination

A Marine Conservation Zone (MCZ) assessment is being undertaken on the HND Implementation Plan which covers all the latest GB network designs captured within HND, HNDFUE (as of the end of August 2024), INTOG and Celtic Sea. Whilst it is not mandated that Offshore Coordination carry out a MCZ assessment, due to the size and scope of the

design exercises, carrying out these assessments will ensure our recommendations have given the appropriate level of consideration to environmental concerns.

In summary, MCZ assessments are undertaken to determine whether possible impacts of a proposed activity have the potential to hinder the conservation objectives of sites designated under the Marine and Coastal Access Act 2009 (MCAA), or the Marine (Scotland) Act 2010. This process encompasses a variety of sites designated (collectively referred to herein as MCZs, unless otherwise stated) within UK's territorial and offshore waters:

- MCZs in English, Welsh, and Northern Irish waters;
- Highly Protected Marine Areas (HPMA) in English waters; and
- Nature Conservation Marine Protected Areas (NCMPAs (herein referred to as MPAs)) in Scottish waters.

The MCZ assessment for Offshore Coordination follows legislation under Section 126 of the MCAA 2009[1]. The process follows the Marine Management Organisation's (MMO) guidance for English MCZ assessments (2013) and has been applied to Welsh and Scottish waters in the absence of guidance from the respective regional authorities.

NESO has commissioned AECOM to undertake an independent and objective MCZ assessment. This MCZ assessment Report has therefore been prepared for Offshore Coordination by AECOM on behalf of NESO.

This Stage 2 Assessment Report

MCZ Stage 2 (sometimes referred to as derogations), applies Section 126 of the MCAA 2009 where a public authority (the authority) has the function of determining an application (whenever made) for authorisation of the doing of an act, and that act is capable of affecting (other than insignificantly) the protected features of an MCZ; or any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent.

The authority must not grant authorisation for the doing of the act unless the person seeking the authorisation (the applicant) satisfies the authority that there is no significant risk of the act hindering the achievement of the conservation objectives stated for an MCZ.

Where the applicant is not able to satisfy the authority that there is no significant risk of the act hindering the achievement of the conservation objectives stated for the MCZ, that person must satisfy the authority that:

- there are no other means of proceeding (OMP);
- the act's benefit to the public clearly outweighs the risk of damage to the environment; and

[1] Applicable to NCMPAs in the absence of specific guidance

- measures of equivalent environmental benefit will be undertaken or arranged, compensating for the damage the act is likely to have on an MCZ.

This report comprises the appraisal of the eight Study Corridors carried forward from Stage 1 assessment. Each criterion is appraised sequentially, thus where a Study Corridor satisfies a criterion it is not progressed for appraisal against the remaining criteria.

This report has identified OMP for all eight study corridors that are considered reasonably feasible, given the level of design detail at plan-level.

1. Introduction

As a result of Stage 1 of the National Energy System Operator's (NESO) **HND Implementation Plan (2025)** eight study corridors have been identified as having potential to hinder the conservation objectives of an English MCZ, Highly Protected Marine Area (HPMA), or Scottish Marine Protected Area (MPA), despite the implementation of best practice mitigation measures (see **Section 3**). As such, these study corridors have been recommended for Stage 2 Assessment (also referred to as derogation).

Typically, MCZ derogation is completed at project level in relation to consenting practices, such as Development Consent Orders (DCO), or Marine licencing. Examples include, Hornsea Project Three (2020)[2], Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects (2022)[3], and Rampion 2 Wind Farm (2024)[4]. The completion of a derogations appraisal process at plan level, where necessary, is considered best practice. This approach is in line with the expectations communicated as part of the review and feedback role undertaken by an Environmental Sub Group (ESG)[5].

Since this is a plan-level MCZ assessment, installation methodologies and final designs for each cable route are not yet defined, including any commitment to the implementation of alternatives, such as specific routes for micro-siting cables to avoid sensitive habitats or cable crossings. Therefore, this derogations report has been completed as far as practicably possible, applying the precautionary principle to the information available at the time of writing.

[2] Orsted. (2020). Hornsea Project Three Offshore Wind Farm Appendix 3 to Applicant's Response to Secretary of State's Consultation - Marine Conservation Zones: MCZ Derogation Case. Available at: https://national-infrastructure-consenting.planninginspectorate.gov.uk/projects/EN010080

[3] Equinor. (2022). Sheringham Shoal and Dudgeon Offshore Wind Farm Extension Projects Marine and Coastal Access Act (MCAA) Derogation: Provision of Evidence. Document Reference: 5.7. Available at: https://national-infrastructure-consenting.planninginspectorate.gov.uk/projects/EN010109

[4] WSP. (2024). Rampion 2 Wind Farm Category 8: Examination Documents Kingmere Marine Conservation Zone (MCZ): Without Prejudice Stage 2 MCZ Assessment. Revision B. Document Reference: 8.67. Available at: https://national-infrastructure-consenting.planninginspectorate.gov.uk/projects/EN010117

[5] The ESG includes consultees such as Statutory Nature Conservation Bodies (SNCBs) and national Environmental Statutory Agencies.

2. Legislation and Guidance

Marine and Coastal Access Act (2009)

Policy and Guidance

Legislation

Marine and Coastal Access Act (2009)

A description of the role of the Marine and Coastal Access Act 2009 (MCAA) relative to English, Welsh, and Northern Irish MCZs; and Scottish MPAs can be found in **Section 2** of the **HND Implementation Plan Marine Conservation Zone (MCZ) Assessment (2025)**.

Regarding MCZ derogation, section 126 of the MCAA 2009 applies where a public authority (the authority) has the function of determining an application (whenever made) for authorisation of the doing of an act, and that act is capable of affecting (other than insignificantly) the protected features of an MCZ; or any ecological or geomorphological process on which the conservation of any protected feature of an MCZ is (wholly or in part) dependent.

The authority must not grant authorisation for the doing of the act unless the person seeking the authorisation (the applicant) satisfies the authority that there is no significant risk of the act hindering the achievement of the conservation objectives stated for an MCZ.

