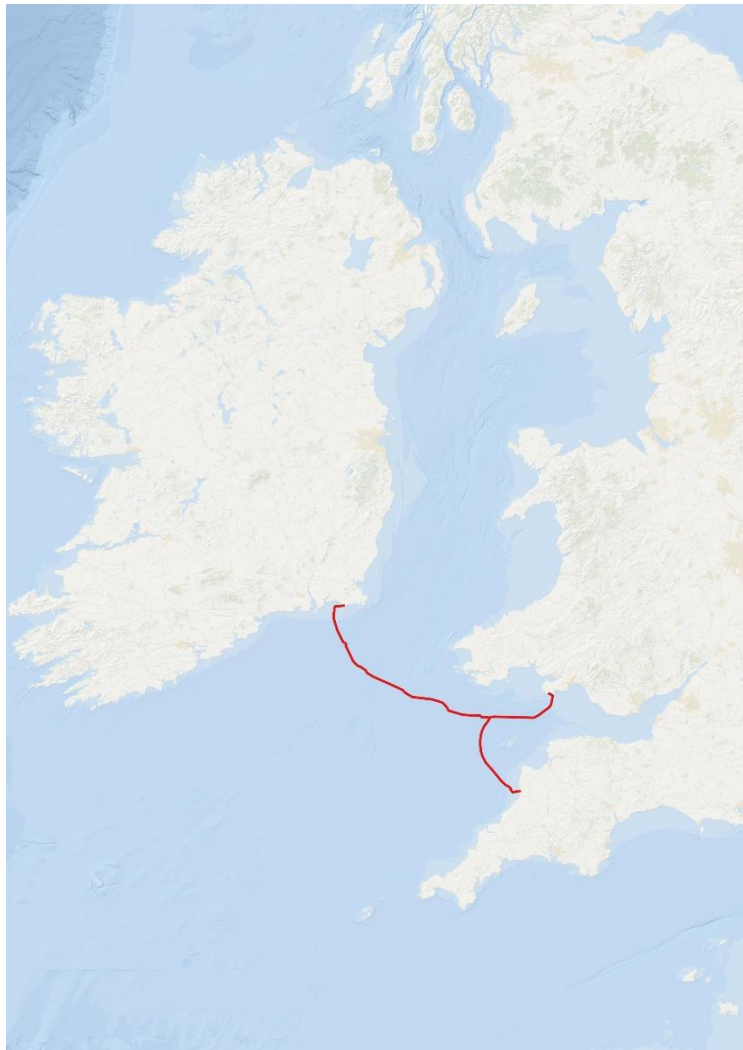


AA Screening and Natura Impact Statement for a Foreshore Licence Application for removal of an out-of-service cable and main lay installation of a subsea fibre optic cable system at Kilmore Quay, Co. Wexford.



20th September 2022

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Document Control Sheet

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1. Introduction

Appropriate Assessment is an assessment of the potential effects of a proposed project or plan, on its own, or in combination with other plans or projects, on one or more NATURA 2000 sites (Special Areas of Conservation (SAC) or Special Protection Areas (SPA)).

The following Appropriate Assessment (AA) (Screening Stage) and Natura Impact Statement (NIS) has been prepared by Altemar Ltd. for Amazon MCS Ireland Limited as part of the application for a Foreshore Licence. The Foreshore Licence application relates to the removal of an out-of-service cable and the installation and operation of the proposed Beaufort Cable System fibre optic cable. The planned cable will extend from Kilmore Quay on the south-east coast of Wexford in Ireland to a Branching Unit off the Pembrokeshire coast to include a link to South Wales and also a link to the west coast of Cornwall.

The proposed new cable will make landfall in Ballyteige Burrow SAC. The National Parks and Wildlife Service have been consulted and have requested that the existing disused cable is left within the Saltee Islands SAC to avoid disturbance to the features of interest within the SAC. The cable is also to avoid the Saltee Islands SAC. An AA Screening and Natura Impact Statement has been prepared. The purpose of this AA Screening and NIS is to determine the impact, if any, of the cable removal and installation of the proposed fibre-optic cable within the Irish 12nm limit and at the landing site in Kilmore Quay, individually or in combination with other plans or projects, on Natura 2000 sites. Following discussions with the National Parks and Wildlife Service (NPWS) an Ecological Impact Assessment (EclA) was also prepared, in addition to this AA Screening/NIS. The EclA is a standalone document and accompanies the AA Screening/NIS.

The cable routing from the beach manhole will comprise the use of existing cable infrastructure (ducting) supplemented by sections of infill or linking infrastructure.

Altemar Ltd.

Since its inception in 2001, Altemar has been delivering ecological and environmental services to a broad range of clients. Operational areas include: residential; infrastructural; renewable; oil & gas; private industry; Local Authorities; EC projects; and, State/semi-State Departments. Bryan Deegan, the managing director of Altemar, is an Environmental Scientist and Marine Biologist with 26 years' experience working in Irish terrestrial and aquatic environments, providing services to the State, Semi-State and industry. He is currently contracted to Inland Fisheries Ireland as the sole "External Expert" to environmentally assess internal and external projects. He is also chair of an internal IFI working group on environmental assessment. Bryan Deegan (MCIEEM) holds a MSc in Environmental Science, BSc (Hons.) in Applied Marine Biology, NCEA National Diploma in Applied Aquatic Science and a NCEA National Certificate in Science (Aquaculture). Bryan Deegan carried out all elements of this Appropriate Assessment Screening and NIS. Bryan has been involved in eight international sub marine fibre optic cable projects, many of which involved Horizontal Directional Drills within designated sites and all works required ecological supervision.

2. Background to the Appropriate Assessment

The Habitats Directive (92/43/EEC), together with the Birds Directive (2009/1477/EC), forms the cornerstone of European nature conservation policy. The Directive protects over 1000 animals and plant species and over 200 "habitat types" which are of European importance. In the Directive, Articles 3 to 9 provide the legislative means to protect habitats and species of European Community interest through the establishment and conservation of an EU-wide network of conservation sites (NATURA 2000).

These are Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas (SPAs) designated under the Birds Directive. Article 6(3) and 6(4) of the Habitats Directive set out the decision-making tests for plans and projects likely to affect NATURA 2000 sites (Annex 1.1). Article 6(3) establishes the requirement for Appropriate Assessment:

"Any plan or project not directly connected with or necessary to the management of the [NATURA 2000] site but likely to have a significant effect thereon, either individually or in combination with other plans and projects, shall be subjected to appropriate assessment of its implications for the site in view of the site's conservation objectives. In light of the conclusions of the assessment of the implication for the site and subject to the provisions of paragraph 4, the component national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public."

Furthermore, as outlined in the EC guidance document on Article 6(4) (January 2007)¹:

"Appropriate assessments of the implications of the plan or project for the site concerned must precede its approval and take into account the cumulative effects which result from the combination of that plan or project with other plans or projects in view of the site's conservation objectives. This implies that all aspects of the plan or project which can, either individually or in combination with other plans or projects, affect those objectives must be identified in the light of the best scientific knowledge in the field."

Assessment procedures of plans or projects likely to affect NATURA 2000 sites should guarantee full consideration of all elements contributing to the site integrity and to the overall coherence of the network, both in the definition of the baseline conditions and in the stages leading to identification of potential impacts, mitigation measures and residual impacts. These determine what has to be compensated, both in quality and quantity. Regardless of whether the provisions of Article 6(3) are delivered following existing environmental impact assessment procedures or other specific methods, it must be ensured that:

- *Article 6(3) assessment results allow full traceability of the decisions eventually made, including the selection of alternatives and any imperative reasons of overriding public interest.*
- *The assessment should include all elements contributing to the site's integrity and to the overall coherence of the network as defined in the site's conservation objectives and Standard Data Form, and be based on best available scientific knowledge in the field. The information required should be updated and could include the following issues:*
 - *Structure and function, and the respective role of the site's ecological assets;*
 - *Area, representativity and conservation status of the priority and nonpriority habitats in the site;*
 - *Population size, degree of isolation, ecotype, genetic pool, age class structure, and conservation status of species under Annex II of the Habitats Directive or Annex I of the Birds Directive present in the site;*

¹ European Commission. (2007). Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission.

- *Role of the site within the biographical region and in the coherence of the NATURA 2000 network; and,*
- *Any other ecological assets and functions identified in the site.*
- *It should include a comprehensive identification of all the potential impacts of the plan or project likely to be significant on the site, taking into account cumulative impacts and other impacts likely to arise as a result of the combined action of the plan or project under assessment and other plans or projects.*
- *The assessment under Article 6(3) applies the best available techniques and methods, to estimate the extent of the effects of the plan or project on the biological integrity of the site(s) likely to be damaged.*
- *The assessment provides for the incorporation of the most effective mitigation measures into the plan or project concerned, in order to avoid, reduce or even cancel the negative impacts on the site.*
- *The characterisation of the biological integrity and the impact assessment should be based on the best possible indicators specific to the NATURA 2000 assets which must also be useful to monitor the plan or project implementation.”*

Methodology

This Appropriate Assessment screening was undertaken in accordance with the European Commission Methodological Guidance on the provision of Article 6(3) and 6(4) of the 'Habitats' Directive 92/43/EEC (EC, 2001), Part XAB of the Planning and Development Act 2000, as amended, in addition to the December 2009 publication from the Department of Environment, Heritage and Local Government; 'Appropriate Assessment of Plans and Projects in Ireland: Guidance for Planning Authorities' and the European Communities (Birds and Natural Habitats) Regulations 2011 and the provision of Article 6 of the Habitats Directive 92/43/EEC (European Commission, 21 November 2018).

In order to comply with the above Guidelines and legislation, this Appropriate Assessment Screening and Natura Impact Statement must be structured as follows:

- 1) Screening Stage
 - Description of the proposed project or plan;
 - Identification of NATURA 2000 sites potentially affected;
 - Identification and description of individual in combination effects likely to result from the proposed project;
 - Assessment of the likely significance of the effects identified above. Exclusion of sites where it can be objectively concluded that there will be no likely significant effects; and,
 - Conclusions.

- 2) Appropriate Assessment (Natura Impact Statement)
 - Description of the NATURA 2000 sites that will be considered further;
 - Identification and description of potential adverse impacts on the conservation objectives of these sites likely to occur from the project or plan;
 - Identification and description of in combination effects likely to result from other plans and projects;
 - Mitigation Measures that will be implemented to avoid, reduce or remedy any such potential adverse impacts;
 - Assessment as to whether, following the implementation of the proposed mitigation measures, it can be concluded, beyond all reasonable scientific doubt, that there will be no adverse impact on the integrity of the relevant European Site in light of its conservation objectives"; and,
 - Conclusions.

3. Stage 1 Screening Assessment

Management of the Site

The plan or project is not directly connected with, or necessary to the management of NATURA 2000 sites.

Relevance to the County Development Plan

Specific relevant objectives of the Draft Wexford County Development Plan 2021-2027² in relation to telecommunications infrastructure include:

“9.2 Climate Action and Infrastructure Planning: Much of this infrastructure is essential to emergency planning and response in times of extreme weather events/critical incidents e.g. telecommunications. To this end:

- *Infrastructure developed above ground should avoid flood risk areas and areas at risk of coastal erosion.*
- *Site selection, location, design and materials will need to have regard to and be resilient to the changing climate (high winds, temperature fluctuations, increased storminess and changes in rainfall).*
- *Infrastructure developed below ground should avoid flood risk areas and areas at risk of coastal erosion.”*

“9.4 Infrastructure Strategy: This strategy is focused on the provision of high quality water, wastewater and waste management facilities and telecommunications infrastructure that will facilitate and sustain the planned growth of the county over the lifetime of the CDP and beyond.

9.4.2 Strategy

- *To facilitate the development of high speed telecommunications and ICT infrastructure throughout the county in order to grow and develop economic activity, to enhance learning and education facilities and contribute to the social wellbeing of our residents, particularly in rural areas in the county.”*

“9.10 Telecommunications and ICT Strategy:

The Council is committed to the development of high quality, high speed telecommunications networks and infrastructure throughout the county and will maximise the opportunities that it offers for our urban and rural areas and for our residents and workers. However, this must be managed to ensure a balance between the provision of this infrastructure in the interests of social and economic progress and sustaining residential amenity and environmental quality.

The importance of telecommunications and ICT, including international connectivity, is critically important to support the future needs of society and enterprise across the country. The importance of this infrastructure transcends many of the NPF NSOs, in particular, NSO 3 Strengthened rural economies and communities and NSO 6 A Strong economy supported by enterprise, innovation and skills. The NPF acknowledges the importance in the short-term of rolling out the National Broadband Plan (NPO 24) as a means for developing further opportunities for enterprise, employment, education, innovation, skills development for those who live and work in rural areas.

The NPF also highlights the opportunities offered by harnessing the data economy and in this regard prioritises the roll out of the NBP, the enhancement of international fibre communications links and the promotion of Ireland as a sustainable destination for ICT infrastructures such as data centres and associated economic activities.

The Connectivity strategy in the RSES seeks to enhance regional accessibility by developing high quality digital connectivity throughout the region. It emphasises the critical importance of enhanced quality and the provision of digital and mobile telecommunications and infrastructure in the revitalisation of cities, towns, villages and rural areas across the region.

The RSES supports the development of ‘Smart’ cities and towns which goes beyond the use of ICT. It means smarter transport networks, upgraded water supply and waste disposal facilities, more efficient ways to light and heat buildings, enhanced public administration, safer public spaces and meeting the needs of the ageing population. This will require on-going investment in broadband, fibre technologies, wireless networks and

² <https://consult.wexfordcoco.ie/en/consultation/draft-wexford-county-development-plan-2021-2027>

integrated infrastructure. The RSES acknowledges the steps taken by Enniscorthy Town towards the achievement of Smart Town status with the establishment of a FAB LAB in 2017, the development of a Technology Park for smart businesses and the establishment of the NZEB training centre.

The Council will continue to support appropriate telecommunications and ICT proposals that will ensure and enhance connectivity of Ireland's rural and island communities to high quality telecommunications networks, and will support proposals where evidence is provided of an approach to development and activity that integrates the needs of cables and pipelines.

9.10.2 Broadband: The availability of high-quality, high speed broadband network to all businesses and households is very important for the economic and social progress of our county. The targets of the NBP include:

- *70 Mbps -100 Mbps available to at least 50% of the population with a majority having access to 100 Mbps.*
- *At least 40Mbps and in many cases faster speeds to at least a further 20% of the population and potentially as much as 35% around smaller towns and villages.*
- *A minimum of 30 Mbps available to all, no matter how rural and remote.*

The roll out of the NBP in the county is being achieved through a combination of commercial investment by the telecommunications sector and State intervention to provide high-speed broadband to the unserved parts of county where market has failed due to factors such as low population density. As of Q2, 2019, and out of the 82,909 premises in the county, 74% fall under the remit of commercial deployment and 26% under the remit of State intervention."

Telecommunication and ICT Objectives

It is the objective of the Council:

"Objective TC01 - To facilitate the delivery of high-speed, high capacity digital and mobile infrastructure at appropriate locations in the county and facilitate the continued roll out of the National Broadband Plan as a means for developing further opportunities for enterprise, employment, education, innovation, skills development for those who live and work in urban and rural areas in the county and subject to compliance with normal planning and environmental criteria and the development management standards contained in Volume 2.

Objective TC02 - To support proposals that will ensure existing and future international telecommunications connectivity which is critically important to support the future needs of society and enterprise in Ireland, and to support appropriate proposals that will ensure and enhance connectivity of Ireland's rural communities to high quality telecommunications networks, and to support proposals where evidence is provided of an approach to development and activity that integrates the needs of cables and pipelines.

Objective TC03 - To support the implementation of a Digital Strategy for the county, seek investment for actions identified, and support the role and initiatives of the Mobile and Broadband Taskforce in addressing digital and mobile coverage blackspots and rural communications connectivity.

Objective TC04 - To support the development of Enniscorthy Town and other towns, villages and rural areas in the county as 'Smart' locations, and to facilitate the deployment of disruptive technologies and smart infrastructures these locations.

Objective TC05 - To support investment for initiatives in smart technology as an enabler for education and life-long learning in all locations.

Objective TC06 - To have regard to Telecommunications Antennae and Support Structures-Guidelines for Planning Authorities (Department of the Environment and Local Government, 1996), Circular Letter of 2012 (PL07/12) or and any updated guidelines published during the lifetime of the Plan.

Objective TC07 - To co-operate with telecommunications service providers in the development of this infrastructure, having regard to the proper planning and sustainable development of the area, normal planning and environmental criteria and the development management standards contained in Volume 2.

Objective TC08 - To require co-location and clustering of new masts and support structures on existing sites, unless a fully documented case is submitted explaining the precise circumstances against co-location and

clustering. Where it is not possible to share a support structure, the applicant should, where possible, share the site or an adjacent site so that the antennae may be clustered.

Objective TC09 - To adopt a presumption against the erection of antennae in proximity to residential areas, schools and community buildings.

Objective TC10 - To minimise, and avoid where possible, the development of masts and antennae within the following areas:

- *Prominent locations in the Distinctive, Uplands, River Valley, and Coastal landscape character units.*
- *Locations which impede or detract from existing public view points to/from Distinctive, Uplands, River Valley and Coastal landscape character units, and rivers, estuaries or the sea.*
- *Historic landscapes and battlefields.*
- *Areas within or adjoining the curtilage of protected structures.*
- *Areas on or within the setting of archaeological sites.*
- *Within or adjacent to Natura 2000 sites. The Council may consider an exemption to this objective where:*

The Council may consider an exemption to this objective where:

- *An overriding technical need for the equipment has been demonstrated and which cannot be met by the sharing of existing authorised equipment in the area, and*
- *The equipment is of a scale and is sited, designed and landscaped in a manner which minimises adverse visual impacts on the subject landscape unit.*

Objective TC11 - To ensure the location of telecommunications structures minimise and/or mitigate any adverse impacts on communities, the natural and built environment and public rights of way.

Objective TC12 - To require that ducting for broadband fibre connections to be provided during the installation of services, in all new commercial and housing schemes and during the carrying out of any work to roads or rail lines.

Objective TC13 - To encourage the provision of WiFi zones in public buildings."

Heritage and Conservation

Specific relevant objectives of the Draft Wexford County Development Plan 2021-2027 in relation to heritage and conservation include:

"13.2 Natural Heritage: Natural heritage, often referred to as biodiversity, is the variety of life, its physical or geological foundation and the landscapes which form our surroundings. Biodiversity includes everything from trees to weeds, from mammals to birds, from coast to countryside. Biodiversity is important for many things including food, fertile soils and clean air and water. It is therefore important that the development objectives in the Plan are balanced with objectives which ensure that the county's natural heritage is protected, conserved and enhanced.

This plan provides objectives to protect designated ecological sites (as detailed in Section 13.2.1 to 13.2.8 below) and protected species, and ecological connectivity (including stepping stones and corridors; such features are those which, by virtue of their linear and continuous structure (such as rivers with their banks or the traditional systems for marking field boundaries) or their function as stepping stones (such as ponds or small woods), are essential for the migration, dispersal and genetic exchange of wild species) and non-designated habitats. It also includes objectives to protect Salmonid Waters, Shellfish Waters, Flora Protection Order sites, watercourses, wetlands and peatlands and other sites of high biodiversity value or ecological importance, e.g. BirdWatch Ireland's 'Important Bird Areas' (Crowe et al., 2009)

13.2.1 Natura 2000 Sites - Natura 2000 sites are a network of sites of the highest biodiversity importance in Europe designated under the EU Birds Directive (79/409/EEC) and the EU Habitats Directive (92/43/EEC). They are comprised of Special Protection Areas (SPA) which provide for the protection and conservation of particular bird species and bird habitats and Special Areas of Conservation (SAC) which provide protection and conservation of habitats and species (other than birds)

Wexford has a particularly rich natural heritage and this is reflected in the number and importance of the Natura 2000 sites in the county. These are listed on Table No. 13.1 and are shown on Map No. 2a, including Natura 2000 sites within fifteen kilometre distance from the Plan boundary. There are currently twelve SACs,

three candidate SACs and nine SPAs within the Plan boundary. There are a further three SACs, two candidate SACs and two SPAs within 15 kilometres of the Plan boundary. The habitats and species in each of these sites are discussed in further detail in the Natura Impact Report.

In accordance with Articles 6(3) and 6(4) of the Habitats Directive, the Council will ensure that all plans and projects are screened to assess, in the view of best scientific knowledge, if the plan or project, individually or in combination with another plan or project is likely to have a significant effect on a Natura 2000 site(s). Such a plan or project may be located within the designated site, in proximity to it or linked to it hydrologically or otherwise have an interdependence (such as feeding, roosting or nesting grounds). In assessing such applications, regard shall be had to the detailed conservation management plans and data reports prepared by NPWS, where available, to the identified features of interest of the site, the identified conservation objectives to ensure the maintenance or restoration of the features of interests to favourable conservation status, the NPWS Article 17 current conservation status reports, the underlying site specific conditions, and the known threats to achieving the conservation objectives of the site.

In the event that the screening indicates that the plan or project will, either directly or indirectly, on its own or in combination with other plans and projects, have a significant effect on a Natura 2000 site(s), the plan or project must be the subject of a full Appropriate Assessment.

Having considered the conclusions of the Appropriate Assessment, the Planning Authority shall agree to the plan or project only if satisfied that it will not adversely affect the integrity of the site concerned or, where in the absence of alternative solutions, the plan or project is deemed imperative for reasons of overriding public interest pursuant to Article 6(4) of the Habitats Directive.”

Natural Heritage Objectives: It is the objective of the Council:

“Objective NH01 - To ensure the protection of all designated ecological sites (as detailed in Section 13.2.1 to 13.2.8) in relevant Local Area Plans with due consideration when assessing planning applications

Objective NH02 - To protect and enhance the rich qualities of our natural heritage in a manner that is appropriate to its significance

Objective NH03 - To promote biodiversity protection and habitat connectivity both within protected areas and in the landscape through promoting the integration of green infrastructure and ecosystem services, including landscape, heritage and biodiversity and management of invasive and alien species in the plan making and development management processes

Objective NH04 - To protect the integrity of sites designated for their habitat and species importance and prohibit development which would damage or threaten the integrity of these sites. Such sites include Special Areas of Conservation (SACs) and candidate SACs, Special Protection Areas (SPAs), Natural Heritage Areas (NHAs) and proposed NHAs, Nature Reserves, Refuges for Fauna and RAMSAR sites. To protect protected species wherever they occur

Objective NH05 - In assessing planning applications located in and/or in proximity to Natura 2000 sites, whether hydraulically linked or otherwise linked or dependent (such as feeding, roosting or nesting grounds) to a designated site, regard shall be had to the detailed conservation management plans and data reports prepared by NPWS, where available, to the identified features of interest of the site, the identified conservation objectives to ensure the maintenance or restoration of the features of interests to favourable conservation status, the NPWS Article 17 current conservation status reports, the underlying site specific conditions, and the known threats to achieving the conservation objectives of the site.

Objective NH06 - To recognise the importance of recommended Geological Natural Heritage Areas, proposed Natural Heritage Areas and County Geological Sites and protect the character and integrity of these sites where appropriate. The Council will consult Geological Survey, Ireland where a development is proposed that may impact on geological sites

Objective NH07 - To have regard to any particular management or sensitivity, contained within the individual site reports within *The Geological Heritage of County Wexford: An audit of County Geological Sites in County Wexford 2018*, in the assessment of planning applications located within Natural Heritage Areas, proposed Natural Heritage Areas and County Geological Sites.

Objective NH08 - To ensure that any plan/project and any associated works, individually or in combination with other plans or projects, are subject to Screening for Appropriate Assessment to ensure there are no likely significant effects on any Natura 2000 site(s) and that the requirements of Article 6(3) and 6(4) of the EU Habitats Directive are fully satisfied.

Where a plan/project is likely to have a significant effect on a Natura 2000 site or there is uncertainty with regard to effects, it shall be subject to Appropriate Assessment. The plan/project will proceed only after it has been ascertained that it will not adversely affect the integrity of the site or where, in the absence of alternative solutions, the plan/project is deemed by the competent authority imperative for reasons of overriding public interest.

Objective NH09 - To ensure the protection of areas, sites and species and ecological networks/corridors of local biodiversity value outside the designated sites throughout the county and to require an ecological assessment to accompany development proposals likely to impact on such areas or species.

Objective NH10 - To ensure that traditional field boundaries, ponds or small woods which provide important ecological corridors, stepping stones or networks are protected. Where such features exist on land which is to be developed the applicant should demonstrate that the design of the development has resulted in the retention of these features insofar as is possible and that the existing biodiversity value of the site has been protected and enhanced

Objective NH11 - To protect trees or groups of trees and woodlands of particular amenity and nature conservation value and make tree preservation orders where appropriate

Objective NH12 - To protect individual trees, groups of trees, woodlands and hedgerows of amenity and biodiversity value, from damage and/or degradation and work to prevent the disruption of the connectivity of the woodlands and hedgerows of the county. Commercial forestry will generally be exempt, except at peripheries and/or where they have not been maintained for commercial purposes

Objective NH13 - To ensure applications for development include proposals for native planting and leave a suitable ecological buffer zone between the development works and any areas or features of ecological importance. To minimise the removal of hedgerow and natural boundaries, and where hedgerows are required to be removed the applicant developer will be required to reinstate the hedgerows with a suitable replacement of native species.

Objective NH14 - To work with local communities, groups, landowners, National Parks and Wildlife Service and other relevant parties to identify, protect, manage and, where appropriate, enhance and promote sites of local biodiversity value.

Objective NH15 - To implement the actions identified in the County Wexford Biodiversity Action Plan 2013, or any subsequent plan, in partnership with all relevant parties and stakeholders.

Objective NH16 - To ensure the protection of natural heritage is integral to the Council's own developments, actions and methods of operation.

Objective NH17 - To ensure that natural heritage and biodiversity consideration are integral to the preparation of Local Area Plans and to identify, protect and manage biodiversity through these Plans.

Objective NH18 - To promote best practice in the control of invasive species and support measures for the prevention and/or eradication of invasive species as appropriate and as opportunities and resources allow.

Objective NH19 - To undertake an audit of invasive species across the county and encourage greater awareness of potential threats caused by invasive species and how they can spread.

Objective NH20 - To raise awareness in relation to invasive species, including making landowners and developers aware of best practice guidance in relation to the control of invasive species and leave them to adhere to same and, to ensure, in so far as possible, that proposals for development do not lead to the spread of invasive species. The Council will inform landowners of any invasive species found or reported on their property and request the landowners to take appropriate action in accordance with best practice guidance

Objective NH21 - To ensure that proposals for development do not lead to the spread or introduction of invasive species. If developments are proposed on sites where invasive species are or were previously present, the applicants will be required to submit a control and management program for the particular invasive species as part of the planning process.

Objective NH22 - To require best practice and facilitate the development of appropriate facilities to minimise the spread of invasive species along blueways and greenways.

Objective NH23 - To carefully consider and implement the management of invasive species where there is a corridor, such as hydrological connections to European Sites in order to prevent the spread of invasive species to sensitive sites

Objective NH24 - To incorporate the actions of the All Ireland Pollinator Plan 2015-2020 (and any subsequent Plan) when managing our parks, open spaces, roadside verges and all vegetation in a way that provides more opportunities for biodiversity while being cognisant of the threat of the spread of invasive species.”

Description of the Proposed Project

Altamar (marine and environmental consultants) have been involved with the proposed cable removal and installation of the proposed Beaufort cable system. The proposed project has been designed to use Best Available Techniques from the initial concept stage to limit the potential impact on biodiversity throughout the project.

Overall Route

Amazon MCS Ireland Limited is planning to construct a new subsea fibre optic cable system to replace an out-of-service cable and upgrade connectivity in the southern sea corridor between Ireland and the UK. The planned cable will extend from Kilmore Quay on the south east coast of Wexford in Ireland to a Branching Unit off the Pembrokeshire coast to include a link to South Wales and also a link to the west coast of Cornwall. The overall scheme is referred to as the Beaufort Cable System.

The planned system is comprised of three segments which are defined as follows;

- Segment A Kilmore Quay to the Branching Unit
- Segment B Branching Unit to South Wales
- Segment C Branching Unit to Cornwall

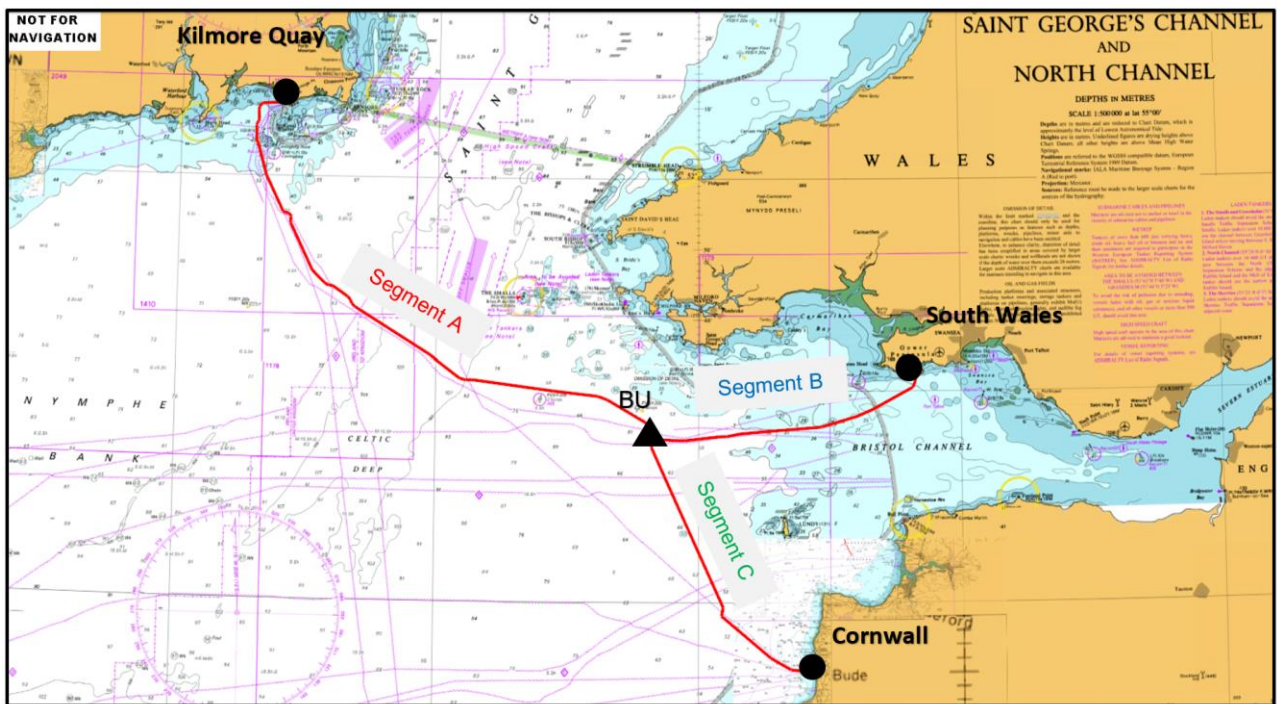


Figure 1 The Beaufort Cable System

A number of cable systems linking Ireland and the UK have been constructed in the Celtic Sea in the past 25 years and these are shown in Figure 2. These cables include;

- | | | |
|-----------------------|----------------------------|------|
| • Celtic | Kilmore Quay to Land's End | 1994 |
| • ESAT 1 | Kilmore Quay to Land's End | 1998 |
| • IRL – UK Crossing 1 | Kilmore Quay to Land's End | 1999 |
| • IRL – UK Crossing 2 | Ballinesker to Bude | 1999 |
| • Solas | Kilmore Quay to Port Eynon | 2000 |

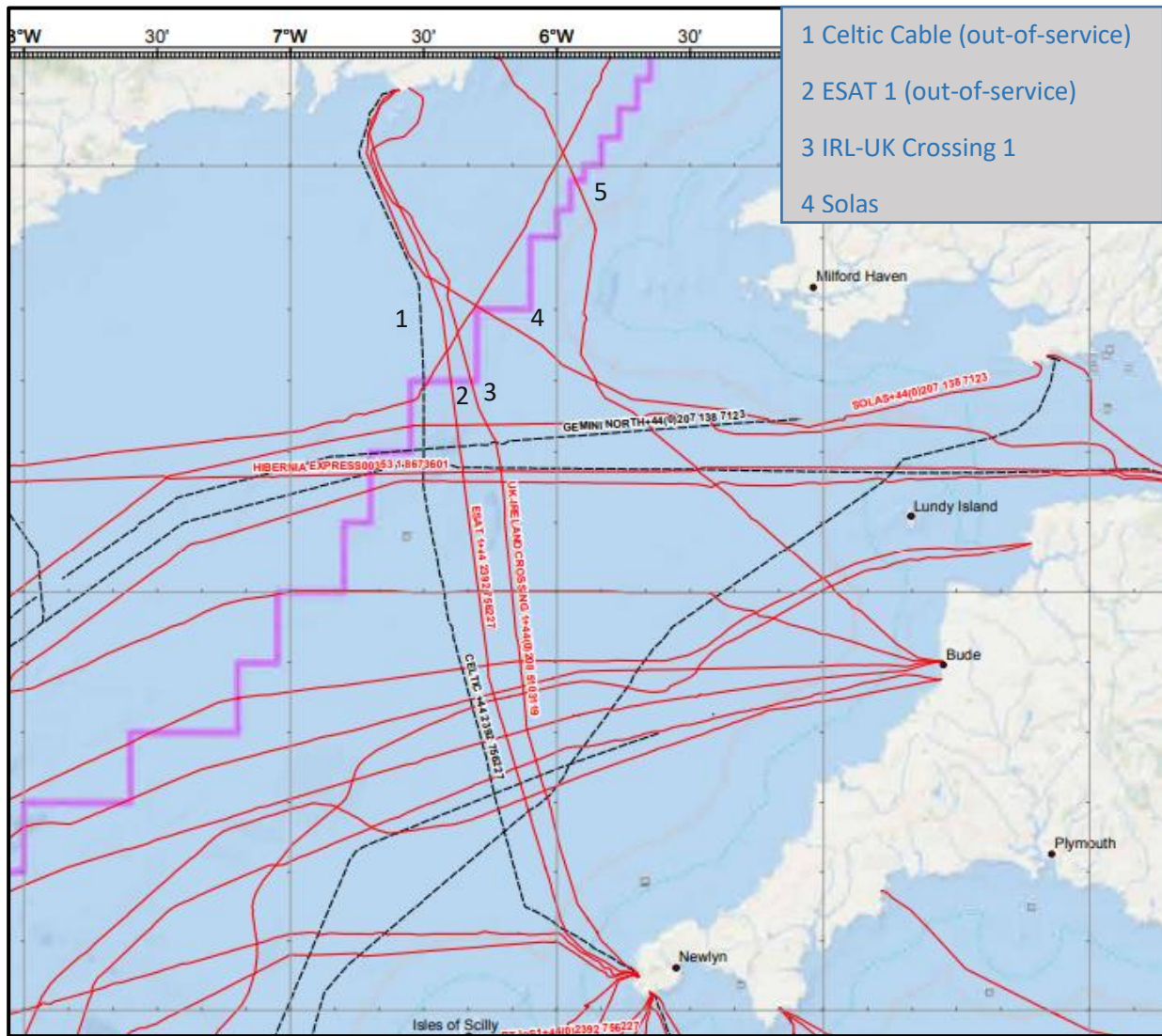


Figure 2 Existing Cable Systems

Celtic is an old Telecom Eireann / BT cable and has been taken out of service. ESAT 1 was installed in 1998 and has recently been taken out of service. UK-IRL Crossing 1 and UK-IRL Crossing 2 were both installed in 1999 and are relatively old in cable terms. Solas, installed in 2000, is also an ageing cable.

The status of these existing cables leaves Ireland largely reliant on the subsea cables in the Dublin - Lancashire/Anglesey sector of the Irish Sea. This, together with increasing requirements for robustness, security, and resilience in overall network systems, establishes a need for a new and diverse cable system. The planned Beaufort Cable System is being developed to replace an out-of-service cable and upgrade the connectivity in the southern sea corridor from Ireland to the UK.

Significant turning points on Segment A are listed as follows;

Kilmore Quay Landfall	KP A – 0
Turning Point	KP A – 7.87
Turning Point	KP A – 17.43
Irish 12 Mile Limit	KP A – 38.40
Turing Point	KP A – 63.00
EEZ Boundary	KP A – 75.78
Branching Unit	KP A – 144.81

The overall route configuration is presented on an Admiralty Chart base map in Figure 3.

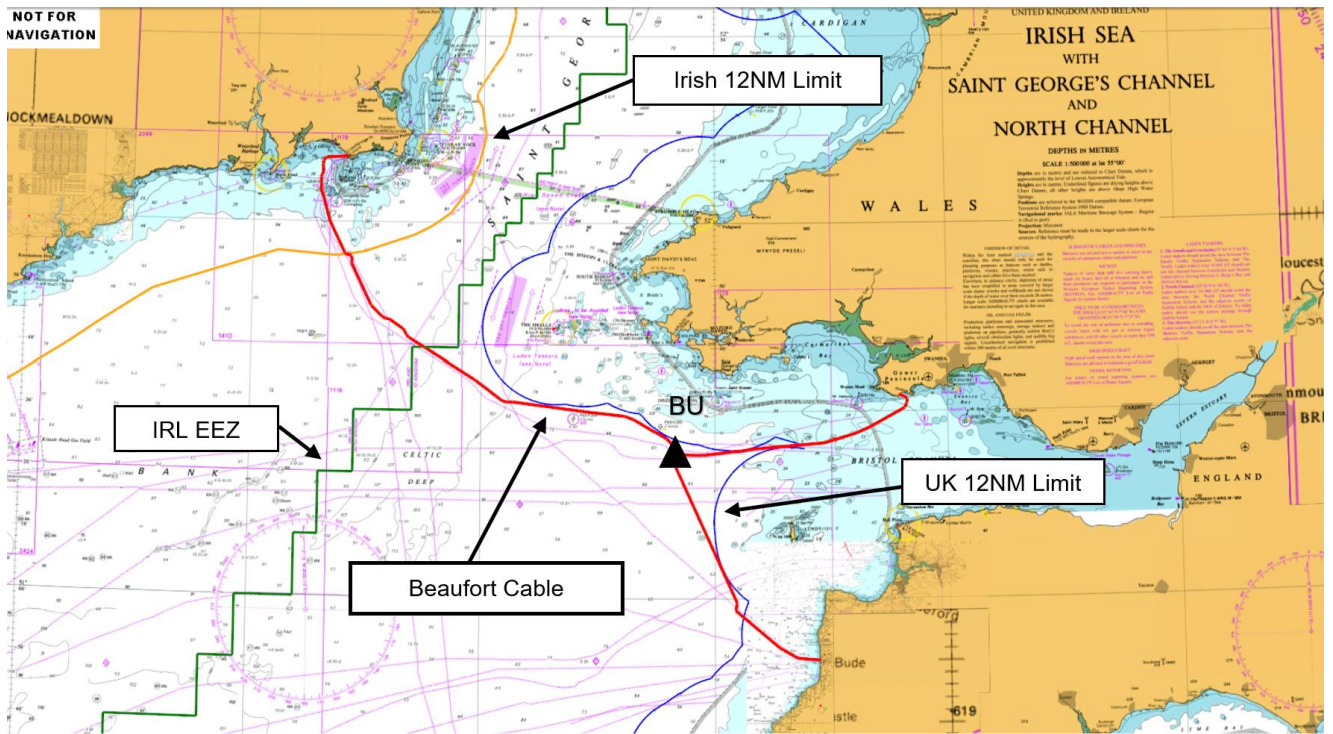


Figure 3 The Planned Cable Route System

The Route Position List for Segment A to the IRL 12nm is presented in Table 1

BEAUFORT Route: Kilmore Quay to IRL 12nm					
ID	LATITUDE	LONGITUDE	LENGTH	TOTAL LENGTH	COMMENT
1	52° 10' 32.8200" N	6° 35' 35.1000" W	35.439 m	---	Kilmore Quay BMH
2	52° 10' 33.1200" N	6° 35' 36.9000" W	45.756 m	35.439 m	
3	52° 10' 33.2400" N	6° 35' 39.3000" W	13.807 m	81.195 m	
4	52° 10' 33.1800" N	6° 35' 40.0200" W	10.911 m	95.002 m	
5	52° 10' 33.0600" N	6° 35' 40.5600" W	44.718 m	105.91 m	H.W.M.
6	52° 10' 32.5800" N	6° 35' 42.7800" W	1.414 km	150.63 m	
7	52° 10' 25.6200" N	6° 36' 56.3400" W	4.467 km	1.565 km	
8	52° 10' 17.8200" N	6° 40' 51.0600" W	504.16 m	6.032 km	
9	52° 10' 14.5200" N	6° 41' 17.0400" W	518.27 m	6.536 km	
10	52° 10' 05.1000" N	6° 41' 39.6000" W	806.82 m	7.054 km	
11	52° 09' 43.2000" N	6° 42' 02.7000" W	878.05 m	7.861 km	
12	52° 09' 15.0000" N	6° 42' 08.2800" W	2.419 km	8.739 km	
13	52° 07' 56.7600" N	6° 42' 04.6200" W	514.36 m	11.159 km	
14	52° 07' 40.7400" N	6° 42' 11.9400" W	676.11 m	11.673 km	
15	52° 07' 21.9000" N	6° 42' 30.0000" W	487.27 m	12.349 km	
16	52° 07' 07.0200" N	6° 42' 38.4600" W	586.21 m	12.836 km	
17	52° 06' 48.0600" N	6° 42' 37.6800" W	1.091 km	13.423 km	

18	52° 06' 12.9000" N	6° 42' 32.7600" W	549.23 m	14.513 km	
19	52° 05' 55.1400" N	6° 42' 33.7200" W	766.39 m	15.063 km	
20	52° 05' 30.3600" N	6° 42' 35.1600" W	257.94 m	15.829 km	
21	52° 05' 22.0200" N	6° 42' 35.6400" W	321.03 m	16.087 km	
22	52° 05' 11.6400" N	6° 42' 36.2400" W	374.86 m	16.408 km	
23	52° 04' 59.5200" N	6° 42' 35.5200" W	205.6 m	16.783 km	
24	52° 04' 53.5800" N	6° 42' 30.6600" W	170 m	16.988 km	
25	52° 04' 49.2000" N	6° 42' 25.2600" W	72.487 m	17.158 km	
26	52° 04' 47.2200" N	6° 42' 23.2200" W	2.943 m	17.231 km	SOLAS
27	52° 04' 47.1600" N	6° 42' 23.1000" W	15.248 m	17.234 km	
28	52° 04' 46.7400" N	6° 42' 22.6800" W	172.81 m	17.249 km	
29	52° 04' 42.3600" N	6° 42' 17.0400" W	131.05 m	17.422 km	
30	52° 04' 38.4600" N	6° 42' 14.3400" W	173.35 m	17.553 km	
31	52° 04' 33.0600" N	6° 42' 11.8800" W	645.11 m	17.726 km	
32	52° 04' 12.8400" N	6° 42' 03.4800" W	1.397 km	18.371 km	
33	52° 03' 29.0400" N	6° 41' 45.3000" W	1.944 km	19.769 km	
34	52° 02' 29.1000" N	6° 41' 14.4600" W	4.822 km	21.712 km	UK-IRL CROSSING 1
35	52° 00' 00.0000" N	6° 40' 00.0000" W	10.527 km	26.534 km	
36	51° 54' 54.7200" N	6° 35' 55.5600" W	268.7 m	37.061 km	
37	51° 54' 48.6600" N	6° 35' 45.4800" W	240.44 m	37.33 km	
38	51° 54' 45.0000" N	6° 35' 34.3800" W	830.89 m	37.57 km	
39	51° 54' 34.0800" N	6° 34' 54.6600" W	367.35 m	38.401 km	12nm limit IRL

Table 1. Route Position List Segment A - Kilmore Quay to IRL 12nm limit

Provisional Time-Line

The provisional time-line for the project is as follows:

- Application Preparation June 2021
- Submit Main-Lay Documentation February 2022
- ESAT-1 Decommissioning Q2/Q3 (2023/2024)
- Main-Lay Q2/Q3 (2023/2024)

Background

The original concept was for the Beaufort Cable system route to follow the line of the ESAT 1 cable southwards from the landfall at Kilmore Quay. However, the inshore section of ESAT 1, shown dashed in blue in Figure 4, predates the Saltee Islands SAC. Taking into account the sensitivity of the features of interest in the SAC, and following consultation with NPWS, it is planned to route the inshore section of the Beaufort Cable around the SAC and also to leave the historic ESAT 1 cable in-situ where it traverses the SAC. It is proposed to lift, remove and appropriately dispose of a substantial section of the ESAT 1 cable within Irish Territorial waters outside of the southern SAC boundary where it is present within the Beaufort installation corridor.

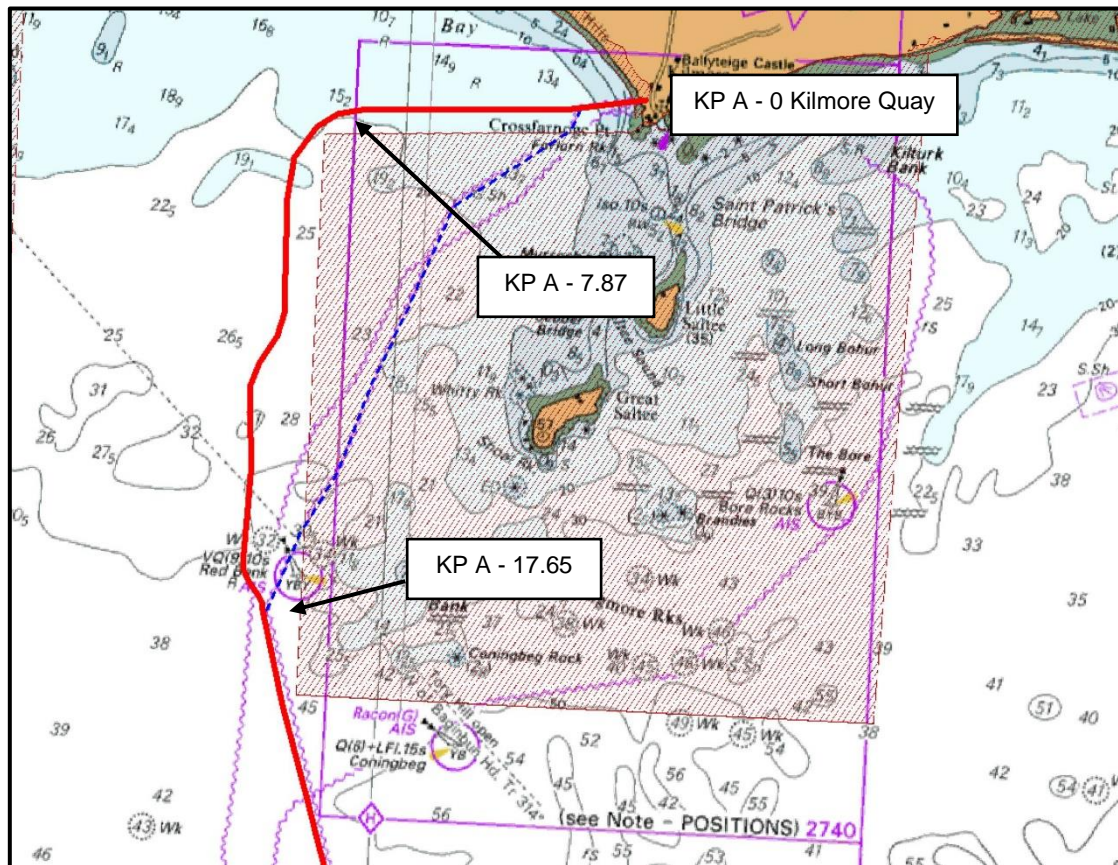


Figure 4 Planned Inshore Route skirting the Saltee Islands SAC

Accordingly, as illustrated in Figure 4, the inshore section of the Beaufort Cable continues to avail of the existing ESAT 1 landfall at Kilmore Quay but then swings west to skirt the northern boundary of the Saltee Islands SAC. At the northwest corner of the SAC the route turns south to the Red Bank Light and joins the ESAT 1 corridor at KP A - 17.65. As it extends in a southerly direction from KP A - 17.65, the Beaufort Cable will be installed along the line of the decommissioned ESAT 1 cable and will continue in the ESAT 1 cable corridor up to the point where the route turns south east, at KP A – 62.5, towards the Branching Unit.

The As-Laid records for the ESAT 1 cable have been made available by BT Ireland and these provide basic information for the installation of the planned Beaufort Cable southwards from the landfall at Kilmore Quay to the point at which the cable turns south-eastwards to the Branching Unit. The survey information is supplemented by further and more recent material, as outlined in Paragraph 2.5 and the overall material provides an enhanced database for the installation of the planned Beaufort Cable System over a substantial portion of the route. It should be noted that in order to minimise cumulative impacts, during the removal process accurate coordinates will be taken of the position of the cable as it is being removed along this route so that the Beaufort cable will be able to be installed as close to the removed cable as is possible.

The As-Laid records include detailed drawings which show the route of the installed cable on a marine survey base comprising bathymetry, extensive annotations relating to seabed features, seabed geomorphology, longitudinal profile and sediment stratification. The drawings are supplemented by Data Reports which include water depth, burial depth and tow-tension over the entire length of the route of ESAT 1.

The data covering the northern section of ESAT 1, together with the remainder of the route, is further supplemented by the following additional material;

- Offshore Seabed Geomorphology.
- Bathymetry, Multi-Beam Backscatter and Sub-Bottom Profile data available under licence via the Marine Institute.
- Seabed Sediment and Bed-form data.
- Landfall features.
- Admiralty Chart Data.
- Inventory of Wrecks.

- Inventory of existing cables.
- Inventory of marine installations and licence blocks.
- Marine Archaeological Assessment.
- AA Screening and Natura Impact Statement
- Ecological Impact Assessment.
- Other data in the public domain.
- Specific experience from the installation of the ESAT 1 and UK-IRL Crossing 1&2 cables.

The Cable

The Beaufort fibre optic cable is 33mm in diameter and will be “un-repeated” (i.e. not powered). It is to be an industry-standard cable with the capability to transmit high-speed data and voice via light waves through the 96 optical fibre pairs contained within the core Unit Fibre Structure (UFS). The cable will be double armoured (DA) in Irish waters and a cut-away section of the cable is shown in Figure 5.

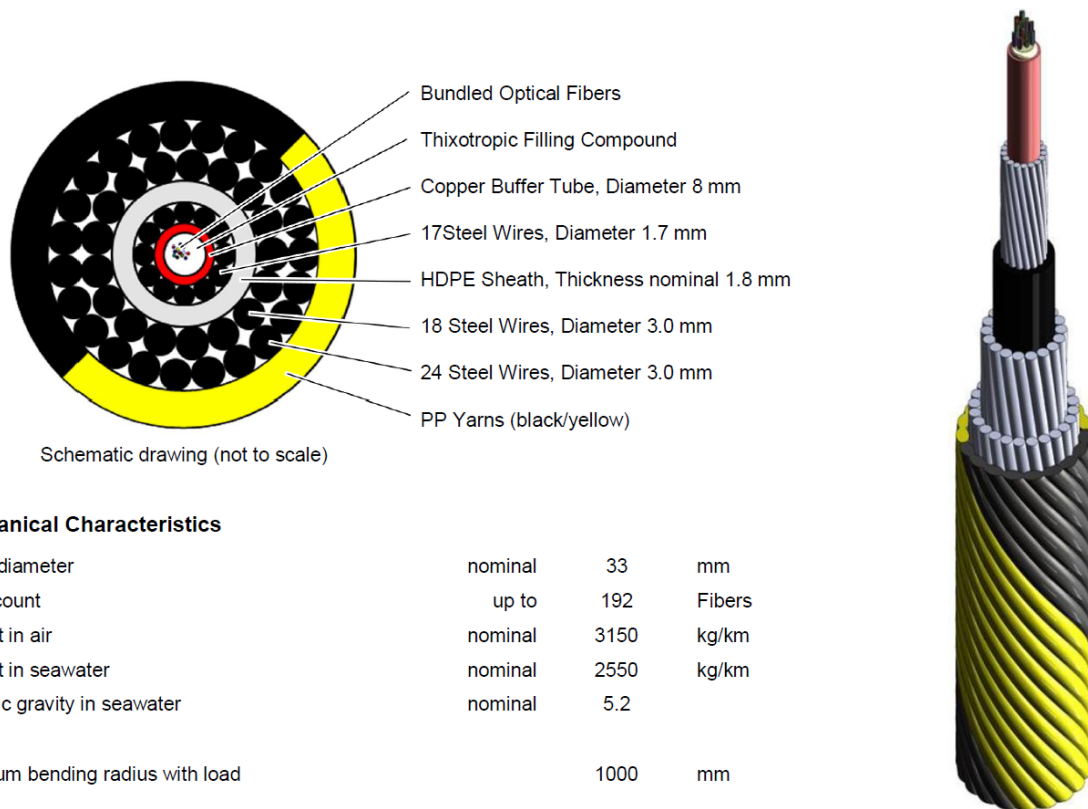


Figure 5. Typical Double Armour Cable Section

The UFS is the innermost element of the cable and consists of up to 96 optical fibre pairs embedded in a buffer gel material inside a copper buffer tube. The buffer gel is a thixotropic material that protects the optical fibres from shear stresses associated with movement inside the tube. Ultra-high strength steel wires are helically wrapped around the UFS and together they act as a pressure vessel that protects the UFS from stresses up to and in excess of 100 MPa. The interstices between the steel wires are filled with a hydrophobic elastomeric water-blocking material which resists longitudinal water ingress. A thin layer of ethylene-acrylic and copolymer plastic resin and a thick layer of polyethylene insulating jacket are co-extruded over the copper sheath. This HDPE sheath provides insulation, abrasion resistance and corrosion protection.

The double armour, consisting of two layers of galvanised wire wrapped around the cable, is coated with hot-blown asphalt and wound with polypropylene yarn. The finished DA Cable has an outer diameter of 33 mm.

Physical Features

Irish Territorial Waters – 12 Mile Limit

The planned route runs from the existing ESAT 1 Landfall at Kilmore Quay and, as outlined in Paragraph 2.2 and Figure 4, it avoids traversing the Saltee Islands SAC. At KP A – 17.65 the route joins the route of ESAT 1 on a south-easterly course and crosses the Irish 12 Mile Limit at KP A – 38.40. The route within Irish Territorial Waters is shown in Figure 6.

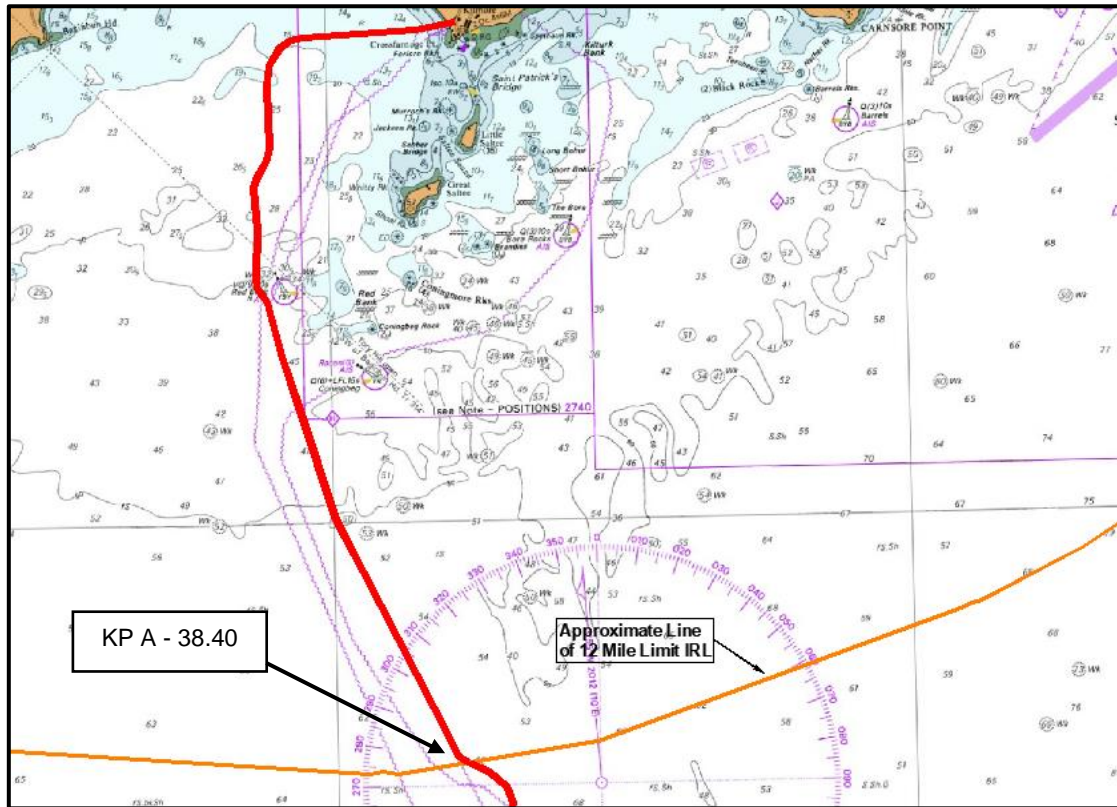


Figure 6 *The Planned Route in Irish Territorial Waters*

Irish EEZ Waters

Beyond the 12 Mile Limit, the route continues to follow the line of ESAT 1 to KP A – 62.5. At that point it changes course and diverges from the route of ESAT 1 to follow a more south easterly course, largely parallel to UK-IRL 1. The proposed route crosses the EEZ at KP A-75.78. This is presented in Figure 7.

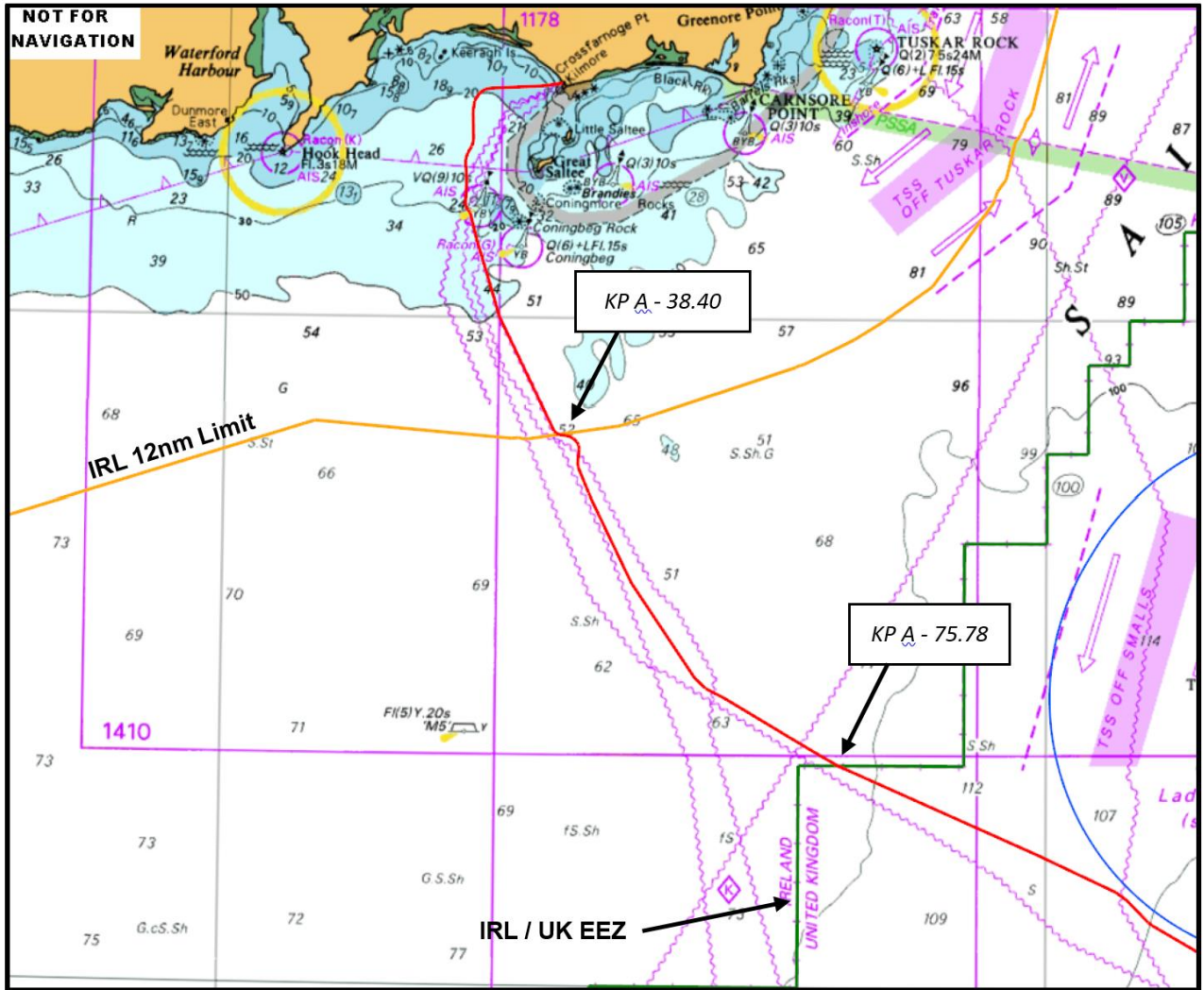


Figure 7 The Planned Route in Irish EEZ Waters

Water Depths

Water depths range from zero at the Low Water Line to 6 metres at the inshore approach to the landfall at Kilmore Quay. The water depth increases gradually to 52 metres at the 12 Mile Limit. As the route traverses the Irish EEZ waters beyond the 12 Mile Limit the water depths increase gradually from 52 metres to 90 metres at the EEZ boundary

Seabed Sediments

A key element in planning the overall route system is the availability of seabed conditions which facilitate the installation of a cable and which will provide stability and security of the cable over its lifespan. A British Geological Survey Seabed Sediment Chart, with the northern section of the overall route system shown on it, is presented in Figure 8.

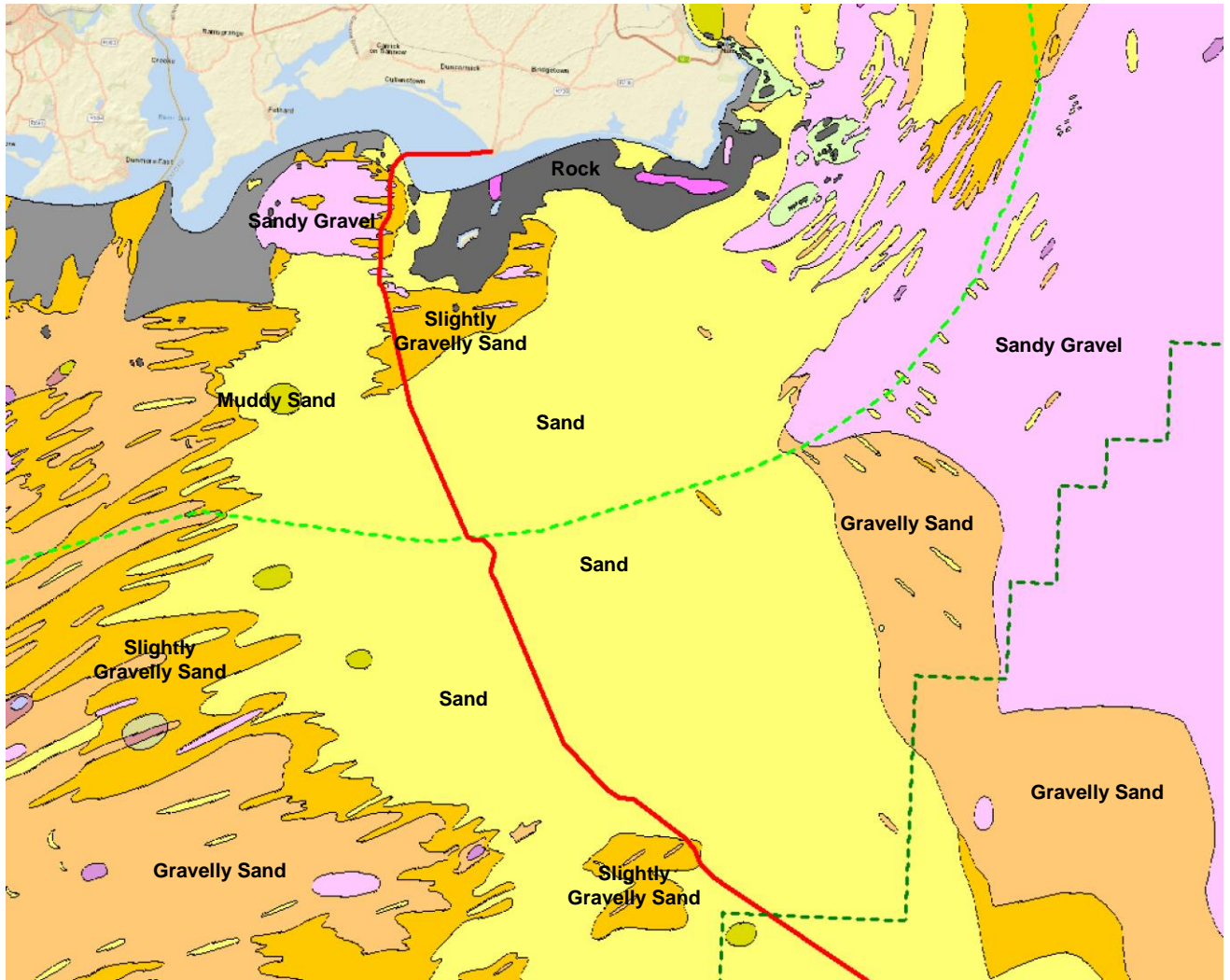


Figure 8 Seabed Sediment Chart

The route extends from Kilmore Quay in a westerly direction over a distance of 7.87 kilometres and then turns on to a southerly course to KP 17.65 to the south west of the Saltee Islands. This section of the route traverses mixed seabed sediments of sandy gravels and gravelly sands until it clears the Saltee Islands. The route then veers east of south from KP 17.65 to KP 62.5 before taking a south easterly course. It continues to avail of the extensive area of sandy seabed to cross the EEZ boundary at KP 75.78.

Bedforms

The rationale for the preferred cable route is further highlighted in the British Geological Survey Bedform Chart in Figure 9 where it can be seen that the route has been kept to the south of the extensive sand-wave fields where the Celtic Sea meets St. Georges Channel.

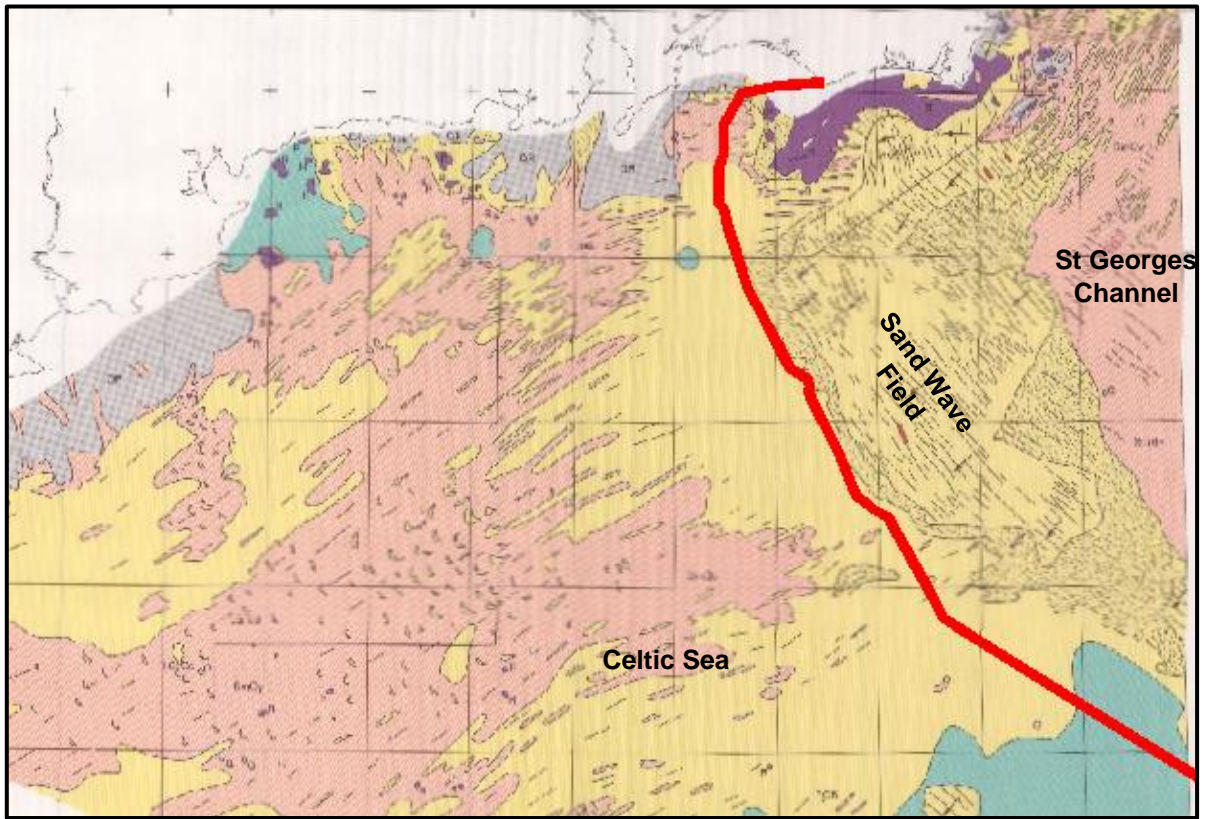


Figure 9 Bedform Chart

Infomar Chart

The line of the route is shown on the Infomar data in Figure 10 and this Backscatter image brings a further level of clarity and confidence to the planned route in Irish Territorial Waters.

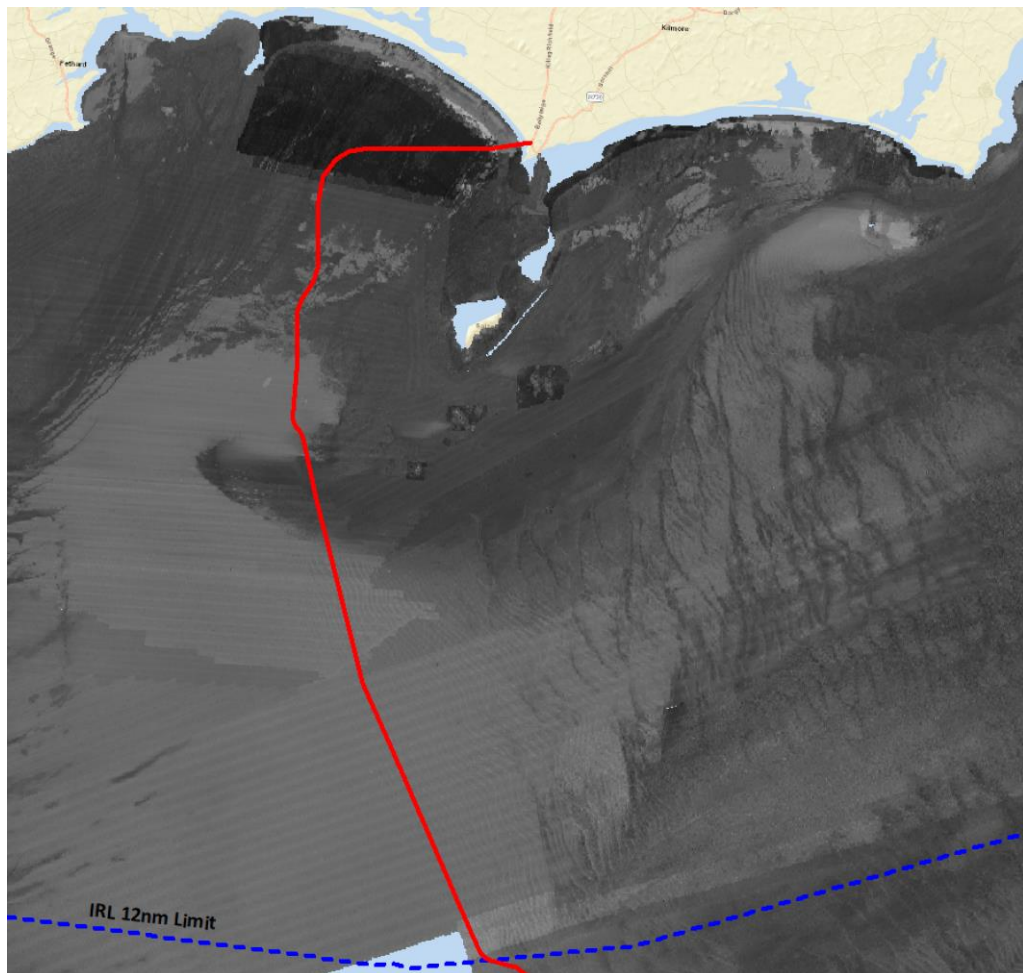


Figure 10 Infomar Chart covering the planned route in Irish Territorial Waters.

Landfall at Kilmore Quay

The ESAT 1 landfall lies to the north west of Kilmore Quay at Ballyteige Burrow and the existing infrastructure is comprised of the landfall on the beach, the duct to sea beneath the dune system to connect to the Beach Manhole, the Beach Manhole, the fronthaul duct from the Beach Manhole to the Cable Landing Station and the Cable Landing Station. An overview of the area is shown in Figure 11 and the relevant 6 Inch to 1 Mile OS Map is shown in Figure 12 (a) The Beaufort approach route on the foreshore to the High Water Mark is shown on the 1/2500 OS map in Figure 12 (b). The cable will be brought ashore to the Beach Manhole via the existing ESAT 1 underground duct infrastructure and from there to the Cable Landing Station.



Figure 11 An overview of the landfall area to the northwest of Kilmore Quay

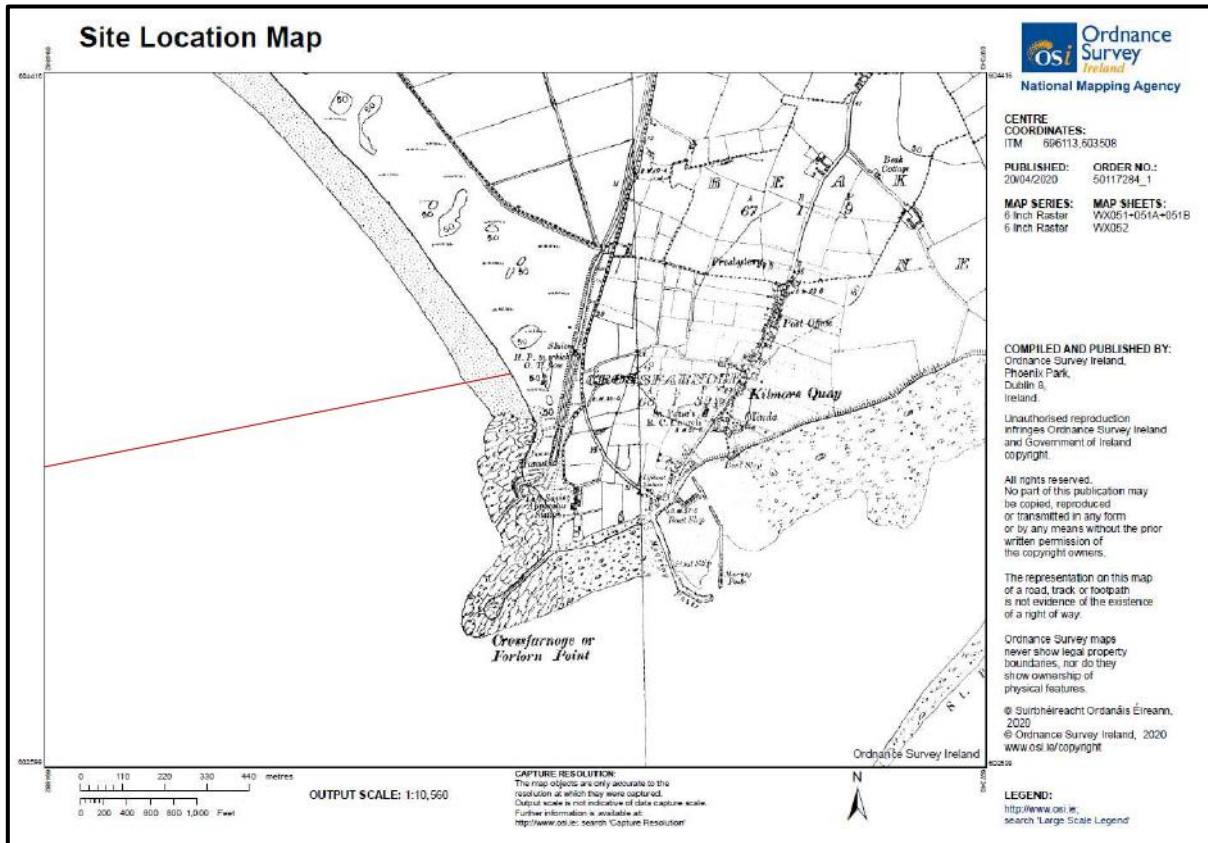


Figure 12 (a) 6" to 1 Mile OS Map

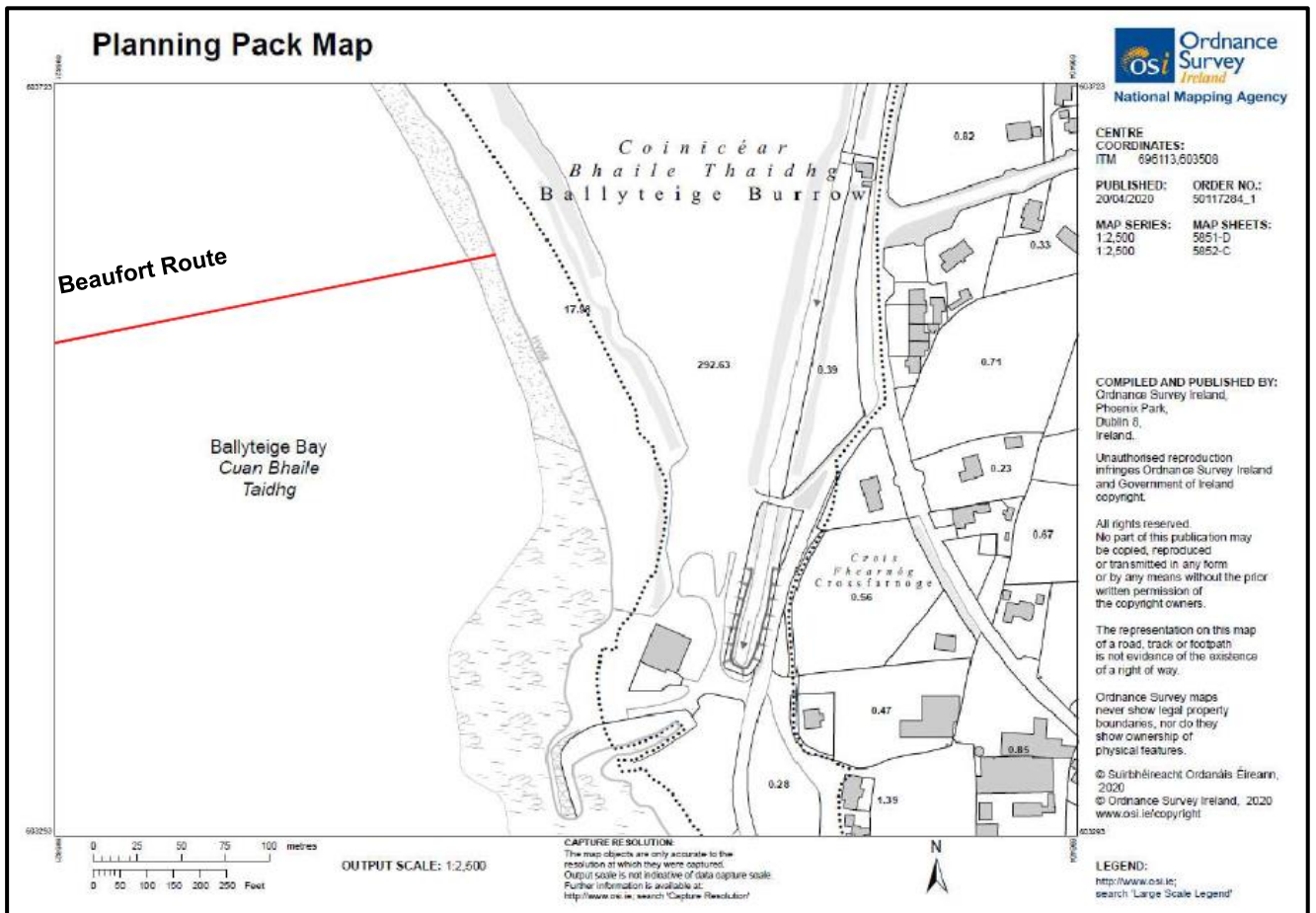


Figure 12 (b) 1/2500 OS map of the landfall at Kilmore Quay

Decommissioning the ESAT 1 Cable

ESAT 1 Cable Specification

The ESAT 1 submarine cable is a Pirelli-designed cable. It is certified as a multifibre (MF) 36 Submarine cable and contains 24 fibres. It is primarily a triple armoured cable with some double armoured sections. Each section of armour is protected by polyethylene yarn as standard in most submarine cables and each section is coated with a bitumen compound. The inner tube (vault) houses the optical fibres which are wrapped around a star shaped slotted guide for fibre protection and durability. The fibre is Pure Silica G.652 Sumitomo optical fibre. Below is an example of the double armour submarine cable.

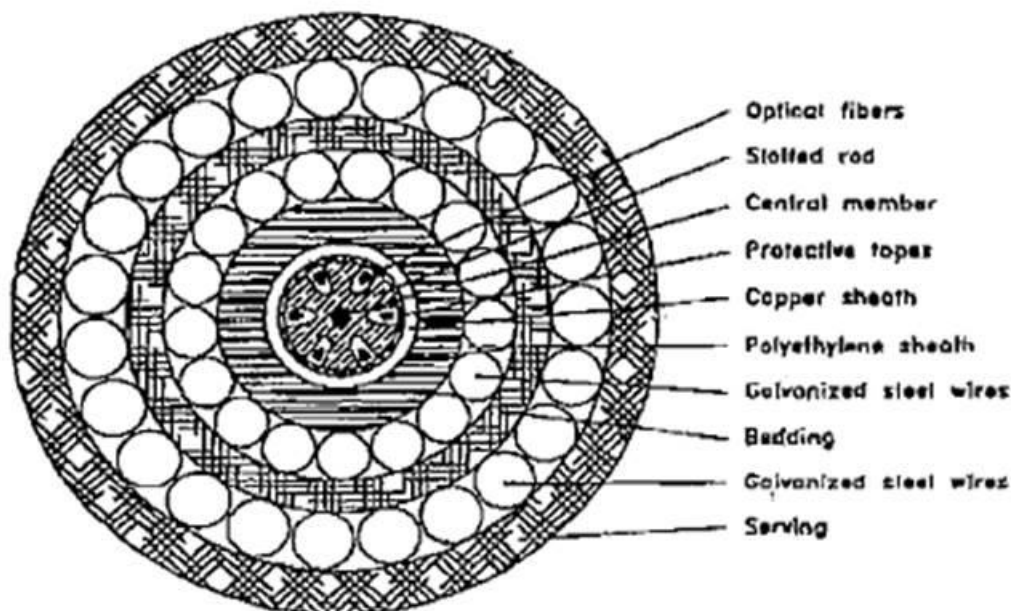


Figure 13 ESAT 1 CABLE SPECIFICATION

The inshore section of the ESAT 1 Cable traverses the Saltee Islands SAC. It is therefore planned to leave that section of the ESAT 1 Cable in-situ so as to leave the sea-bed undisturbed within the SAC and avoid potential environmental impacts to identified “reef” areas during cable removal and also during installation of the Beaufort Cable. Decommissioning and removal of the ESAT 1 cable will therefore commence at KP A – 17.65 where the Beaufort Cable turns on to a south easterly heading just west of the Red Bank. It is planned to remove and recover the ESAT 1 Cable southwards from that point to the 12 Mile Limit at KP A – 37.65. This gives a length of 20 km of subsea cable to be removed inside the 12 Mile Limit.

The ESAT 1 Cable was laid in 1998 and the target plough-burial depth at that time was “up to 0.8 metres”. The actual burial depth was of the order of 0.6 metres. The Gravelly Muddy Sand conditions in the inshore section give way to Gravelly Sand which then in turn gives way to the extensive Sandy seabed along the route from the Red Bank to the 12 Mile Limit and onwards to the EEZ boundary. It is expected that these seabed conditions, together with the relatively shallow depth of burial, will facilitate the lifting and removal of the ESAT 1 Cable.

Plan of Work

Having regard for the seabed conditions southwards from KP 17.65 the decommissioning of the ESAT 1 cable will effectively have the same or lesser impact than the installation of the new cable. A decommissioning vessel, manned by appropriately experienced personnel, will be engaged to carry out the decommissioning of the cable. The vessel will be equipped with suitable navigation / positioning equipment to enable it to follow the position of the cable in the seabed. The vessel will be equipped with a range of cable recovery tools, including Flat Fish cutting grapnel, de-trencher and Rennies and Giffords grapnels and will have at least

the following deck equipment – 1 x main towing winch, 1 recovery winch / second towing winch, 2 x tugger winches and 2 x capstan winches.

Beach Section

In 2021 the structural integrity of the duct and exact location of the end of the duct was found with non-invasive techniques. It is planned to expose the end of the existing ESAT 1 duct on the beach which is buried 1.2 to 1.5m beneath the current beach level. A pit will be excavated at that point to expose the end of the duct and the ESAT cable will be cut. A pull-wire will be attached to the shore end and the cable and pull-wire will be pulled back to the Beach Manhole. The ESAT cable will be cut into manageable sections for disposal at an approved facility. The pull-wire will be secured, the duct end will be sealed and the pit on the beach will be backfilled. This overall exercise will be completed prior to mobilisation of the Decommissioning vessel.

It is planned to subsequently re-locate the cut end of the ESAT 1 cable on the beach at the end of the existing duct and trench along it seawards to expose and remove the cable to the low water mark. As indicated previously, the subsea section of ESAT 1 which runs through the Saltee Islands SAC will be left in-situ to the SAC boundaries.

No excavators will cross the dune system to access the beach works area. It is proposed instead to lower machinery by crane onto the beach from the car park area, with a defined access route along the beach to the end of the cable duct. Pedestrians will only use existing paths.

Subsea Section

The ESAT 1 Cable will be located just south of the Red Bank in approximately 30 metres of water. The cable will be lifted on board the recovery vessel and cut. The end to be returned to the seabed will be stoppered and a clump weight will be attached. The end will then be lowered to the seabed and the position noted for burial by the ROV as part of the Post Lay Burial operations. The other end of the cable will be attached to the decommissioning vessel and the vessel will then proceed seaward, recovering the cable from the seabed. It is anticipated that the vessel speed would be less than 1 knot during the decommissioning works. In exceptional circumstances it may be necessary to avail of jetting to fluidise the sediment above the cable in order to reduce the tension on the cable as it is recovered to avoid breakage.