Where the applicant is not able to satisfy the authority that there is no significant risk of the act hindering the achievement of the conservation objectives stated for the MCZ, that person must satisfy the authority that:

a) there is no other means of proceeding with the act which would create a substantially lower risk of hindering the achievement of those objectives;

b) the benefit to the public of proceeding with the act clearly outweighs the risk of damage to the environment that will be created by proceeding with it, and

c) the person seeking the authorisation will undertake, or make arrangements for the undertaking of, measures of equivalent environmental benefit to the damage which the act will or is likely to have in or on the MCZ.

If the authority believes that there is or may be a significant risk of the act hindering the achievement of the conservation objectives stated for the MCZ, the authority must notify the appropriate statutory conservation body of that fact.

Where the authority has given notification, it must allow 28 days to pass from the date of the notification before deciding whether to grant authorisation for the doing of the act.

The public authority

Through consultations with the Department for Energy Security and Net Zero (DESNZ) it has been clarified that at plan-level the competent authority or equivalent role is held by NESO. As such, NESO is considered as both the applicant and the public authority, within the context of MCZ derogations, and is responsible for undertaking the above duties under Section 126 of the MCAA 2009.

Notably, no precedent has been established regarding the role of the Secretary of State (SoS) in the plan-level MCZ derogation process, and thus, the SoS's interest or ability to intervene with the role of the public authority. As such, this MCZ derogation report has been provided as an appendix to the Holistic Network Design Implementation Plan Habitats Regulations Assessment Derogations Report to ensure transparency and inform the decision making of the SoS, where applicable.

Policy and Guidance

Marine conservation zones and marine licensing (MMO, 2013)

The MMO Guidance (2013) describes how MCZ Assessments should be undertaken during the process of marine licence decision making. This same guidance applies to the process of MCZ Assessment at plan-level. For projects constituting Nationally Significant Infrastructure Projects (NSIPs), references within the guidance to "the authority" are taken to mean the Secretary of State (Department for Energy Security and Net Zero (DESNZ)) as the relevant decision-making authority under Section 126 of the Marine and Coastal Access Act 2009.

The MMO guidelines recommend a staged approach to assessment, involving three sequential stages: Screening, Stage 1 Assessment, and Stage 2 Assessment. Full details of these stages have been provided below and presented in **Figure 1**:

- **Screening** – To determine whether the activity is taking place within of near an area being put forward or already designated as an MCZ and whether the activity is capable of affecting (other than insignificantly) either (i) the protected features on 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) dependant. If the answer is yes, then proceed to Stage 1.

- **Stage 1 Assessment** – Is the authority satisfied that there is no significant risk of the activity hindering the conservation objectives stated for the MCZ and can the authority exercise its functions to further the conservation objectives of the site. If the answer is no to either of these questions, then the authority must consider whether there are other means of proceeding with the act which would create a substantially lower risk of hindering the conservation objectives of the MCZ. If the answer is still no, then proceed to Stage 2.

- **Stage 2 Assessment** – This stage looks at whether the benefit to the public clearly outweighs the risk of damage to the environment and seeks to satisfy the authority that the applicant can make arrangements to undertake measure of equivalent environmental benefit to the damage which the act will have of the MCZ.

Full detail of the plan-level MCZ assessment methodology has been provided in **Appendix A: Holistic Network Design Implementation Plan Habitats Regulations Assessment and Marine Conservation Zone Assessment Methodology**.

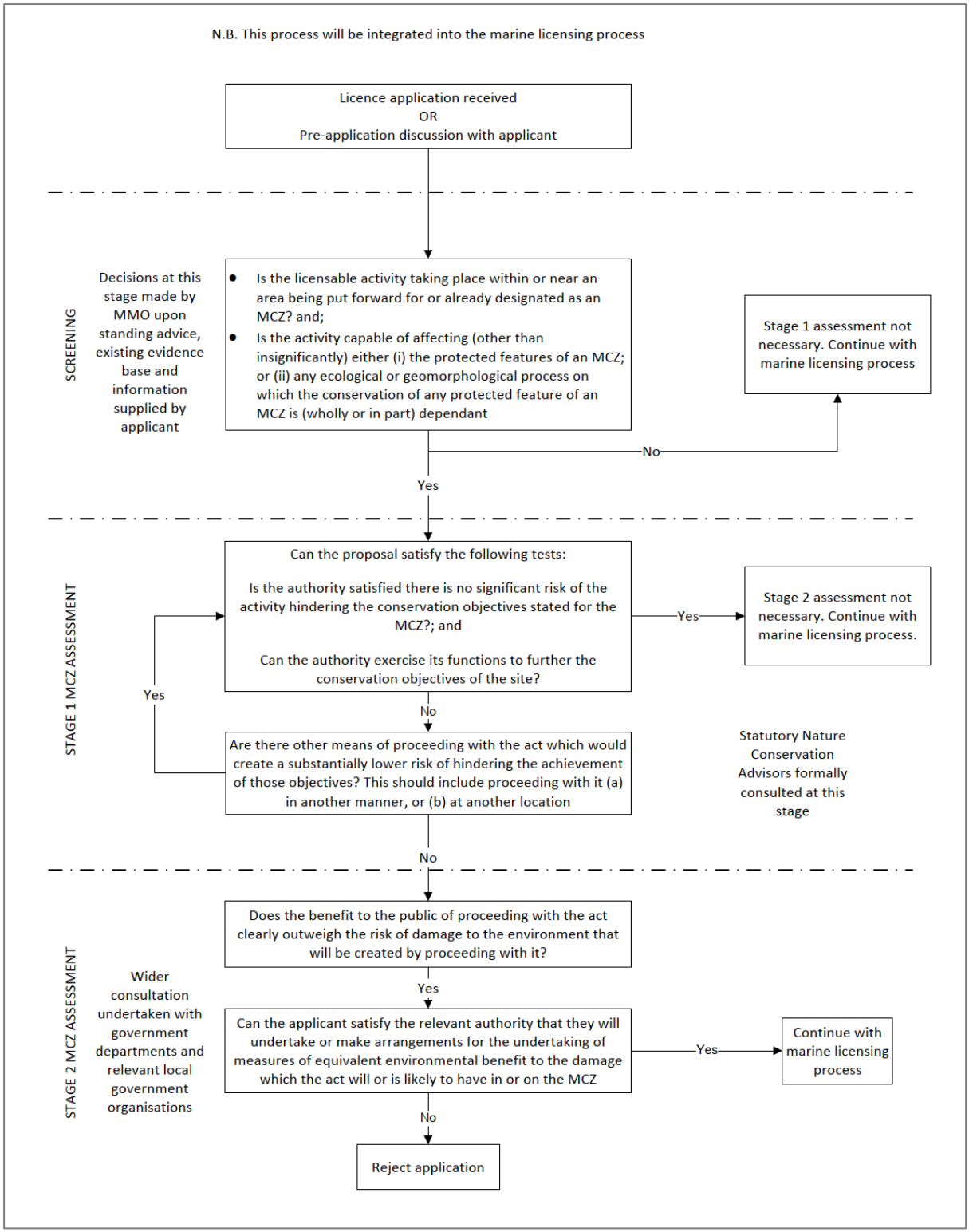

Figure 1 Summary of the MCZ assessment process (MMO guidance, 2013)

3. Relevant Study Corridors and Associated MCZs

Stage 1 MCZ assessment identified eight study corridors as having the potential to affect the conservation objectives of 4 different MCZs. These corridors, their associated MCZ(s), and the impact pathway for which they have been carried forward are summarised in **Table 1**.

Table 1 study corridors screened into Stage 2 Assessment (derogations)

Scheme	Proposed study corridor	Associated Marine Conservation Zones	Potential impact pathway
HND	Ballantrae_to_Pentir	Clyde Sea Sill MPA	Permanent habitat loss
HND	R4_5_to_Penwortham	Fylde MCZ	Permanent habitat loss
HND	R4_6_to_Penwortham	Fylde MCZ	Permanent habitat loss
HND	SW_E1a_to_Hawthorn_Pit	North East of Farnes Deep HPMA	Increased Suspended Sediment Concentration (SSC)
HND	SW_NE7_to_Peterhead	Southern Trench MPA	Permanent habitat loss
HND	SW_W1_to_Ballantrae	Clyde Sea Sill MPA	Permanent habitat loss
HNDFUE	SW_NE7_to_Peterhead DCSS	Southern Trench MPA	Permanent habitat loss
INTOG	Peterhead_to_Cenos	East of Gannet and Montrose Fields MPA; and Southern Trench MPA	Permanent habitat loss

4. Other Means of Proceeding

HND

HNDFUE

INTOG

Under the first condition of the MCAA 2009 Section 126 (6a), if the applicant seeking authorisation cannot satisfy the authority that there is no significant risk of their act hindering the achievement of the conservation objectives of an MCZ, the applicant must satisfy the authority that there are no other means of proceeding (OMP) which would create a substantially lower risk of hindering the achievement of those objectives. These OMP include measures which adapt the *manner* in which the act is implemented, such changes in methods or additional mitigation measures, or consideration of other possible *locations* where the act could be implemented[6].

As per the Marine Conservation Zones and Marine Licensing guidance published by the Marine Management Organisation (MMO) (2013)[7] consideration of OMP is often undertaken as the final part of Stage 1 assessment. However, this guidance is contextualised by the availability of detailed design information typically available for a single project seeking DCO and / or marine licensing approvals. At plan-level a much higher level of detail is available, which in turn influences the ability to rule out the possibility of certain impact pathways hindering the conservation objectives of an MCZ at stage 1. Additionally, this plan-level MCZ assessment has appraised 56 MCZs, 31 MPAs, and two HPMA sites in relation to 52 proposed study corridors. Accordingly, a high-level approach was necessary, deferring detailed investigation of OMP to a select few study corridors that advanced to Stage 2 Assessment.

If a study corridor cannot clearly identify reasonable OMP, it will proceed on to the second condition of MCAA Section 126. Conversely, if reasonable OMP can be identified, the assessment will consider there to be justification to discontinue appraisal under the other conditions of the Stage 2 Assessment.

HND

Ballantrae_to_Pentir

Ballantrae_to_Pentir has been taken forward to Stage 2 as the appraisal of technical constraints along the study corridor (National Grid ESO, 2024a)[8] indicates that through micro-siting within the study corridor, potential crossings can be reduced from three possible crossings to two unavoidable cable crossings within the Clyde Sea Sill MPA.

At crossing locations cable protection is commonly required where the cable cannot be installed to an adequate burial depth. This protection typically consists of rock protection or concrete mattressing, resulting in permanent loss of benthic habitat directly beneath its footprint. The area of cable protection required will differ on a case-by-case basis;

[6] Typically the manner in which an act is implemented is considered first. Should alteration of to the manner be deemed unlikely to substantially reduce the risk of the act undermining the conservation objectives of an MCZ, other locations are subsequently considered.
[7] Marine Management Organisation. (2013). Marine conservation zones and marine licensing.
[8] National Grid ESO. (2024a). ScotWind– WCD4-Pen Delta – Ballantrae to Pentir x 2. Internal appraisal (draft).

however, conservatively the protection required at each crossing is typically no greater than 750 m in length[9] and 10 m wide, resulting in an area of 7,500 m^2 of potential habitat loss. The Clyde Sea Sill MPA has a documented area of 71,200 ha (712,000,000 m^2) (NatureScot, 2025a)[10]. Thus, two cable crossings would account for a 0.00211% loss of the seabed habitat within the MPA.

The MPA's protected benthic features of concern include circalittoral and offshore sand and coarse sediment communities, and marine Geomorphology of the Scottish Shelf Seabed. These are understood to be broadscale habitats, covering large portions of the MPA (Scottish Natural Heritage, 2014)[11]. However, with the use of targeted benthic surveys to further inform micro-siting within the study corridor, it is likely the crossing locations can either avoid these features (i.e. circalittoral and offshore sand and coarse sediment communities) or substantially reduce the magnitude of potential losses for the most sensitive features.