The recovered cable will be cut into manageable lengths on-board the recovery vessel and it will be stored for off-loading at a suitable port for disposal at an appropriate facility. All certificates associated with the disposal of the cable will be provided for lodgement with the appropriate authority.

Decommissioning at Cable Crossings

The ESAT 1 cable is crossed by UK – IRL Crossing 1 within the 12 Mile Limit. The crossing location is shown in Figure 14 and the details are as follows;

UK-IRL Crossing 1	KP A - 21.712	Water depth 49m
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In the case of UK-IRL Crossing 1 the underlying cable is ESAT 1 and a formal Method Statement will be prepared which will set out the measures to be taken at the crossing. The key points will include detailed survey at the Crossing, establishment of the distance on either side of the crossing at which the ESAT 1 Cable will be cut, the attachment of clump weights and burial of the cut ends. ESAT 1 is crossed by the Solas cable. However, the crossing is within the Saltee Islands SAC and, as it is planned to leave the ESAT 1 cable in place throughout the SAC, there will be no disturbance at the existing ESAT 1/Solas crossing.

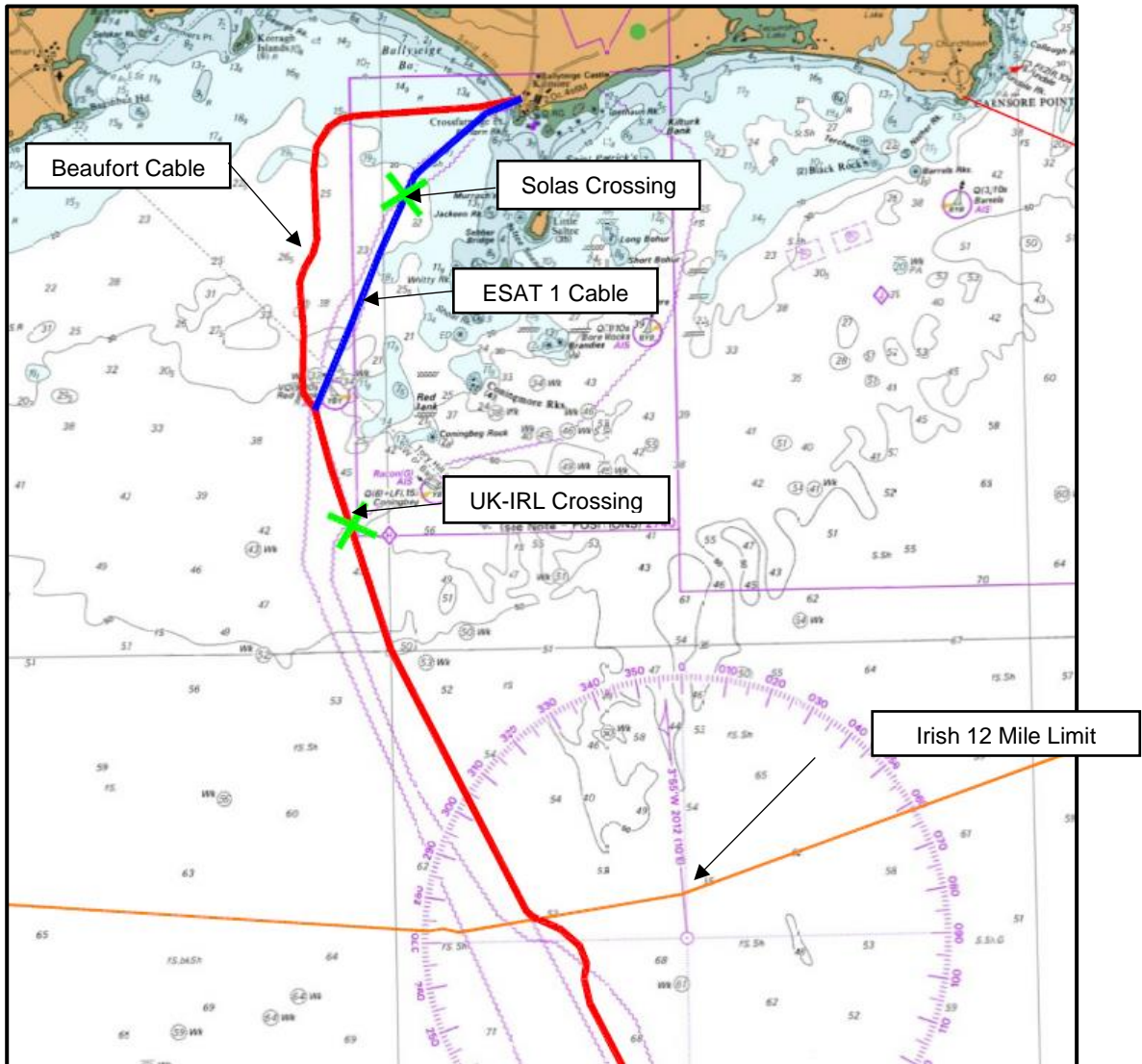


Figure 14 Existing Crossing Locations within the Irish 12 Mile Limit

Cable Installation Activities

The cable system is comprised of a number of specific installations and activities as follows;

- Beach / Foreshore Access
- The Landfall at Kilmore Quay
- Cable Installation on the Beach
- The Inshore Approach
- Subsea Cable Installation

Beach / Foreshore Access

There will be a requirement for equipment access to the beach / foreshore for;

- Excavation and backfill of an exit pit at the end of the existing ESAT 1 duct on the beach.
- Pulling the cable ashore.
- Installation of the cable from the end of the existing ESAT duct out to the Low Water Line.

It is proposed that plant and equipment such as a mini digger / small excavator / cable winch will be lifted by crane from the public car park onto the beach. This will ensure that there will be no interference or disturbance of the dune system, the boardwalk pedestrian access or the grassed areas. (Figure 15).

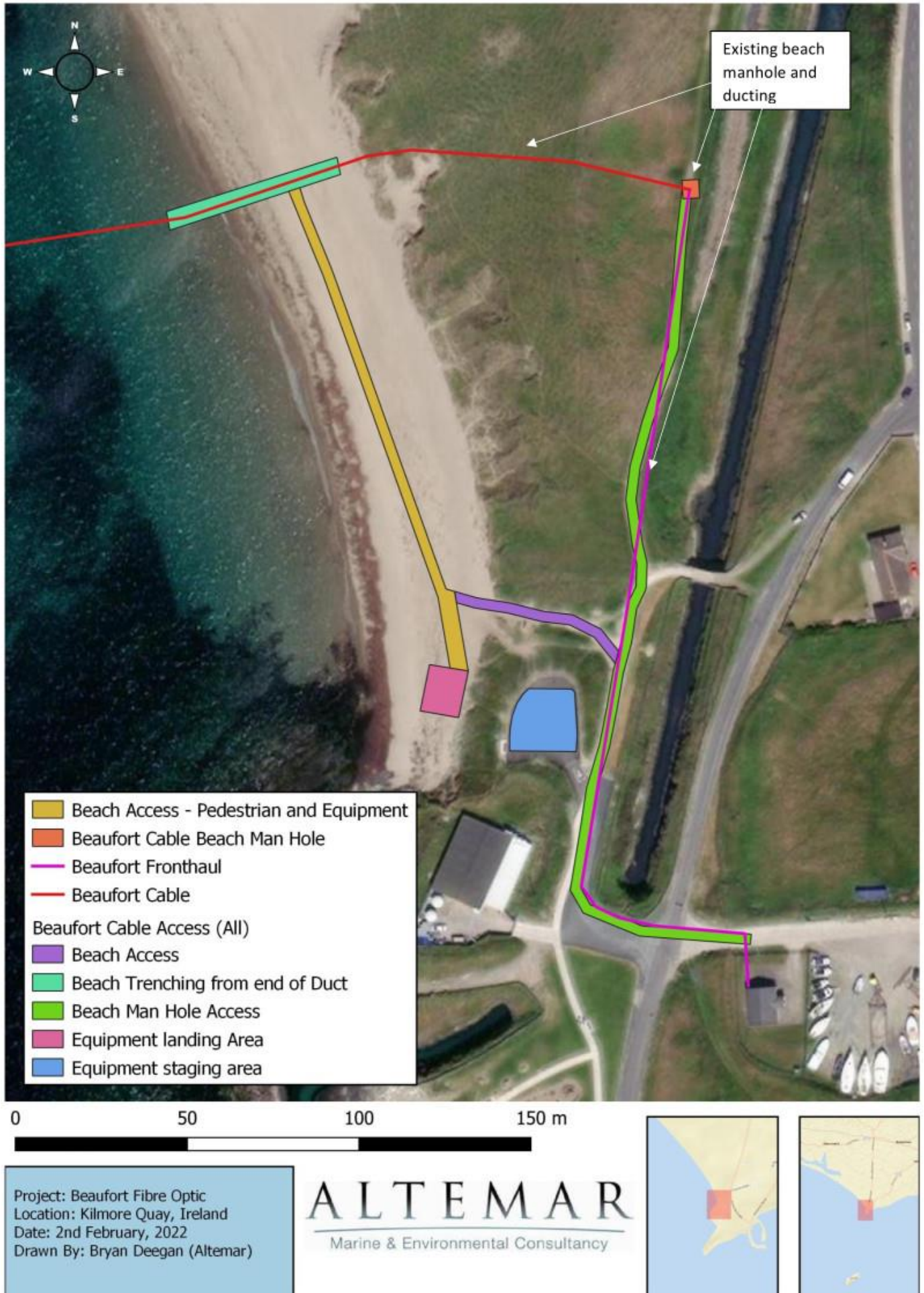


Figure 15. Beach Access and Cable Route outline – landfall at Ballyteige Burrow

Existing public access arrangements to the general foreshore area shall not be impeded by plant or materials used in connection with the works and all necessary precautions shall be put in place to protect foreshore users and the public in accordance with relevant Health and Safety Legislation.

The Landfall

When the Cable Installation Vessel is mobilised, the pit on the beach will be re-excavated. The cable will be pulled ashore from the Cable Installation Vessel and the end will be laid on the beach prior to attachment to the pre-installed pull-wire. The cable will then be attached to the pull-wire and pulled through the existing duct into the Beach Manhole where it will be secured.

Cable Installation on the Beach

The section of cable from the end of the existing ESAT 1 duct to the low water line will be trenched to a target depth of 1.5m. The length of this section will be of the order of 50 metres and it is anticipated that trenching, cable-lay and backfill will be completed within two tidal cycles.

Inshore Approach

The beach is gently sloping and extends over a distance of 50 metres in the intertidal zone from High Water Line out to the Low Water Line (Mean Springs).

The 5 metre and 10 metre depth contours are 400 metres and 850 metres out from the Low Water Line and, within that zone, the cable route turns west to skirt the northern boundary of the Saltee Islands SAC in water depths ranging up to 15 metres. The 15 metre depth contour largely coincides with the northwest corner of the SAC and the route turns south at that location to run parallel to the western boundary of the SAC. This Turning Point is at KP A – 7.87.

Trenching beyond the low water line will be achieved by the shallow-draft Cable Installation Vessel with an appropriate trenching tool such as the sand-piper jet-sled (Figure 17a). The target depth of burial is 1.5m. The deployment and burial of the cable will continue to the 15 metre water depth at which point the Main-Lay vessel will take over.

Sub-Sea Cable Installation

A Pre-Lay Grapnel Run (PLGR) will be undertaken prior to commencement of Main-Lay. This activity is to ensure that the planned line of the cable is clear of seabed debris which may include chains, steel cables, anchors, nets etc. The swathe of the grapnel is less than 1 metre wide and there will be minimal disturbance of the sea-bed during the debris clearance operation. All debris recovered from the sea-bed will be hauled on board and subsequently disposed of onshore in a safe and environmentally approved manner. The PLGR vessel will use a DGPS positioning system. The route followed by the PLGR will be as close as practicable to the selected Route Position List and always within the swathe of the route survey. PLGR will not be carried out in the immediate vicinity of in-service cables.

A number of CPT's (Cone Penetration Test), where an instrumented cone of 3 to 5cm diameter is pushed into the seabed to maximum depth of 3m, may be carried out at key locations along the route to confirm seabed substrate conditions and burial tool selection.

The Main Lay vessel will pick up the end of the cable from the Inshore Section at the 15 metre water depth and this will then be jointed to the main cable on board the Main Lay Vessel. The jointing process takes approximately 18-24 hours to complete, including tests of the cable system. The Main Lay Vessel will then proceed to deploy and bury the cable in the seabed. The burial tool is towed by the Main Lay Vessel and is designed to bury the cable at a depth such that the cable will be secure from fishing activities.

Typical burial speed is generally of the order of 0.5 knots and is dependent on the stiffness of the seabed sediment. There is no significant noise generation during burial operations. Cable installation produces only a minor plume of suspension of seabed sediments in the water column and this is transient and localised due to the nature of the burial and natural backfill activities. Typical subsea cable burial tools used to

simultaneously install and bury fibre optic cables in the seabed include cable plough (passive and jet assisted) or jetting trenchers (sled or ROV mounted). Burial tool options are discussed in the following sections.

Cable plough: A cable plough is a trenching system which simultaneously lays and buries the cable by using a minimally invasive plough-share to create a furrow in the seabed approximately 500mm in width (Figure 16). As the plough is towed through the seabed its share blade and inclined cutting disk displaces a wedge of substrate. As the plough progresses forwards, the cable is placed in the bottom of the furrow and the displaced material drops back into the trench, placing the cable at the bottom of a relatively undisturbed sediment wedge. Jet-assisted ploughs are similar to passive ploughing tools but utilize targeted nozzles along the plough share that introduce water jets at the soil interface to help reduce friction and improve overall efficiency.

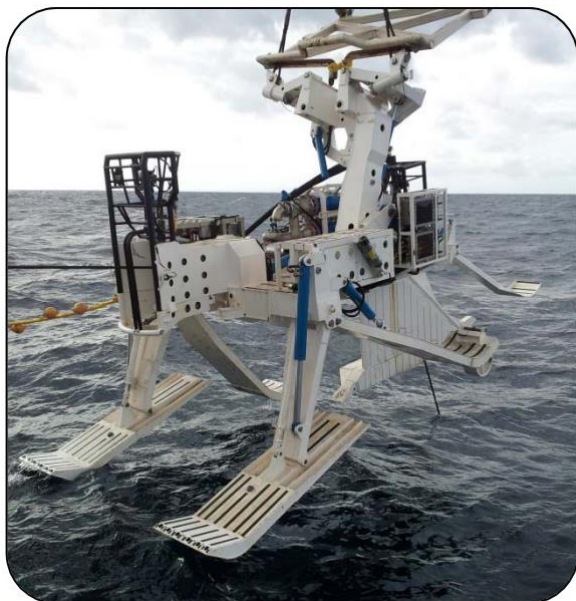


Figure 16. Cable Plough

Jetting trenchers: A jetting trencher is a system which simultaneously lays and buries the cable by forming a narrow trench (approx. 150mm) of fluidised seabed using a bespoke jetting sword into which the cable is installed to the target depth through the cable depressor.(Figures 17(a) / 17(b)). Jetting trenchers can be self-propelled on tracks (ROV type) or sled mounted and towed by the cable installation vessel. ROV type jetting trenchers may also be used for Post – Lay Burial of the cable at crossings or in areas of surface laid cable where the main burial tool was not deployed. Jetting trenchers are powered and controlled from the cable installation vessel via electrical umbilicals. Noise generated by a jetting trencher is less than that generated by a plough. A sketch which illustrates the Main Lay cable installation is presented in Figure 18.



Figure 17 (a) Sandpiper sled mounted jet trencher



Figure 17 (b) XT600 ROV mounted jet trencher

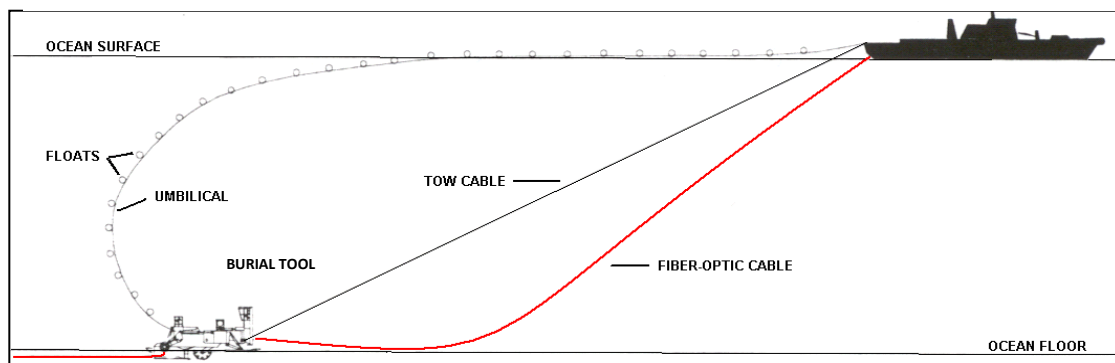


Figure 18 Offshore Cable Installation and Burial

The target burial depth for the Beaufort cable system is 1.5 metres. In areas of stiff soil, the actual burial depth may be reduced but is planned to be still at a depth which will protect the cable from fishing operations and generally not less than 1 metre.

Post Lay Operations

Following main lay operations, post-lay inspection and burial may be carried out in certain areas to inspect the proper laying and burial of the cable in the seabed. A post-lay burial operation may be performed in order to supplement the burial operations in the following instances:

- Planned recoveries of the burial tool, e.g. ploughshare change locations.
- Initial and final splice positions within the buried sections – Post-Lay Inspection and Burial is planned for the initial splice location between the Pre-Lay Shore End and main lay section of the cable to 1.5 metre target burial depth.
- Unplanned recoveries due to burial tool breakdown, weather delay, etc.
- Surface-laid sections due to burial tool malfunction where the burial tool is not brought back on board.

ROV Operations

In limited areas requiring Post-Lay burial, a separate Remotely Operated Vehicle (ROV) is utilized. The ROV typically uses a jetting burial tool to bury the cable to the required depth. The seabed is emulsified in the

localised region of the burial and a narrow trench is formed. The ROV burial system slowly moves along the seabed on the required cable track cutting a trench into which the cable is placed. The seabed sediment is displaced temporarily to form the trench during the burial operation and then allowed to re-form naturally and 'backfill' the trench after the passage of the ROV's burial tool. It should be noted that the surrounding seawater is used for the jetting system, i.e. nothing alien is introduced into the environment. The burial tool does not remove any seabed materials from the area. The ROV burial operation is controlled from the main vessel and monitored in real time using high definition video cameras mounted on the ROV.

Existing and Proposed Marine Activities

Hydrocarbon Licence Blocks

There are a number of Hydrocarbon Licence Blocks off the south and southeast coast of Ireland. These are shown in Figure 19 with the planned route overlaid. The planned route does not traverse any Hydrocarbon Licence Blocks.

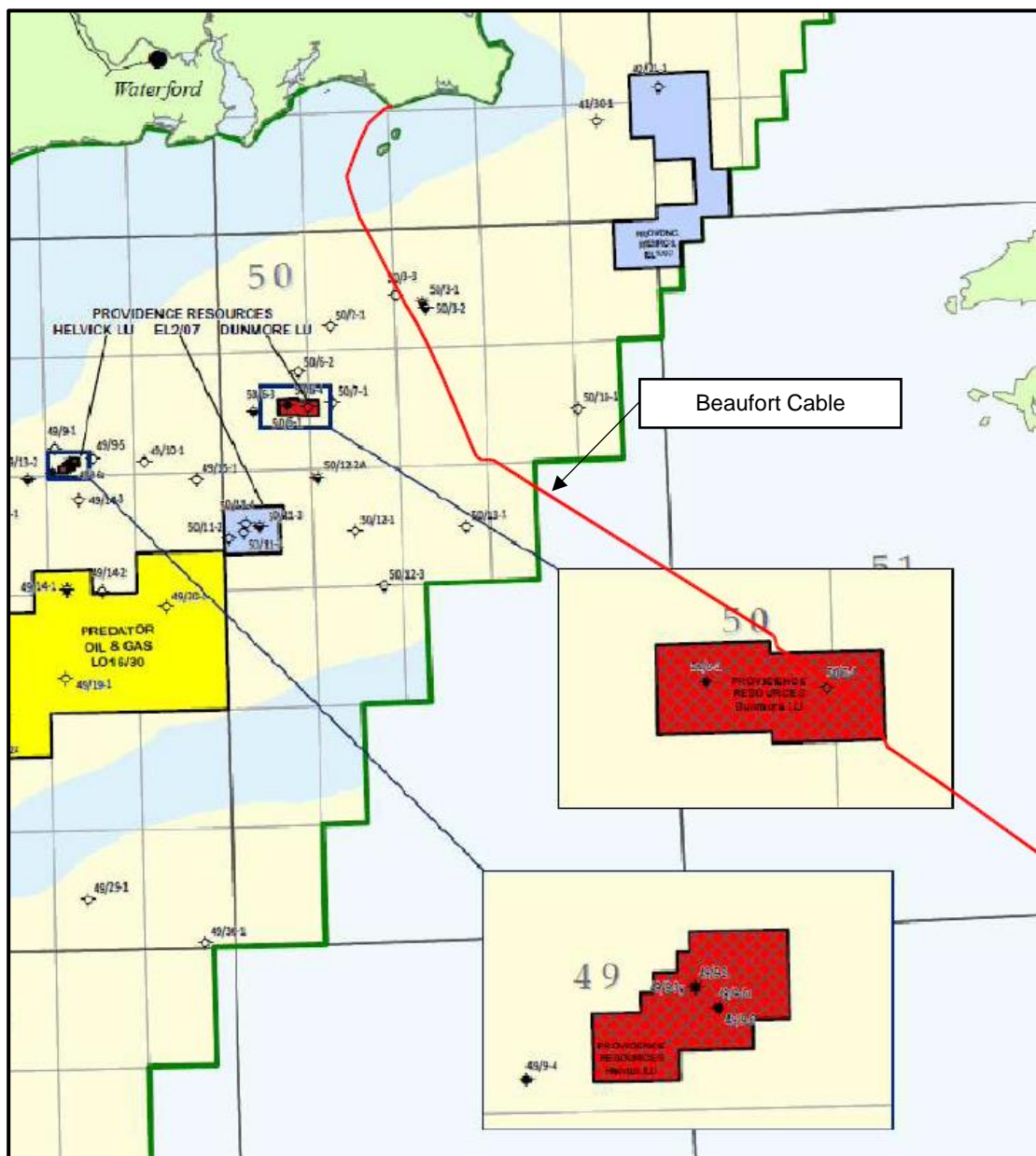


Figure 19 Hydrocarbon Licence Blocks

Military Activities

There are three offshore areas designated as military danger areas around the Irish Coast (Figure 20). None of these areas are close to the cable route.

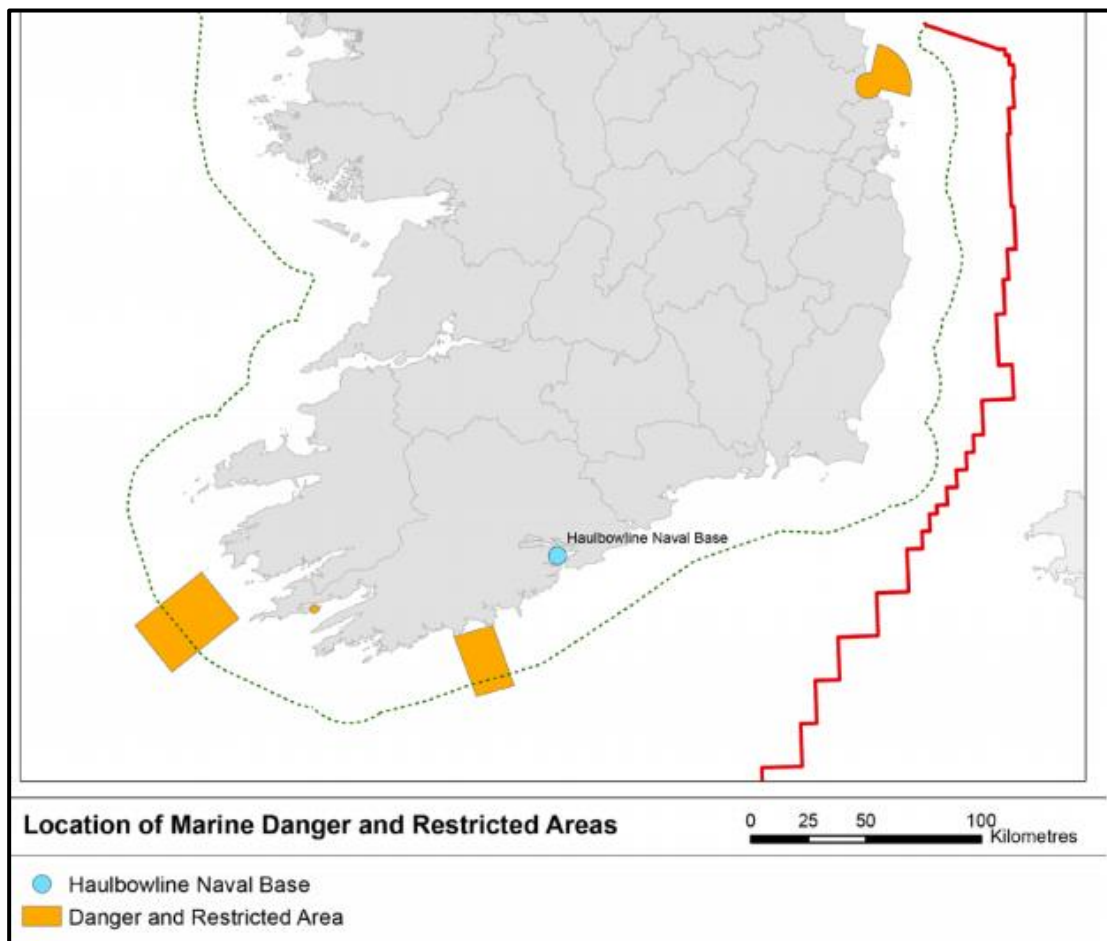


Figure 20 Irish Offshore Military Areas

Irish Aviation Authority: ENR 5, 1 Prohibited, Restricted and Danger Areas (2015)

Potential Future Developments

There is a foreshore licence application for Soil and Vegetation sampling at Ballyteige Burrow for scientific analysis lodged in 2021. There is an application for the installation of 2 No. pipes and a flow control structure at Lady’s Island. There are also two potential Offshore Wind Farm site investigation and marine surveys off the Waterford coastline and there is a planned Electrical Interconnector Cable extending from the east coast of the Hook Peninsula to Wales. These potential future offshore developments are discussed with regard to the planned Beaufort Cable in the following sections.

Reference	Title	Year	Location	Activity	Status
FS007274	UCD Soil and Vegetation Sampling - Ballyteige	2021	Wexford	Soil and vegetation sampling	Consultation
FS007050	Greenlink Interconnector Wexford	2019	Wexford	Subsea and underground electricity interconnector cable	Determination
FS006982	Energia - Application for Site Investigation Licence for Windfarm off Helvick Head	2019	Waterford	Site investigations for Offshore Wind Farm	Consultation
FS006983	SSE Renewables Celtic Sea	2019	Waterford	Site investigations for Offshore Wind Farm	Consultation
FS007038	Lady’s Island Pipeline	2021	Wexford	Installation of 2 no. pipes and a flow control structure	Consultation

Table 1 Foreshore licence applications in vicinity of Beaufort cable

Offshore Windfarms

Viridian Renewables ROI Ltd. Have made an application for a Foreshore Licence for survey (Ref. No. FS 006982) for a possible Offshore Windfarm off Helvick Head, Co. Waterford. The proposed survey area is shown in Figure 21 and it does not impinge on the telecoms cable corridor emanating from Kilmore Quay.

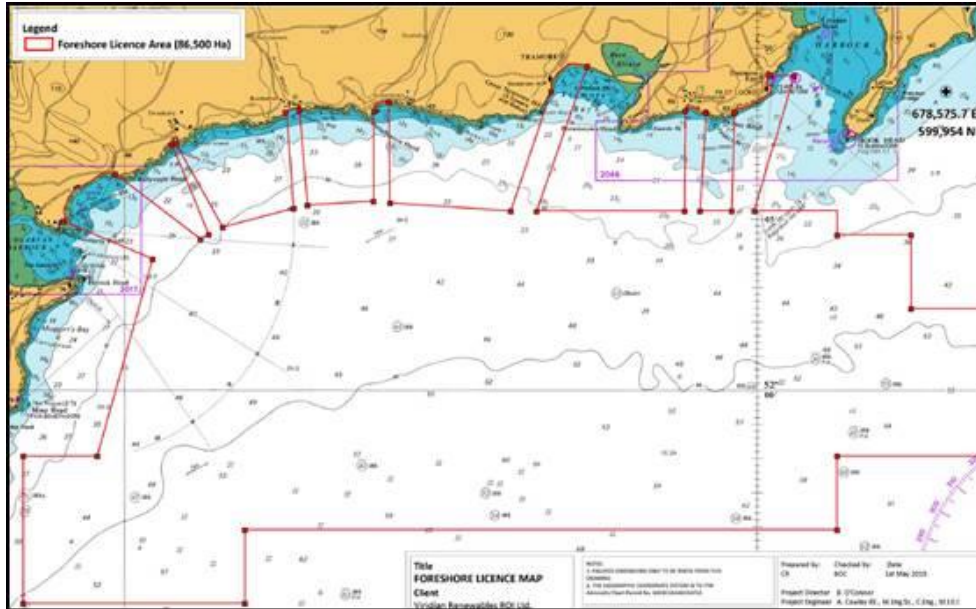


Figure 21 Viridian Renewables ROI Ltd. Offshore Windfarm Development Area

SSE have also made an application for a Foreshore Licence for survey for a possible Offshore Windfarm off Bunmahon Bay, Co. Waterford (Ref. No. FS 006983). This proposed development is south of the proposed Viridian development and is a significant distance to the west of the telecoms cable corridor emanating from Kilmore Quay. The location is shown in Figure 22 and it does not impinge on the telecoms cable corridor.

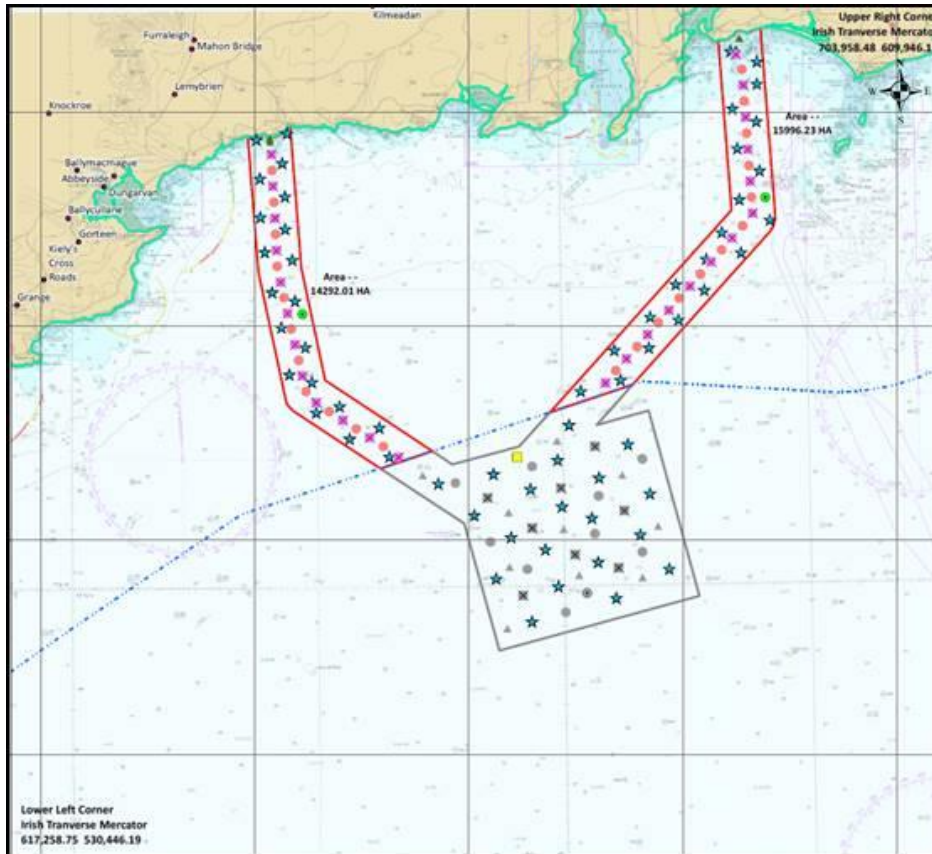


Figure 22 SSE Offshore Windfarm Development Area

The proposed SSE development also incorporates two options for export cables and these are included in the application for the Foreshore Licence for survey. The eastern survey corridor for an export cable from the proposed Offshore Windfarm to the landfall at Bannow Bay comes close to the telecoms cable corridor at a point south of the Saltee Islands. However, the SSE survey corridor is clear of the Beaufort route at that location and then veers sharply to the south west and diverges from the telecoms cable corridor. The proposed SSE cable and the survey corridor can be seen in Figure 22.

Electrical Interconnector Cable

Greenlink Interconnector Limited has been granted a Foreshore Licence (Reference FS 007050) for a cable route for an Electrical Interconnector to Wales. The proposed route out from Baginbun (east side of the Hook Peninsula) approaches the telecoms cable corridor to the south of the Saltee Islands. The route extends along the telecoms cable corridor to approximately 51 55' 00" where it turns eastward and diverges from the telecoms cable corridor. Figure 23(a)

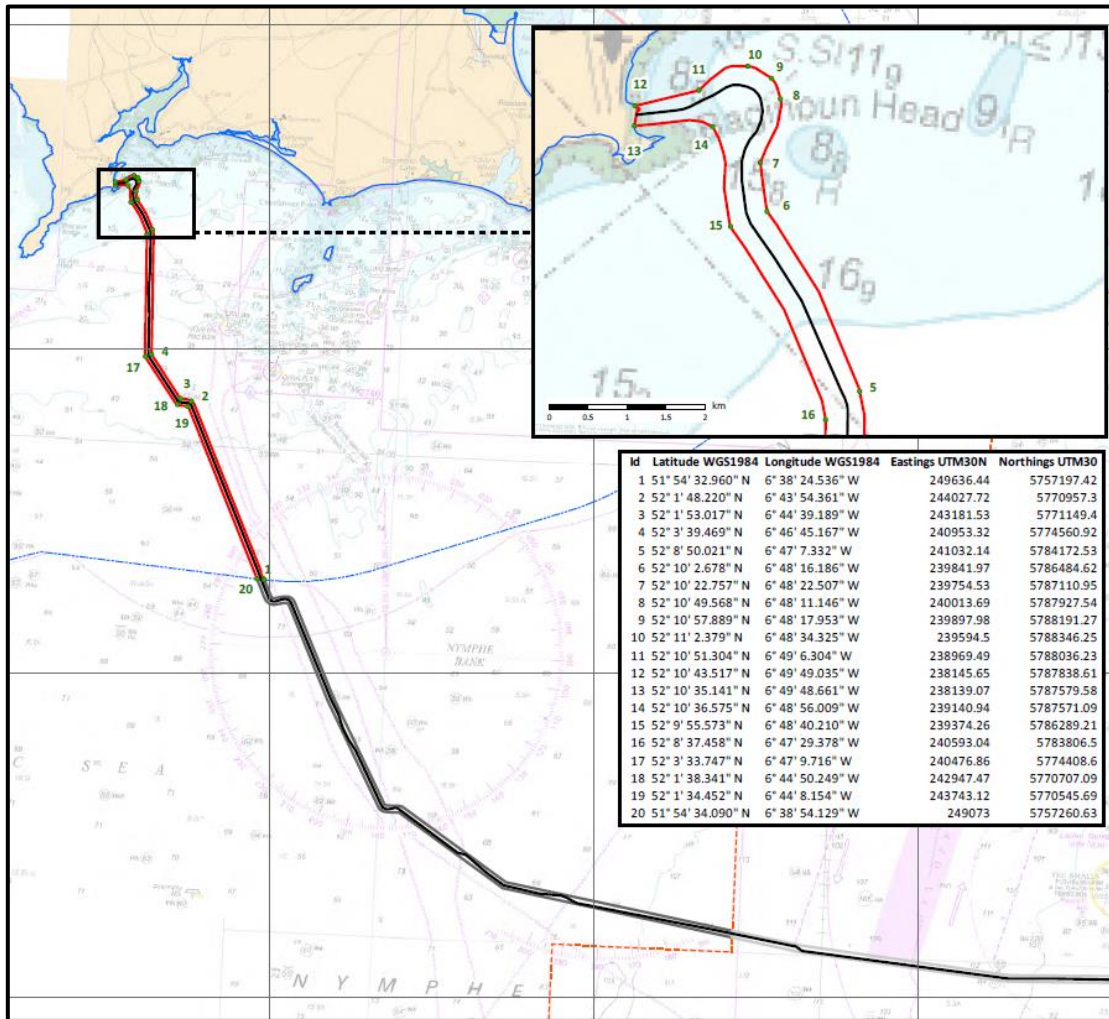


Figure 23(a) Greenlink Interconnector Route Overview

Ref. Greenlink Foreshore Licence Application

The planned route of the Greenlink Cable has taken the presence of the existing telecoms cable corridor into account and the relative location of the Greenlink Cable and the proposed Beaufort Cable (ESAT 1) is shown in Figure 23 (b). The proposed Beaufort Cable does not introduce any significant additional constraints which would inhibit the routing of the Greenlink Interconnector Cable.

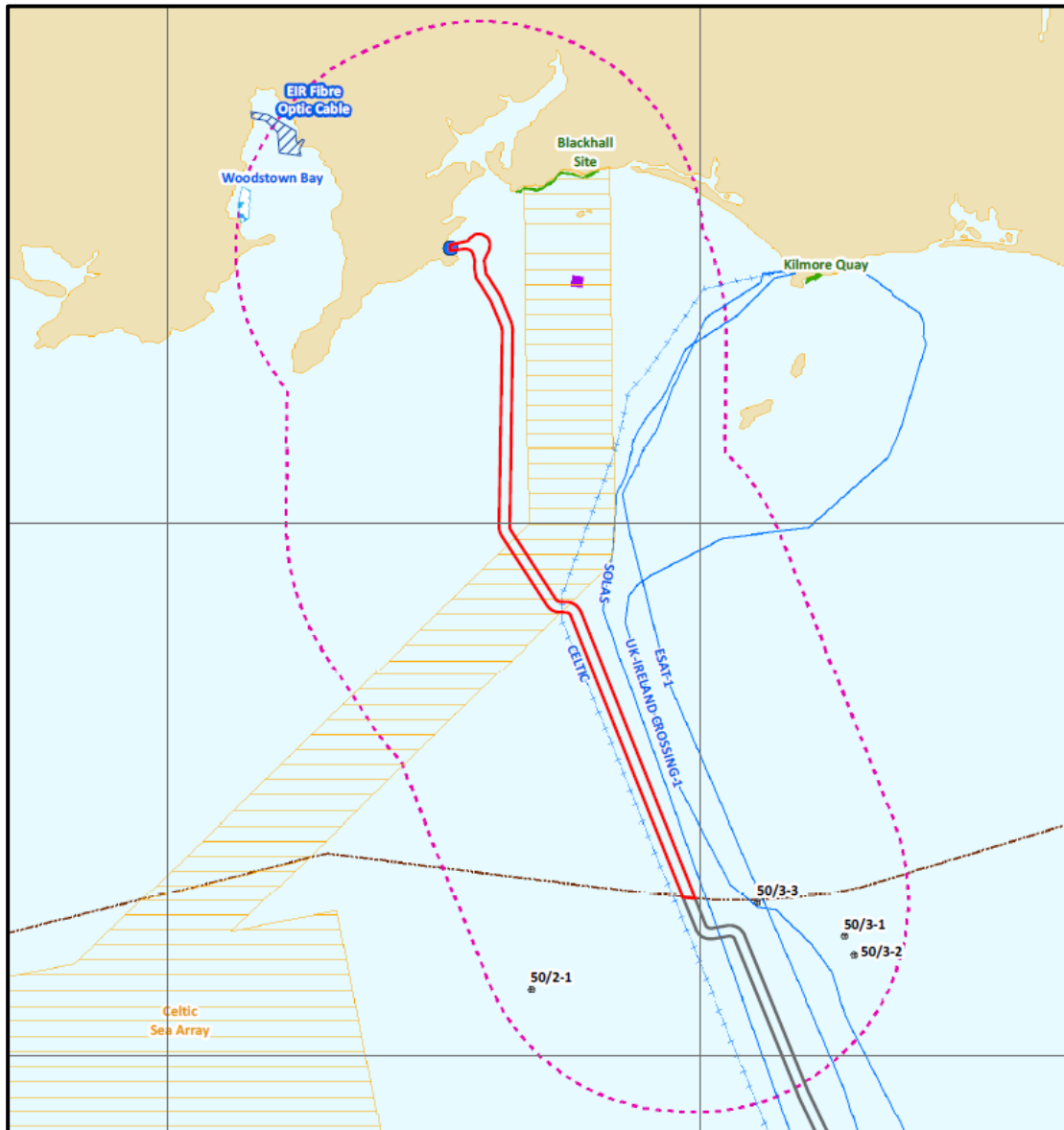


Figure 23(b) Relative positions of the Greenlink and ESAT 1 Cable routes *Ref. Greenlink Foreshore Licence Application*

Commercial Fishing

There is a significant level of commercial fishing in the Celtic Sea. The intensity of fishing is illustrated in Figure 24 and the route of the Beaufort Cable skirts to the north of the most heavily fished area whilst also keeping south and clear of the sand-wave fields as shown in Figures 9 and 10. It is effectively an optimum route. Secure burial of the cable through the fishing grounds will be a significant consideration and the fact that the seabed is comprised of sand is a positive factor in this context.

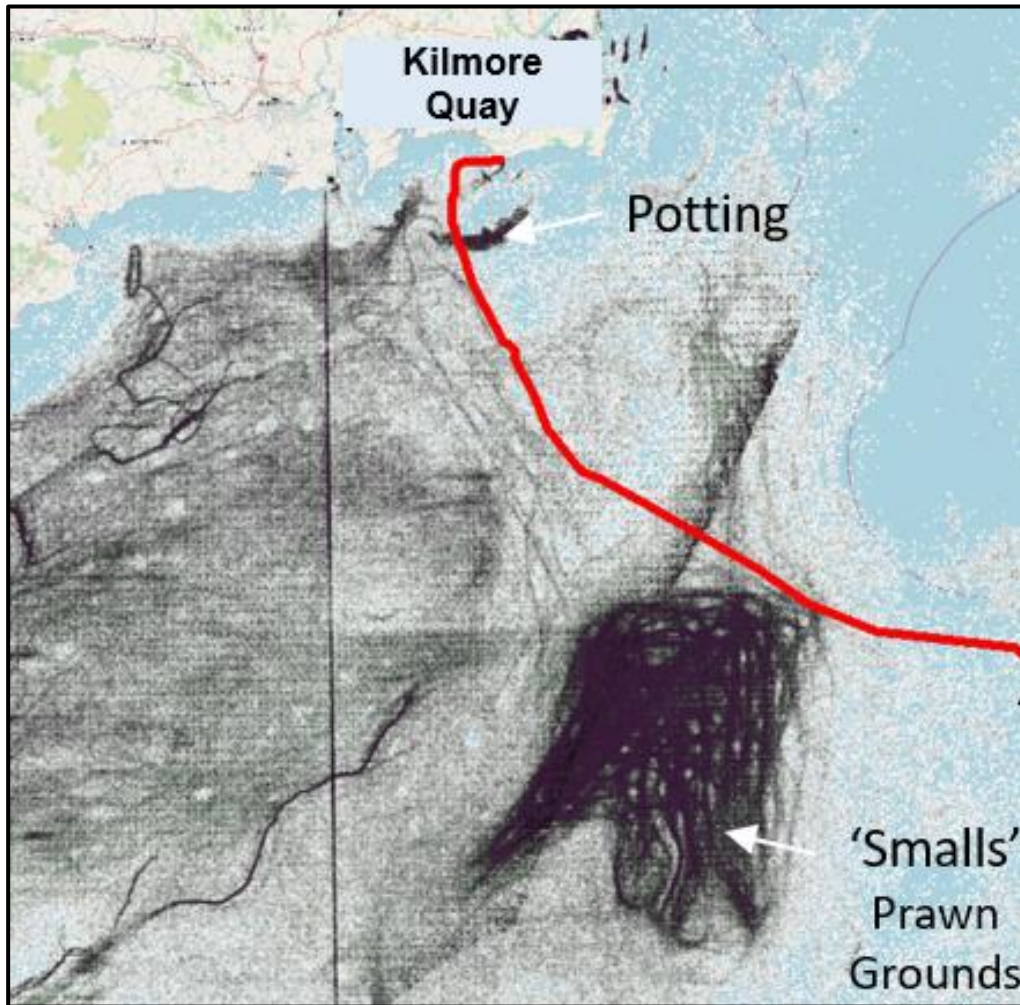


Figure 24 Commercial Fishing Pattern

The overall fishing pattern is significant but it is not an impediment to cable installation. It is planned to appoint a Fisheries Liaison Officer to ensure that the fishing fleets are provided with advance notice of the progress of the Main-Lay vessel together with day-to-day communication on vessel position.