Furthermore, multiple cable routes have been successfully installed across this MPA. One example is the Scotland to NI 4 telecoms cable[12, 13], which was ready for service in 2022. This development sets a precedent that it is possible to install a subsea cable across the Clyde Sea Sill MPA without significant risk of hindering the conservation objectives of the MPA (BT, 2020)[14].

On this basis, and subject to detailed route refinement and design at project level, the scale and spatial extent of permanent habitat loss, , **Ballantrae_to_Pentir is not considered to pose significant risk of hindering the conservation objectives of the Clyde Sea Sill MPA**. As reasonable OMP has been identified, there is considered no need to assess this derogations case under the subsequent conditions of the MCAA Section 126.

R4_5_to_Penwortham

The final two thirds of R4_5_to_Penwortham has an extremely similar design to R4_6_to_Penwortham and is therefore a similar derogation case. While R4_5_to_Penwortham and R4_6_to_Penwortham share a similar design and partially overlap geographically, they represent separate reinforcement links connecting different

[9] Commonly no greater than 500 m in length
[10] NatureScot. (2025a). Clyde Sea Sill MPA(NC). [Online] Available at: https://sitelink.nature.scot/site/10414 . Accessed: 12th March 2025.
[11] Scottish Natural Heritage. (2014). Clyde Sea Sill Nature Conservation MPA. Available at: https://www.nature.scot/sites/default/files/nature-conservation-mpa/10414/mpa-data-confidence-assessment.pdf
[12] Notably, installation techniques can vary between telecoms and HVDC cables. However, both cable types are associated with many of the same, or similar impact pathways.
[13] The example chosen has, in part, been influenced by the public availability of associated reports at the time of writing.
[14] British Telecommunications PLC (BT). (2020). Scotland - Northern Ireland (Scot-NI) 3 and 4 Replacement Cables Technical Appendix D: Protected Sites Screening Report. Available at: https://marine.gov.scot/sites/default/files/d.pdf

windfarms to Penwortham substation. They are therefore not mutually exclusive and may be constructed cumulatively.

The habitat loss estimates presented below relate to each route individually; where both routes are progressed, these impacts would be additional and have been considered accordingly within the assessment. It has been taken forward to Stage 2 as the appraisal of technical constraints along the study corridor (National Grid ESO, 2022b)[14] indicates that through micro-siting within the study corridor, potential crossings can be reduced from five possible crossings to three unavoidable cable crossings within the Fylde MCZ.

At crossing locations cable protection is commonly required where the cable cannot be installed to an adequate burial depth. This protection typically consists of rock protection or concrete mattressing, resulting in permanent loss of benthic habitat directly under its footprint. The area of cable protection needed will differ on a case-by-case basis; however, conservatively the protection required at each crossing is typically no greater than 750 m in length[9] and 10 m wide, resulting in an area of 7,500 m^2 of potential habitat loss.

The MCZ's protected benthic features are understood to be broadscale habitats, with the northern quarter of the MCZ comprising subtidal mud, and the southern half comprising subtidal sand; but recorded to be in favourable condition (Natural England, 2016)[15]. Micro-siting informed by pre-installation benthic surveys will seek to minimise interaction with designated features and reduce the footprint of cable protection where required. Permanent habitat loss would be restricted to discrete, localised footprints at crossing locations.

Furthermore, a subsea telecoms cable (Havhingsten / CeltixConnect-212·13) has previously been installed across the Fylde MCZ and became operational in 2022. While telecoms and power cables differ in design and potential impact pathways, this demonstrates that cable installation within the MCZ has previously been subject to assessment and consent under the relevant regulatory framework.

On this basis, and subject to detailed route refinement and design at project level, the scale and spatial extent of permanent habitat loss, **R4_5_to_Penwortham is not considered to pose significant risk of hindering the conservation objectives of the Fylde MCZ**. As reasonable OMP has been identified, there is considered no need to assess this derogations case under the subsequent conditions of the MCAA Section 126.

R4_6_to_Penwortham

R4_6_to_Penwortham has been taken forward to Stage 2 as the appraisal of technical constraints along the study corridor (National Grid ESO, 2022b)[16] indicates that through micro-siting within the study corridor, potential crossings can be reduced from five possible crossings to three unavoidable cable crossings within the Fylde MCZ.

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[15] Natural England (2016) Flyde MCZ factsheet v3. [Online] Available at: https://publications.naturalengland.org.uk/publication/4933233460379648

[16] National Grid ESO. (2022b). North West Region – R4_6_to_Penwortham. Internal appraisal.

At crossing locations cable protection is commonly required where the cable cannot be installed to an adequate burial depth. This protection typically consists of rock protection or concrete mattressing, resulting in permanent loss of benthic habitat under directly under its footprint. The area of cable protection needed will differ on a case-by-case basis; however, conservatively the protection required at each crossing is typically no greater than 750 m in length[9] and 10 m wide, resulting in an area of 7,500 m^2 of potential habitat loss.

The MCZ's protected benthic features are understood to be broadscale habitats, with the northern quarter of the MCZ comprising subtidal mud, and the southern half comprising subtidal sand; but recorded to be in favourable condition (Natural England, 2025)[17]. With the use of benthic surveys to inform micro-siting within the study corridor it is likely that micro-siting informed by pre-installation benthic surveys will seek to minimise interaction with designated features and reduce the footprint of cable protection where required.

Furthermore, multiple cable routes have successfully been installed across this MCZ. One example being the Havhingsten / CeltixConnect-2 (CC-2) telecoms cable[12, 13], which was ready for service in 2022. This development sets precedence that it is possible to install a subsea cable across the Flyde MCZ without significant risk of hindering its conservation objectives[18].

With the application of micro-siting, informed by targeted surveys**, R4_6_to_Penwortham is not considered to pose significant risk of hindering the conservation objectives of the Fylde MCZ**. As reasonable OMP has been identified, there is considered no need to assess this derogations case under the subsequent conditions of the MCAA Section 126.

SW_E1a_to_Hawthorn_Pit

SW_E1a_to_Hawthorn_Pit has been taken forward to Stage 2 due to its proximity to the North East of Farnes Deep HPMA.

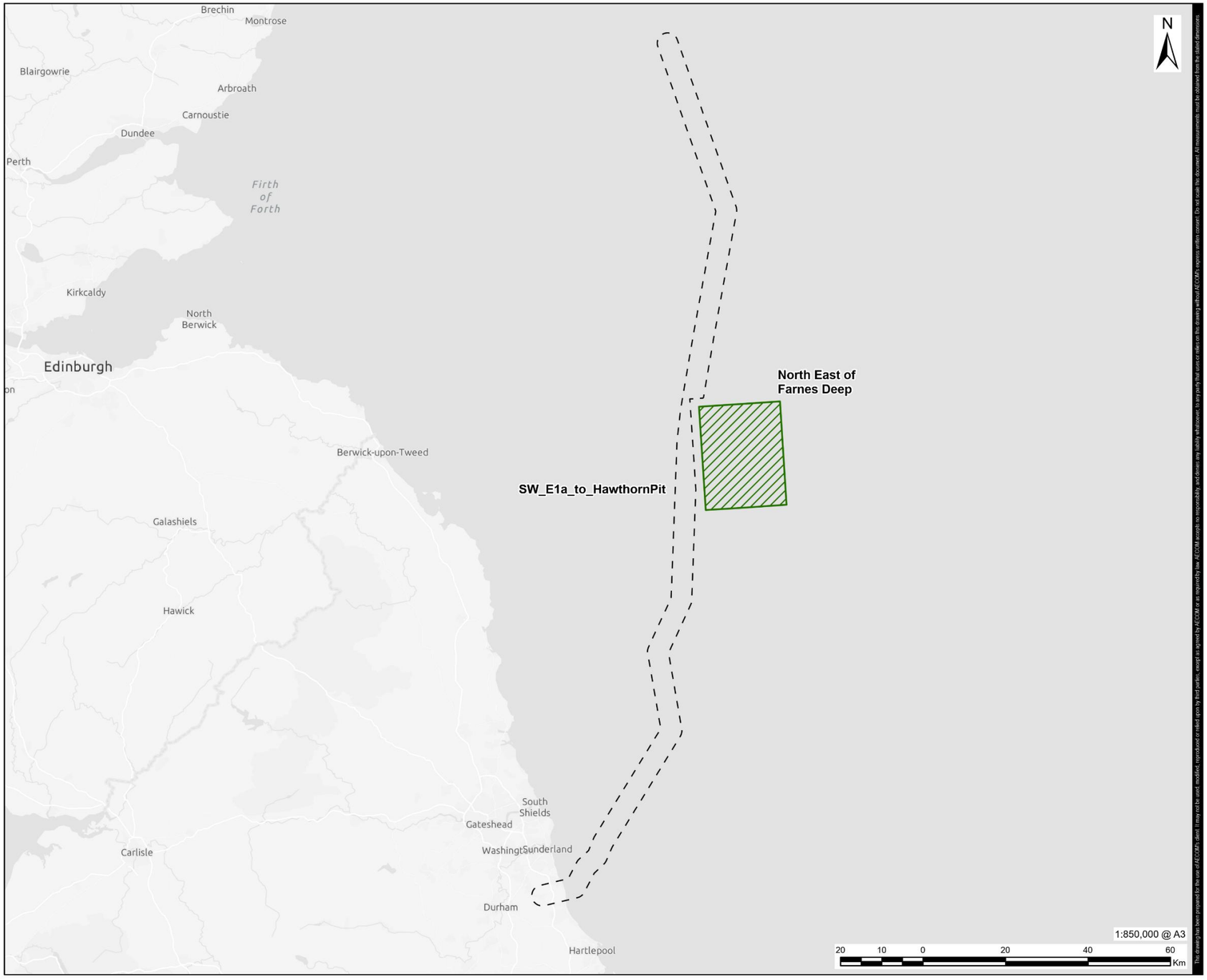
The Stage 1 MCZ assessment clarifies that 'it is the intention of NESO to avoid any interaction with an HPMA, and that refinement to reduce the width of the current 5 km wide study corridor is planned before project level'. Additionally, it has been identified that there is space within the current study corridor design to avoid the HPMA by a distance of 2 km, or greater (possibly up to 4 km); dependant on the influence of other design constraints, such as cost and engineering design. It is NESO's recommendation that developers will as a minimum adhere to the advised 2 km HPMA buffer distance (Natural

[17] Natural England. (2025a). Fylde MCZ Feature Condition. [Online] Available at: https://designatedsites.naturalengland.org.uk/Marine/MarineFeatureConditionDirect.aspx?SiteCode=UKMCZ0007&SiteName=fylde%20mcz&SiteNameDisplay=Fylde%20MCZ&countyCode=&responsiblePerson=&SeaArea=&IFCAArea=&NumMarineSeasonality=

[18] MCZ assessment and / or derogations reports in relation to this project do not appear to be publicly available.

England & JNCC, 2022)[19] and could potentially exceed it (**Figure 2**). Therefore, the impact pathways of concern are not direct, but indirect; associated with increases in SSC from cable trenching and backfill during installation.