Ports

The relevant commercial ports in the Celtic Sea are Cork, Waterford and Rosslare in Ireland and Milford Haven in Wales. None of these ports will be directly affected by the cable installation process and the cable installation will not require any restrictions or special measures in relation to normal access to these ports.

Kilmore Quay and Dunmore East are significant fishing ports. Cable installation activities will not inhibit access to the harbour at Kilmore Quay and the routing of the cable to the west of the Saltee Islands will ensure the installation of the cable will be clear of the main access to the Harbour. The planned cable route is quite a distance from Dunmore East and will not inhibit access to that port at any stage. Liaison will be established with the Harbour Authority at each of the ports to ensure that no conflicts arise.

Shipping

There is a Traffic Separation Zone off the south east corner of Wexford at Beaufort Rock and there is another zone off St David's Head on the Pembrokeshire coast. These are well north of the proposed Cable System and will not be affected by the cable routing. There is a regular ferry service between Rosslare in Wexford and Fishguard in Pembrokeshire but the route is well to the north of the cable system. There is also a regular ferry service from Rosslare to Cherbourg with four sailings per day at present. That ferry route will cross the cable route in the open waters of the Celtic Sea and will be part of the overall offshore shipping pattern. The pattern of shipping movements in the seas traversed by the cable system is shown in Figure 25 and it is not particularly intense.

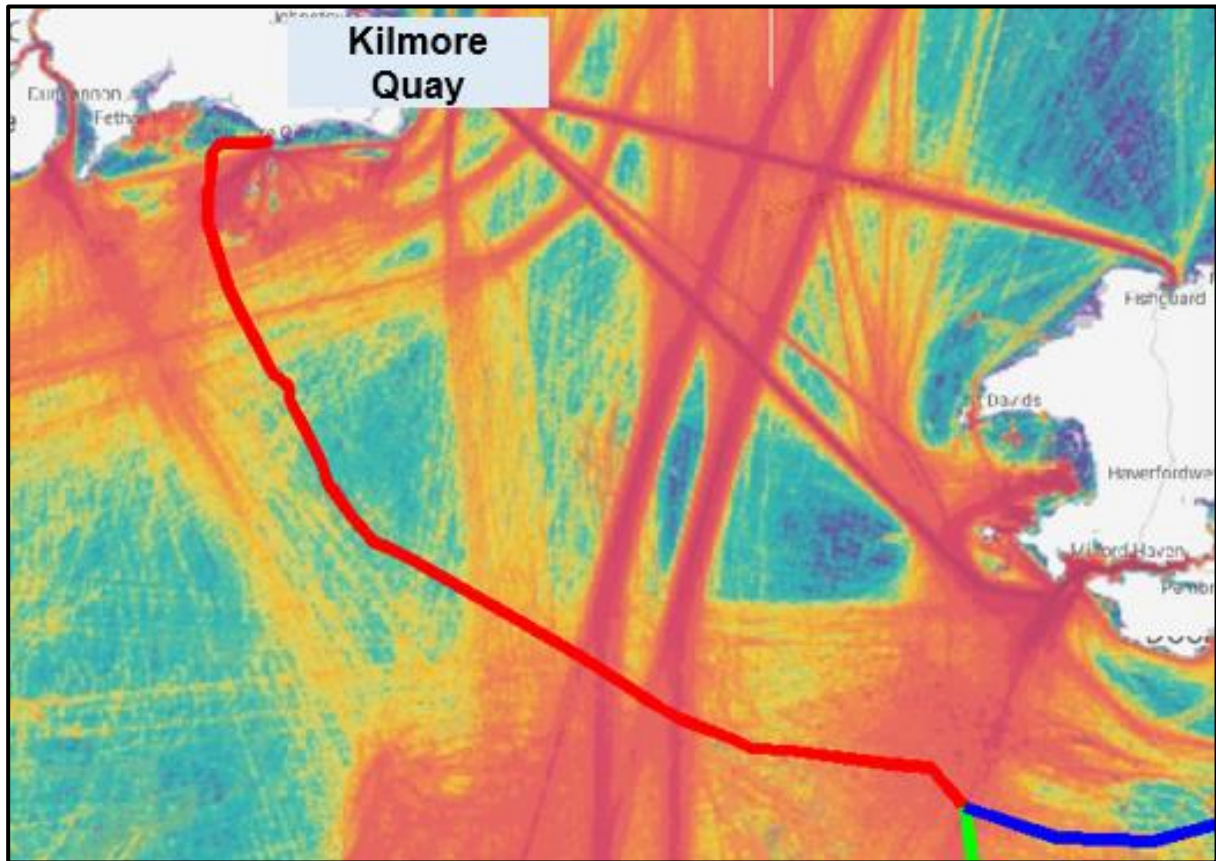


Figure 25. Vessel Traffic Density 2019

There is a relatively light pattern of coastal shipping along the southeast coast. The pattern centred on Kilmore Quay is quite apparent, as is the corresponding pattern centred on Waterford Port and Dunmore East. Other noticeable features are the ferry routes from Rosslare to Fishguard and to Cherbourg together with the north/south movement between the Celtic Sea and St. Georges Channel. The widespread pattern in UK EEZ waters is largely related to commercial fishing. However, as can be seen in Figure 25, the cable route skirts the northern limits of these fishing grounds where the intensity of the movements is very much reduced.

Navigation

General Aspects

In developing the planned route, due regard has been given to; Physical influences on the cable – bathymetry, seabed geology, Anthropogenic influences on the cable route e.g. shipping, fishing, anchorages, wrecks, offshore hydrocarbon licence blocks, offshore developments, subsea power cable development and underwater archaeology.

The key ports and harbours with potential influence on the cable route in Irish waters include;

- Rosslare Port
- Waterford Port
- Kilmore Quay
- Dunmore East

The Port of Cork is 120km to the south of Kilmore Quay and its influence is effectively part of the general shipping pattern in the Celtic Sea. The level of risk arising from the shipping movements to and from the commercial ports is relatively low as indicated by the data in Table 3 below.

Port	Annual Shipping Movements	Average Daily Shipping Movements
Rosslare Port	3294	9
Waterford Port	1030	3
Cork Port	2974	8

Table 3. Shipping Movements at Relevant Ports

One of the main information sources used to assess the pattern of shipping traffic in the Celtic Sea has been the Automatic Identification System (AIS) information. AIS is a safety-at-sea system that broadcasts information via a ship-based VHF transmitter. This information is received by a network of shore-based receivers and can be collated. The main traffic routes to affect the cable route in Irish Territorial Waters will be the coastal traffic transiting around the south east coast and the movement of fishing vessels to and from their home ports of Kilmore Quay and Dunmore east. These vessel movements pose a navigational risk and care is required as the Main-Lay vessel will be crossing the coastal traffic in particular.

Mitigation of Navigation Risk

Key points relating to mitigation of Navigational Risk associated with the planned Beaufort Cable are as follows:

- Lifting and removal of the ESAT 1 cable will extend over a period of 3 to 5 days
- Main-Lay will extend over a 6 to 8 day period in Irish Waters.
- The Main-Lay will be undertaken by a single, purpose-built vessel.
- The vessel will install cable on a 24 hour per day basis and a full operational crew will be on duty at all times.
- Vessel speed will be of the order of 0.5 knots.
- The vessel will comply fully with all requirements of the International Regulations for Preventing Collisions at Sea.
- Prior to commencement of installation, the Dept. of the Environment Community and Local Government will be notified of the planned start and the estimated completion dates for the operation.
- The Rosslare and Waterford Port Companies will be informed of the Plan of Work and of the planned start and estimated completion dates for the operation. Arrangements will be put in place to provide next-day position forecast throughout the installation period.
- Representatives of the fishing fleets at Kilmore Quay and Dunmore East will be contacted and made aware of planned operations.
- A Fisheries Liaison Officer will be employed to ensure co-operation between fishing operations and cable installation activities as the work proceeds.
- Arrangements will be made for the publication of a formal Marine Notice through the Department of Transport, Tourism and Sport and the notice will provide vessel and contact details together with a general description of operations and approximate dates of commencement and completion.

Alternative Sites

The project has previously investigated many landfall sites on the south east and east coast of Ireland. Following a desk based and visual review, Ballyteige Bay was selected as the optimal route. The presence of the existing disused cable infrastructure from the cable landing station to the beach significantly reduces the potential impact of the proposed installation. As part of the route selection process a route has been selected to follow, where possible, the disused cable route, targeting soft sediments, allowing for burial of the cable. Burial is the preferred option in order to ensure that the cable is protected from anthropogenic activities including fishing, shipping lanes, dredged channels, anchoring etc. The placing of the cable along the disused cable route also reduces the potential cumulative effect of the project following due to the removal of the disused cable first and the laying of the new cable within the same corridor.

Spatial Scope and Zone of Influence

IEEM (2006) defined the zone of influence as “*the areas/resources that may be affected by the biophysical changes caused by activities associated with a project*”. In order to define the extent of the study area for ecological assessment, all elements of the project were assessed and reviewed in order to identify the spatial scale at which ecological features could be impacted. Due to the limited temporal and geographical scale of the project, conservatively it is not considered that the impacts of the proposed works would extend beyond 1km of the intertidal, primarily extended beyond the project footprint due to noise generation and 500 m of the subtidal elements of the project due to noise generation and potential disturbance of sediment. However, as outlined in IEEM (2010) “*in the marine environment it is more difficult to define the geographical framework precisely and to accommodate all factors that should influence the definition of value, e.g. size or conservation status of populations or the quality of habitats.*” As a result, “*it is very unlikely that the impacts on integrity can be evaluated without considering functions and processes acting outside the site’s formal boundary.*” During the cable laying process vessel speeds are slow (0.5kn). In light of this and based on the localised nature of the cable laying impacts the Zone of Influence in the subtidal was extended to 1 km either side of the cable route. However, a search area of 15 km was used for the gathering of information for nationally and internationally designated sites and marine mammal species.

Identification of Relevant Natura 2000 Sites

The proposed works are not directly connected with, or necessary to, the management of Natura 2000 sites. The Natura 2000 sites within 15 kilometres of the subject site and those with a direct/indirect pathway are detailed in Table 1 and Figures 26 & 27. Their qualifying interests, and the potential impact of the works on these qualifying interests, are found in Tables 2 & 3. The boundaries of the Natura 2000 sites at the proposed landfall location are seen in Figures 28 & 29. Natura 2000 sites located within 5km of the proposed cable route and landfall are demonstrated in Figures 30 & 31.

The proposed cable laying route is within Ballyteige Burrow SAC and proximate to a number of other Natura 2000 sites located within the marine environment surrounding Kilmore Quay and Ballyteige Bay.

The proposed cable laying route is located within, and passes through, Ballyteige Burrow SAC. Construction works are proposed within Ballyteige Burrow as part of the landfall works (Figures 28 & 29). Machinery and equipment will be lifted onto the beach via a crane placed in the car park in order to avoid bringing machinery through the dune system to access the beach. The terrestrial works are essentially the removal of a disused cable and replacement of the cable within existing ducts. However, a trench at a depth of 1.2m – 1.5m needs to be dug on the beach at the end of the existing duct (that extends from the terrestrial under the dune system to the beach). The purpose of this is to cut and remove a decommissioned fibre optic cable (ESAT-1) in the duct. The cable is also to be removed from the existing duct back to the landfall station and from the sand out to the Saltee Islands SAC boundary. Separately a new cable will be placed within the existing duct and will need to be buried on the beach. Given that there are proposed construction works located within Ballyteige Burrow SAC and in the marine environment proximate to the Saltee Islands SAC, mitigation measures are required to ensure that there are no likely significant effects on the qualifying interests of the Natura 2000 sites but also Annex species including marine mammals. It is worth noting that no excavation works will take place within the dunes located in Ballyteige Burrow. Further, the presence of an existing cable duct from the beach to the landfall station significantly reduces the degree of excavation/installation works within Ballyteige Burrow.

The terrestrial and intertidal works are within Ballyteige Burrow SAC. The nearest Natura 2000 site to the proposed cable route after Ballyteige Burrow SAC is Saltee Islands SAC. Cable removal works will stop at the boundary to the SAC but the installation works will be 200m from the SAC. Given the nature of the burial works and the use of a Main Lay Vessel within the marine environment surrounding Kilmore Quay and Ballyteige Bay, there is the potential for impact on protected reef and grey seal species (*Halichoerus grypus*), which are qualifying interests of this SAC. Given the proximity of the proposed cable laying route to the Saltee Islands SAC (min. 200m during mainlay), mitigation measures are required to ensure that there are no likely significant effects on the qualifying interests of this SAC. It is important to note, however, that the proposed cable laying route does not enter the Saltee Islands SAC or offshore SPAs (Figures 29 - 31).

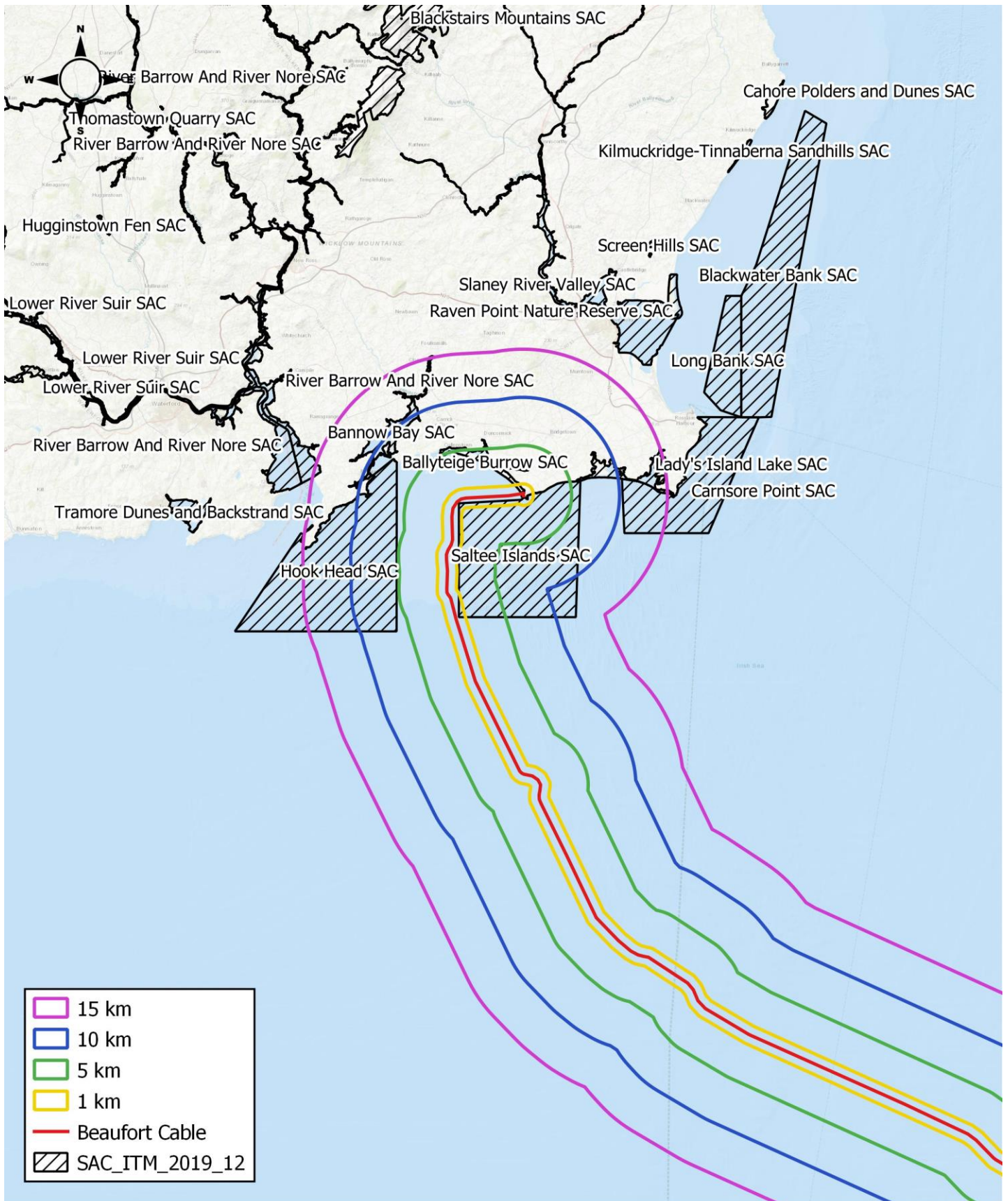
The nearest Special Protection Area (SPA) is Ballyteige Burrow SPA, located 1.2km from the proposed cable laying route (1.4km from the proposed landfall area) (Figure 27). There is the potential for disturbance of the protected

bird species during the construction phase of development via the landfall of the cable within Ballyteige Burrow and the operation of the Main Lay Vessel within Ballyteige Bay. Out of an abundance of caution, it is considered that mitigation measures are required to ensure that the proposed project will not impact upon the protected bird species of proximate SPAs.

Table 1 outlines the Natura 2000 sites within 15km of the proposed route and landfall. Due to the localised and minor nature of the impacts during the installation and operation of the fibre optic cable it is purely out of an abundance of caution that all Natura 2000 sites within 15km of the cable are assessed. No likely significant effects are foreseen on Natura 2000 sites beyond 15km due to the minor and localised nature of the works.

Table 1. Proximity to designated sites of conservation importance

Code	NATURA 2000 Site	Distance
Special Areas of Conservation		
000696	Ballyteige Burrow SAC	Within SAC
000707	Saltee Islands SAC	SAC boundary for removal 230 m from mainlay
000764	Hook Head SAC	5.1 km
000709	Tacumshin Lake SAC	5.6 km
000697	Bannow Bay SAC	8.1 km
002269	Carnsore Point SAC	10.3 km
000704	Lady's Island Lake SAC	11.4 km
002162	River Barrow and River Nore SAC	14.2 km
Special Protection Areas		
004020	Ballyteige Burrow SPA	1.2 km
004002	Saltee Islands SPA	2.9 km
004118	Keeragh Islands SPA	4 km
004092	Tacumshin Lake SPA	6.6 km
004033	Bannow Bay SPA	8.4 km
004009	Lady's Islands Lake SPA	11.8 km
004076	Wexford Harbour and Slobbs SPA	14.8 km



Project: Beaufort Fibre Optic
 Location: Kilmore Quay, Ireland
 Date: 2nd February, 2022
 Drawn By: Bryan Deegan (Altamar)

ALTEMAR
 Marine & Environmental Consultancy



Figure 26. Special Areas of Conservation (SAC) located within 15km of the proposed cable route

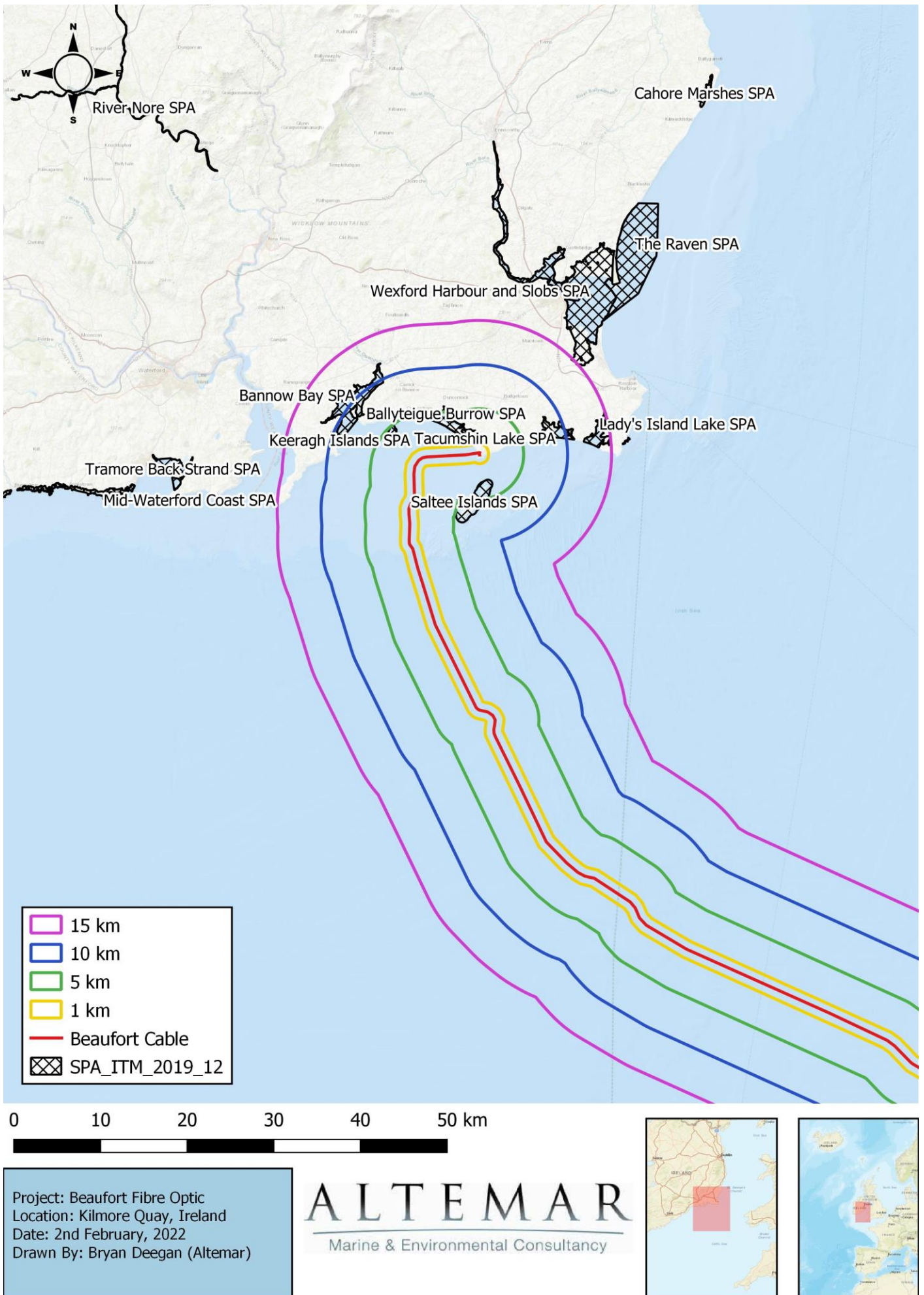


Figure 27. Special Protection Areas (SPA) located within 15km of the proposed cable route

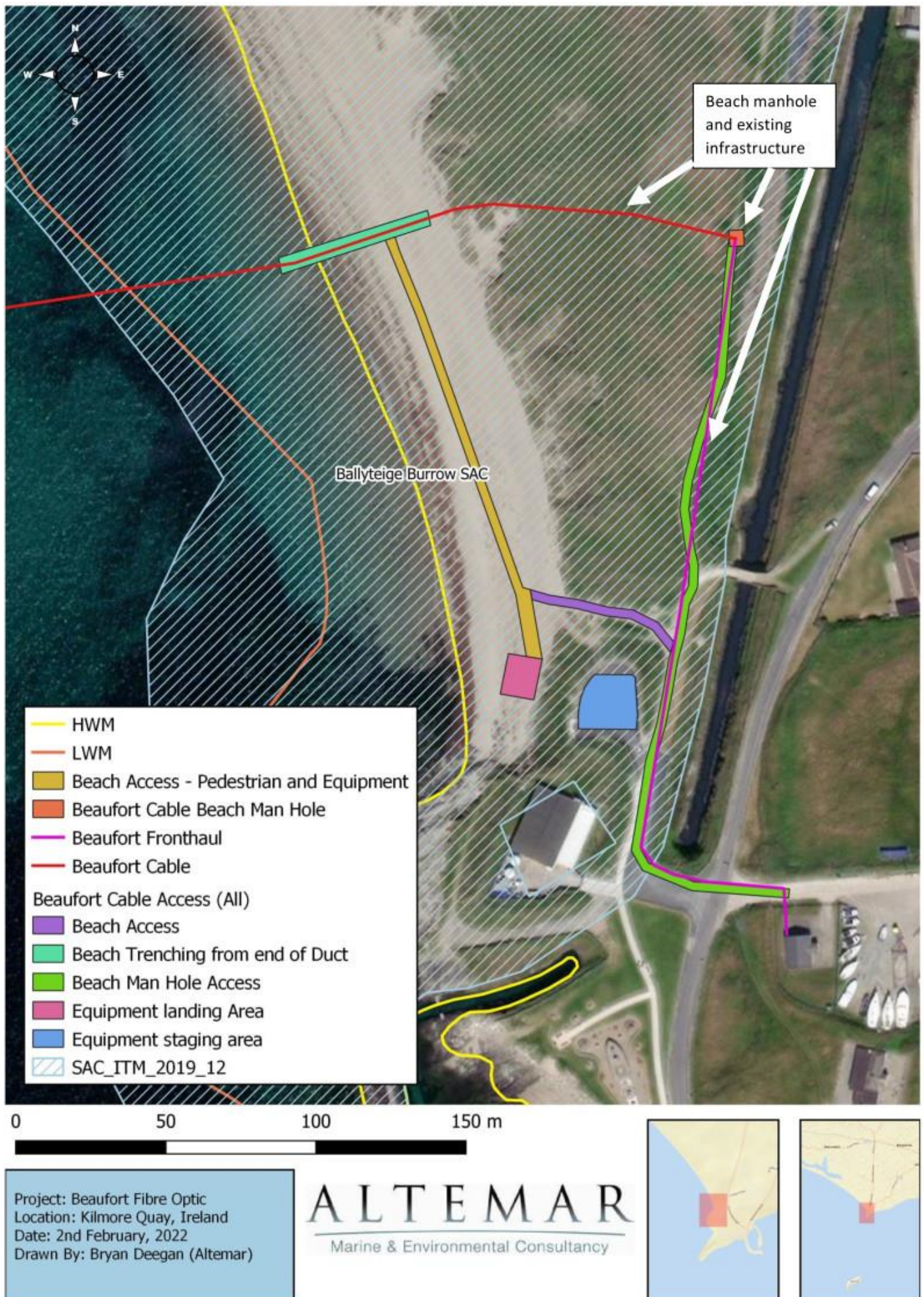
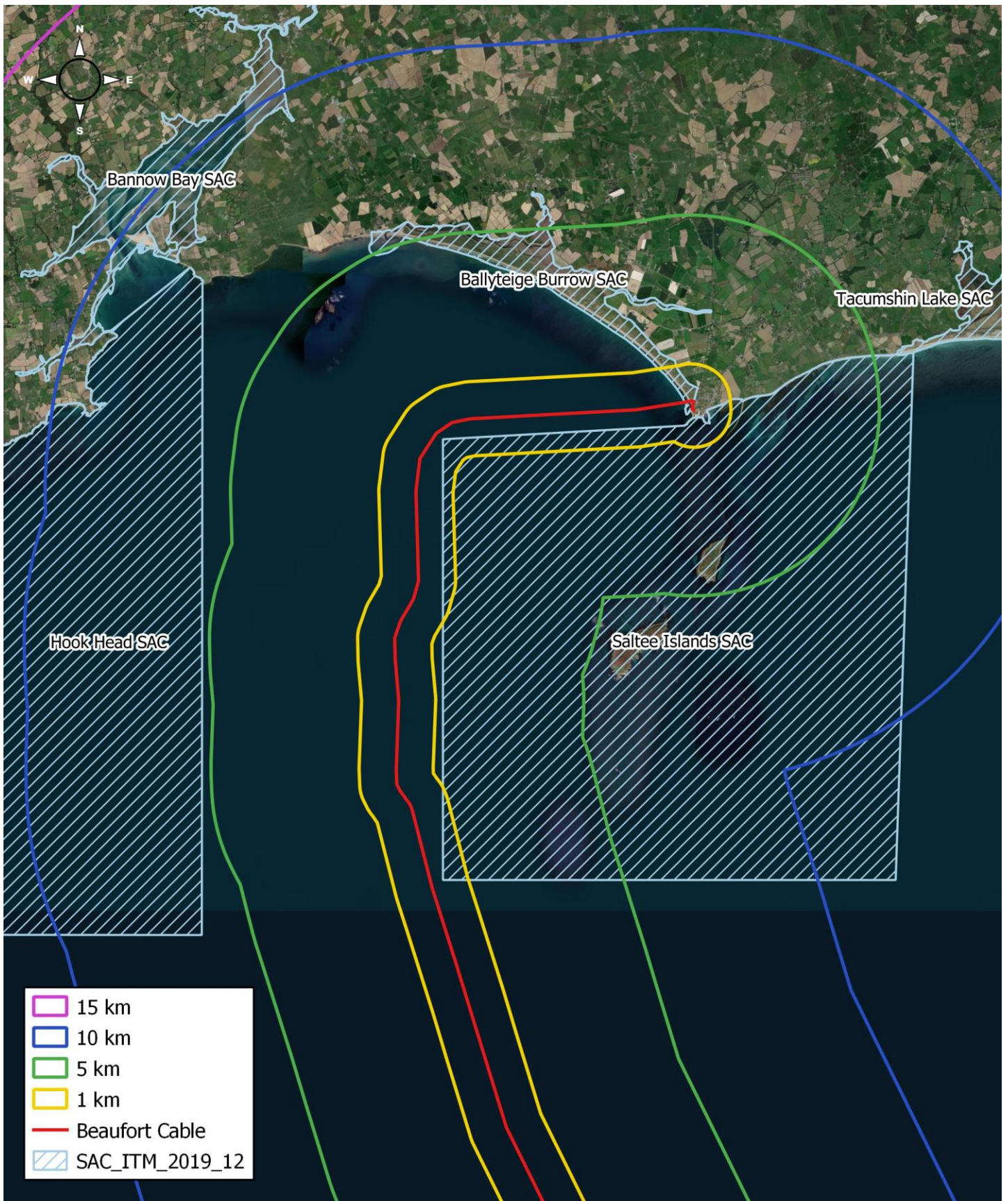


Figure 28. Proposed landfall at Kilmore Quay in relation to Ballyteige Burrow SAC



Figure 29. Proximate SACs to the proposed landfall at Kilmore Quay



Project: Beaufort Fibre Optic
 Location: Kilmore Quay, Ireland
 Date: 2nd February, 2022
 Drawn By: Bryan Deegan (Altamar)



Figure 30. SACs located within 10km of the proposed cable route

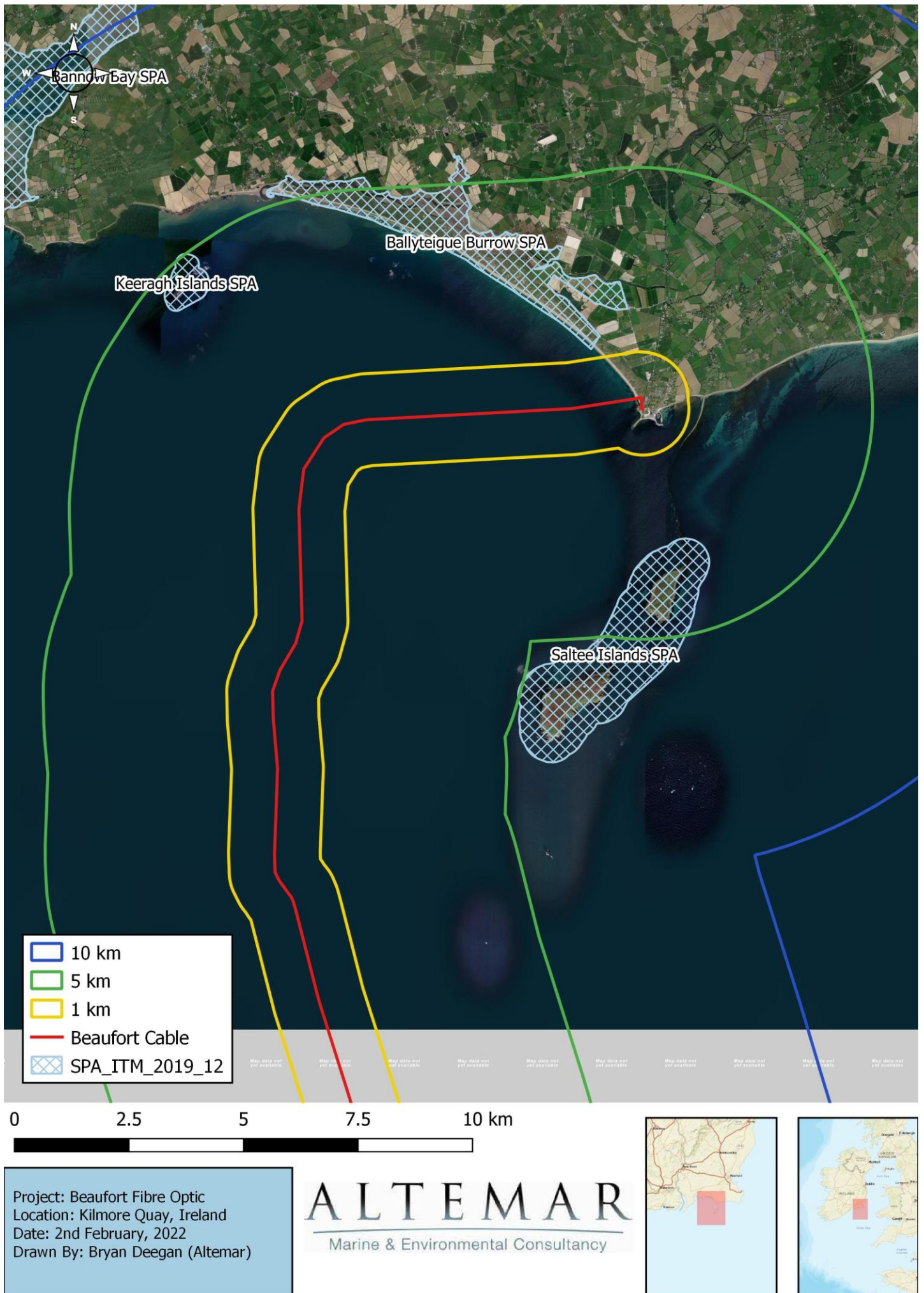


Figure 31. SPAs located within 5km of the proposed cable route

Table 2. Initial screening of NATURA 2000 sites within 15km and NATURA 2000 sites with potential of hydrological connection to the proposed development – Screened IN (NIS Required)

NATURA Code	Name	Screened IN/OUT	Details/Reason
Special Areas of Conservation			
IE 000696	Ballyteige Burrow SAC	IN	<p>Conservation Objectives</p> <p>The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.</p> <p>Qualifying Interests</p> <p>Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornetea fruticosi</i>) [1420] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>) [2150] Humid dune slacks [2190]</p> <p>Potential Impact</p> <p>The proposed cable removal and main-lay areas are within the SAC.</p> <p>The works will be in the terrestrial and in the marine elements of the SAC. The terrestrial cable removal and laying will be within an existing duct and beach manhole. No terrestrial excavation works will be carried out. The intertidal element will involve personnel, machinery and excavations on a popular beach proximate to Kilmore Quay with an existing car park and human and dog walking activity. However, initial assessment identifies that in the absence of mitigation measures there may be potential for impact on the qualifying interests of this SAC through disturbance and the physical impact on the intertidal sediments and terrestrial habitats. There is also potential for pollution from machinery and personnel on site within the SAC.</p> <p>Given that machinery works are proposed within the SAC, mitigation measures are required to prevent significant impacts on its qualifying interests. Further information is required to determine the potential for adverse effects on this SAC.</p> <p>NIS is Required.</p>
IE 000707	Saltee Islands SAC	IN	<p>Conservation Objectives</p> <p>The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall</p>

NATURA Code	Name	Screened IN/OUT	Details/Reason
			<p>maintenance of favourable conservation status of those habitats and species at a national level.</p> <p>Qualifying Interests Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Submerged or partially submerged sea caves [8330] Grey Seal (<i>Halichoerus grypus</i>) [1364]</p> <p>Potential Impact The proposed cable removal borders the SAC and the cable laying is located 230 m from the Saltee Islands SAC.</p> <p>However, initial assessment identifies that in the absence of mitigation measures there may be potential for impact on the qualifying interests of this SAC through disturbance and the physical impact on the qualifying interests of this SAC. In particular, mitigation measures are required to ensure that there are no impacts on grey seals and reefs, which are features of interest of this SAC. Due to short term scale of the project, the distance from the works to the SAC, and the low level of impact, there is no possibility of significant effects on the other features of interest of this SAC.</p> <p>Mitigation measures are required for grey seals and reef. Further information is required to determine the potential for adverse effects on this SAC.</p> <p>NIS is Required.</p>
Special Protection Areas			
IE 004020	Ballyteige Burrow SPA	IN	<p>Conservation Objectives The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.</p> <p>Qualifying Interests Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Shelduck (<i>Tadorna tadorna</i>) [A048] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Lapwing (<i>Vanellus vanellus</i>) [A142] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Wetland and Waterbirds [A999]</p> <p>Potential Impact The proposed landfall and works are located a minimum of 1.4 km from the SPA. The route passes by this SPA at a minimum of 1.2 km.</p> <p>The cable laying and removal works will be in the marine subtidal and in the terrestrial/intertidal elements of Ballyteige Bay and offshore. The cable laying and removal will be within an area of existing vessel traffic in Kilmore Quay and the intertidal element is on a popular beach with a car park and existing human and dog walking activity. The majority of species are overwintering birds</p>

NATURA Code	Name	Screened IN/OUT	Details/Reason
			<p>and are likely not be present during the works. However, out of an abundance of caution, should the qualifying interests be present during works in Q2-Q3 mitigation measures will be required in the way of ecological supervision. It is considered that there may be potential for impact on the qualifying interests of this SPA through disturbance. Mitigation measures will be present on site in relation to bird species and it is possible, although unlikely that wintering birds may be present during the works. Further information is required to determine the potential for adverse effects on this SPA.</p> <p>NIS is Required.</p>
IE 004002	Saltee Islands SPA	IN	<p>Conservation Objectives</p> <p>The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.</p> <p>Qualifying Interests</p> <p>Fulmar (<i>Fulmarus glacialis</i>) [A009] Gannet (<i>Morus bassanus</i>) [A016] Cormorant (<i>Phalacrocorax carbo</i>) [A017] Shag (<i>Phalacrocorax aristotelis</i>) [A018] Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183] Herring Gull (<i>Larus argentatus</i>) [A184] Kittiwake (<i>Rissa tridactyla</i>) [A188] Guillemot (<i>Uria aalge</i>) [A199] Razorbill (<i>Alca torda</i>) [A200] Puffin (<i>Fratercula arctica</i>) [A204]</p> <p>Potential Impact</p> <p>The proposed landfall and works area are located a minimum of 2.9 km from the SPA.</p> <p>The cable works will be in the marine subtidal and in the terrestrial/intertidal elements of Ballyteige Bay and offshore. The works will be within an area of existing vessel traffic in Kilmore Quay and the intertidal element is on a popular beach with a car park and existing human and dog walking activity. The majority of species listed as qualifying interests would not be expected in the terrestrial/intertidal landfall area. However, species would be present offshore.</p> <p>Out of an abundance of caution, in the absence of mitigation measures, it is considered that there may be potential for impact on the qualifying interests of this SPA through disturbance particularly for species that may be present in the landfall area.</p> <p>Mitigation measures are required. Further information is required to determine the potential for adverse effects on this SPA.</p> <p>NIS is Required.</p>

Table 3. Initial screening of NATURA 2000 sites within 15km and NATURA 2000 sites beyond 15km with potential of hydrological connection to the proposed development – Screened OUT

NATURA Code	Name	Screened IN/OUT	Details/Reason
Special Areas of Conservation			
IE 000709	Tacumshin Lake SAC	OUT	<p>Conservation Objectives</p> <p>The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.</p> <p>Qualifying Interest</p> <p>Coastal lagoons [1150] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120]</p> <p>Potential Impact</p> <p>The proposed cable removal and laying is located at a minimum of 5.6 km from the SAC within the marine environment.</p> <p>In the absence of mitigation, impacts from the cable removal and laying would be minor, localised, and would not be expected to extend to the SAC and terrestrial/intertidal habitats located 5.6 km from the works. Due to short term scale of the project, the distance from the cable laying to the SAC, and the low level of impact, there is no possibility of significant effects on the qualifying interests of this SAC.</p> <p>No impacts on the qualifying interests of this Natura 2000 site are foreseen.</p> <p>No significant effects are likely.</p>
IE 000764	Hook Head SAC	OUT	<p>Conservation Objectives</p> <p>The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.</p> <p>Qualifying Interests</p> <p>Large shallow inlets and bays [1160] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230]</p> <p>Potential Impact</p> <p>The proposed landfall works area is located 13 km from the Hook Head SAC. The marine cable removal/mainlay route passes by this SAC at a minimum distance of 5.1 km.</p> <p>The cable removal and laying works will be in the marine subtidal and in the terrestrial/intertidal elements of Ballyteige Bay and offshore. The works will be within an area of existing vessel traffic and the intertidal element is on a popular beach with a car park and existing human and dog walking activity.</p>

NATURA Code	Name	Screened IN/OUT	Details/Reason
			<p>Due to short term scale of the project, the distance from the works to the SAC, and the low level of impact, there is no possibility of significant effects on the qualifying interests of this SAC. Subtidal works are over 5km from the SAC and silt resuspended from the works would be expected to have settled or diluted to negligible levels prior to reaching the SAC.</p> <p>No significant effects are likely .</p>
IE 000697	Bannow Bay SAC	OUT	<p>Conservation Objectives</p> <p>The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.</p> <p>Qualifying Interests</p> <p>Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornetea fruticosi</i>) [1420] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130]</p> <p>Potential Impact</p> <p>The proposed cable works are located 8.1 km from the Bannow Bay SAC. The proposed cable removal and laying will be located within the marine and terrestrial environments and will not impact on the conservation interests of this site. Any sediment resuspended from the proposed works would be expected to settle or be diluted to negligible levels prior to reaching this SAC.</p> <p>Impacts from the cable removal and laying would be minor, localised and would not extend to the SAC 8.1 km from the works. Due to short term scale of the project, the distance from the cable laying to the SAC, and the low level of impact, there is no possibility of significant effects on the qualifying interests of this SAC.</p> <p>No significant effects are likely .</p>
IE 002269	Carnsore Point SAC	OUT	<p>Conservation Objectives</p> <p>The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.</p> <p>Qualifying Interests</p> <p>Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170]</p> <p>Potential Impact</p> <p>The proposed cable laying site is located at a minimum of 10.3 km from the Carnsore Point SAC. The proposed cable laying will be</p>