[19] Natural England and Joint Nature Conservation Committee (JNCC). (2022a). High-level Conservation Advice for Public Authorities on Highly Protected Marine Areas. [Online] Available at: https://data.jncc.gov.uk/data/d12633b1-b123-4738-a594-b53c183aee68/hpma-high-level-conservation-advice.pdf



AECOM

PROJECT

Hollistic Network Design Implementation Plan - Marine Conservation Zone (MCZ) Assessment

CLIENT

National Energy Systems Operator (NESO)

CONSULTANT

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LEGEND

SW_E1a_to_Hawthorn_Pit Study Area

Highly Protected Marine Area (HPMA)

NOTES

1: Basemapping: Esri UK, Esri, TomTom, Garmin, FAO, METI/NASA, USGS

ISSUE PURPOSE

FOR INFORMATION

PROJECT NUMBER

60705615

FIGURE TITLE

Other Means of Proceeding: Alternative SW_E1a_to_Hawthorn_Pit Study Corridor

FIGURE NUMBER

Figure 2

Filename: \\na.aecomnet.com\lis\EMEA\Leeds-UKLDS2\Legacy\UKLDS2PFPSW001WIP\LE_Projects\GIS Management\HRA\20231020231030_National_Grid_HRA\02_Maps\01_National_Grid_HRA_WebMap\01_National_Grid_HRA_WebMap.aprx Revision: 1 Drawn: JA Checked: KH Approved: JW Date: 2025-06-03

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Figure 2 Other Means of Proceeding: Alternative SW_E1a_to_Hawthorn_Pit Study Corridor

The North East of Farnes Deep HPMA Advice on Operations (JNCC, 2023)[20] assigns a Risk Profiling of Pressures (RPP) score of medium-high to changes in suspended solids from power cable laying, burial and protection. This is justified based on the potential for the resuspension of fine particulate matter such as silt and chalk, which is known to travel greater distances (hundreds of metres) than coarse material such as sands and gravels (tens of metres) (OSPAR Commission, 2012)[21].

Broadscale mapping indicates that the seabed within the study corridor is likely to be either EUNIS habitat MD52: Atlantic offshore circalittoral sand and / or EUNIS habitat MD32: Atlantic offshore circalittoral coarse sediment (EMODnet, 2023)[22]; predominantly comprising coarse sediment types. Benthic surveys may be required to confirm these habitat classifications and the expected low or negligible levels of fine material. Sediment dispersion modelling will likely be required to verify the potential for increased SSC to reach the HPMA (or lack of). However, should any finer sediments be present, any measurable increase to SSC within the HPMA is highly likely to be of concentrations comparable to, or lower than, the natural variation within the HPMA (negligible).

In light of NESO's recommendation to avoid the HPMA by at a minimum of 2 km, and the expected localised dispersion of the coarse seabed type within the study corridor, **SW_E1a_to_Hawthorn_Pit is not considered to pose significant risk of hindering the conservation objectives of the North East of Farnes Deep HPMA**. As reasonable OMP has been identified, there is considered no need to assess this derogations case under the subsequent conditions of the MCAA Section 126.

SW_NE7_to_Peterhead

SW_NE7_to_Peterhead has been taken forward to Stage 2 as the appraisal of technical constraints along the study corridor (National Grid ESO, 2022a)[23] indicates that through micro-siting within the study corridor, potential crossings can be reduced from three possible crossings to two unavoidable cable crossings within the Southern Trench MPA.

At crossing locations cable protection is commonly required where the cable cannot be installed to an adequate burial depth. This protection typically consists of rock protection or concrete mattressing, resulting in permanent loss of benthic habitat directly within its footprint. The area of cable protection required will differ on a case-by-case basis; however, conservatively the protection required at each crossing is typically no greater

[20] JNCC. (2023). North East of Farnes Deep MPA: Advice on Operations. Available at: https://hub.jncc.gov.uk/assets/5c5def7f-e1a0-4a7f-8078-a0ff3050a4fb#:~:text=Advice%20on%20Operations%20workbook%20%E2%80%93%20provides,protected%20feature%20of%20the%20HPMA

[21] OSPAR Commission. (2012). Guidelines on Best Environmental Practice (BEP) in Cable Laying and Operation. Available at: https://www.gc.noaa.gov/documents/2017/12-02e_agreement_cables_guidelines.pdf

[22] EMODnet. (2023). EUSeaMap Broad-Scale Predictive Habitat Map for Europe. Available at: https://emodnet.ec.europa.eu/geonetwork/srv/eng/catalog.search#/metadata/0a1cb988-22de-48b2-8cda-d90947ef77d1

[23] National Grid ESO. (2022a). North Scotland Region – NS6 - SW_N4 – Arnish (Lewis). Internal appraisal.

than 750 m in length[9] and 10 m wide, resulting in an area of 7,500 m^2 of potential habitat loss. The Southern Trench MPA has a documented area of 239,800 ha (2,398,000,000 m^2) (NatureScot, 2025b)[24]. Thus, two cable crossings would account for a 0.00063% of the seabed habitat within the MPA.

The MPA's protected benthic features of concern include burrowed mud, and shelf deeps. These are understood to be broadscale habitats, covering large portions of the MPA (NatureScot, 2024)[25]. Targeted benthic surveys to will likely be required to confirm this and inform any necessary micro-siting within the study corridor. However, based on the information cited above regarding infrastructure location and benthic habitat extent it is highly likely that the crossing locations can avoid these features entirely.

Therefore, SW_NE7_to_Peterhead **is not considered to pose significant risk of hindering the conservation objectives of the Southern Trench MPA**. As reasonable OMP has been identified, there is considered no need to assess this derogations case under the subsequent conditions of the MCAA Section 126.

SW_W1_to_Ballantrae

SW_W1_to_Ballantrae is a similar derogation case to Ballantrae_to_Pentir. It has been taken forward to Stage 2 as the appraisal of technical constraints along the study corridor indicates that through micro-siting within the study corridor, potential crossings can be reduced from four possible crossings to three unavoidable cable crossings within the Clyde Sea Sill MPA.

At crossing locations cable protection is commonly required where the cable cannot be installed to an adequate burial depth. This protection typically consists of rock protection or concrete mattressing, resulting in permanent loss of benthic habitat under directly under its footprint. The area of cable protection needed will differ on a case-by-case basis; however, conservatively the protection required at each crossing is typically no greater than 750 m in length[9] and 10 m wide, resulting in an area of 7,500 m^2 of potential habitat loss. The Clyde Sea Sill MPA has a documented area of 71,200 ha (712,000,000 m^2) (NatureScot, 2025a)[10]. Thus, two cable crossings would account for a 0.00211% loss of the seabed habitat within the MPA.

The MPA's protected benthic features of concern include circalittoral and offshore sand and coarse sediment communities, and marine Geomorphology of the Scottish Shelf Seabed. These are understood to be broadscale habitats, covering large portions of the MPA (Scottish Natural Heritage, 2014)[11]. However, with the use of targeted benthic surveys to further inform micro-siting within the study corridor, it is likely the crossing locations can either avoid these features (i.e. circalittoral and offshore sand and coarse sediment

[24] NatureScot. (2025b). Southern Trench MPA(NC). [Online] Available at: https://sitelink.nature.scot/site/10477

[25] NatureScot. (2024). Conservation Management Advice: Southern Trench MPA. Available at: https://www.nature.scot/sites/default/files/nature-conservation-mpa/10477/conservation-and-management-advice.pdf

communities) or substantially reduce the magnitude of potential losses for the most sensitive features.

Furthermore, multiple cable routes have been successfully installed across this MPA. One example being the Scotland to NI 4 telecoms cable[13, 14], which was ready for service in 2022. This development sets precedence that it is possible to install a subsea cable across the Clyde Sea Sill MPA without significant risk of hindering the conservation objectives of the MPA (BT, 2020)[14].

With the application of considerate micro-siting, and in light of the small proportion of overall habitat the cable protection would occupy; **SW_W1_to_Ballantrae is not considered to pose significant risk of hindering the conservation objectives of the Clyde Sea Sill MPA**. As reasonable OMP has been identified, there is considered no need to assess this derogations case under the subsequent conditions of the MCAA Section 126.

HNDFUE

SW_NE7_to_Peterhead_DCSS

SW_NE7_to_Peterhead has an extremely similar design to SW_NE7_to_Peterhead and is therefore a similar derogation case. It has been taken forward to Stage 2 as the appraisal of technical constraints along the study corridor (NESO and RPS, 2022b) indicates that there are two unavoidable cable crossings within the Southern Trench MPA. Where these crossings are located cable protection is commonly required where the cable cannot be installed to an adequate burial depth. This protection typically consists of rock protection or concrete mattressing, resulting in permanent loss of benthic habitat under its footprint.

The area of cable protection will differ on a case-by-case basis; however, conservatively the protection required at each crossing is typically no greater than 750 m in length[9] and 10 m wide, resulting in an area of 7,500 m^2 of potential habitat loss. The Southern Trench MPA has a documented area of 239,800 ha (2,398,000,000 m^2) (NatureScot, 2025b)[24]. Thus, two cable crossings would account for a 0.00063% of the seabed habitat within the MPA.

The MPA's protected benthic features of concern include burrowed mud, and shelf deeps. These are understood to be broadscale habitats, covering large portions of the MPA (NatureScot, 2024)**Error! Bookmark not defined.**. Targeted benthic surveys to will likely be required to confirm this and inform any necessary micro-siting within the study corridor. However, based on the information cited above regarding infrastructure location and benthic habitat extent it is highly likely that the crossing locations can avoid these features entirely.

Therefore, **SW_NE7_to_Peterhead_DCSS is not considered to pose significant risk of hindering the conservation objectives of the Southern Trench MPA**. As reasonable OMP has been identified, there is considered no need to assess this derogations case under the subsequent conditions of the MCAA Section 126.

INTOG

Peterhead_to_Cenos

Peterhead_to_Cenos has been taken forward to Stage 2 as the appraisal of technical constraints along the study corridor (National Grid ESO, 2024b)[26] indicates that despite micro-siting within the study corridor, there are two unavoidable cable crossings within the East of Gannet and Montrose Fields MPA, and a further two unavoidable cable crossings within the Southern Trench MPA.

At crossing locations cable protection is commonly required where the cable cannot be installed to an adequate burial depth. This protection typically consists of rock protection or concrete mattressing, resulting in permanent loss of benthic habitat directly beneath its footprint.

East of Gannet and Montrose Fields MPA

The Eastern portion of Peterhead_to_Cenos connects the Cenos Offshore Windfarm (OWF). At the plan level, the corridor has been designed to minimise interactions with the MPA; however, because Cenos OWF is located within the East of Gannet and Montrose Fields MPA, some interaction with the site is expected. Based on plan-level consideration of feasible connection options, routing the power cable through the MPA is considered necessary to minimise the overall extent of seabed disturbance and environmental effects.

At plan-level there is an absence of specific design information or proposed development layouts. Thus, the design assumption for the Peterhead_to_Cenos study corridor uses a centralised connection point for CENOS within the wind farm lease area[27]. As this centroid is well within the boundaries of the East of Gannet and Montrose Fields MPA there is no opportunity to connect the cable to the wind farm outside of the MPA. As such, the current study corridor represents the engineering solution that provides the shortest feasible route with the lowest potential environmental impacts[28]. Indeed, a connection point outside the MPA would result in greater environmental impacts associated with the wind farm inter-array cables. Additionally, routing the cable corridor around the outside of the MPA would add approximately 50 km of cabling to the design, and due to the large amount of existing infrastructure in the seabed surrounding the MPA would significantly increase the number of required cable crossings. This would likely be cost inhibitive to any proposed development.

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[26] National Grid ESO. (2024b). INTOG– Cenos – Peterhead. Internal appraisal (draft).

[27] Notably, this assessment does not consider the design of any offshore wind farm infrastructure, only the connecting HVDC cable(s).

[28] Please note that the purpose of the HND Implementation Plan is not to identify preferred or recommended routes, but to establish if study corridors are potentially feasible; informing the overall design appraisal process by highlighting the environmental and technical constraints associated with identified study corridors.

The appraisal of technical constraints along the study corridor (National Grid ESO, 2024b)[26] shows a large number of subsea cable and pipeline assets to have been installed across the MPA, with multiple assets crossing one another. This indicates that there is precedence that can be followed to install a subsea cable without risk of significantly hindering the conservation objectives of the MPA.