NATURA Code	Name	Screened IN/OUT	Details/Reason
			<p>localised within the marine environment and will not impact on the conservational interests of mudflats and sandflats not covered by seawater at low tide.</p> <p>Further, given that the SAC is located at least 10.3 km from the proposed cable laying site sediment resuspended from the proposed works would be expected to settle or be diluted to negligible levels prior to reaching this SAC. Due to short term scale of the project, the distance from the cable laying to the SAC, and the low level of impact, there is no possibility of significant effects on the qualifying interests of this SAC. As such, the proposed cable laying will not impact on the conservational objectives of protected reefs within the Carnsore Point SAC.</p> <p>No significant effects are likely .</p>
IE 000704	Lady's Island Lake SAC	OUT	<p>Conservation Objectives</p> <p>The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.</p> <p>Qualifying Interests</p> <p>Coastal lagoons [1150] Reefs [1170] Perennial vegetation of stony banks [1220]</p> <p>Potential Impact</p> <p>The proposed development site is located 11.4 km from the Lady's Island Lake SAC. The proposed cable laying will be localised within the marine environment and will not impact on the conservational interests. Further, given that the SAC is located at least 11.4 km from the proposed works sediment resuspended from the proposed works would be expected to settle or be diluted to negligible levels prior to reaching this SAC. As such, the proposed cable laying will not impact on the conservational objectives of protected reefs within this SAC.</p> <p>No significant effects are likely .</p>
IE 002161	River Barrow and River Nore SAC	OUT	<p>Conservation Objectives</p> <p>The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.</p> <p>Qualifying Interests</p> <p>Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Reefs [1170] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritima</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Water courses of plain to montane levels with the <i>Ranunculon fluitantis</i> and <i>Callitricho-Batrachion</i> vegetation [3260] European dry heaths [4030] Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels [6430] Petrifying springs with tufa formation (<i>Cratoneurion</i>) [7220]</p>

NATURA Code	Name	Screened IN/OUT	Details/Reason
			<p>Old sessile oak woods with Ilex and Blechnum in the British Isles [91A0] Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0] Desmoulin's Whorl Snail (<i>Vertigo moulinsiana</i>) [1016] Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>) [1029] White-clawed Crayfish (<i>Austropotamobius pallipes</i>) [1092] Sea Lamprey (<i>Petromyzon marinus</i>) [1095] Brook Lamprey (<i>Lampetra planeri</i>) [1096] River Lamprey (<i>Lampetra fluviatilis</i>) [1099] Twaite Shad (<i>Alosa fallax fallax</i>) [1103] Salmon (<i>Salmo salar</i>) [1106] Otter (<i>Lutra lutra</i>) [1355] Killarney Fern (<i>Trichomanes speciosum</i>) [1421] Nore Pearl Mussel (<i>Margaritifera durrovensis</i>) [1990]</p> <p>Potential Impact</p> <p>The cable laying site is located at a minimum of 14.2 km from the River Barrow and River Nore SAC. Sediment resuspended from the proposed works would be expected to settle or be diluted to negligible levels prior to reaching this SAC. Due to short term scale of the project, the distance from the cable laying to the SAC, and the low level of impact, there is no possibility of significant effects on the qualifying interests of this SAC.</p> <p>No significant effects are likely .</p>
Special Protection Areas			
IE 004092	Tacumshin Lake SPA	OUT	<p>Conservation Objectives</p> <p>To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.</p> <p>To maintain or restore the favourable conservation condition of the wetland habitat at Tacumshin Lake SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.</p> <p>Qualifying Interests</p> <p>Little Grebe (<i>Tachybaptus ruficollis</i>) [A004] Bewick's Swan (<i>Cygnus columbianus bewickii</i>) [A037] Whooper Swan (<i>Cygnus cygnus</i>) [A038] Wigeon (<i>Anas penelope</i>) [A050] Gadwall (<i>Anas strepera</i>) [A051] Teal (<i>Anas crecca</i>) [A052] Pintail (<i>Anas acuta</i>) [A054] Shoveler (<i>Anas clypeata</i>) [A056] Tufted Duck (<i>Aythya fuligula</i>) [A061] Coot (<i>Fulica atra</i>) [A125] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Lapwing (<i>Vanellus vanellus</i>) [A142] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Wetland and Waterbirds [A999]</p> <p>Potential Impact</p> <p>The Tacumshin Lake SPA is located 6.6 km from the proposed location of the cable laying. The cable laying works will be localised</p>

NATURA Code	Name	Screened IN/OUT	Details/Reason
			<p>within the marine environment and in the terrestrial / intertidal elements of Ballyteige Bay.</p> <p>The proposed works is within an area of existing vessel traffic, and the intertidal element of the works is within an area of high human disturbance. The presence of works 6.6km from the SPA in a disturbed environment and a vessel working in the marine environment would not be deemed to have an impact on the conservation objectives of this SPA. Due to short term scale of the project, the distance from the works to the SPA, and the low level of impact, there is no possibility of significant effects on the qualifying interests of this SAC.</p> <p>In the absence of mitigation, impacts caused by the project would be expected to be localised to the immediate environs of the proposed cable laying site No impacts on the qualifying interests of this Natura 2000 site are foreseen.</p> <p>No significant effects are likely .</p>
IE 004033	Bannow Bay SPA	OUT	<p>Conservation Objectives</p> <p>The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.</p> <p>Qualifying Interests</p> <p>Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Shelduck (<i>Tadorna tadorna</i>) [A048] Pintail (<i>Anas acuta</i>) [A054] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Lapwing (<i>Vanellus vanellus</i>) [A142] Knot (<i>Calidris canutus</i>) [A143] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160] Redshank (<i>Tringa totanus</i>) [A162] Wetland and Waterbirds [A999]</p> <p>Potential Impact</p> <p>The proposed cable laying site is located 8.4 km from the Bannow Bay SPA. The majority of qualifying interests are wintering birds and will not be present during the works. However, due to short term scale of the project, the distance from the works to the SPA, and the low level of impact, there is no possibility of significant effects on the qualifying interests of this SAC.</p> <p>In the absence of mitigation, impacts caused by the project would be expected to be localised to the immediate environs of the proposed cable laying site No impacts on the qualifying interests of this Natura 2000 site are foreseen.</p> <p>Impacts from the cable laying would be minor, localised and would not be expected to extend to the SPA 8.4 km from the works.</p> <p>No significant effects are likely .</p>

NATURA Code	Name	Screened IN/OUT	Details/Reason
IE 004009	Lady's Island Lake SPA	OUT	<p>Conservation Objectives</p> <p>To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA.</p> <p>To maintain or restore the favourable conservation condition of the wetland habitat at Lady's Island Lake SPA as a resource for the regularly-occurring migratory waterbirds that utilise it.</p> <p>Qualifying Interests</p> <p>Gadwall (<i>Anas strepera</i>) [A051] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Sandwich Tern (<i>Sterna sandvicensis</i>) [A191] Roseate Tern (<i>Sterna dougallii</i>) [A192] Common Tern (<i>Sterna hirundo</i>) [A193] Arctic Tern (<i>Sterna paradisaea</i>) [A194] Wetland and Waterbirds [A999]</p> <p>Potential Impact</p> <p>The proposed cable laying site is located 11.8 km from the Lady's Island SPA. The proposed works will be located within an area of high disturbance due to the presence of a car park and high pedestrian and canine activity. In addition, the works are proximate to Kilmore Quay with vessel activity. Due to the distance from the works to the SPA, and the low level of impact, there is no possibility of significant effects on the qualifying interests of this SAC.</p> <p>In the absence of mitigation, impacts caused by the project would be expected to be localised to the immediate environs of the proposed cable laying site. No impacts on the qualifying interests of this Natura 2000 site are foreseen.</p> <p>2000 site are predicted.</p> <p>No significant effects are likely .</p>
IE 004076	Wexford Harbour and Slob SPA	OUT	<p>Conservation Objectives</p> <p>The maintenance of habitats and species within Natura 2000 sites at favourable conservation condition will contribute to the overall maintenance of favourable conservation status of those habitats and species at a national level.</p> <p>Qualifying Interests</p> <p>Little Grebe (<i>Tachybaptus ruficollis</i>) [A004] Great Crested Grebe (<i>Podiceps cristatus</i>) [A005] Cormorant (<i>Phalacrocorax carbo</i>) [A017] Grey Heron (<i>Ardea cinerea</i>) [A028] Bewick's Swan (<i>Cygnus columbianus bewickii</i>) [A037] Whooper Swan (<i>Cygnus cygnus</i>) [A038] Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Shelduck (<i>Tadorna tadorna</i>) [A048] Wigeon (<i>Anas penelope</i>) [A050] Teal (<i>Anas crecca</i>) [A052] Mallard (<i>Anas platyrhynchos</i>) [A053] Pintail (<i>Anas acuta</i>) [A054] Scaup (<i>Aythya marila</i>) [A062] Goldeneye (<i>Bucephala clangula</i>) [A067] Red-breasted Merganser (<i>Mergus serrator</i>) [A069] Hen Harrier (<i>Circus cyaneus</i>) [A082]</p>

NATURA Code	Name	Screened IN/OUT	Details/Reason
			<p>Coot (<i>Fulica atra</i>) [A125] Oystercatcher (<i>Haematopus ostralegus</i>) [A130] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Lapwing (<i>Vanellus vanellus</i>) [A142] Knot (<i>Calidris canutus</i>) [A143] Sanderling (<i>Calidris alba</i>) [A144] Dunlin (<i>Calidris alpina</i>) [A149] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Curlew (<i>Numenius arquata</i>) [A160] Redshank (<i>Tringa totanus</i>) [A162] Black-headed Gull (<i>Chroicocephalus ridibundus</i>) [A179] Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183] Little Tern (<i>Sterna albifrons</i>) [A195] Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395] Wetland and Waterbirds [A999]</p> <p>Potential Impact</p> <p>The proposed cable laying site is located at a minimum of 14.8 km from the Wexford Harbour and Slobbs SPA. The proposed works will be located within an area of high disturbance due to the presence of a car park and high pedestrian and canine activity. In addition, the works are proximate to Kilmore Quay with vessel activity. Due to the distance from the works to the SPA, and the low level of impact, there is no possibility of significant effects on the qualifying interests of this SAC.</p> <p>In the absence of mitigation, impacts caused by the project would be expected to be localised to the immediate environs of the proposed cable laying site. No impacts on the qualifying interests of this Natura 2000 site are foreseen.</p> <p>No significant effects are likely .</p>
IE 004118	Keeragh Islands SPA	Out	<p>Conservation Objectives</p> <p>To maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA</p> <p>Qualifying Interest</p> <p>Cormorant (<i>Phalacrocorax carbo</i>) [A017]</p> <p>Potential Impact</p> <p>The proposed landfall and works area are located a minimum of 9.5 km from the SPA. The cable laying route passes by this SPA at a minimum of 4 km. The proposed works will be located within an area of high disturbance due to the presence of a car park and high pedestrian and canine activity. In addition, the works are proximate to Kilmore Quay with vessel activity. Due to the distance from the works to the SPA, and the low level of impact, there is no possibility of significant effects on the qualifying interests of this SAC.</p> <p>In the absence of mitigation, impacts caused by the project would be expected to be localised to the immediate environs of the proposed cable laying site. No impacts on the qualifying interests of this Natura 2000 site are foreseen.</p> <p>Potential for significant effects on this SPA - NIS is Required.</p>

Marine mammals

As outlined in NPWS³ “Cetaceans account for 48% of all the native species of mammals, both marine and terrestrial, recorded in Ireland and Irish waters are thought to contain important habitats for cetaceans within the northeast Atlantic. To date, 24 species of cetacean, or 28% of species described worldwide, have been recorded in Ireland. Irish cetaceans include six species of baleen whale and eighteen species of toothed whale, including five species of beaked whale. Twenty-two of these have been reported stranded ashore and 20 species observed at sea. Two species (Pygmy sperm whale and Gervais’ beaked whale) are only known from stranded individuals and two species (Northern right whale and White whale/beluga) have only been recorded historically, with neither species occurring in the stranding record so far.

Ireland also has two species of seals, the Common Seal (or Harbour Seal) and the Grey Seal. Whilst both species haul out on land for key stages of their life history, the majority of their time is spent in the marine environment.

In Ireland, the 1992 EC Habitats Directive as transposed by the European Communities (Birds and Natural Habitats) Regulations 2011 (S.I. No. 477 of 2011) requires that both seal species and all cetaceans occurring in Ireland are maintained at favourable conservation status. Under Article 12 of the Directive, all cetaceans should receive strict protection within the Exclusive Economic Zone. Under Article 4 of the Directive, Special Areas of Conservation (SACs) must be proposed for the following species:”

- Bottlenose Dolphin
- Harbour Porpoise
- Common Seal
- Grey Seal

The protection afforded to marine mammals in Ireland is summarised below:

- Harbour Porpoise Annex II of EC Habitats Directive/Protected species of Wildlife (Amendment) Act/OSPAR List of Threatened and Declining Species and Habitats
- Bottlenose Dolphin Annex II of EC Habitats Directive/Annex IV of EC Habitats Directive/Protected species of Wildlife (Amendment) Act
- All Cetacea Annex IV of EC Habitats Directive/Protected species of Wildlife (Amendment) Act
- Grey Seal/Harbour Seal Annex II of EC Habitats Directive/Protected species of Wildlife (Amendment) Act

Discussion took place with the Foreshore Unit and the inclusion of marine mammals within the Appropriate Assessment process. It was considered that as marine mammals are afforded protection under the Habitats Directive, the proposed project has the potential to introduce noise into the marine environment and mitigation measures are required to protect marine mammals, they are included in this Appropriate Assessment. *Figure 32* shows all cetacean species and *Figure 33* shows monthly activity trends, in the vicinity of the proposed cable route, as recorded by IWDG sightings scheme. Cetacean activity has been seen in the vicinity of the cable route corridor. Species seen in the area and along the cable route include Fin Whale (*Balaenoptera physalus*), Risso’s dolphin (*Grampus griseus*), common dolphin (*Delphinus delphis*), humpback whale (*Megaptera novaeangliae*), Sperm whale (*Physeter macrocephalus*), bottle-nosed dolphin (*Tursiops truncatus*), minke whale (*Balaenoptera acutorostrata*) and harbour porpoise (*Phocoena phocoena*). During the months of proposed works (Q2-Q3 2023) Fin Whale (*Balaenoptera physalus*), Risso’s dolphin (*Grampus griseus*), common dolphin (*Delphinus delphis*), humpback whale (*Megaptera novaeangliae*), Sperm whale (*Physeter macrocephalus*), bottle-nosed dolphin (*Tursiops truncatus*), minke whale (*Balaenoptera acutorostrata*) and harbour porpoise (*Phocoena phocoena*) have been noted proximate to the proposed works. It should, be noted that grey seal is a feature of interest of the Saltee Islands SAC.

³ <https://www.npws.ie/marine/marine-species/cetaceans>

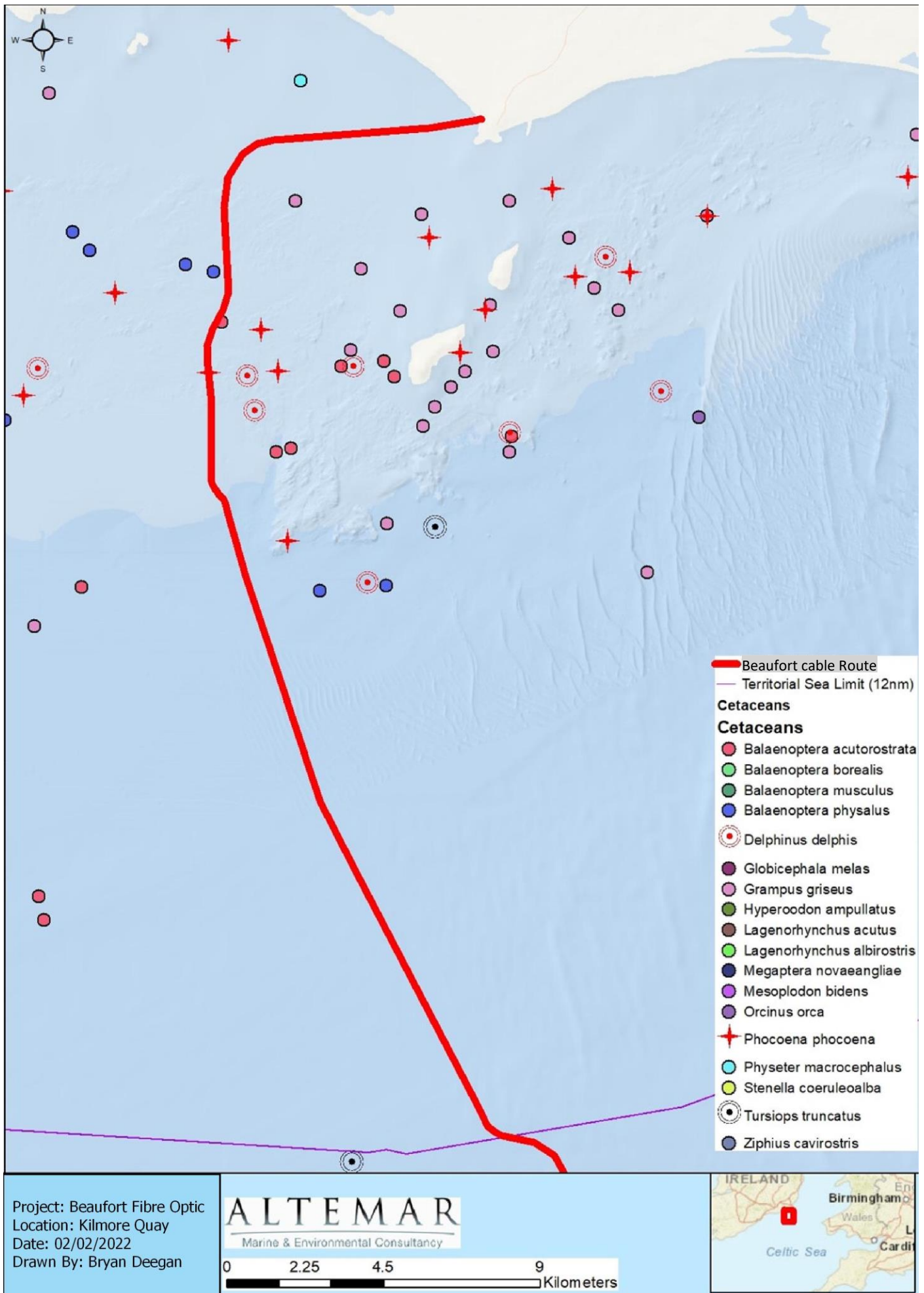


Figure 32. Recorded cetacean species sightings (Source: IWDG)

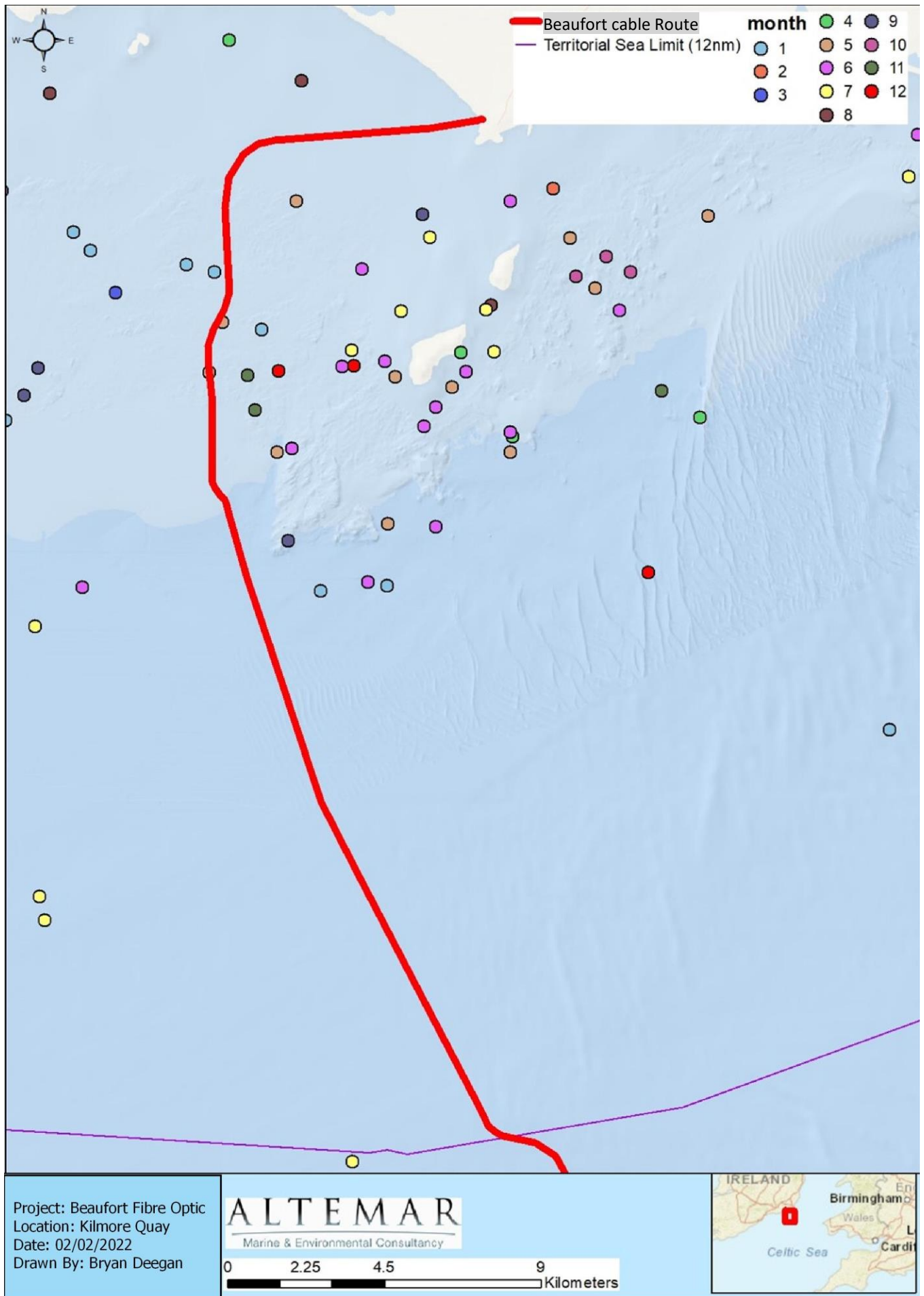


Figure 33. Recorded Cetacean sightings (Source IWDG Sightings Data) in the inshore area recorded during the 12 months of the year.

In combination effects

As outlined by (OSPAR, 2012) “Cumulative effects, the combined effect of more than one activity, may reinforce the impacts of a single activity due to temporal and/or spatial overlaps”. The potential for in-combination effects within the Zol that may occur as a result of the proposed project, during and post works were assessed. The proposed landfall cable laying is in a populated area and is a popular destination for the local community. It is a location with a regular stream of dog walkers and pedestrians on the shore. The cable laying would not be seen to have an impact on water quality of the area including impacting the water quality status. The intertidal section of this project will involve trenching (in SAC/SPA/pNHA & Ramsar site) and machinery that will enter the upper shore (within the conservation sites).

The following is a list of planning applications as identified on the Department of Housing, Local Government and Heritage’s ‘National Planning Application Database’ portal:

Table 4. In combination effects evaluated.

Ref. No.	Address	Proposal
20210079	Ballask (ED Kilmore), Kilmore.	Permission for the construction of 1) an All Weather Outdoor Training facility and associated lighting, 2) an All weather walking track and associated lighting and 3) all associated site works at Kilmore GAA grounds.
20191633	Crossfarnogue, Nemestown, Beak, Ballyteigue and Libgate, Kilmore.	Ten year planning permission to construct a new wastewater treatment plant in Kilmore Quay in two phases. Phase 1 (A) Wastewater treatment plant (WwTP) with a capacity of 850 population equivalent (PE) at Nemestown; (B) 2 No. wastewater pumping stations (WwPS) at Crossfarnogue; (C) 8.5 kms of pipeline Irish Water intends to deliver this phase within 5 years. Phase 2 construction of modular expansion to the WwTP to provide a treatment capacity up to 1,900 PE. A Natura Impact Statement accompanies this planning application.
20170534	Crossfarnogue, Kilmore.	Permission for extension to front of existing factory comprising the erection of single storey loading bay.

These potential future offshore developments are discussed with regard to the planned Beaufort Cable in the following sections. These have been detailed previously in the report.

Table 5. Foreshore licence applications in vicinity of Beaufort cable

Reference	Title	Year	Location	Activity	Status
FS007274	UCD Soil and Vegetation Sampling - Ballyteige	2021	Wexford	Soil and vegetation sampling	Consultation
FS007050	Greenlink Interconnector Wexford	2019	Wexford	Subsea and underground electricity interconnector cable	Determination
FS006982	Energia - Application for Site Investigation Licence for Windfarm off Helvick Head	2019	Waterford	Site investigations for Offshore Wind Farm	Consultation
FS006983	SSE Renewables Celtic Sea	2019	Waterford	Site investigations for Offshore Wind Farm	Consultation
FS007038	Lady’s Island Pipeline	2021	Wexford	Installation of 2 no. pipes and a flow control structure	Consultation

Application **20191633** relates to a proposed wastewater treatment plant located to the east of the proposed cable laying site that was granted permission. An Appropriate Assessment Screening Report and a Natura Impact Statement was prepared by AECOM Infrastructure and Environment UK Ltd., on behalf of Irish Water, to accompany this application. The Stage 2 Appropriate Assessment concludes that:

'provided the mitigation measures and the guidelines outlined in this Stage 2 Appropriate Assessment, along with monitoring procedures outlined are implemented, it is considered that the proposed development will not result in significant impacts on the qualifying species or habitats, and the conservation status of the Saltee Islands SAC or Ballyteige Burrow SAC, either directly, indirectly, or cumulative.'

Further, following the implementation of mitigation measures:

'it is envisioned that there shall be no significant adverse effects on the integrity of the European sites in view of the site's conservation objectives and that the conservation status of the Annex I habitats and Annex II species will not be compromised by this proposed project either directly, indirectly, or cumulatively.'

The UK element of the project will be covered under UK licencing. Given this, it is considered that in combination effects with other existing and proposed developments in proximity to the application area would be unlikely, neutral, not significant and localised. It is concluded that no likely significant effects on Natura 2000 sites will be seen as a result of the proposed development alone or combination with other projects.

The potential impacts of the proposed cable laying are Temporary (i.e. Effects lasting less than a year) and primarily to occur during the brief construction period (with the presence of boats, machinery and personnel in the vicinity of the works) and over several tidal cycles as sediments redistribute over the cable. Impacts on infauna would be deemed to be temporary (i.e. Effects lasting less than a year). The projects outlined above are either completed or, are currently going through planning stages and are not expected to be carried out concurrently or are not at a scale or location where in combination effects are foreseen with the proposed project. This report pertains to the cable laying for a marine fibre optic cable in subtidal and intertidal habitats. As can be seen from using the Best Available Techniques and mitigation measures during cable laying considerable effort has gone into minimising the potential environmental impact of the project. "Generally all mitigation measures applied for individual cables also contribute to reduction of cumulative impacts" (OSPAR, 2012).

No in combination effects are foreseen from the project in conjunction with other projects.

Appropriate Assessment Screening Conclusions

An initial screening of the proposed works, using the precautionary principle (without the use of any mitigation measures) and Natura 2000 sites with the potential to result in significant effects on the conservation objectives and features of interest of the Natura 2000 sites was carried out in Table 2. Based on best scientific knowledge and objective information and assessment, the possibility of significant effects caused by the proposed project was excluded for the following Natura 2000 sites:

Special Areas of Conservation

- IE 000709 Tacumshin Lake SAC
- IE 000697 Bannow Bay SAC
- IE 002269 Carnsore Point SAC
- IE 000704 Lady's Island Lake SAC
- IE 002161 River Barrow and River Nore SAC
- IE 000764 Hook Head SAC

Special Protection Areas

- IE 004092 Tacumshin Lake SPA
- IE 004033 Bannow Bay SPA
- IE 004009 Lady's Island Lake SPA
- IE 004076 Wexford Harbour and Slobbs SPA
- IE 004118 Keeragh Islands SPA

The proposed cable removal and laying is within Ballyteige Burrow SAC. Terrestrial elements are within existing ducts. Intertidal elements will involve excavation within Ballyteige Burrow SAC. Subtidal elements of the project are proximate to Saltee Islands SAC, Ballyteige Burrow SPA and Saltee Islands SPA.

Acting on a strictly precautionary basis, NIS is required in respect of the effects of the project on the Ballyteige Burrow SAC, Saltee Islands SAC, Ballyteige Burrow SPA and Saltee Islands SPA because it cannot be excluded on the basis of

best objective scientific information following screening, in the absence of control or mitigation measures that the plan or project, individually and/or in combination with other plans or projects, will have a significant effect on the named European Site/s.

A NIS or Stage 2 Appropriate Assessment is not required for the effects of the project on all other listed Natura sites above because it can be excluded on the basis of the best objective scientific information following screening that the plan or project, individually and/or in combination with other plans or projects, will have a significant effect on the European Site/s.

4. Stage II- Natura Impact Statement

A Natura Impact Statement (NIS) is Stage 2 of the Appropriate Assessment process. In the case of the proposed cable laying, acting on a strictly precautionary basis a NIS is required in respect of the effects of the project on:

- Ballyteige Burrow SAC
- Saltee Islands SAC
- Ballyteige Burrow SPA
- Saltee Islands SPA

A Natura Impact Statement is required for the above Natura 2000 sites because it cannot be excluded on the basis of best objective scientific information, in the absence of control or mitigation measures, following screening, that the plan or project, individually and/or in combination with other plans or projects, will have a significant effect on the named European Site/s.

A Stage 2 Appropriate Assessment or NIS is not required for the effects of the project on all other listed Natura 2000 sites and those beyond 15km, because it can be excluded on the basis of the best objective scientific information following screening that the plan or project, individually and/or in combination with other plans or projects, will have a significant effect on the European Site/s.

The NIS evaluates the potential for direct, indirect effects, alone or in combination with other plans and projects having taken into account the use of mitigation measures. It outlines the information required for the competent authority to screen for appropriate assessment and to determine whether or not the proposed development, either alone or in combination with other plans or projects, in view of best scientific knowledge and in view of the site's conservation objectives, will adversely affect the integrity of the European site.

In order to provide sufficient objective information for the Natura Impact Statement a further review of the Conservation Objectives and features of interest, potential impacts and mitigation measures is necessary to determine if significant effects are likely to impact on the outlined Natura 2000 sites.

As outlined in the Ballyteige Burrow SAC Site Synopsis⁴ (NPWS 2020):

'This coastal site extends eastwards and northwards from the village of Kilmore Quay in Co. Wexford. A long, narrow spit of coarse sand and gravel with an impressive sand dune system (Ballyteige Burrow) forms most of the seaward boundary of this site. Behind the spit lies a shallow, tidal sea inlet and estuary of the Duncormick River (The Cull). The eastern portion of this intertidal system was reclaimed in the 19th century by construction of the Cull Bank and is now polderland, most of which is intensively farmed grassland and arable land. The western portion of The Cull retains semi-natural habitat, including mudflats which are exposed at low tide and saltmarsh. Most of the site is designated a Nature Reserve.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (= priority; numbers in brackets are Natura 2000 codes):*

[1130] Estuaries; [1140] Tidal Mudflats and Sandflats; [1150] Coastal Lagoons; [1210] Annual Vegetation of Drift Lines; [1220] Perennial Vegetation of Stony Banks; [1310] Salicornia Mud; [1330] Atlantic Salt Meadows; [1410] Mediterranean Salt Meadows; [1420] Halophilous Scrub; [2110] Embryonic Shifting Dunes; [2120] Marram Dunes (White Dunes); [2130] Fixed Dunes (Grey Dunes)*; [2150] Decalcified Dune Heath*; [2190] Humid Dune Slacks.*

A significant proportion of this site comprises intertidal mud- and sandflats which form part of the estuary of the Duncormick River, and the site includes most of the tidal section of this river. The estuary also receives the flow from a network of canals which drain the polders to the east of the site, plus from some minor streams. The estuary is interesting because it is almost entirely enclosed by the extensive sandshingle spit which makes up Ballyteige Burrow, with only a narrow inlet/outlet at the western end. The estuary empties almost entirely on most tides, apart from the main central channel.

*A dominating feature of this site is its large dune system, many of the dunes reaching over 20 m in height. Embryonic shifting dunes and Marram (*Ammophila arenaria*) dunes occur along the seaward side, with more stable fixed dunes and dune heath inland, though blow-outs occur throughout. Typically, plants such as Marram, Portland Spurge (*Euphorbia portlandica*), Sea-holly (*Eryngium maritimum*), Sea Stork's-bill (*Erodium cicutarium*) and Carlina Thistle (*Carlina vulgaris*) are common on the seaward dunes.*

*The fixed dunes occupy the central ridge of the Burrow. These are well developed and species-rich. The vegetation is predominantly low-growing and contains species such as Common Restharrow (*Ononis repens*), Wild Pansy (*Viola tricolor* subsp. *curtisii*), Sea Stork's-bill, Common Centaury (*Centaureum erythraea*), Wild Thyme (*Thymus praecox*) and Red Fescue (*Festuca rubra*). Cattle have not grazed the eastern end of the site since 1987 and, as a result, there is an increase in dune scrub encroachment and a decrease in species diversity. The dominant species here are Red Fescue and Burnet Rose (*Rosa pimpinellifolia*), while Bracken (*Pteridium aquilinum*) is common.*

*One of the most notable features at Ballyteige is the presence of developing acid heath within the (calcareous) fixed grey dune area. This is very unusual in Irish dune systems. The vegetation here is dominated by Bracken, with some Gorse (*Ulex europaeus*) and low-growing herbs. In addition, dune slacks occur as part of the dune complex. These are eroded down in places to the shingle base on which the dunes rest. The free draining nature of these slacks has resulted in an unusual vegetation community distinguished from the adjacent fixed dunes in the abundance of the lichen and bryophyte flora and the shorter stature of the vegetation.*

*Saltmarsh vegetation fringes The Cull, featuring Sea Aster (*Aster tripolium*), Sea Arrowgrass (*Triglochin maritima*), Lax-flowered Sea-lavender (*Limonium humile*) and Hard-grass (*Parapholis strigosa*), with well developed mats of glasswort (*Salicornia* sp.) and patches of cord-grass (*Spartina* sp.). Salt meadows with Sea Rush (*Juncus maritimus*) have formed behind the dyke at the eastern end of the site. Part of the saltmarsh complex contains halophilous scrub vegetation. This is a very rare habitat in Ireland, with only two known extant locations - Ballyteige and Bannow Bay. This habitat is characterised by the rare Perennial Glasswort (*Arthrocnemum perenne*).*

*A series of drainage channels and a small pond, which are largely artificial in origin, now have a flora and fauna characteristic of lagoons. The channels have a maximum depth of 3 m. Seawater enters mainly by percolation through the dunes along the southern shore and apparently by leakage of the sluice on The Cull at high tide. While the aquatic vegetation in much of the site is poor, two lagoonal specialists, Tassel-weed (*Ruppia maritima*) and the green alga *Chaetomorpha linum* occur. An additional lagoonal specialist, the Red Data Book stonewort *Chara canescens*, was recorded here in 1991. The fauna of the lagoonal habitat is rich, diverse and typically lagoonal. A total of 60 taxa were recorded in a survey in 1998, in addition to several further taxa recorded previously. Eleven of these are considered*

⁴ <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY000696.pdf>

as lagoonal specialists in Britain or Ireland (*Lekanesphaera hookeri* (Order Isopoda), *Palaemonetes varians* (Order Decapoda), *Sigara stagnalis* (Order Hemiptera), *S. concinna* (Order Hemiptera), *Agabus conspersus* (Order Coleoptera), *Enochrus bicolor* (Order Coleoptera), *Hydrobia ventrosa* (Class Gastropoda, Order Neotaenioglossa), *Conopeum seurati* (a bryozoan), *Neomysis integer* (Order Mysida), *Notonecta viridis* (Order Hemiptera) and *Plea leachi* (Order Heteroptera)). While the habitat is particularly degraded, restoration is considered feasible and long-term prospects are good.

Ballyteige is recognised as one of the most impressive shingle-based dune systems in the country. There are 'cobble valley's' in between the some of the dunes, an unusual feature. Species associated with shingle recorded from the site include Sea Sandwort (*Honkenya peploides*), Sea-holly (*Eryngium maritimum*), Sea Bindweed (*Calystegia soldanella*) and Yellow Horned-poppy (*Glaucium flavum*). Species typical of the habitat 'annual vegetation of drift lines' which occur at the site include Spear-leaved Orache (*Atriplex prostrata*), Sea-holly, Sea Rocket (*Cakile maritima*) and Yellow Horned-poppy.

This site is host to a range of rare plant species. Wild Asparagus (*Asparagus officinalis* subsp. *prostratus*) is frequent among dune vegetation, while Lesser Centaury (*Centaureum pulchellum*) is associated with damp dune slacks. Borrer's Saltmarshgrass (*Puccinellia fasciculata*) and Perennial Glasswort occur on the saltmarsh. There is also a recent record for Sea Pea (*Lathyrus japonicus* subsp. *maritimus*), a species typically associated with shingle. All five species are protected under the Flora (Protection) Order, 2015. Henbane (*Hyoscyamus niger*), a species which is considered as threatened in Ireland, also occurs at Ballyteige. The dunes also have an interesting lichen flora: the scarce species *Usnea articulata* occurs here, and this is the only known site in Ireland for the species *Fulgensia fulgens*.

The Cull and adjacent reclaimed land provide important habitat for wintering waterfowl, and Brent Goose occur here in internationally important numbers (average maximum count of 219 individuals over the winters 1994/95 - 1997-98). Nationally important numbers of Lapwing (2,737) and Black-tailed Godwit (161) occur. Two species listed on Annex I of the E.U. Birds Directive occur regularly in winter, Golden Plover (2,441) and Bar-tailed Godwit (79), while another species, Little Tern, breeds at Callenstown strand.

The invertebrate fauna of the site includes a number of scarce species, examples being the bumble bees *Bombus distinguendus* and *B. sylvarum*, the jewel wasp *Hedychridium ardens* and the ant *Tetramorium caespitum*, as well as those listed above.

The dune system is used for cattle grazing. An appropriate grazing level is a critical factor in maintaining the diversity of dune systems. Coastal systems in general are threatened by disturbance of the substrate, such as removal of sand/shingle.

This coastal site is of major ecological value for its range of good quality coastal habitats, including three habitats given priority status on Annex I of the E.U. Habitats Directive - fixed dune, dune heath and lagoon. The dune system is of excellent quality, physically well developed and with a rich flora which includes five protected species. The importance of the site for wintering waterfowl further enhances its value.'

As outlined in the Conservation objectives supporting document – coastal habitats (NPWS, 2014)⁵ habitats in the vicinity of the proposed works and could be potentially impacted by the proposed works include:

A) ‘Perennial vegetation of stony banks

Perennial vegetation of stony banks is vegetation that is found at or above the mean high water spring tide mark on shingle beaches (i.e., beaches comprised of cobbles and pebbles). It is dominated by perennial species (i.e. plants that continue to grow from year to year). The first species to colonise are annuals or short-lived perennials that are tolerant of periodic displacement or overtopping by high tides and storms. Level, or gently-sloping, high-level mobile beaches, with limited human disturbance, support the best examples of this vegetation. More permanent ridges are formed by storm waves. Several of these storm beaches may be piled against each other to form extensive structures. However, little is known about the distribution and nature of this habitat at this site.

Overall Objective

The overall objective for ‘perennial vegetation of stony banks’ in Ballyteige Burrow SAC is to ‘maintain the favourable conservation condition’. This objective is based on an assessment of the recorded condition of the habitat under a range of attributes and targets. The assessment is divided into three main headings (a) Range, (b) Area and (c) Structure and Functions.

Area

Habitat extent

Habitat extent is a basic attribute to be assessed when determining the condition of a particular habitat. The target for favourable condition is ‘no decrease in extent from the established baseline’. Bearing in mind that coastal systems are naturally dynamic and subject to change even within a season, this target is assessed subject to natural processes, including erosion and succession.

The exact current extent of this habitat in Ballyteige Burrow is unknown. The National Shingle Beach Survey (Moore & Wilson, 1999) surveyed the site, but did not map the area. The CMP recorded and mapped a narrow band of shingle vegetation extending approximately 630m along the strand at Ballyteige Burrow (0.506ha) (Ryle et al., 2009). The habitat was not recorded during the Sand Dunes Monitoring Project (Delaney et al., 2013), however it appears that the differences in the records may be down to the interpretation of the habitat.

The target is that the area should be stable or increasing, subject to natural processes, including erosion and succession.

Range

Habitat distribution

Current distribution unknown. Shingle was noted to occur as a narrow band along the strand at Ballyteige by Ryle et al. (2009). The NSBS also noted a number of shingle based flat grasslands between the dunes (Moore & Wilson, 1999). Some of the vegetation within the areas assigned as ‘humid dune slacks’ by Delaney et al. (2013) could possibly be assigned to this habitat.

The target is that there should be no decline or change in the distribution of this habitat, unless it is the result of natural processes, including erosion and succession.

Structure and Functions

A fundamental aim of shingle conservation is to facilitate natural mobility. Shingle beaches are naturally dynamic systems, making them of geomorphological interest as well as ecological interest. They are constantly changing and shingle features are rarely stable in the long term.

Functionality and sediment supply

The health and on-going development of this habitat relies on a continuing supply of shingle sediment. This may occur sporadically as a response to storm events rather than continuously. Interference with the natural coastal processes, through offshore (or onshore) extraction or coastal defence structures in particular, can interrupt the supply of sediment and lead to beach starvation.

The target is to maintain the natural circulation of sediment and organic matter, without any physical obstructions.

⁵[https://www.npws.ie/sites/default/files/publications/pdf/Ballyteige%20Burrow%20SAC%20\(000696\)%20Conservation%20objectives%20supporting%20document%20-%20coastal%20habitats%20\[Version%201\].pdf](https://www.npws.ie/sites/default/files/publications/pdf/Ballyteige%20Burrow%20SAC%20(000696)%20Conservation%20objectives%20supporting%20document%20-%20coastal%20habitats%20[Version%201].pdf)

Vegetation structure: zonation

Ecological variation in this habitat type depends on stability; the amount of fine material accumulating between the pebbles; climatic conditions; width of the foreshore and past management of the site. The ridges and lows also influence the vegetation patterns, resulting in characteristic zonations of vegetated and bare shingle. In the frontal less stable areas of shingle, the vegetation tends to be dominated by annuals and short-lived salt-tolerant perennials. Where the shingle is more stable the vegetation becomes more perennial in nature and may include grassland, heathland and scrub, depending on the exact nature of the site. The presence of lichens at Ballyteige Burrow indicates long term stability of the shingle structure. Transitions to intertidal, saltmarsh and sand dune habitats occur at this site (Moore & Wilson, 1999). The rare lichen, *Fulgensia semibracteata* has its only known station in Ireland in the dry slacks of Ballyteige Burrow, where there is an absence of winter flooding, primarily due to the underlying shingle substrate.

The target is to maintain the range of coastal habitats, including transitional zones, subject to natural processes including erosion and succession.

Vegetation composition: typical species & sub-communities

The degree of exposure, as well as the coarseness and stability of the substrate determines species diversity. There is little information concerning the vegetation growing on the shingle at Ballyteige Burrow but it is assumed to support a typical flora for this habitat. Typical species include sea sandwort (*Honckenya peploides*), sea-holly (*Eryngium maritimum*), sea bind weed (*Calystegia soldanella*) and yellow horned-poppy (*Glaucium flavum*). The target for this attribute is to ensure that the typical flora of vegetated shingle is maintained, as are the range of sub-communities within the different zones.

Vegetation composition: negative indicator species

Where shingle becomes more stabilised negative indicator species can become an issue. Negative indicator species can include non-native species (e.g. *Centranthus ruber*, *Lupinus arboreus*); species indicative of changes in nutrient status (e.g. *Urtica dioica*) and species not considered to be typical of the habitat (e.g. *Pteridium aquilinum*).

The target for this attribute is that negative indicator species (including non-native species) should represent less than 5% of the vegetation cover."

B) Sand dune habitats

Sand dunes are hills of wind-blown sand that have become progressively more stabilised by a cover of vegetation. In general, most sites display a progression through strandline, foredunes, mobile dunes and fixed dunes. Where the sandy substrate is decalcified, fixed dunes may give way to dune heath. Wet hollows, or dune slacks, occur where the dunes have been eroded down to the level of the water-table. Machair is a specialised form of dune system that is only found on the northwest coasts of Ireland and Scotland. Transitional communities can occur between dune habitats and they may also form mosaics with each other. Dune systems are in a constant state of change and maintaining this natural dynamism is essential to ensure that all of the habitats present at a site achieve favourable conservation condition.

In Ireland, there are 9 sand dune habitats (including annual vegetation of drift lines) listed under Annex I of the EU Habitats Directive (92/43/EEC) (* denotes a priority habitat):

- Annual vegetation of drift lines (1210)
- Embryonic shifting dunes (2110)
- Shifting dunes along the shoreline with *Ammophila arenaria* (2120)
- Fixed coastal dunes with herbaceous vegetation (grey dunes) (2130) *
- Decalcified dunes with *Empetrum nigrum* (2140) *
- Atlantic decalcified fixed dunes (2150) *
- Dunes with *Salix repens* (2170)
- Humid dune slacks (2190)
- Machair (21A0) *

Six dune habitats were recorded by Ryle et al. (2009) but only the five habitats indicated in bold above are listed as Qualifying Interests for Ballyteige Burrow SAC. These habitats include mobile areas at the front, as well as more stabilised parts of dune systems. Humid dune slacks were also recorded at the Ballyteige Burrow sub-site by the CMP. However, these areas need to be assessed further to investigate whether they are better placed within the habitat 'perennial vegetation of stony banks'.

Annual vegetation of drift lines is found on beaches along the high tide mark, where tidal litter accumulates. It is dominated by a small number of annual species (i.e. plants that complete their life-cycle within a single season). Tidal litter contains the remains of marine algal and faunal material, as well as a quantity of seeds. Decaying detritus in the tidal litter releases nutrients into what would otherwise be a nutrient-poor environment. The habitat is often represented as patchy, fragmented stands of vegetation that are short-lived and subject to frequent re-working of the sediment. The vegetation is limited to a small number of highly specialised species that are capable of coping with salinity, wind exposure, an unstable substrate and lack of soil moisture. Typical species include spear-leaved orache (*Atriplex prostrata*), frosted orache (*A. laciniata*), sea rocket (*Cakile maritima*), sea sandwort (*Honckenya peploides*) and prickly saltwort (*Salsola kali*).

Embryonic dunes are low accumulations of sand that form above the strandline. They are sometimes referred to as foredunes, pioneer dunes or embryo dunes, as they can represent the primary stage of dune formation. They are characterised by the presence of the salt-tolerant dune grasses sand couch (*Elytrigia juncea*) and lyme grass (*Leymus arenarius*), which act as an impediment to airborne sand. Strandline species can remain a persistent element of the vegetation.

Where sand accumulation is more rapid, marram grass (*Ammophila arenaria*) invades, initiating the transition to mobile dunes (Shifting dunes along the shoreline with *Ammophila arenaria*). Marram growth is actively stimulated by sand accumulation. These unstable and mobile areas are sometimes referred to as 'yellow dunes' (or white dunes in some European countries), owing to the areas of bare sand visible between the tussocks of marram.

Fixed dunes refers to the more stabilised area of dune systems, generally located in the shelter of the mobile dune ridges, where the wind speed is reduced and the vegetation is removed from the influence of tidal inundation and salt spray. This leads to the development of a more or less closed or 'fixed' carpet of vegetation dominated by a range of sand-binding species (Gaynor, 2008).

At the older landward edge of the fixed dunes, leaching of basic minerals and nutrients can lower the pH over time and create conditions suitable for colonisation by heath species. As these decalcified or acidic conditions can only form on the older, landward extremes of dune systems, they are often vulnerable to housing or other developments. Well-developed dune heath communities containing the classic dwarf ericoid shrubs, such as *Calluna vulgaris* (heather), and *Erica* spp., that are generally regarded as characterising the habitat, are not well represented in Ireland.

All of the dune habitats indicated above occur as a complex mosaic of constantly changing and evolving vegetation communities. They are inextricably linked in terms of their ecological functioning and should be regarded as single geomorphological units. As such, no dune habitat should be considered in isolation from the other dune habitats present at a site, or the adjoining semi-natural habitats with which they often form important transitional communities.

The CMP surveyed one sub-site within Ballyteige Burrow SAC:

1. Ballyteige Burrow (Appendix V)

Ballyteige Burrow is a long sand/shingle spit extending approximately 8.5km in a westerly direction from Forlorn Point at Kilmore Quay. The distribution of sand dune habitats as mapped by the SDM is presented in Appendix II. A total of 253.53ha of sand dune habitat was mapped within the Ballyteige Burrow SAC, of which 17.68ha represents 'humid dune slacks' which need to be reviewed. The remaining area represents habitats of qualifying interest for this particular site.

Overall objectives

The overall objective for 'Annual vegetation of drift lines' in Ballyteige Burrow SAC is to 'maintain the favourable conservation condition'.

The overall objective for 'Embryonic shifting dunes' in Ballyteige Burrow SAC is to 'maintain the favourable conservation condition'.

The overall objective for 'Shifting dunes along the shoreline with *Ammophila arenaria*' in Ballyteige Burrow SAC is to 'maintain the favourable conservation condition'.

The overall objective for 'Fixed coastal dunes with herbaceous vegetation' in Ballyteige Burrow SAC is to 'restore the favourable conservation condition'.

While acknowledging that the habitat may be poorly developed at this site, the overall objective for ‘Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)’ in Ballyteige Burrow SAC is to ‘maintain the favourable conservation condition’.

These objectives are based on an assessment of the recorded condition of each habitat under a range of attributes and targets. The assessment is divided into three main headings (a) Area (b) Range and (c) Structure and Functions.

Area

Habitat extent

Habitat extent is a basic attribute to be assessed when determining the condition of a particular habitat. A baseline habitat map was produced for the sand dune habitats at each sub-site in Ballyteige Burrow SAC during the Coastal Monitoring Project (CMP) (Ryle et al., 2009). During the SDM, these baseline maps were checked and revised to account for changes in habitat interpretation and omissions. Updated maps were then produced to reflect the current situation on the ground. The revised baseline habitat maps and updated habitat maps from the SDM are included with the individual site reports in the Appendix V.

Ballyteige Burrow is an important site for the range and extent of its coastal habitats. In general, the habitats at the front of the system are limited in their development and extent in view of the tidal exposure. The fixed dunes are significant in extent and species diversity.

Dune heath habitat occurs in transition with the fixed dune habitat. Neither the CMP nor the SDM separated dune heath from fixed dune as the dune heath habitat was recognised based in the presence of gorse (*Ulex europaeus*) which is concentrated on the leeward side of the dunes. The difficulty in delineating the habitat at Ballyteige Burrows and most Irish sites that are designated for dune heath is the absence of other ericoid species typical of dune heath. The status of this habitat requires further review.

The total areas of each sand dune habitat within the SAC as estimated by Delaney et al. (2013) are presented in the following table.

Habitat	Total area (ha) of habitat within SAC boundary following SDM
Annual vegetation of driftlines	0.66
Embryonic shifting dunes	0.43
Shifting dunes along the shoreline with <i>Ammophila arenaria</i>	8.11
Fixed coastal dunes with herbaceous vegetation	225.65
Atlantic decalcified fixed dunes	-
Total	234.85

In the case of ‘embryonic dunes’ and ‘shifting dunes along the shoreline with *Ammophila arenaria*’, losses were reported during the baseline survey (Ryle et al., 2009). However, the extent of these habitats is naturally limited by the tidal conditions at the site. Therefore, the general target for this attribute in the case of each habitat is that the area should be stable, or increasing. Bearing in mind that coastal systems are naturally dynamic and subject to change, this target is always assessed subject to natural processes, including erosion and succession.

Range

Habitat distribution

Ballyteige Burrow is a long sand/shingle spit and supports a good range of dune habitats (Ryle et al., 2009; Delaney et al., 2013).

The distribution of sand dune habitats as mapped by Delaney et al. (2013) is presented in Appendix II.

Of particular interest at the site is the possible existence of small areas of decalcified dune heath, a priority Annex I habitat. This is normally characterised by the presence of ericoid or heath species in association with dune species. The status of this habitat in Ireland is currently under review.

There should be no decline or change in the distribution of these sand dune habitats, unless it is the result of natural processes, including erosion, and succession.

Structure and Functions

The location, character and dynamic behaviour of sand dunes are governed by a combination of geographic, climatic, edaphic and anthropogenic factors. Sand dunes are highly complex, dynamic systems, where the habitats occur in a complex and constantly evolving and changing mosaic. They function as systems in terms of geomorphology and hydrology and maintaining the favourable conservation condition of the habitats present depends on allowing these processes to continue unhindered. Maintaining the favourable conservation condition of all of the sand dune habitats in Ballyteige Burrow SAC in terms of structure and functions depends on a range of attributes for which targets have been set as outlined below.

Physical structure: functionality and sediment supply

Coastlines naturally undergo a constant cycle of erosion and accretion. There are two main causes of erosion: (a) those resulting from natural causes and (b) those resulting from human interference. Natural causes include the continual tendency towards a state of equilibrium between coasts and environmental forces, climatic change (particularly an increase in the frequency of storms or a shift in storm tracks), relative sea level rise and natural changes in the sediment supply. Human interference is usually associated with changes in the sediment budget, either directly, through the removal of beach or inshore sediment, or indirectly, by impeding or altering sediment movement. It is important to recognise that the process of coastal erosion is part of a natural tendency towards equilibrium. Natural shorelines attempt to absorb the energy entering the coastal zone by redistributing sediment.

Dunes are naturally dynamic systems that require continuous supply and circulation of sand. Sediment supply is especially important in the embryonic dunes and mobile dunes, as well as the strandline communities where accumulation of organic matter in tidal litter is essential for trapping sand and initiating dune formation. The construction of physical barriers such as sea defences can interrupt longshore drift, leading to beach starvation and increased rates of erosion. Sediment circulation and erosion also has a role to play in the more stabilised dune habitats. Cycles of erosion and stabilisation are part of a naturally functioning dune system, where the creation of new bare areas allows pioneer species and vegetation communities to develop, increasing biodiversity. The construction of physical barriers can interfere with the sediment circulation by cutting the dunes off from the beach resulting in fossilisation or over-stabilisation of dunes.

The target for this attribute is to maintain the natural circulation of sediment and organic matter throughout the entire dune system, without any physical obstructions.

Vegetation structure: zonation

The range of vegetation zones on a dune system should be maintained. Gaynor (2008) highlights the highly transitional nature of much of the vegetation; therefore, it is important that the transitional communities are also conserved, including those to the saltmarsh communities.

Ballyteige Burrows represents one of the finest examples of a dune/saltmarsh system with intact transitional communities between the two habitats. This is an extremely rare feature on Irish dune systems.

The target is to maintain the range of coastal habitats, including transitional zones, subject to natural processes, including erosion and succession.

Vegetation structure: bare ground

This target only applies to fixed dunes. It does not apply to the other habitats present where high levels of bare sand are a natural component of the habitat. In the fixed and slack areas some degree of instability is vital. Constant cycles of erosion and stabilisation provide the necessary conditions for the establishment of pioneer species and species that favour open conditions including invertebrates, helping to increase biodiversity.

The target is to achieve up to 10% bare sand. This target is assessed subject to natural processes.

Vegetation structure: vegetation height

This attribute applies to the fixed dunes, where a varied vegetation structure is important for maintaining species diversity and is particularly important for invertebrates and birds. The ecological benefits of moderate levels of grazing on dunes have been well documented (Gaynor, 2008). Moderate grazing regimes lead to the development of a species-rich vegetation cover. The animals increase biodiversity by creating microhabitats through their grazing, dunging and trampling activities. Grazing slows down successional processes and in some cases reverses them, helping to achieve a diverse and dynamic landscape. The effects of trampling assist the internal movement of sand through the development of small-scale blowouts, while dunging can eutrophicate those dune habitats whose nutrient-poor status is crucial for the survival of certain vegetation types. Many species, from plants to invertebrates,

benefit immensely from the open and diverse system created by a sustainable grazing regime. Many dune species are small in size and have relatively low competitive ability. Consequently, the maintenance of high species diversity on a dune system is dependent on the existence of some control to limit the growth of rank coarse vegetation (Gaynor, 2008).

There is limited grazing at Ballyteige Burrow as part of the management regime within the Nature Reserve, in order to maintain the dwarf grassland sward mosaic which is of considerable conservation value at the site. In contrast, in the land under private ownership the dunes are undergrazed and dominated by marram with relatively large patches of bracken and bramble present (Ryle et al., 2009; Delaney et al., 2013).

The target for this attribute is to maintain structural variation within the sward.

Vegetation composition: plant health of dune grasses

This attribute applies to foredunes and mobile dunes, where blowing sand is a natural feature. The health of the dune grasses (particularly *Ammophila arenaria* and *Elytrigia juncea*) is assessed by the plant parts above the ground (they should be green) and the presence of flowering heads. This gives a clear indication of the status of the supply of blown sand, which is required for these species to thrive.

The target for this attribute is that more than 95% of the dune grasses should be healthy.

Vegetation composition: typical species & sub-communities

Species diversity and plant distribution in dunes is strongly controlled by a range of factors, including mobility of the substrate, grazing intensities, moisture gradients, nutrient gradients and human disturbance. In the younger, more mobile dunes, marram (*Ammophila arenaria*) is common, while groundsel (*Senecio vulgaris*), sea rocket (*Cakile maritima*) and dandelion (*Taraxacum* sp.) are also present. The fixed, more stable dune vegetation includes lady's bedstraw (*Galium verum*), common birdsfoot trefoil (*Lotus corniculatus*), wild thyme (*Thymus praecox*), kidney vetch (*Anthyllis vulneraria*), wild pansy (*Viola tricolor*) and biting stonecrop (*Sedum acre*).

The Ballyteige sub-site supports a characteristic and species-rich dune flora, details of which can be found in the site report from the SDM (Ryle et al., 2009) which is included in Appendix V. Additional information on the flora of the site can be found in Nooren & Schouten (1976), Gaynor (2008) and Ryle et al. (2009). Rare elements of the site flora include wild asparagus (*Asparagus officinalis* var. *prostratus*), a Red Data Book species (Ryle et al., 2009).

The target for this attribute is to maintain a typical flora for the particular sand dune habitat.

Vegetation composition: negative indicator species

Negative indicators include non-native species (e.g. *Hippophae rhamnoides*), species indicative of changes in nutrient status (e.g. *Urtica dioica*) and species not considered characteristic of the habitat. Sea-buckthorn (*Hippophae rhamnoides*) should be absent or effectively controlled.

The main invasive species identified in Gaynor (2008) were bracken (*Pteridium aquilinum*) and sea buckthorn (*Hippophae rhamnoides*). The invasion of non-native species compromises the typical plant community structure. Bracken (*Pteridium aquilinum*) is becoming increasingly dominant, particularly where sites have been abandoned or where grazing levels have been significantly reduced. The vegetation retains many elements of the original vegetation cover, but there is a reduction in biodiversity. As the canopy becomes taller and ranker, many of the low-growing species disappear. In this case, the vegetation is treated as a sub-community of the original community that was invaded. This is always the case unless the original vegetation cover has been completely destroyed, as can happen with *H. rhamnoides*, which can form dense impenetrable thickets.

Bracken (*Pteridium aquilinum*) and Bramble (*Rubus fruticosus*) have been recorded in fixed dunes to the east of the site at Ballyteige (privately owned land) where grazing is absent (Ryle et al., 2009; Delaney et al., 2013).

The target is that negative indicators (including non-native species) should represent less than 5% of the vegetation cover.

Vegetation composition: scrub/trees

This attribute only applies to the fixed dunes and dune heath. Scrub encroachment leads to reduction in dune biodiversity and needs to be controlled. The presence of scrub and trees which have deep roots can also lower the groundwater table which can have significant impacts on any slack communities.

The target for this attribute therefore is that the cover of scrub and tree species should be under control or represent no more than 5% of the vegetation cover.'

As outlined in the Conservation objectives supporting document – marine habitats (NPWS, 2014)⁶:

C) Principal Benthic Communities (Mudflats and Sandflats and Estuaries)

Within Ballyteige Burrow SAC, two community types are recorded. Their occurrence within the Annex I habitats and the SPA are presented in table 1; a description of each community type is given below.

Community Type	SAC Annex I Habitats		SPA
	Estuaries (1130)	Mudflats and sandflats not covered by seawater at low tide (1140)	
Mixed sediment to sand with nematodes and <i>Tubificoides benedii</i> community complex	✓	✓	✓
Sand with crustaceans and <i>Nephtys hombergii</i> community complex	✓		✓

Table 1 The community types recorded in Ballyteige Burrow SAC and their occurrence in the Annex I habitats and the overlapping SPA.

Estimated areas of each community type within the Annex I habitat, based on interpolation, is given in the objective targets in Section 2.

The development of a community complex target arises when an area possesses similar abiotic features but records a number of biological communities that are not regarded as being sufficiently stable and/or distinct temporally or spatially to become the focus of conservation efforts. In this case, examination of the available data from Ballyteige Burrow identified a number of biological communities whose species composition overlapped significantly. Such biological communities are grouped together into what experts consider are sufficiently stable units (i.e. a complex) for conservation targets.

MIXED SEDIMENT TO SAND WITH NEMATODES AND TUBIFICOIDES BENEDII COMMUNITY COMPLEX

The complex is recorded throughout the intertidal at this site and in the shallow subtidal in the inner reaches of the estuary (Figure 43).

The sediment is variable ranging from sandy mud in the inner reaches of the estuary (fine sand and silt-clay ranging from 8.7% to 61.8% and 10.5% to 52%, respectively) to coarse sediment in the exposed outer shore (gravel ranges from 0.2% to 27.3% and coarse sand from 17.6% to 46.8%).

The distinguishing species of this community complex include unidentified nematodes, the oligochaete *Tubificoides benedii* and unidentified oligochaetes of the family Enchytraeidae, the polychaetes *Pygospio elegans* and *Eteone longa*, and the amphipod *Corophium volutator*.

These species are not uniformly distributed within the community complex. The exposed mobile sand has low species diversity with only enchytraeids being recorded in moderate abundances in some areas here. *T. benedii* is recorded in moderate to high abundances in the inner estuary but is absent from the outer estuary and on the exposed beach. *P.*

Distinguishing species of Mixed sediment to sand with nematodes and <i>Tubificoides benedii</i> community complex	
Nematoda indet.	Enchytraeidae indet.
<i>Tubificoides benedii</i>	<i>Corophium volutator</i>
<i>Pygospio elegans</i>	<i>Eteone longa</i>

Table 2 Distinguishing species of Mixed sediment to sand with nematodes and *Tubificoides benedii* community complex.

⁶[https://www.npws.ie/sites/default/files/publications/pdf/Ballyteige%20Burrow%20SAC%20\(000696\)%20Conservation%20objectives%20supporting%20document%20-%20marine%20habitats%20\[Version%201\].pdf](https://www.npws.ie/sites/default/files/publications/pdf/Ballyteige%20Burrow%20SAC%20(000696)%20Conservation%20objectives%20supporting%20document%20-%20marine%20habitats%20[Version%201].pdf)

elegans is recorded in its highest abundance on the shore at Lacken; elsewhere it occurs in moderate to low abundances. It is absent from all but the western end of the exposed beach where it occurs in low abundances. *E. longa* occurs in moderate abundances within the estuary and is only recorded midway along the exposed beach. *C. volutator* is recorded in moderate to high abundances in the east of the site from Blackstone to the east of Cull Island and it occurs in low abundances in the outer reaches of the estuary. Unidentified nematodes occur in high to moderate abundances in the outer reaches of the estuary and at eastern extreme of the exposed beach; they are not recorded elsewhere within the site.

Other species present here include the gastropod *Peringia ulvae* and the polychaete *Hediste diversicolor* and the bivalves *Cerastoderma edule* and *Mya arenaria*. *Arenicola marina* is recorded as abundant on the north shore of the sheltered estuary, near Lough, and in the inner estuary just north of Blackstone. Green filamentous algae (*Ulva* spp.) and *Ulva lactuca* are present extensively in these areas. The bivalve *Lasaea adansoni* occurs in high abundance at the outer reaches of the estuary reflecting the coarse nature of the sediment here.

SAND WITH CRUSTACEANS AND NEPHTYS HOMBERGII COMMUNITY COMPLEX

This subtidal community complex is recorded throughout the site at depths of between 0m and 7m (Figure 44).

The sediment is largely that of fine and very fine sands (ranging from 44.4% to 84.1% and 7.7% to 52.6%, respectively) the exception being at the entrance to the estuary where the

substrate is that of coarse sediment (gravel is 28.9% of the sediment compared to less than 0.2% elsewhere).

The community complex is distinguished by the amphipods *Bathyporeia elegans* and *Pontocrates arcticus* and the polychaete *Nephtys hombergii*. *N. hombergii* is recorded within the estuary while *P. arcticus* and *B. elegans* are only recorded outside it.

Other species present in this community complex include the polychaetes *Magelona johnstoni*, *Spio martinensis*, *Nephtys cirrosa*, and *Melita palmata* and the amphipods *Gammarus locusta*, *Urothoe brevicornis* and *Bathyporeia pelagica*. *Gammarus locusta* is recorded in high abundance in the coarse sediment near the mouth of the estuary. The polychaete *Melinna palmata* and *Spio martinensis* are recorded within the estuary while *Spiophanes bombyx*, *Paraspio decorata* and *Sigalion mathildae* only occur outside the estuary.

Distinguishing species of the Sand with crustaceans and <i>Nephtys hombergii</i> community complex	
<i>Bathyporeia elegans</i>	<i>Pontocrates arcticus</i>
<i>Nephtys hombergii</i>	

Table 3 Distinguishing species of the Sand with crustaceans and *Nephtys hombergii* community complex.

Section 2 – Appropriate Assessment Notes

Many operations/activities of a particular nature and/or size require the preparation of an environmental impact statement of the likely effects of their planned development. While smaller operations/activities (i.e. sub threshold developments) are not required to prepare such statements, an appropriate assessment and Natura Impact Statement is required to inform the decision-making process in or adjacent to Natura 2000 sites. The purpose of such an assessment is to record in a transparent and reasoned manner the likely effects on a Natura 2000 site of a proposed development. General guidance on the completion of such assessments has been prepared and is available at www.npws.ie.

Annex I Habitats

It is worth considering at the outset that in relation to Annex I habitat structure and function, the extent and quality of all habitats varies considerably in space and time and marine habitats are particularly prone to such variation. Habitats which are varying naturally, i.e. biotic and/or abiotic variables are changing within an envelope of natural variation, must be considered to have favourable conservation condition. Anthropogenic disturbance may be considered significant when it causes a change in biotic and/or abiotic variables in excess of what could reasonably be envisaged under natural processes. The capacity of the habitat to recover from this change is obviously an important consideration (i.e. habitat resilience) thereafter.

This Department has adopted a prioritized approach to conservation of structure and function in marine Annex I habitats.

- 1. Those communities that are key contributors to overall biodiversity at a site by virtue of their structure and/or function (keystone communities) and their low resilience should be afforded the highest degree of protection and any significant anthropogenic disturbance should be avoided.*
- 2. In relation to the remaining constituent communities that are structurally important (e.g. broad sedimentary communities) within an Annex I marine habitat, there are two considerations.*
 - 2.1 Significant anthropogenic disturbance may occur with such intensity and/or frequency as to effectively represent a continuous or ongoing source of disturbance over time and space (e.g. effluent discharge within a given area). Drawing from the principle outlined in the European Commission's Article 17 reporting framework that disturbance of greater than 25% of the area of an Annex I habitat represents unfavourable conservation status, this Department takes the view that licensing of activities likely to cause continuous disturbance of each community type should not exceed an approximate area of 15%. Thereafter, an increasingly cautious approach is advocated. Prior to any further licensing of this category of activities, an interDepartmental management review (considering inter alia robustness of available scientific knowledge, future site requirements, etc) of the site is recommended.*
 - 2.2 Some activities may cause significant disturbance but may not necessarily represent a continuous or ongoing source of disturbance over time and space. This may arise for intermittent or episodic activities for which the receiving environment would have some resilience and may be expected to recover within a reasonable timeframe relative to the six-year reporting cycle (as required under Article 17 of the Directive). This Department is satisfied that such activities could be assessed in a contextspecific manner giving due consideration to the proposed nature and scale of activities during the reporting cycle and the particular resilience of the receiving habitat in combination with other activities within the designated site.*

The following technical clarification is provided in relation to specific conservation objectives and targets for Annex I habitats to facilitate the appropriate assessment process:

Objective - To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in Ballyteige Burrow SAC, which is defined by the following list of attributes and targets.

Target 1 - The permanent habitat area is stable or increasing, subject to natural processes.

- This target refers to activities or operations that propose to permanently remove habitat from a site, thereby reducing the permanent amount of habitat area. It does not refer to long or short term disturbance of the biology of a site.
- Early consultation or scoping with the Department in advance of formal application is advisable for such proposals.

Target 2 - Conserve the following community type in a natural condition: Mixed sediment to sand with nematodes and *Tubificoides benedii* community complex.

- A semi-quantitative description of this community type has been provided in Section 1.
- An interpolation of its likely distribution is provided in figure 3.
- The estimated area of this community type within the Mudflats and sandflats not covered by seawater at low tide habitat given below is based on spatial interpolation and therefore should be considered indicative: - Mixed sediment to sand with nematodes and *Tubificoides benedii* community complex – 201ha
- Significant continuous or ongoing disturbance of communities should not exceed an approximate area of 15% of the interpolated area of each community type, at which point an inter-Departmental management review is recommended prior to further licensing of such activities.
- Proposed activities or operations that cause significant disturbance to communities but may not necessarily represent a continuous or ongoing source of disturbance over time and space may be assessed in a context-specific manner giving due consideration to the proposed nature and scale of activities during the reporting cycle and the particular resilience of the receiving habitat in combination with other activities within the designated site.

Objective - To maintain the favourable conservation condition of Estuaries in Ballyteige Burrow SAC, which is defined by the following list of attributes and targets.

Target 1 - The permanent habitat area is stable or increasing, subject to natural processes.

- This habitat also encompasses the Annex I habitat of mudflats and sandflats not covered by seawater at low tide. In such areas, the specific targets for that Annex I habitat will address requirements within the Annex I habitat Estuaries.
- This target refers to activities or operations that propose to permanently remove habitat from a site, thereby reducing the permanent amount of habitat area. It does not refer to long or short term disturbance of the biology of a site.
- Early consultation or scoping with the Department in advance of formal application is advisable for such proposals.

Target 2 - Conserve the following community types a natural condition: Mixed sediment to sand with nematodes and *Tubificoides benedii* community complex and Sand with crustaceans and *Nephtys hombergii* community complex.

- A semi-quantitative description of these community types has been provided in Section 1.
- An interpolation of their likely distribution is provided in figure 3.
- The estimated area of these community types within the Estuaries habitat given below is based on spatial interpolation and therefore should be considered indicative:
 - Mixed sediment to sand with nematodes and *Tubificoides benedii* community complex
 - 164ha - Sand with crustaceans and *Nephtys hombergii* community complex - 30ha
- Significant continuous or ongoing disturbance of communities should not exceed an approximate area of 15% of the interpolated area, at which point an inter-Departmental management review is recommended prior to further licensing of such activities.
- Proposed activities or operations that cause significant disturbance to communities but may not necessarily represent a continuous or ongoing source of disturbance over time and space may be assessed in a context-specific manner giving due consideration to the proposed nature and scale of activities during the reporting cycle and the particular resilience of the receiving habitat in combination with other activities within the designated site.'

D)Coastal Lagoons

As outlined in the Conservation objectives supporting document – coastal lagoons (NPWS, 2014)⁷:

“Coastal lagoons” (habitat code 1150) is a priority habitat in Annex I of the Habitats Directive. A coastal lagoon is a lake or pond that is fully or partially separated from the sea by a permeable barrier that can be entirely natural such as shingle, or can be an artificial embankment. Salinity varies depending on such factors such as freshwater inputs and barrier permeability. Lagoons support unique assemblages of flora and fauna, particularly invertebrates. In Ireland, coastal lagoons are considered to be in bad conservation status due to issues such as drainage and water pollution (NPWS, 2013).

A single lagoon, in the form of artificial channels, is listed for this SAC (Oliver, 2007). The table below gives the conservation status assessment of this lagoon as outlined in that report. See the map in Appendix 1 and Appendix 2 for an account of the site (from Oliver, 2007).(Figure 45)

Code ¹	Name	County	Conservation Assessment
IL008	Ballyteige channels	Wexford	Unfavourable- inadequate

¹ Codes are those used in Oliver, 2007.

Conservation objectives

A site-specific conservation objective aims to define the favourable conservation condition of a habitat or species at site level. The maintenance of habitats and species within sites at favourable condition will contribute to the maintenance of favourable conservation status of those habitats and species at a national level.

Conservation objectives are defined using attributes and targets that are based on parameters as set out in the Habitats Directive for defining favourable status, namely area, range, and structure and functions.

Provisional reference conditions for Irish lagoons are proposed by Roden and Oliver (2013). Reference conditions aim to define ecological status prior to human impacts (i.e. “natural” conditions). The targets for the water quality attributes given below are based on reference values given by Roden and Oliver (2013).

Attributes and targets may change/become more refined as further information becomes available.

Area

The target for habitat area is: stable or increasing, subject to natural processes. Favourable reference area for the mapped lagoons is 12.5ha (area is calculated from spatial data derived from Oliver (2007)).

Range

The known distribution of lagoon habitat in Ballyteige Burrow SAC is shown in Appendix 1. The target for the habitat distribution attribute is: no decline, subject to natural processes.

Structure and functions

Structure and functions relates to the physical components of a habitat (“structure”) and the ecological processes that drive it (“functions”). For lagoons these include attributes such as salinity, hydrology and various water quality attributes.

Salinity regime

Lagoons can vary considerably in salinity both within and between sites depending on the volume and timing of inflowing and outflowing fresh and seawater. Salinity is probably the most important variable in the classification of lagoon types (Roden and Oliver, 2013).

The target for the salinity regime attribute is: median annual salinity and temporal variation within natural range.

Seawater enters these artificial drainage channels by percolation through the dunes along the southern shore and also by leakage of the sluice on the Cull at high tide. It is also possible that seawater enters from the tidal river that runs from Duncormick to Bridgetown. A range of salinities from 34psu near seepage streams to freshwater can be found. See Roden and Oliver (2013) for further information on salinity classes and Appendix 2 for the lagoon report.

Hydrological regime

Fluctuations in water depth are a natural feature of lagoon hydrology. However, if water levels fluctuate beyond their natural values due to issues such as drainage, the condition of the habitat can deteriorate.

⁷[https://www.npws.ie/sites/default/files/publications/pdf/Ballyteige%20Burrow%20SAC%20\(000696\)%20Conservation%20objectives%20supporting%20document%20-%20lagoons%20habitats%20\[Version%201\].pdf](https://www.npws.ie/sites/default/files/publications/pdf/Ballyteige%20Burrow%20SAC%20(000696)%20Conservation%20objectives%20supporting%20document%20-%20lagoons%20habitats%20[Version%201].pdf)

The target for hydrological regime is: annual water level fluctuations and minima within natural ranges.

Ballyteige channels is relatively shallow (less than 3m deep), thus even small changes in water depth can cause significant losses in habitat area. Further information is required to investigate historic fluctuations to enable more specific targets to be set. See Appendix 2 for the site report.

Barrier: connectivity between lagoon and sea

The morphology of the barrier between a lagoon and sea determines how it functions ecologically. Changes to the barrier can be due to natural processes such as storms, but they can also be modified through human intervention. Active management is sometimes necessary, particularly if the lagoon is artificial.

The target for the attribute barriers: connectivity between lagoon and sea is: appropriate hydrological connections between lagoons and sea, including where necessary, appropriate management.

The channels are artificial; water is pumped westward into the Cull and south eastwards into the sea west of Kilmore Quay. See also site account in Appendix 2.

Water quality- Chlorophyll a

This attribute indicates the level of phytoplankton in the water column. Roden and Oliver (2013) make the assumption that, for shallow lagoons in "natural" condition, primary productivity is dominated by the benthos rather than the plankton. Phytoplankton tends to increase in density in response to increasing nutrient levels. Excessive shading from phytoplankton can reduce submergent macrophyte colonisation of the littoral zone of lagoons.

The target for the attribute water quality- Chlorophyll a is: annual median chlorophyll a within natural ranges and less than 5µg/L. Target based on Roden and Oliver (2013).

4.5 Water quality- Molybdate reactive phosphorus (MRP)

The target for the attribute water quality- Molybdate Reactive Phosphorus (MRP) is: annual median MRP within natural ranges and less than 0.1mg/L. The target is based on Roden and Oliver (2013).

This limit is required to ensure that excessive shading from phytoplankton does not reduce submergent colonisation of the littoral zone.

Water quality- Dissolved inorganic nitrogen (DIN)

The target for the attribute water quality- Dissolved Inorganic Nitrogen (DIN) is: annual median DIN within natural ranges and less than 0.15mg/L. The target is based on Roden and Oliver (2013).

As for phosphorus, the limit for set nitrogen is to ensure that excessive shading from phytoplankton does not reduce submergent colonisation.

Depth of macrophyte colonisation

Ballyteige channels within the Ballyteige Burrow SAC have been identified as shallow, thus, it is expected that macrophytes extend down to their full depths.

The target for the attribute depth of macrophyte colonisation is: macrophyte colonisation to maximum depth of lagoons.

Typical plant species

*As lagoon specialist species do not easily recolonise, their presence is one of the indicators of long term continuity of quality. The target for the attribute typical plant species is: maintain number and extent of listed lagoonal specialists, subject to natural variation. The plant species recorded in this lagoon are summarised in Oliver (2007). Species considered to be lagoonal specialists include *Chaetomorpha linum* and *Ruppia maritima*. See Appendix 2 for the site report.*

Typical animal species

Some invertebrate species are regarded as lagoonal specialists and their presence can indicate long term quality. As species found within each lagoon can vary considerably, depending on other attributes such as salinity, the target is based on site-specific species lists.

The target for the attribute typical animal species is: maintain listed lagoon specialists, subject to natural variation. The species recorded in this lagoon are summarised in Oliver (2007).

Negative indicator species

Negative indicator species include non-native alien species as well as those that are not typical of the habitat. For example, accelerated encroachment by reedbeds can be caused by low salinity, shallow water and elevated nutrient levels. The target for the attribute negative indicator species is: negative indicator species absent or under control.'

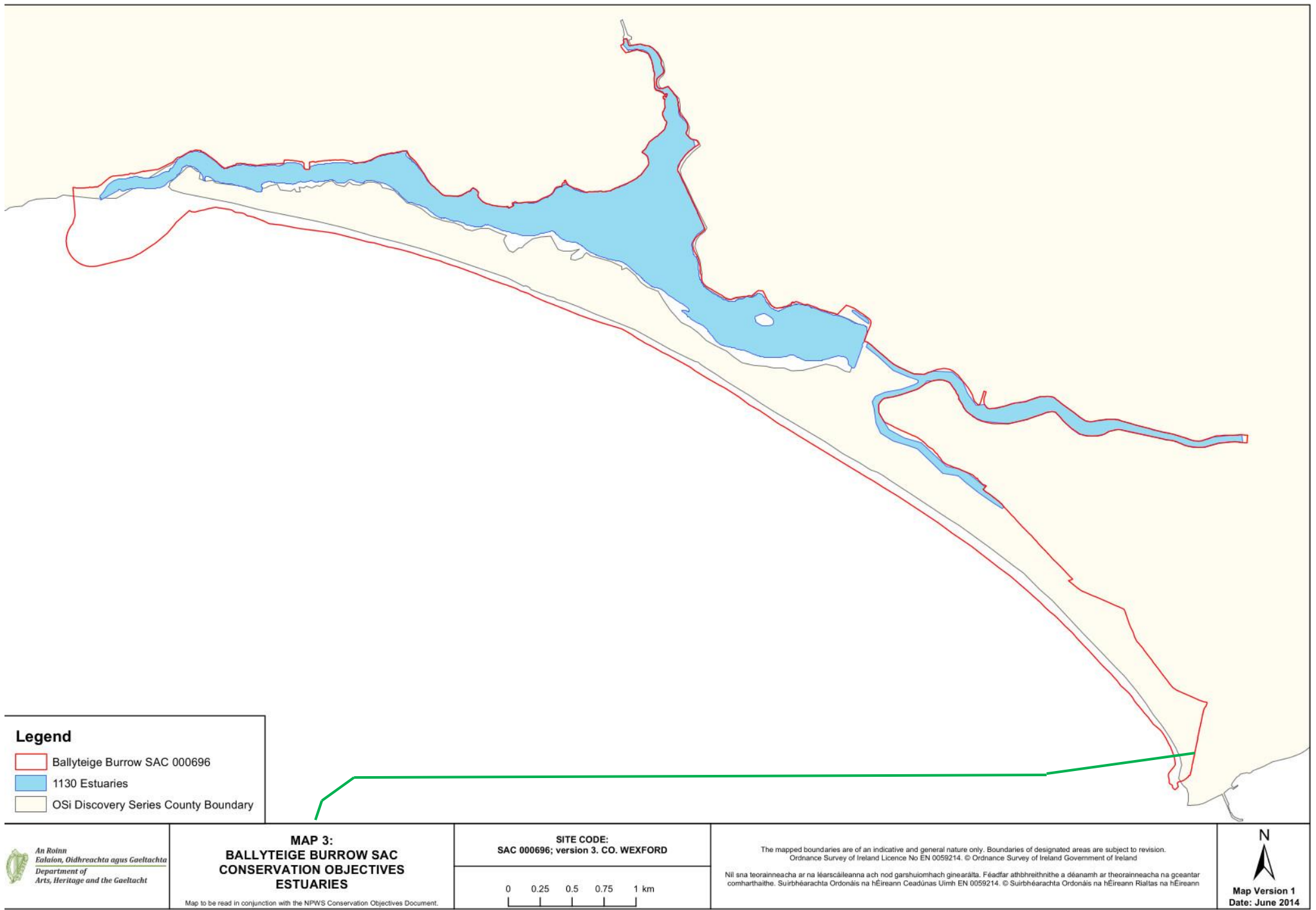


Figure 34. Location of Estuaries in Ballyteige Burrow SAC and Beaufort cable route (green)

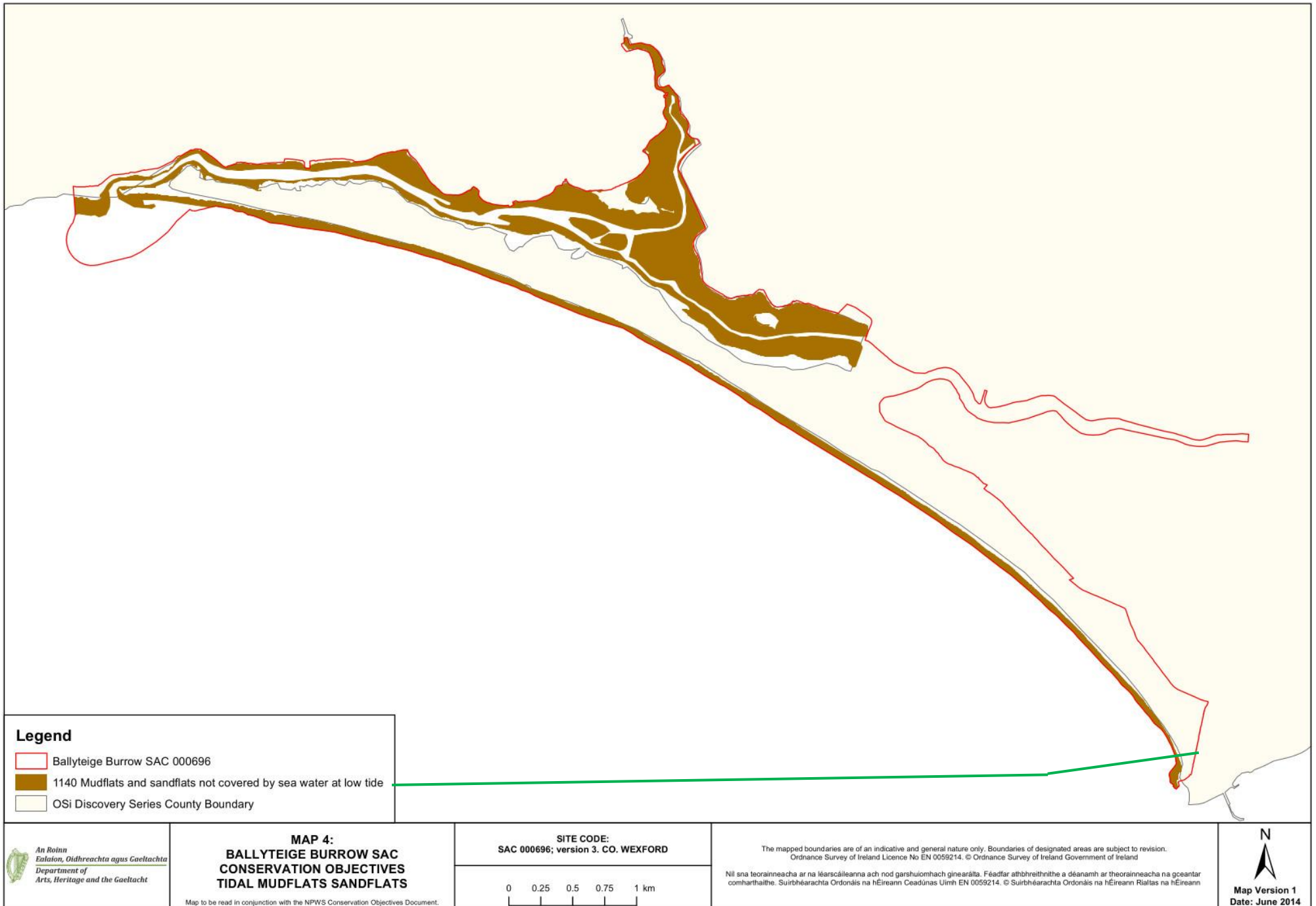


Figure 35. Location of Tidal Mudflats and Sandflats in Ballyteige Burrow SAC and Beaufort cable route (green)