The area of cable protection required will differ on a case-by-case basis; however, conservatively the protection required at each crossing is typically no greater than 750 m in length[9] and 10 m wide, resulting in an area of 7,500 m^2 of potential habitat loss. The East of Gannet and Montrose Fields MPA has a documented area of 183,900 ha (1,839,000,000 m^2) (NatureScot, 2025b)[24]. Thus, two cable crossings would account for a 0.00082% of the seabed habitat within the MPA.

Additionally, habitat mapping shows that offshore deep-sea muds dominate the south-eastern half of the MPA, with the remainder being dominated by subtidal sands and gravel; the preferred habitat of ocean quahog (JNCC, 2023)[29]. Notably, the technical constraints assessment (National Grid ESO, 2024b)[26] suggests it is highly likely the cable crossings will be located within the subtidal sands and gravel portion of the MPA; a habitat type known to demonstrate high recoverability due to their dynamic and mobile nature (RPS, 2019)[30]. Targeted benthic surveys would also inform micro-siting, to further minimise or avoid protected features where possible.

Compared to the extent of subtidal sands and gravel habitat within the MPA, two areas of cable protection would represent a relatively small-scale loss and would not be expected to compromise the functional integrity of general habitats and species or diminish biodiversity at the regional scale. Furthermore, for many infaunal species, localised habitat loss will only have a temporary impact as fauna will be able to redistribute once the installation has been completed. Particularly in the case of ocean quahog, a relatively resilient and mobile bivalve species.

The conservation objectives for ocean quahog and deep-sea mud habitats within the MPA include a requirement for recovery. Taking this into account, the limited spatial extent and low magnitude of permanent effects, together with the temporary nature of installation-related disturbance, are not expected to materially affect the ability of these features to recover towards favourable condition at the site scale.

With the low magnitude of effect and recoverability of protected habitats in mind, **Peterhead_to_Cenos is not considered to pose significant risk of hindering the conservation objectives of the East of Gannet and Montrose Fields MPA**. Additionally, with OMP identified that could further reduce the risk of hindering conservation objectives, including (i) refinement of the cable alignment within the study corridor through micro-

[29] JNCC. (2023). East of Gannet and Montrose Fields MPA: Monitoring and Evidence. Available at: https://jncc.gov.uk/our-work/east-of-gannet-and-montrose-fields-mpa/#monitoring-and-evidence

[30] RPS. (2019). Review of cable installation, protection, mitigation, and habitat recoverability. The Crown Estate. Available at: https://www.marinedataexchange.co.uk/details/TCE-1714/2019-rps-offshore-wind-leasing-round-4-review-of-cable-installation-protection-mitigation-and-habitat-recoverability-report-on-behalf-of-the-crown-estate

siting informed by targeted pre-construction benthic surveys, (ii) optimisation of burial depth to minimise the need for cable protection, and (iii) reduction of cable protection footprints at crossings to the lowest reasonably achievable area, there is considered no need to assess this derogations case under the subsequent conditions of the MCAA Section 126.

Southern Trench MPA

The western portion of Peterhead_to_Cenos, approaching landfall, occupies a similar location to SW_NE7_to_Peterhead, and SW_NE7_to_Peterhead_DCSS within the Southern Trench MPA. Therefore, this study corridor's inclusion at Stage 2 Assessment concerns cable crossings with the same existing subsea infrastructure as study corridors.

The area of cable protection required will differ on a case-by-case basis; however, conservatively the protection required at each crossing is typically no greater than 750 m in length[9] and 10 m wide, resulting in an area of 7,500 m^2 of potential habitat loss. The Southern Trench MPA has a documented area of 239,800 ha (2,398,000,000 m^2) (NatureScot, 2025b)[24]. Thus, two cable crossings would account for a 0.00063% of the seabed habitat within the MPA.

The MPA's protected benthic features of concern include burrowed mud, and shelf deeps. These are understood to be broadscale habitats, covering large portions of the MPA (NatureScot, 2024)[24]. Targeted benthic surveys will likely be required to confirm this and inform any necessary micro-siting within the study corridor. However, based on the information cited above regarding infrastructure location and benthic habitat extent it is highly likely that the crossing locations can avoid these features entirely.

Therefore, Peterhead_to_Cenos **is not considered to pose significant risk of hindering the conservation objectives of the Southern Trench MPA**. As reasonable OMP has been identified, there is considered no need to assess this derogations case under the subsequent conditions of the MCAA Section 126.

5. Conclusions

Following the detailed consideration of the eight study corridors carried forward to Stage 2 Assessment, the appraisal has identified other means of proceeding (OMP) for all eight study corridors that are considered reasonably feasible, given the level of design detail at plan-level. With the application of the precautionary principle, and professional judgment, these OMP are considered to significantly reduce the risk of hindering the conservation objectives of the associated MCZ / HPMA / NCMPAs. Therefore, is it is concluded that all eight study corridors do not need to be considered further for the remaining conditions associated with Stage 2 Assessment at plan-level.

It is understood that further MCZ Assessment will be undertaken for the cables which reach project level, where refined study corridors and more detailed design information will be confirmed. It is advised that the developers of the eight study corridors give careful consideration the mitigation measures highlighted within this assessment, in order to minimise the risk of MCZ derogations being required down-the-line.

Glossary

Acronym	Description
DCO	Development consent Order
DESNZ	Department for Energy Security and Net Zero
ESG	Environmental Sub Group
HND	Holistic Network Design
HPMA	Highly Protected Marine Area
INTOG	Innovation Targeted Oil and Gas
MCAA	Marine and Coastal Access Act 2009
MCZ	Marine Conservation Zone (England, Wales, and Northern Ireland)
MMO	Marine Management Organisation
MPA	Marine Protected Area (Scotland)
NESO	National Energy System Operator
Ofgem	Office of Gas and Electricity Markets
OMP	other means of proceeding
OTNR	Offshore Transmission Network Review
SNCBs	Statutory Nature Conservation Bodies
ToR	Terms of Reference

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