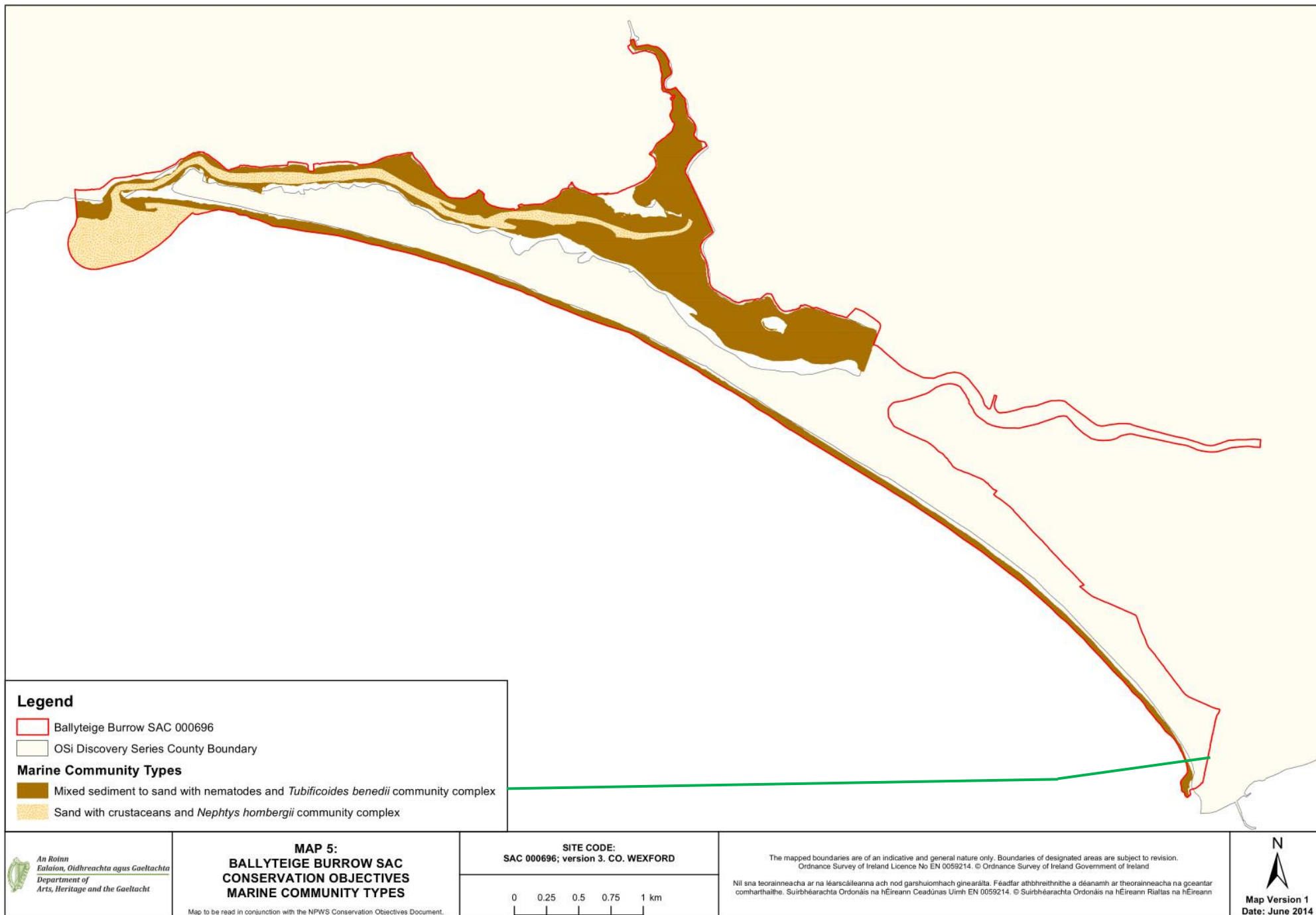


Figure 36. Location of Mixed Community Types in Ballyteige Burrow SAC and Beaufort cable route (green)

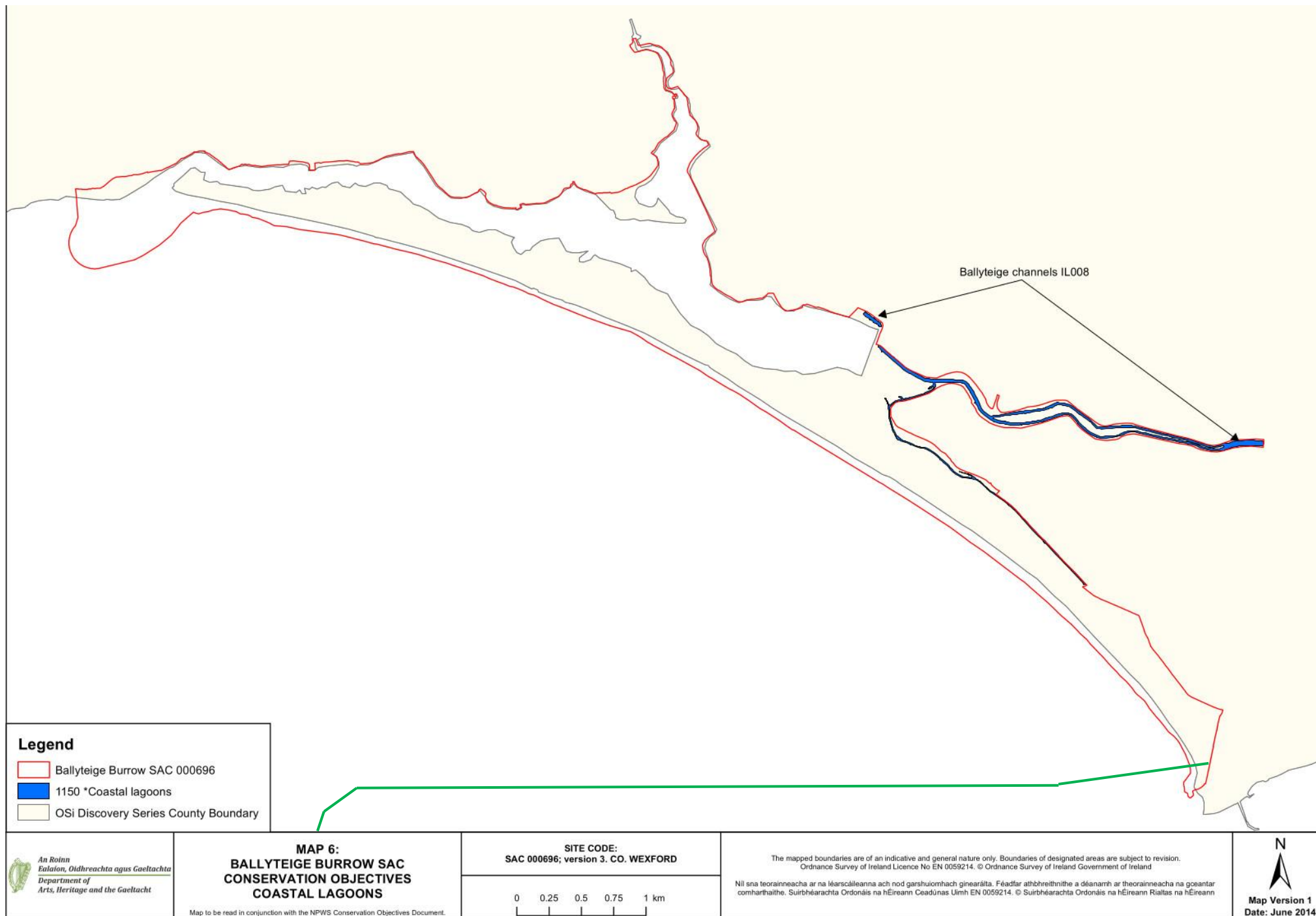


Figure 37. Location of Coastal Lagoons in Ballyteige Burrow SAC and Beaufort cable route (green)

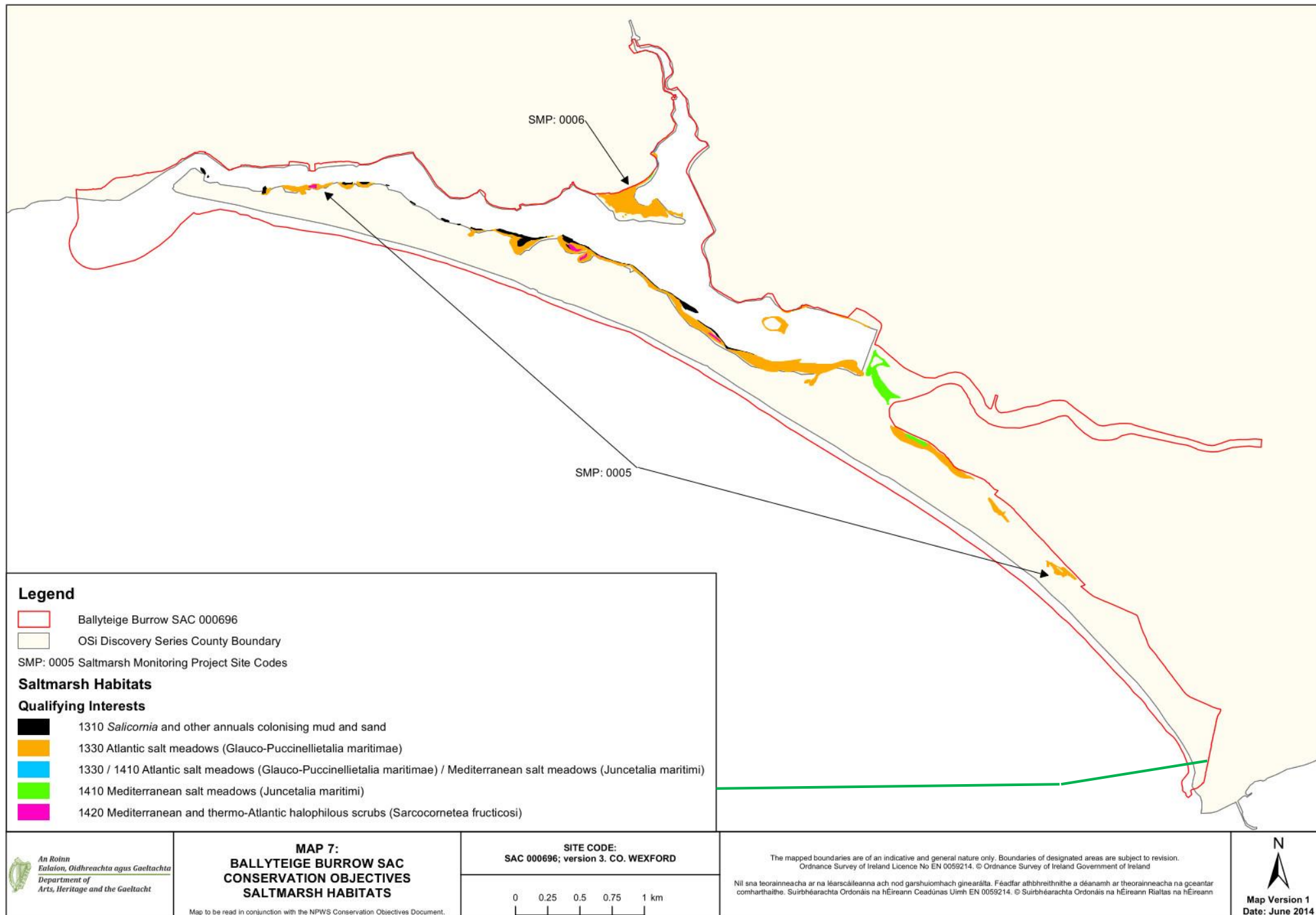


Figure 38. Location of Saltmarsh Habitats in Ballyteige Burrow SAC and Beaufort cable route (green)

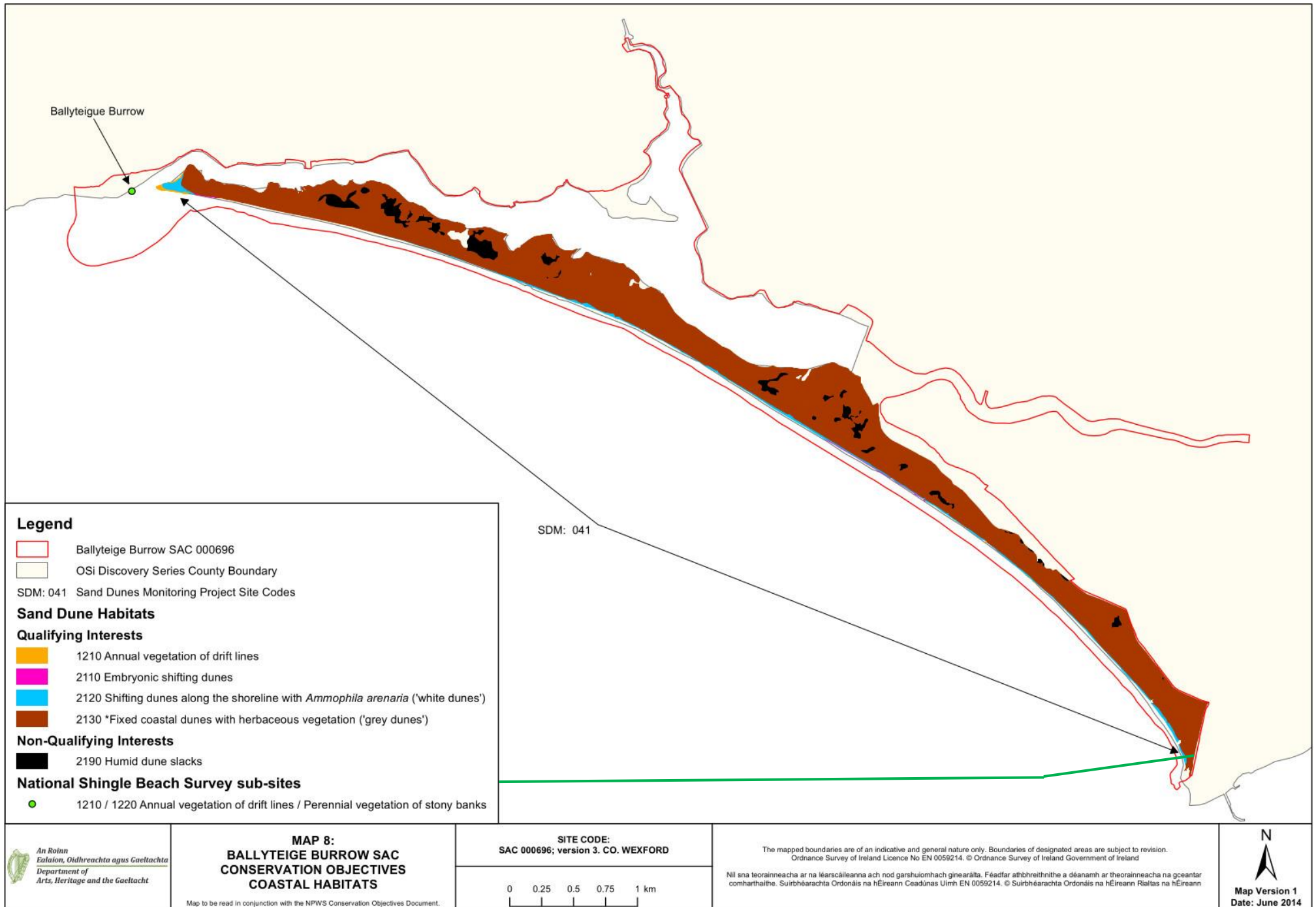


Figure 39. Location of Coastal Habitats in Ballyteigue Burrow SAC and Beaufort cable route (green)

As outlined in the Saltee Islands SAC Site Synopsis⁸ (NPWS 2013):

'This site comprises the Saltees Islands and a large area of the surrounding seas. There are two islands, Great Saltee and Little Saltee, and a constellation of islets and rocks. The islands are situated between 4 and 5 km off the south Wexford coast. As a group, they constitute a broken reef that protrudes from a seabed of sand and shell. The reef has a north-east/south-west orientation and is typically strewn with boulders, cobbles and patches of sand and gravel. Bedrock is metamorphic schist and gneiss.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (= priority; numbers in brackets are Natura 2000 codes):*

*[1140] Tidal Mudflats and Sandflats; [1160] Large Shallow Inlets and Bays; [1170] Reefs; [1230] Vegetated Sea Cliffs; [8330] Sea Caves; [1364] Grey Seal (*Halichoerus grypus*)*

The subtidal reefs at this site range from rugged bedrock with steep sided gullies to large boulders mixed with sand or cobbles and pebbles. They range from exposed, to moderately exposed, to wave action. The communities present are excellent examples of those typical of tide-swept areas and many have fauna and flora that are tolerant of sand scour. The area is notable for the range of colonial sea squirts present. With the exception of only a few samples, the communities are very species rich, with samples taken during the BioMar Survey having from 78 to 117 species. No other area surveyed during the BioMar Survey had so many species rich communities.

*In shallow water the reefs support a forest of mixed kelp species, with scour tolerant fauna on tide-swept bedrock or a kelp forest of *Laminaria hyperborea* with a faunal cushion and foliose red algae. With increasing depth the kelp thins to a kelp park. The kelp understory ranges from a turf of hydroids, bryozoans, sponges and numerous colonial sea squirts, to a community characterised by the bryozoan *Flustra foliacea* or an understory foliose red algae. On the sides of boulders a community with Deadman's Fingers (*Alcyonium digitatum*), the keel worm *Pomatoceros triqueter* and algal and bryozoan crusts is found.*

*In deeper water (15-30 m) animal dominated reef communities occur. The most notable of these is a community dominated by the sea squirt *Stolonica socialis* and the bryozoan *Flustra foliacea*. This community is rich in colonial sea squirts, in which *Archidistoma aggregatum*, *Sidnyum elegans* and *Distomus variolosus* and the solitary *Pyura squammata* occur. *Stolonica socialis* is only known from the south-east and north-west of Ireland, while *S. elegans* has not previously been recorded in Ireland. *Distomus variolosus* is only known from between Galway and Tralee Bay on the west coast, and the east and south-east coasts of Ireland. *Pyura squammata* appears to have a widespread but local distribution in Ireland. The sea anemone *Cataphellia brodricii* occurs in this community and in shallow water, both around the Saltee Islands and in other areas in the south-east. The only other records for this species are from Roaringwater Bay, Co. Cork. Where the bedrock is steep or large boulders are present the community may be formed of cushion sponges, branching sponges, massive sponges, *Nemertesia* hydroids, the rose coral *Pentapora foliacea*, or *Alcyonium digitatum*. Beds of the brittlestars *Ophiothrix fragilis* and *Ophiocomina nigra* are also found in the area, and on very steep to vertical reefs the plumose anemone *Metridium senile* may be found.*

*Species not mentioned above, and with limited distribution in Britain and Ireland and considered to be worthy of conservation, include the sponges *Tethyspira spinosa* and *Plocamilla coriacea*, the hydroids *Aglaophenia acacia*, *Tamarisca tamarisca*, *Halecium muricatum* and *Sertularella gaudichaudi*, the sea slug *Okenia aspersa*, the bryozoan *Schizomavella sarniensis* and the burrowing brittlestar *Amphiura securigera*. The majority of these species occur in the ascidian dominated communities and the *Stolonica socialis* community in particular. *Tethyspira spinosa* is only known from the Saltees and Roaringwater Bay in Ireland. *Plocamilla coriacea* is a recently described species, only recorded from the Saltees, Carnsore Point and Tuscar Rock, Co. Wexford and Kilkieran Bay, Co. Galway. *Aglaophenia acacia* is a southern species and occurs at several sites around the Saltees, with only one previous record in Ireland. Prior to the BioMar survey the only 20th century records for *Halecium muricatum* in Britain and Ireland were from the Isle of Man. This species is now known to occur at the Saltees and in Co. Donegal. The records for *Sertularella gaudichaudi* from this area are the only Irish records. The sea slug *Okenia aspersa* occurs at two sites in the area and these are the only recent records for Ireland. *Schizomavella sarniensis* is a recently described species of bryozoan and to date in Ireland has only been recorded from around the Saltees. The current known distribution of the burrowing brittlestar *Amphiura securigera* in Ireland appears to be the south-east of the country and Kenmare River, Co. Cork.*

⁸ <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY000707.pdf>

The littoral sediments of the Saltee Islands area are moderately exposed to wave action. Talitrid amphipods live under drift algae on the strand line. The mid shore is characterized by polychaete worms (*Hediste diversicolor*, *Malacoceros fuliginosus*, *Spio filicornis* and *Arenicola marina*), crustaceans (*Crangon crangon*) and crabs (*Carcinus maenas*). The low shore is characterized by the polychaete worms *Spio filicornis* and *Lanice conchilega*, the burrowing crustacean *Atylus swammerdamei*, crabs and bivalve molluscs (*Fabulina fabula* and occasional *Cerastoderma edule*). The sublittoral sediment around the Salties is composed of exposed, tide-swept shelly gravel characterised by the burrowing sea cucumber *Neopendactyla mixta*, with hydroids and bryozoans attached to cobbles.

Both islands have exposed rocky cliffs on the south and east sides. On Great Saltee these are mostly around 30 m high, and about half this on Little Saltee. The cliffs have a typical sea cliff flora, with Thrift (*Armeria maritima*), Sea Champion (*Silene vulgaris* subsp. *maritima*), Sea Plantain (*Plantago maritima*), Sea Aster (*Aster tripolium*), Common Scurvygrass (*Cochlearia officinalis*), Rock Sea-spurrey (*Spergularia rupicola*), Sea Mayweed (*Matricaria maritima*), Red Fescue (*Festuca rubra*), Sea Spleenwort (*Asplenium marinum*) and Sea Samphire (*Crithmum maritimum*). Sea Stork's-bill (*Erodium maritimum*) also occurs, and Golden-samphire (*Inula crithmoides*) has been recorded in the past. Excellent displays of lichens (*Ramalina* spp. and *Xanthoria* spp.) are present. The northern and western sides of both islands are fringed with shingle and boulder shores, with small areas of intertidal sandflats. Sea caves occur at the base of the cliffs on Great Saltee. Some of these are sublittoral and some have boulder beaches at the back.

Since the abandonment of farming on the islands (apart from sheep grazing on Little Saltee), Bracken (*Pteridium aquilinum*) has become dominant over much of the terrestrial area and often occurs in association with Bluebells (*Hyacinthoides non-scripta*). Bramble (*Rubus fruticosus* agg.) are also frequent. Dry grassland still occurs in some of the old fields, with species such as Yorkshire-fog (*Holcus lanatus*), Ground Ivy (*Glechoma hederacea*), Common Ragwort (*Senecio jacobaea*), Common Nettle (*Urtica dioica*) and thistles (*Cirsium* spp.).

Several springs and seepage areas provide habitat diversity. Species present include Water-cress (*Nasturtium officinale*), Jointed Rush (*Juncus articulatus*), Bog Stitchwort (*Stellaria alsine*), Marsh Pennywort (*Hydrocotyle vulgaris*) and, in at least one location, Early Marsh-orchid (*Dactylorhiza incarnata*).

Great Saltee has a breeding population of Grey Seal, one of the very few in eastern Ireland. The breeding population was estimated at 571-744 individuals in 2005. A one-off moult count in 2007 gave a figure of 246 individuals.

The Saltee Islands are internationally important for their colonies of breeding seabirds. Particularly notable are the Gannets on Great Saltee (2,050 pairs in 2000), Cormorants on Little Saltee (273 pairs in 2000), Shags on both islands (265 pairs), Fulmars (525 pairs 1998-2000), Kittiwakes (2,125 pairs in 1999), and auks – Guillemots (21,436 individuals), Razorbills (c. 4,000 individuals) and Puffins (1,822 individuals). There is also a small Manx Shearwater colony (c. 150-175 pairs) on Great Saltee. The breeding populations of large gulls have declined dramatically in recent years. The Lesser Black-backed Gull colony is still important (245 pairs), but numbers of Herring Gull (c. 50 pairs) and Great Black-backed Gull (c. 90) are now very low.

There are one or two pairs of breeding Peregrine, and one pair of Chough occur here - at the eastern edge of their Irish range. Both of these species are listed on Annex I of the E.U. Birds Directive. Great Saltee is a major site for spring and autumn landbird migration. Very large numbers of pipits, swallows, martins, thrushes, warblers and finches occur, while smaller numbers of a great variety of other species (some very rare in Ireland) have also been recorded.

The island is also a good site for migrant Lepidoptera, especially Red Admirals, Painted Ladies, Clouded Yellows, Silver Y moths and Humming-bird Hawk Moths.

This site is of high conservation importance for the occurrence of several habitats which are listed on Annex I of the E.U. Habitats Directive, of which the reefs are of exceptional quality and diversity. The site is of international importance for breeding seabirds and has two species which are listed on Annex I of the E.U. Birds Directive. In addition, the site has a breeding population of Grey Seal, an Annex II species on the E.U. Habitats Directive.'

The Natura 2000 Standard Data Form (2020)⁹ states that:

'The site comprises the Saltee Islands and a large area of the surrounding seas. There are two islands (Great Saltee and Little Saltee) and a constellation of islets and rocks. The islands are situated between 4 and 5 km

⁹ <https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF000707.pdf>

off the south Wexford coast. As a group, they constitute a broken reef that protrudes from a seabed of sand and shell. The reef has a north-east/south-west orientation and is typically strewn with boulders, cobbles and patches of sand and gravel. Bedrock is metamorphic schist and gneiss. The islands are exposed to prevailing wind and swells from the west. Tidal streams tend to be moderate but are strong in some areas, particularly where the reef is shallow. The islands were inhabited and farmed in the past but are now abandoned, although some sheep grazing occurs on Little Saltee. A community dominated by *Pteridium aquilinum* is the main vegetation type on the islands. Dry grassland occurs within the old field boundaries. Habitats with a minor presence are springs, flushes and scrub. The shorelines vary from rocky cliffs of moderate height to shingle, sand and boulder shores. Small sections of boulder clay cliffs are exposed in places.

The exposed reef communities of the Saltee Islands are extremely species rich and contain rare or scarce species. In the shallow infralittoral zone, there are extremely species rich kelp parks (79-124 species) and tideswept *Halidrys siliquosa* and mixed kelp communities (78-100 species). The lower infralittoral communities dominated by red algae are also extremely species rich (79-117 species). Rare and notable species of sponge, anthozoan, brittlestar and hydroid live in these areas. Circalittoral communities are also distinguished by consistently extremely high species richness (average 76 species). There are four notable and scarce sponge species, 6 species of scarce or notable hydroid, a scarce anemone, two scarce nudibranchs and two scarce ascidian species. Perhaps more important than the high number of notable species in the Saltee Islands area is the fact that the populations of ten of those species have extremely high conservation value because they represent a high proportion of the total population in the national territory: these are the sponge *Tethyspira spinosa*; the hydroids *Halecium muricatum*, *Aglaophenia acacia* and *Gymnangium montagui*; the anemone *Cataphellia brodricii*, the nudibranchs *Okenia aspersa* and *Aeolidiella glauca*; and the ascidians *Pycnoclavella aurilucens*, *Distomus variolosus* and *Stolonica socialis*. The sediment communities are also important. The littoral sediment communities present at Kilmore Quay are characteristic of many similar beaches around the coast. The sublittoral sediment characterized by the sea cucumber *Neopendactyla mixta* is one of only seven such communities recorded by Biomar. Good examples of vegetated cliff habitat on both islands with a typical south-eastern flora. Has sea caves though marine communities not yet investigated. A long established breeding population of *Halichoerus grypus* and the only significant population in the south-east region. The Saltee Islands are amongst the most important seabird colonies in the country for populations and species diversity. Internationally important for *Uria aalge* and *Alca torda*, and nationally important for a further seven seabird species, including *Sula bassana*, *Phalacrocorax corax*, *Phalacrocorax aristotelis*, *Larus fuscus*, *Rissa tridactyla*, and *Fratercula arctica*. The islands have long-established seabird monitoring programmes. *Pyrhrocorax pyrrhocorax* occurs at the eastern edge of its Irish range and *Falco peregrinus* breeds. Great Saltee is a major site for spring and autumn landbird migration.'

As outlined in the Conservation objectives supporting document – coastal habitats (NPWS, 2011)¹⁰:

'Vegetated sea cliffs

Sea cliffs can be broadly divided into two categories: hard (or rocky) cliffs and soft (or sedimentary) cliffs, both of which are covered by the Annex I habitat 'vegetated sea cliffs of the Atlantic and Baltic coasts'. Hard cliffs are composed of rocks such as limestone, sandstone, granite or quartzite that are hard and relatively resistant to mechanical erosion. Soft cliffs are composed of softer rock, such as shale, or unconsolidated material, such as glacial till. Vegetation of hard sea cliffs in exposed situations exhibits a strong maritime influence and is relatively stable. Soft cliff habitats are more prone to slope failure, which results in the presence of fast-colonising pioneer species. Both hard and soft cliffs are found on the Saltee Islands.

Defining the limits of what constitutes a sea cliff is problematic and a number of different interpretations have been used in the past (Fossitt, 2000; Commission of the European Communities, 2003; JNCC, 2004; Browne, 2005). In order to address any inconsistencies, the following definition for sea cliffs was developed and used during the Irish Sea Cliff Survey (Barron et al., 2011):

"A sea cliff is a steep or vertical slope located on the coast, the base of which is in either the intertidal (littoral) or subtidal (sublittoral) zone. The cliff may be composed of hard rock such as basalt, or of softer substrate such as shale or boulder clay. Hard cliffs are at least 5m high, while soft cliffs are at least 3m high. The cliff top is generally defined by a change to an obvious less steep gradient. In some cases the cliff may grade into the slopes of a hillside located close to the coast. In these cases the cliff is defined as that part of the slope which was formed by processes of coastal erosion, while the cliff top is where there is the distinct break in slope. Both

¹⁰https://www.npws.ie/sites/default/files/publications/pdf/000707_Saltee%20Islands%20SAC%20Coastal%20Supporting%20Doc_V1.pdf

the cliff and the cliff top may be subject to maritime influence in the form of salt spray and exposure to coastal winds. A cliff can ascend in steps with ledges, and the top of the cliff is taken to occur where erosion from wave action is no longer considered to have been a factor in the development of the landform. The cliff base may be marked by a change in gradient at the bottom of the cliff. Where the base is exposed it can be characterised by scree, boulders, a wave-cut platform or sand, among other substrates. During this survey where cliffs occur within the subtidal zone the base was considered to be the high water mark. A cliff is considered to have reached its end point where it is no longer over 5m high (hard cliffs) or 3m high (soft cliffs), or no longer has a steep slope. To be considered in this study, a cliff had to be a minimum of 100m in length. Sea cliffs may support a range of plant communities such as grassland, heath, scrub and bare rock communities, among others.”

The cliffs on Great Saltee Island are generally 30m in height, while those on Little Saltee Island are generally half this height. The cliffs are predominantly hard but there are areas of soft boulder clay cliffs along the northern and western shores. There are sea caves at the base of the cliffs on Great Saltee.

The site is also of international importance for breeding seabirds, and as such, is designated a Special Protection Area under the EU Birds Directive.

Overall Objective

The overall objective for ‘vegetated sea cliffs of the Atlantic and Baltic coasts’ in Saltee Islands SAC is to ‘maintain the favourable conservation condition’. This objective is based on an assessment of the current condition of the habitat under a range of attributes and targets. The assessment is divided into three main headings (a) Area, (b) Range and (c) Structure and Functions.

Area

Habitat extent

Habitat extent is a basic attribute to be assessed when determining the condition of a particular habitat. The target is ‘area to remain stable’. Bearing in mind that coastal systems are naturally dynamic and subject to change even within a season, this target is assessed subject to natural processes, including erosion.

The distribution of vegetated sea cliffs is shown on a map in Appendix I. Rocky sea cliffs occur along the southern and eastern shores of the two islands, while boulder clay cliffs occur along the northern and western shores.

As cliffs are linear features on maps, their extent is measured in kilometres rather than hectares, as you would with other habitats. During the ISCS (Barron et al., 2011), each cliff was divided into sections based on physical characteristics and vegetation cover. Breaks (i.e. non-cliff areas) of between 80m and 500m along a length of cliff were discounted from the calculations. As the site was not assessed by Barron et al. (2011) only the total length of the cliff has been estimated. Whether or not there are sections or breaks has not been established. The total length, as estimated by digitising their extent on the OSi six inch (1:10,560) mapping series, is presented in the following table.

Site name	Length (km) of hard cliff	Length (km) of soft boulder clay cliff	Total length (km) of sea cliff
Great Saltee Island	4.06	1.45	5.51
Little Saltee Island	1.80	1.31	3.11
Totals	5.86	2.76	8.62

Range

Habitat distribution

The distribution of sea cliffs throughout Saltee Islands SAC as identified by data held in NPWS files is presented in Appendix I. The cliffs in Saltee Islands SAC are not likely to be redistributed through natural processes, unlike other more dynamic coastal systems such as sand dunes or saltmarshes. However, the soft boulder cliffs are likely to recede as they would naturally be more prone to erosion.

Structure and Functions

A fundamental aim of sea cliff conservation is to facilitate some degree of natural mobility through slumping. Sea cliffs can be of geomorphological interest as well as ecological interest and also erosion can expose geological features of interest.

Functionality and hydrological regime

Coastal protection works can disrupt the natural integrity of a sea cliff. The health and ongoing development of vegetated sea cliffs relies on natural processes such as erosion continuing without any impingement. This is generally a bigger issue for soft cliffs which require a degree of slumping and erosion to expose bare soil for pioneer species to colonise; otherwise the vegetation is replaced by hardy grasses and scrub of little conservation value can develop. In addition, cliff erosion provides an important sediment source to sites further along the coast (e.g. sand dunes). Preventing erosion at a cliff site can lead to beach starvation at another site.

Flushes can be associated with cliffs in areas where the groundwater seeps out onto the cliff face. This is more usually associated with soft cliffs where these flushes contribute to the natural instability of the ground and provide patches of wetland habitat. The Annex I priority habitat 'petrifying springs with tufa formation (Cratoneurion) (7220)' can also be associated with sea cliffs, although it is not known whether or not such formations occur on the Saltee Islands.

The target is to maintain, or where necessary restore, the natural geomorphological processes without any physical obstructions and the local hydrological regime, including groundwater quality.

Vegetation structure: zonation

Ecological variation in this habitat type depends on a number of physical and biological factors, in particular climate, degree of exposure to sea-spray, geology and soil type, as well as the level of grazing and sea bird activity.

The target is to maintain the sea cliff habitat, as well as transitional zones, including those to terrestrial communities.

Vegetation structure: vegetation height

A varied vegetation structure is important for maintaining species diversity and is particularly important for invertebrates and birds. Grazing increases the species diversity and is particularly important for maritime grasslands and coastal heath, which are often associated with sea cliffs. The target is to maintain the structural variation in the sward height.

Vegetation composition: typical species & sub-communities

Different sea cliff communities develop in a number of habitat zones related to the degree of maritime influence (exposure to wind and sea spray), geology and soil type. In general Irish sea cliffs display a range of zones running in a series of horizontal bands up the cliff face, each of which has its own distinct sub-communities including:

- Splash zone
- Pioneer zone
- Rock crevice/cliff ledge zone
- Maritime grassland zone
- Maritime heath zone
- Maritime slope flush zone

There is considerable variation but the general pattern would be that the maritime influence is strongest near the base of the cliff and becomes gradually less dominant towards the cliff top. At the cliff base, the vegetation is naturally very open and the species present have a high tolerance to salinity. The splash zone generally has a well developed lichen flora dominated by species such as *Verrucaria maura*, *Ramalina* spp. and *Xanthoria* spp. These plant communities are dependent on rock crevices for rooting. Moving up the cliff, between the splash zone and the cliff top, vegetation on cliff ledges is less open and can support some species which are not exclusively associated with coastal conditions. Closer to the cliff top, maritime grasslands can occur. The plant

Typical splash zone species			
<i>Ramalina</i> spp.	<i>Verrucaria maura</i>	<i>Xanthoria</i> spp.	
Typical crevice & ledge species			
<i>Anthyllis vulneraria</i>	<i>Asplenium marinum</i>	<i>Armeria maritima</i>	<i>Aster tripolium</i>
<i>Atriplex prostrata</i>	<i>Beta vulgaris</i> ssp. <i>maritima</i>	<i>Cerastium diffusum</i>	<i>Lavatera arborea</i>
<i>Catapodium marinum</i>	<i>Crithmum maritimum</i>	<i>Festuca rubra</i>	<i>Limonium</i> sp.
<i>Inula crithmoides</i>	<i>Ligusticum scoticum</i>	<i>Plantago coronopus</i>	<i>Plantago maritima</i>
<i>Sedum anglicum</i>	<i>Spergularia rupicola</i>	<i>Sedum rosea</i>	<i>Silene uniflora</i>
Typical coastal heath species			
<i>Calluna vulgaris</i>	<i>Daboecia cantabrica</i>	<i>Empetrum nigrum</i>	<i>Erica cinerea</i>
<i>Erica tetralix</i>	<i>Vaccinium myrtillus</i>	<i>Scilla verna</i>	<i>Ulex gallii</i>
Typical maritime grassland species			
<i>Anthyllis vulneraria</i>	<i>Armeria maritima</i>	<i>Daucus carota</i>	<i>Festuca rubra</i>
<i>Crithmum maritimum</i>	<i>Hyacinthoides non-scripta</i>	<i>Plantago coronopus</i>	<i>Plantago maritima</i>
<i>Sedum anglicum</i>	<i>Spergularia rupicola</i>	<i>Silene uniflora</i>	<i>Scilla verna</i>

communities and physical characteristics of maritime grasslands vary depending on the degree of exposure and whether or not grazing is a factor. Plant communities typical of sea birds and maritime therophyte communities (dominated by annual species) are exceptions to this horizontal zonation and can occur as a mosaic with the other plant communities. The following table presents lists of species that are considered typical of the different zones that are generally associated with hard cliffs by Barron et al. (2011).

The cliffs in Saltee Islands SAC are thought to support a maritime vegetation cover with a typical south-eastern flora. The hard cliffs along the southern and eastern shores are known to be particularly diverse, with a range of species including sea pink (*Armeria maritima*), scurvy grass (*Cochlearia* spp.), red fescue (*Festuca rubra*), sea campion (*Silene uniflora*), spear-leaved orache (*Atriplex prostrata*), sea mayweed (*Tripleurospermum maritimum*), sea plantain (*Plantago maritima*), English stonecrop (*Sedum anglicum*), sea samphire (*Crithmum maritimum*), rock sea spurry (*Spergularia rupicola*) and sea spleenwort (*Asplenium marinum*). Some scarce or uncommon species have also been recorded including sea stork's-bill (*Erodium maritimum*) and golden-samphire (*Inula crithmoides*). A range of lichens including *Ramalina* and *Xanthoria* species are also present.

The boulder clay cliffs along the northern and western shores are less species-rich, but do support sea pink (*Armeria maritima*), red fescue (*Festuca rubra*), sea mayweed (*Tripleurospermum maritimum*), creeping bent (*Agrostis stolonifera*) and false oat-grass (*Arrhenatherum elatius*).

The target for this attribute is to ensure that the typical flora of vegetated sea cliffs is maintained, as are the range of sub-communities within the different zones.

Vegetation composition: negative indicator species

Negative indicator species can include non-native species (e.g. *Hebe* sp., *Carpobrotus edulis*, *Gunnera tinctoria*), species indicative of changes in nutrient status (e.g. *Urtica dioica*) and species not considered to be typical of the habitat (e.g. *Pteridium aquilinum*).

The target for this attribute is that negative indicator species (including non-native species) should make up less than 5% of the vegetation cover.

Vegetation composition: bracken and woody species

Encroachment of bracken (*Pteridium aquilinum*) and woody/scrub species on cliffs, particularly onto maritime grasslands, leads to a reduction in species diversity.

The target for this attribute on the Saltees is that bracken should make up less than 10% of the vegetation cover, while woody species should make up no more than 20% of the vegetation cover.'

As outlined in the Conservation objectives supporting document –marine habitats (NPWS, 2011)¹¹:

'The Saltee Islands and Forlorn Point forms the semi enclosed eastern boundary of Ballyteigue Bay (figure 1). This large, open, south-westerly facing bay is bounded to the west by the Hook Head Peninsula and is exposed to prevailing winds and swells from the south-west and moderate to locally strong tidal streams.

*This Annex I habitat of Large shallow inlets and bays partly encompasses communities of the Annex I habitats of Reefs and Submerged or partly submerged sea caves; these will be dealt with separately. An additional benthic community: Coarse sediment with *Pomatoceros* spp. and *Pisidia longicornis* community was recorded within the Annex I habitat of Large shallow inlet and bay at this site (figure 5).*

Within the SAC but outside this Annex I habitat, the subtidal sediment substrate is mixed; it occurs in depths greater than 30m and is dominated by epibenthic crustaceans.

Coarse sediment with *Pomatoceros* spp. and *Pisidia longicornis* community

This community occurs on the north-east portion of the site in depths of between approximately 8m and 30m (figure 5).

The substrate here is that of coarse material with gravel and cobbles and the fauna reflects this, being typical of coarse sediments in general.

*The most numerically abundant species is the serpulid polychaetes *Pomatoceros* spp. and the long clawed porcelain crab *Pisidia longicornis* (table 1). Other notable taxa present are barnacles (including *Balanus* sp.), the ophiuroid *Ophiothrix fragilis* and the polychaetes *Pholoe baltica* and *Harmothoe* sp.*

Distinguishing species of the Coarse sediment with <i>Pomatoceros</i> spp. and <i>Pisidia longicornis</i> community	
<i>Pomatoceros triqueter</i>	<i>Liljeborgia pallida</i>
<i>Pomatoceros</i> sp.	<i>Harmothoe</i> sp.
<i>Pisidia longicornis</i>	<i>Sphaerosyllis taylori</i>
<i>Ophiothrix fragilis</i>	Aoridae
<i>Pholoe baltica</i> (sensu Petersen)	<i>Amblyosyllis formosa</i>
Nemertea	Pectinidae
<i>Eusyllis assimilis</i>	

Table 1. Distinguishing species of the Coarse sediment with *Pomatoceros* spp. and *Pisidia longicornis* community.

MUDFLATS AND SANDFLATS NOT COVERED BY SEAWATER AT LOW TIDE.

This Annex I habitat occurs intertidally between the Mean Low Water Mark (MLWM) and the Mean High Water Mark (HMWM), with the lower shore extent being defined by the Ordnance Survey Mean Low Water boundary. At this site intertidal sediments occurs from Kilmore Quay to Ringbaun on the northern margin of the SAC; it is also recorded on the Little Saltee Island as a thin band above the intertidal reef. Within this SAC this habitat is represented by a single community complex.

The development of a community complex target arises when an area possesses similar abiotic features but records a number of biological communities that are not regarded as being sufficiently stable and/or distinct temporally or spatially to become the focus of conservation efforts. In this case, examination of the available data from Saltee Islands identified a number of biological communities whose species composition overlapped significantly. Such biological communities are grouped together into what experts consider are sufficiently stable units (i.e. a complex) for conservation targets.

Intertidal sand to muddy sand dominated by polychaetes community complex

This community complex occurs intertidally from Kilmore Quay to Ringabaun and on the Little Saltee Island above the intertidal reef (figure 5).

The sediment varies from sand (coarse sand ranges from 0.13 to 40.5%, medium sand from 0.28 to 61.3% and fine sand from 0.87 to 37.9%) to muddy sand (very fine sand ranges from 0.3 to 56.1% and silt-clay from 1.1 to

¹¹https://www.npws.ie/sites/default/files/publications/pdf/000707_Saltee%20Islands%20SAC%20Marine%20Supporting_Doc_V1.pdf

61.7%). Mixed sediment (gravel ranges from 15.6 to 34.2%) is associated with the mid to upper shore on the beach from Kilmore Quay to Ringabaun.

The fauna is dominated by the polychaetes *Eteone longa*, *Capitella* spp., *Malacoceros fuliginosus* and *Arenicola marina* (table 2) on the mid to lower shore, in coarser sediments the crustaceans *Eurydice pulchra* and *Pontocrates* sp. are more prominent. Oligochaetes predominate on the mid to upper shore.

Distinguishing species of the Intertidal sand to muddy sand dominated by polychaetes community complex	
<i>Eteone longa</i>	<i>Malacoceros fuliginosus</i>
<i>Capitella</i> sp. agg.	<i>Arenicola marina</i>
<i>Eurydice pulchra</i>	<i>Pontocrates</i> sp.
Oligochaetes	

Table 2: Distinguishing species of the Intertidal sand to muddy sand dominated by polychaetes community complex.

REEFS

Within this SAC reef is widespread through the site. Intertidally, it is recorded from the pier at Kilmore Quay to St. Patrick's Bridge and on some shores of the Saltee Islands. Subtidally, the reef occurs as a broad northeast/south-west band traversing the site (figure 5).

The intertidal reef consists of boulders and sloping bedrock and is classified as exposed to moderately exposed around the islands and as sheltered on the mainland around Kilmore Quay. The subtidal reef substrate ranges from rugged bedrock with steep sided gullies to large boulders mixed with sand or cobbles and pebbles; its exposure regime is classified as exposed.

Ecologically, the reef in Saltee Islands SAC can be classified into three main groups, Intertidal reef community complex, Subtidal reef dominated by echinoderms and sponges community complex and *Laminaria* dominated community (figure 5). These community types are described below.

Intertidal reef community complex

This community complex occurs on all intertidal reefs within the site; its exposure regime ranges from exposed, moderately exposed to sheltered (figure 5). Lichens dominate the top of the shore, while furoids, wracks, gastropods and barnacles are prevalent further down the shore (table 3). The algae *Ulva* spp., *Cladophora rupestris* and *Ceramium* sp. and the barnacle *Balanus balanus* are more common on the sheltered reef while the furoid *Fucus serratus*, the gastropods *Littorina obtusata* and *Patella depressa*, the barnacle *Chthamalus montagui* and the anemone *Actinia equina* are associated with the more exposed areas at this site. Other fauna recorded include the algae *Lithothamnion* sp., *Mastocarpus stellatus* and the serpulid polychaete *Pomatoceros* sp.

Species associated with the Intertidal reef community complex	
<i>Fucus vesiculosus</i>	<i>Fucus spiralis</i>
<i>Fucus serratus</i>	<i>Ascophyllum nodosum</i>
<i>Porphyra purpurea</i>	<i>Porphyra umbilicalis</i>
<i>Patella vulgata</i>	<i>Patella depressa</i>
<i>Palmaria palmata</i>	<i>Verrucaria maura</i>
<i>Chthamalus montagui</i>	<i>Balanus balanus</i>
<i>Nucella lapillus</i>	<i>Actinia equina</i>
<i>Littorina littorea</i>	<i>Littorina obtusata</i>
<i>Gibbula umbilicalis</i>	

Table 3. Species associated with Intertidal reef community complex.

Subtidal reef dominated by echinoderms and sponges community complex

This reef community complex is recorded throughout the site between depths of 15m and 40m (figure 5). The substrate is that of bedrock with steep sided gullies to large boulders mixed with sand or cobbles and pebbles. The exposure regime of this community is recorded as exposed.

This community complex is dominated by the echinoderms *Echinus* sp. and *Asterias* sp. and the sponges *Alcyonium* sp., *Cliona* sp. and encrusting sponges (table 4). At the shallow depths above 20m a variety of algae species, including encrusting calcareous red algae, also occur.

Species associated with Subtidal reef dominated by echinoderms and sponges community complex	
<i>Echinus</i> sp.	<i>Cliona</i> sp.
<i>Alcyonium</i> sp.	<i>Labrus</i> sp.
Encrusting sponges	Red algae
<i>Asterias</i> sp.	

Table 4. Species associated with subtidal reef dominated by echinoderms and sponges community complex.

Other species present include the anemones *Actinothoe* sp., *Sagartia* sp., *Urticina* sp., bryozoans including *Flustra* sp., the crustaceans *Cancer pagurus*, *Palinurus* sp. and *Necora puber*, the echinoderms *Henricia* sp., *Luidia* sp., *Marthasterias glacialis*, *Ophiocomina nigra*, *Ophiothrix* sp. and *Stichastrella* sp., hydroids including *Nemertesia* sp., the sponges *Myxilla* sp., *Pachymastia* sp., *Polymastia* sp., *Pentapora* sp., *Suberites* sp. and *Tethya* sp., the bivalve *Mytilus* sp. and the polychaete *Pomatoceros* sp. Several species of fish were also recorded on the reef, namely the goby *Gobiusculus* sp., the cod species *Gadus morhua* and *Trisopterus luscus*, and the dogfish *Scyliorhinus* sp.

Laminaria dominated community

Assemblages of *Laminaria* are recognised as being among the most ecologically dynamic and biologically diverse of habitats on the planet. Kelp species are the most common prominent constituents of the temperate lower intertidal and subtidal rocky shore. They are considered to be an important genus with a diverse community of fauna and other algae associated with them.

In Saltee Islands SAC, the *Laminaria* dominated community occurs on bedrock in exposed conditions between the low water mark and 20 meters depth (figure 5).

The species associated with this community are listed in table 5. Two species of *Laminaria*, *L. digitata* and *L. hyperborea* predominate, a third kelp species *Saccharina latissima* has also been recorded here. Several other algae species are found on this reef including *Fucus serratus*, *Saccorhiza polyschides*, *Halidrys siliquosa*, *Polysiphonia* sp., *Ahnfeltia* sp., *Chorda filum*, *Membranoptera* sp., *Delesseria* sp., *Desmarestia* sp., *Palmaria palmata*, *Gelidium* sp., *Dilsea carnosa*, *Dictyota dichotoma*, *Alaria* sp., and encrusting calcareous red algae.

The fauna recorded from this community include the sponges, *Halichondria* sp., *Alcyonium* sp., *Cliona* sp. and encrusting sponges, the anemone *Actinothoe sphyrodeta*, hydroids including *Obelia* sp., bryozoans including *Membranipora* sp., *Pomatoceros* sp. and spirorbid polychaetes, barnacles, the crabs *Carcinus maenas* and *Cancer pagurus*, and the gastropod *Calliostoma zizyphinum*. Fish species recorded include the wrasse *Labrus* sp. and the dogfish *Scyliorhinus* sp.

Species associated with the <i>Laminaria</i> dominated community	
<i>Laminaria digitata</i>	<i>Desmarestia</i> sp.
Foliose red algae	<i>Pomatoceros</i> sp.
<i>Laminaria hyperborea</i>	Spirorbids
<i>Saccharina latissima</i>	<i>Obelia</i> sp.
Hydroids	Bryozoans
Encrusting sponges	<i>Dilsea carnosa</i>
<i>Membranipora</i> sp.	<i>Saccorhiza polyschides</i>

Table 5. Species associated with the *Laminaria* dominated community.

SUBMERGED OR PARTLY SUBMERGED SEA CAVES

The distribution and ecology of intertidal or subtidal sea caves has not been the subject of scientific investigation in Ireland and the extent of very few individual caves have been mapped in detail. The Department of Communications, Marine and Natural Resources previously commissioned a coastal oblique

aerial survey for the purpose of coastal protection. Analysis of this imagery has yielded some information concerning the location of partly submerged sea caves in Saltee Islands SAC, which appear to be limited to the Great Saltee Island (figure 4). There is no additional information available concerning the likely distribution of permanently submerged sea caves in the site at present. Whilst surveys undertaken in the UK indicate the structure and function of sea caves are largely influenced by hydrodynamic forces and water quality, no such information is yet available for Ireland.

ANNEX II SPECIES

HALICHOERUS GRYPUS (GREY SEAL)

This marine mammal species occurs in estuarine, coastal and offshore waters but also utilises a range of intertidal and terrestrial habitats for important life history functions such as breeding, moulting, resting and social activity. Its aquatic range for foraging and inter-site movement extends predominantly into continental shelf and slope waters. Grey seal occupies both aquatic and terrestrial habitats in Saltee Islands SAC, including intertidal shorelines that become exposed during the tidal cycle and outlying rocky skerries when these are not inundated by wave action. It is present at the site throughout the year during all aspects of its annual life cycle which includes breeding (Aug-Dec approx.), moulting (Dec-April approx.) and non-breeding foraging and resting phases. In acknowledging the limited understanding of aquatic habitat use by the species within the site, it should be noted that all suitable aquatic habitat is considered relevant to the species' range and ecological requirements at the site and is therefore of potential use by grey seals.

Grey seals are vulnerable to disturbance during periods when time is spent ashore by individuals or groups of animals. This occurs immediately prior to and during the annual breeding season, which takes place predominantly during the months of August-December. Pups are born on land, usually on remote beaches and uninhabited islands or in sheltered caves. While there may be outliers in any year, specific established sites are used annually for breeding-associated behaviour by adult females, adult males, newborn pups and weaned pups. Such habitats are critical to the maintenance of the species within any site since pups are nursed there for a period of several weeks by the mother prior to weaning and abandonment. During this period, adult females also mate with adult males at or adjacent to breeding sites. In addition to delivering information on breeding dynamics, pup production (i.e. the number of pups born each year) can be measured or estimated in order to deliver an assessment of population size. However the relationship between pup production and total population size is not well known. An estimated 163 pups were born in Saltee Islands SAC in 2005. The corresponding minimum population estimate for the site numbered 571-734 grey seals of all ages. Known and suitable habitats for the species in Saltee Islands SAC during the breeding season are indicated in figure 6. Current breeding sites in Saltee Islands SAC are broadly as follows: Great Saltee Island and Little Saltee Island.

Grey seal also occurs at the site during the annual moult (i.e. hair shedding and replacement), a protracted period during which individual animals spend significant periods of days or weeks on the shore. Moulting is considered an intensive, energetically-demanding process that all seals must undergo, incurring further vulnerability for individuals during this period. Terrestrial or intertidal sites where seals can be found ashore are known as haul-out sites. Moulting locations may be preferentially selected by the species. Those currently described in Ireland are remote from human habitation and interference, being on uninhabited islands or remote beaches, with specific established sites used annually by moulting adult females, adult males and juveniles. In Ireland the moulting phase in the annual life cycle occurs predominantly during the months of December to April. A minimum estimate of 246 grey seals was recorded at the site during the moult season in 2007. Known moult haul-out locations at the site are indicated in figure 7, broadly consisting of Great Saltee Island and the Coningmore Rocks.

Grey seal is a successful aquatic predator that feeds on a wide variety of fish and cephalopod species. For individual grey seals of all ages, intervals between foraging trips in coastal or offshore waters are spent resting ashore at terrestrial or intertidal haul-out sites, or in the water. Resting locations selected by grey seals may be more variable and dispersed than those used during the breeding or moulting seasons. While outliers may occur for very small numbers of animals, there is nevertheless a tendency for recurrent selection by grey seal of particular habitats and sites for terrestrial/intertidal resting behaviour (e.g., low-lying rocks and skerries). Known and suitable habitats for resting by the species are indicated in figure 8. Current sites described in Saltee Islands SAC are broadly as follows: Great Saltee Island, Little Saltee Island, the Coningmore Rocks and The Brandies.

Section 2: Appropriate Assessment Notes

Many operations/activities of a particular nature and/or size require the preparation of an environmental impact statement of the likely effects of their planned development. While smaller operations/activities (i.e., sub threshold developments) are not required to prepare such statements, an appropriate assessment and Natura Impact Statement is required to inform the decision-making process in or adjacent to Natura 2000 sites. The purpose of such an assessment is to record in a transparent and reasoned manner the likely effects on a Natura 2000 site of a proposed development. The Department of the Environment, Heritage and Local Government has prepared general guidance on the completion of such assessments (www.npws.ie).

Annex I Habitats

It is worth considering at the outset that in relation to Annex I habitat structure and function, the extent and quality of all habitats varies considerably in space and time and marine habitats are particularly prone to such variation. Habitats which are varying naturally, i.e., biotic and/or abiotic variables are changing within an envelope of natural variation, must be considered to have favourable conservation condition. Anthropogenic disturbance may be considered significant when it causes a change in biotic and/or abiotic variables in excess of what could reasonably be envisaged under natural processes. The capacity of the habitat to recover from this change is obviously an important consideration (i.e., habitat resilience) thereafter.

This Department has adopted a prioritized approach to conservation of structure and function in marine Annex I habitats.

- 1. Those communities that are key contributors to overall biodiversity at a site by virtue of their structure and/or function (keystone communities) should be afforded the highest degree of protection and any significant anthropogenic disturbance should be avoided.*
- 2. In relation to the remaining constituent communities that are structurally important (e.g., broad sedimentary communities) within an Annex I marine habitat, there are two considerations.*
 - 2.1 Significant anthropogenic disturbance may occur with such intensity and/or frequency as to effectively represent a continuous or ongoing source of disturbance over time and space (e.g., effluent discharge within a given area). Drawing from the principle outlined in the European Commission's Article 17 reporting framework that disturbance of greater than 25% of the area of an Annex I habitat represents unfavourable conservation status, this Department takes the view that licensing of activities likely to cause continuous disturbance of each community type should not exceed an approximate area of 15%. Thereafter, an increasingly cautious approach is advocated. Prior to any further licensing of this category of activities, an inter-Departmental management review (considering inter alia robustness of available scientific knowledge, future site requirements, etc) of the site is recommended.*
 - 2.2 Some activities may cause significant disturbance but may not necessarily represent a continuous or ongoing source of disturbance over time and space. This may arise for intermittent or episodic activities for which the receiving environment would have some resilience and may be expected to recover within a reasonable timeframe relative to the six-year reporting cycle (as required under Article 17 of the Directive). This Department is satisfied that such activities could be assessed in a context-specific manner giving due consideration to the proposed nature and scale of activities during the reporting cycle and the particular resilience of the receiving habitat in combination with other activities within the designated site.*

The following technical clarification is provided in relation to specific conservation objectives and targets for Annex I habitats to facilitate the appropriate assessment process:

Objective - To maintain the favourable conservation condition of Large shallow inlets and bays in the Saltee Islands SAC, which is defined by the following list of attributes and targets

Target 1- *The permanent habitat area is stable or increasing, subject to natural processes.*

- This habitat also partly encompasses the Annex I habitats of Reefs, Submerged or partly submerged sea caves and vegetated sea cliffs; however targets for these habitats should be addressed in their own right.*
- This target refers to activities or operations that propose to permanently remove habitat from the site, thereby reducing the permanent amount of habitat area. It does not refer to long or short term disturbance of the biology of a site.*
- Early consultation or scoping with the Department in advance of formal application is advisable for such proposals.*

Target 2- *The following community should be maintained in a natural condition: Coarse sediment with Pomatoceros spp. and Pisidia longicornis community.*

- *A semi-quantitative description of this community has been provided in Section 1.*
- *An interpolation of its likely distribution is provided in figure 5.*
- *The estimated areas of this community (within the Annex 1 habitat of Large shallow inlet and bay) given below are based on spatial interpolation and therefore should be considered indicative: Coarse sediment with Pomatoceros spp. and Pisidia longicornis community 2,712ha.*
- *Significant continuous or ongoing disturbance of community should not exceed an approximate area of 15% of the interpolated area of the community, at which point an inter-Departmental management review is recommended prior to further licensing of such activities.*
- *Proposed activities or operations that cause significant disturbance to the community but may not necessarily represent a continuous or ongoing source of disturbance over time and space may be assessed in a context-specific manner giving due consideration to the proposed nature and scale of activities during the reporting cycle and the particular resilience of the receiving habitat in combination with other activities within the designated site.*

Objective - To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide in the Saltee Islands SAC, which is defined by the following list of attributes and targets

Target 1- *The permanent habitat area is stable or increasing, subject to natural processes.*

- *This target refers to activities or operations that propose to permanently remove habitat from the site, thereby reducing the permanent amount of habitat area. It does not refer to long or short term disturbance of the biology of a site.*
- *Early consultation or scoping with the Department in advance of formal application is advisable for such proposals*

Target 2- *The following community should be maintained in a natural condition: Intertidal sand to muddy sandy dominated by polychaetes community complex.*

- *A semi-quantitative description of this community has been provided in Section 1.*
- *An interpolation of its likely distribution is provided in figure 5.*
- *The estimated areas of the community given below are based on spatial interpolation and therefore should be regarded as indicative: Intertidal sand to muddy sand dominated polychaetes community 20 ha*
- *Significant continuous or ongoing disturbance of the community should not exceed an approximate area of 15% of the interpolated area of the community, at which point an inter-Departmental management review is recommended prior to further licensing of such activities.*
- *Proposed activities or operations that cause significant disturbance to the community but may not necessarily represent a continuous or ongoing source of disturbance over time and space may be assessed in a context-specific manner giving due consideration to the proposed nature and scale of activities during the reporting cycle and the particular resilience of the receiving habitat in combination with other activities within the designated site.*

Objective - To maintain the favourable conservation condition of Reefs in the Saltee Islands SAC, which is defined by the following list of attributes and targets

Target 1- *The distribution of reefs should remain stable, subject to natural processes.*

- *The likely distribution of reef habitat in this SAC is indicated (figure 3).*
- *This target refers to activities or operations that propose to permanently remove reef habitat, thus reducing the range over which this habitat occurs within the site. It does not refer to long or short term disturbance of the biology of reef habitats.*
- *Early consultation or scoping with the Department in advance of formal application is advisable for such proposals.*

Target 2- *The permanent area is stable, subject to natural processes.*

- *This target refers to activities or operations that propose to permanently remove habitat from the site, thereby reducing the permanent amount of habitat area. It does not refer to long or short term disturbance of the biology of a site.*

- Early consultation or scoping with the Department in advance of formal application is advisable for such proposals.

Target 3- The following reef community complexes should be maintained in a natural condition: Intertidal reef community complex; and Subtidal reef dominated by echinoderms and sponges community complex.

- A semi-quantitative description of the communities has been provided in Section 1.
- An interpolation of their likely distribution is provided in figure 5.
- The estimated areas of the communities within the Reefs habitat given below are based on spatial interpolation and therefore should be regarded as indicative: Intertidal reef community complex 43 ha
Subtidal reef dominated by echinoderms and sponges community complex 4,296ha
- This target relates to the structure and function of the reef and therefore it is of relevance to those activities that may cause disturbance to the ecology of the habitat.
- Significant continuous or ongoing disturbance of communities should not exceed an approximate area of 15% of the interpolated area of each community type, at which point an inter-Departmental management review is recommended prior to further licensing of such activities.
- Proposed activities or operations that cause significant disturbance to communities but may not necessarily represent a continuous or ongoing source of disturbance over time and space may be assessed in a context-specific manner giving due consideration to the proposed nature and scale of activities during the reporting cycle and the particular resilience of the receiving habitat in combination with other activities within the designated site.

Target 4- The extent of Laminaria dominated community should be conserved, subject to natural processes.

- Laminaria dominated communities are considered to be keystone communities that are of considerable importance to the overall ecology and biodiversity of a habitat by virtue of their physical complexity.
- Any significant anthropogenic disturbance to the extent of the Laminaria dominated community should be avoided.
- An interpolation of the likely distribution of the Laminaria dominated community is provided in figure 5 and should be regarded as indicative. Based on this interpolation the estimated area is 256 ha.

Target 5- The biology of the Laminaria dominated community should be conserved, subject to natural processes.

- It is important to ensure the quality as well as the extent of the Laminaria dominated community is protected.
- Any significant anthropogenic disturbance to the flora and fauna associated with the Laminaria dominated community complex should be avoided.

Objective - To maintain the favourable conservation condition of submerged or partly submerged sea caves in the Saltee Islands SAC, which is defined by the following list of attributes and targets

Target 1- The distribution of sea caves occurring should remain stable, subject to natural processes.

- The distribution of all sea caves in this SAC has not yet been fully evaluated.
- This target refers to activities or operations that propose to permanently remove sea cave habitat thus reducing the range over which this habitat occurs within the site. It does not refer to long or short term disturbance of the biology of sea cave habitats.
- Early consultation or scoping with the Department in advance of formal application is advisable for such proposals.

Target 2- Human activities should occur at levels that do not adversely affect the ecology of sea caves.

- This target relates to proposed activities or operations that may result in the deterioration of key resources (e.g., water quality) that are likely to drive or influence community structure of sea caves in the site. In the absence of complete knowledge on these elements in this site, such considerations should be assessed where appropriate on a case-by-case basis.

The following technical clarification is provided in relation to specific conservation objectives and targets for Annex II species to facilitate the appropriate assessment process:

Objective - To maintain the favourable conservation condition of grey seal in the Saltee Islands SAC, which is defined by the following list of attributes and targets

Target 1- *Species range within the site should not be restricted by artificial barriers to site use.*

- *This target may be considered relevant to proposed activities or operations that will result in the permanent exclusion of grey seal from part of its range within the site, or will permanently prevent access for the species to suitable habitat therein.*
- *It does not refer to short-term or temporary restriction of access or range.*
- *Early consultation or scoping with the Department in advance of formal application is advisable for proposals that are likely to result in permanent exclusion.*

Target 2- *The breeding sites should be maintained in a natural condition.*

- *Target 2 is relevant to proposed activities or operations that will result in significant interference with or disturbance of (a) breeding behaviour by grey seal within the site and/or (b) aquatic/terrestrial/intertidal habitat used during the annual breeding season.*
- *Operations or activities that cause displacement of individuals from a breeding site or alteration of natural breeding behaviour, and that may result in higher mortality or reduced reproductive success, would be regarded as significant and should therefore be avoided.*

Target 3- *The moult haul-out sites should be maintained in a natural condition.*

- *Target 3 is relevant to proposed activities or operations that will result in significant interference with or disturbance of (a) moulting behaviour by grey seal within the site and/or (b) aquatic/terrestrial/intertidal habitat used during the annual moult.*
- *Operations or activities that cause displacement of individuals from a moult haul-out site or alteration of natural moulting behaviour to an extent that may ultimately interfere with key ecological functions would be regarded as significant and should therefore be avoided.*

Target 4- *The resting haul-out sites should be maintained in a natural condition.*

- *Target 4 is relevant to proposed activities or operations that will result in significant interference with or disturbance of (a) resting behaviour by grey seal within the site and/or (b) aquatic/terrestrial/intertidal habitat used for resting.*
- *Operations or activities that cause displacement of individuals from a resting haul-out site to an extent that may ultimately interfere with key ecological functions would be regarded as significant and should therefore be avoided.*

Target 5- *The grey seal population occurring within the site should contain adult, juvenile and pup cohorts annually.*

- *Resting haul-out sites and the composition of haul-out groups may be different to those normally observed during breeding or moulting. There is some evidence of cohort-linked preferential selection by grey seals of terrestrial/intertidal sites elsewhere in Ireland.*
- *Whilst information is limited in Saltee Islands SAC at this time, disturbance at a specific location may have the effect of causing cohort-specific disturbance within the population. Population composition, whether in aquatic or terrestrial/intertidal habitats within the entire site or at individual locations, is likely to vary naturally within and between years.*
- *For the effective maintenance of the population, the above cohorts should be represented in the population occurring naturally within the site each year and any disturbance likely to cause such a cohort-specific effect should be carefully considered*

Target 6- *Human activities should occur at levels that do not adversely affect the grey seal population.*

- *Proposed activities or operations should not introduce man-made energy (e.g., aerial or underwater noise, light or thermal energy) at levels that could result in a significant negative impact on individuals and/or the population of grey seal within the site. This refers to both the aquatic and terrestrial/intertidal habitats used by the species in addition to important natural behaviours during the species' annual cycle.*
- *Target 6 also relates to proposed activities or operations that may result in the deterioration of key resources (e.g., water quality, feeding, etc) upon which grey seals depend. In the absence of complete knowledge on the species' ecological requirements in this site, such considerations should be assessed where appropriate on a case-by-case basis.'*

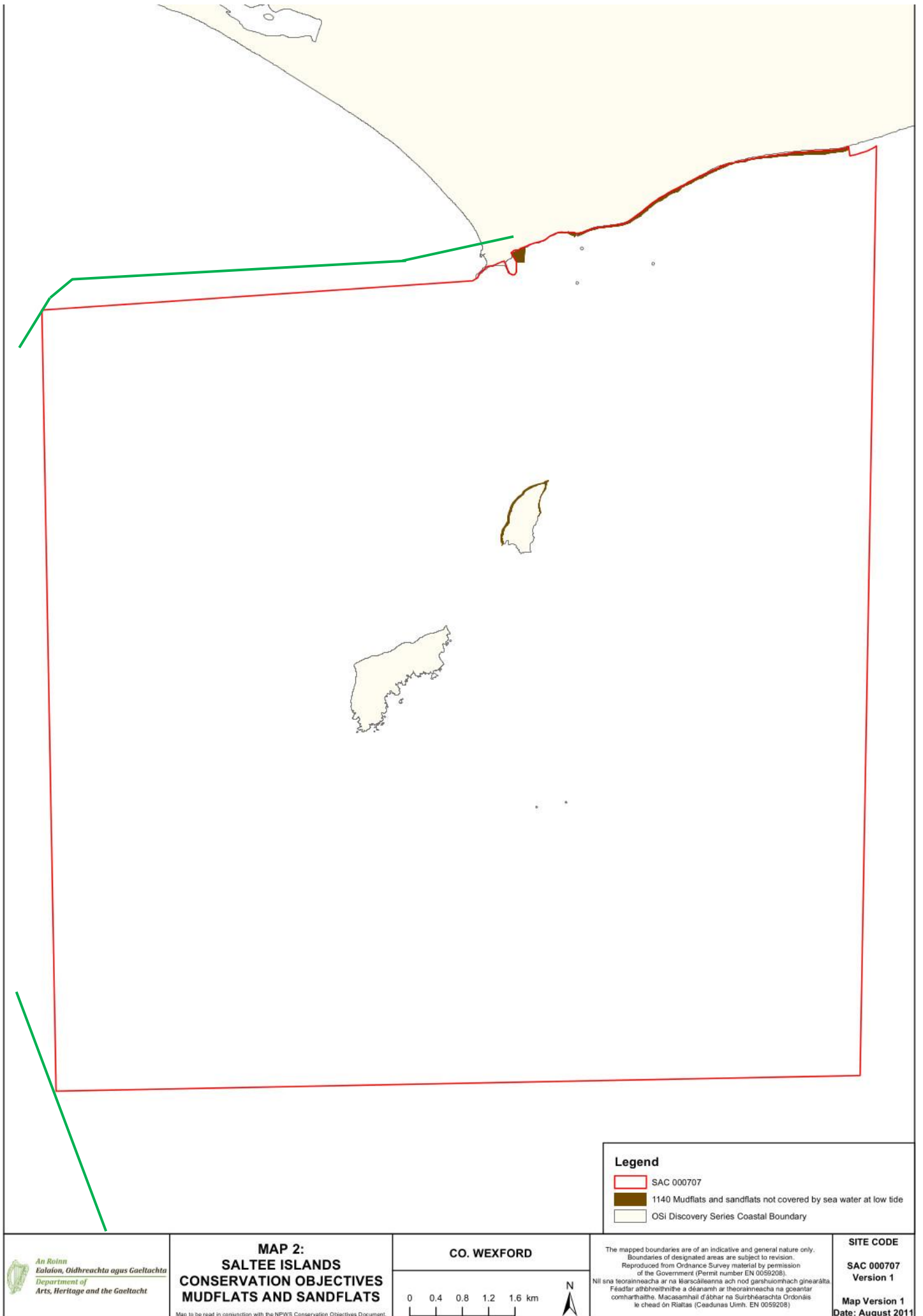


Figure 40. Location of Mudflats and Sandflats in Saltee Islands SAC and Beaufort cable route (green)

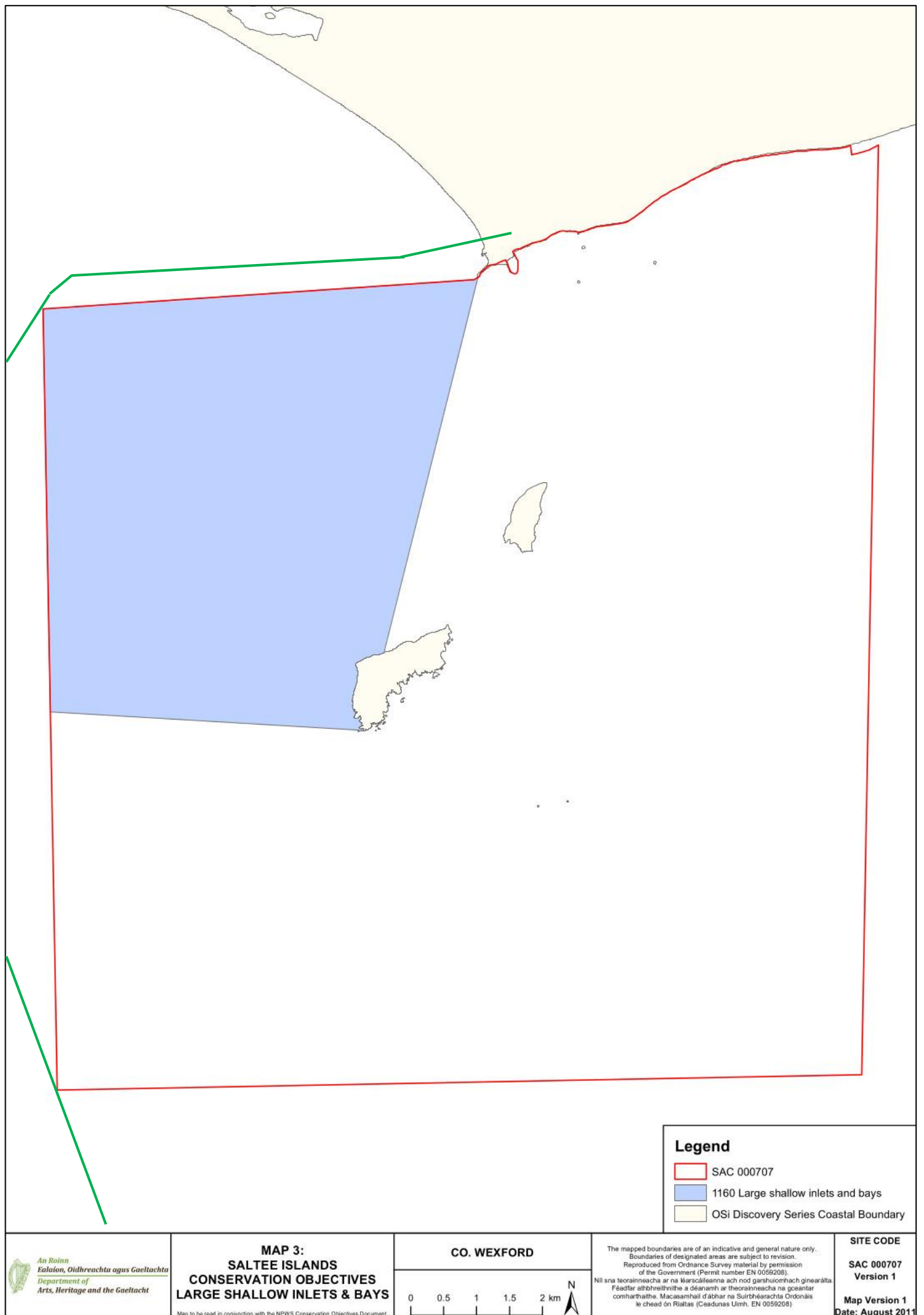


Figure 41. Location of Large Shallow inlets and Bays in Saltee Islands SAC and Beaufort cable route (green)

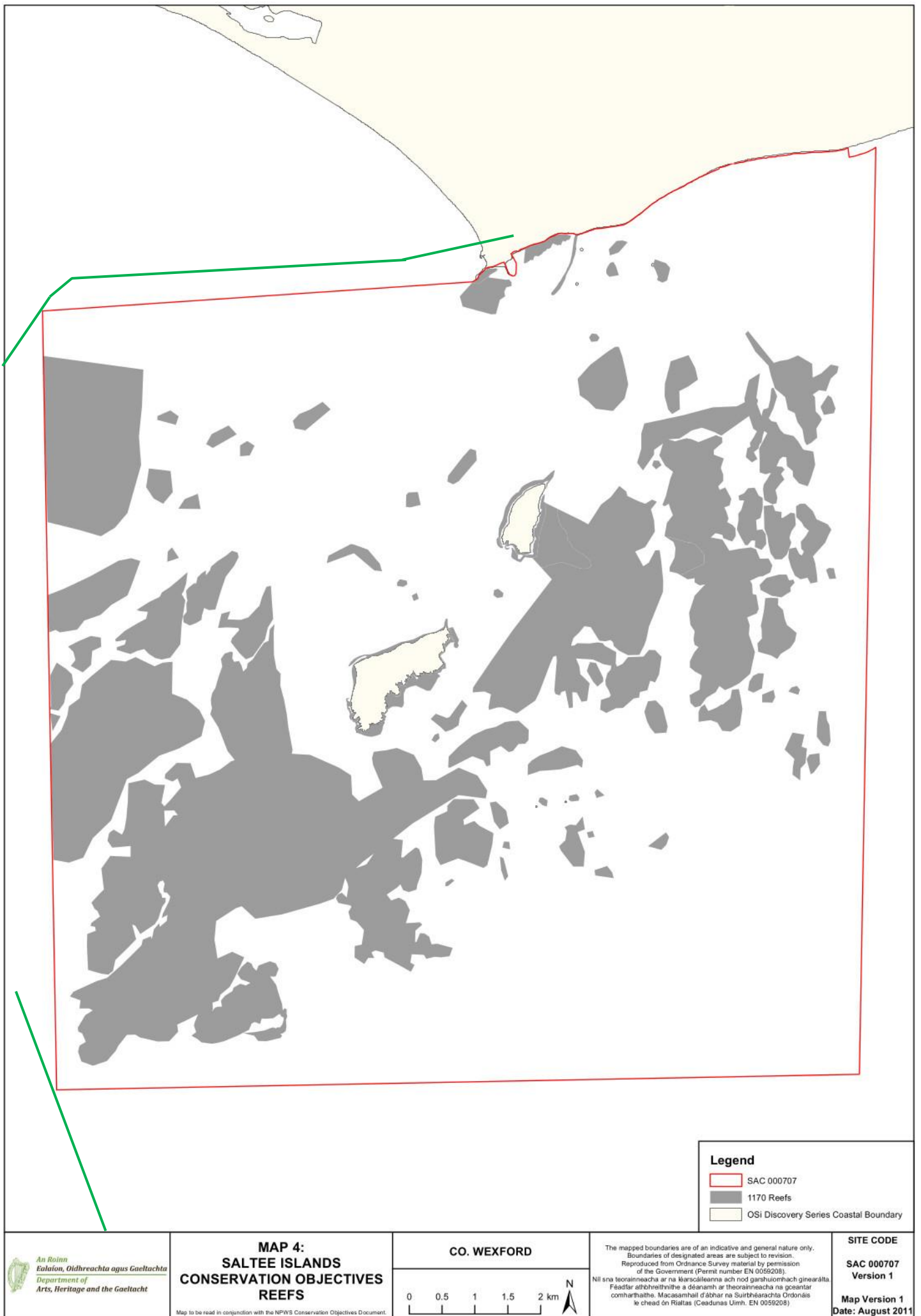


Figure 42. Location of Reefs in Saltee Islands SAC and Beaufort cable route (green)

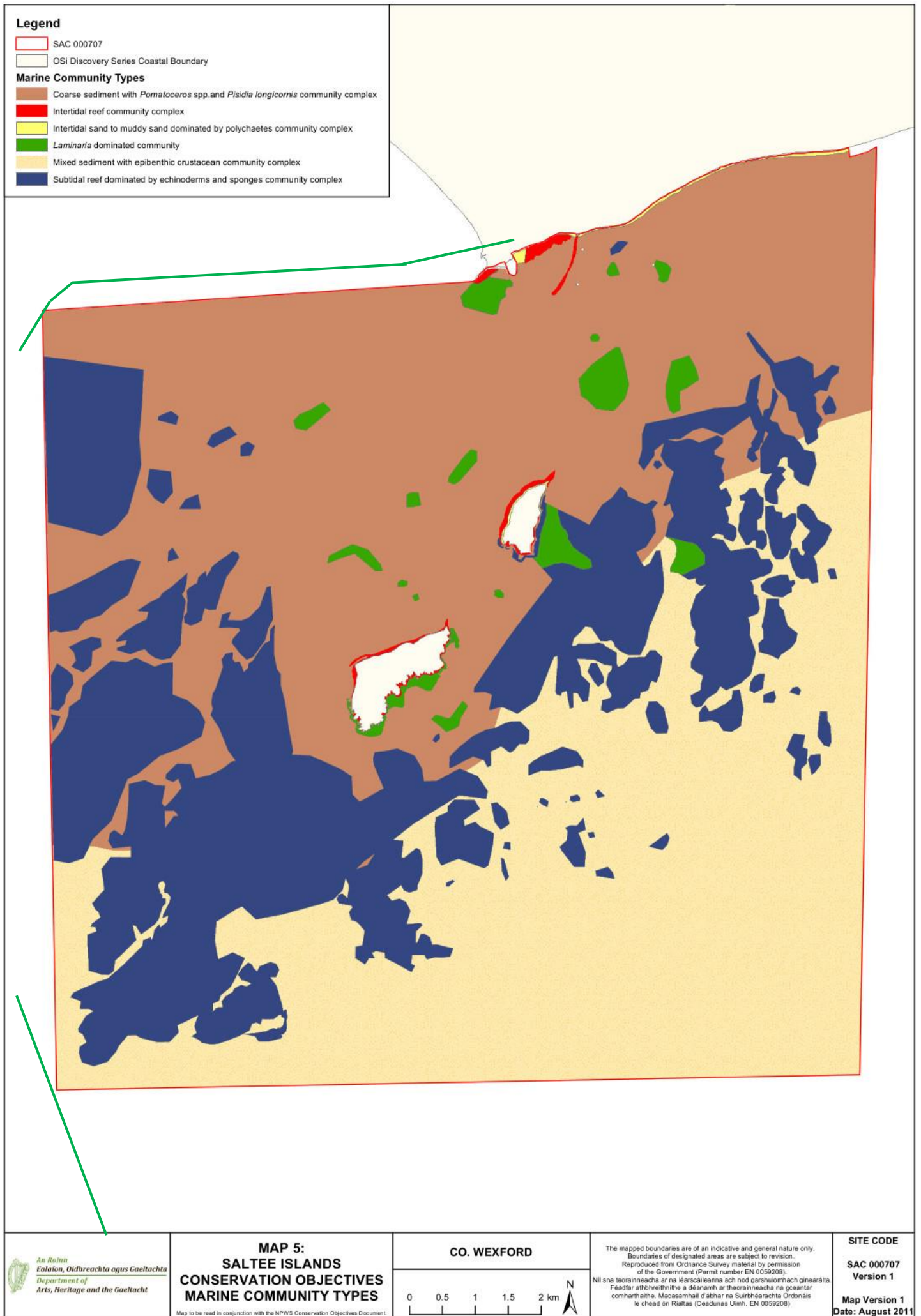
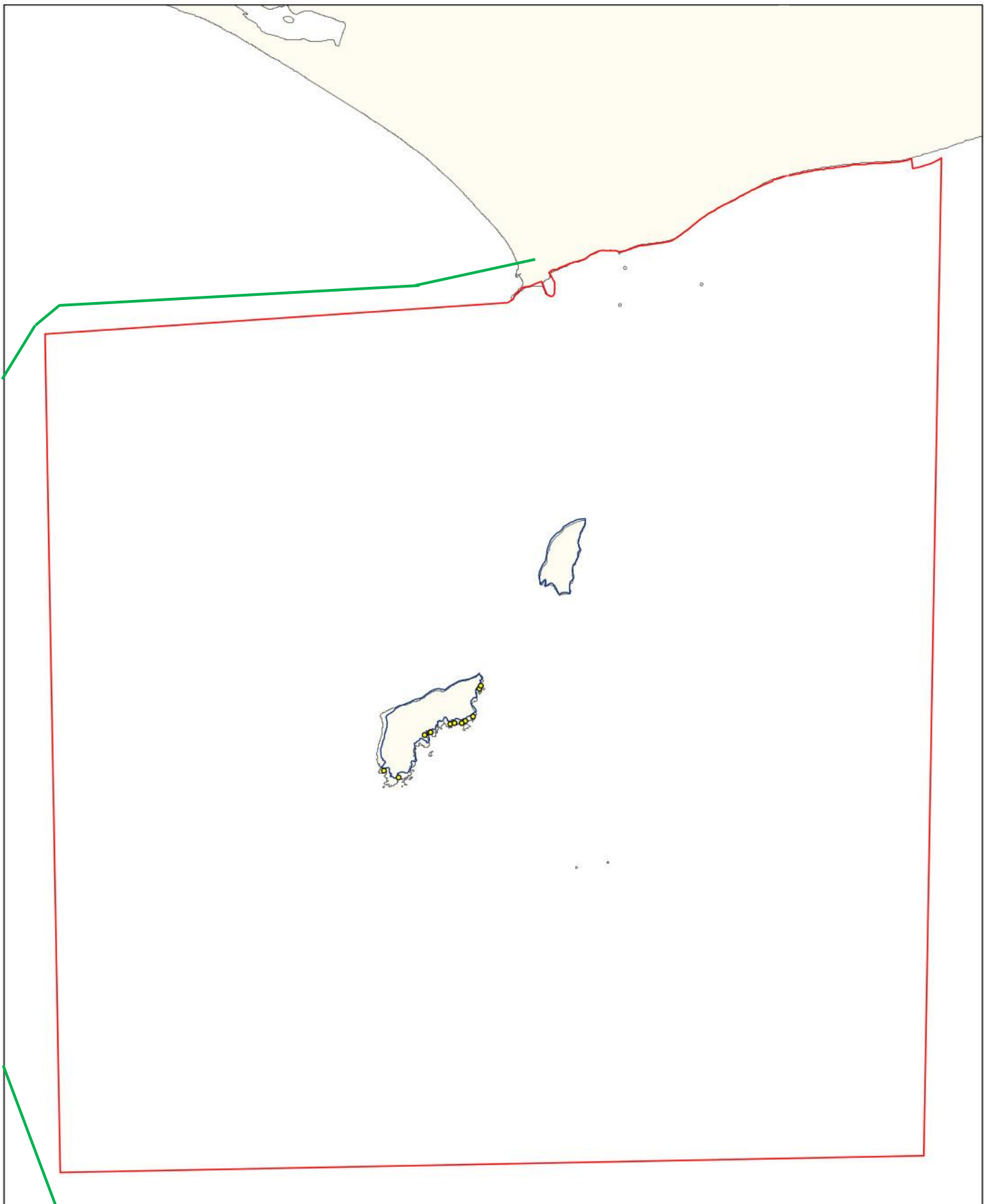



Figure 43. Location of Marine Community Types in Saltee Islands SAC and Beaufort cable route (green)



Legend


- SAC 000707
- 1230 Vegetated Sea Cliffs of the Atlantic and Baltic coasts
- 8330 Submerged or partially submerged sea caves
- OSI Discovery Series Coastal Boundary

 **An Roinn Ealaíon, Oidhreacht agus Gaeltachta**
 Department of Arts, Heritage and the Gaeltacht

**MAP 6:
 SALLEE ISLANDS
 CONSERVATION OBJECTIVES
 VEGETATED SEA CLIFFS &
 SEA CAVES**

Map to be read in conjunction with the NPWS Conservation Objectives Document.

CO. WEXFORD

0 0.5 1 1.5 2 km 

The mapped boundaries are of an indicative and general nature only. Boundaries of designated areas are subject to revision. Reproduced from Ordnance Survey material by permission of the Government (Permit number EN 0059208).
 Níl sna teorainneacha ar na léarscálanna ach níod garshuíomhach ginearálta. Féadfar aithhealltíne a déanamh ar theorainneacha na gceantar comharthaítha. Macasamhail d'ábhar na Suirbhéarachta Órdonáis le chead ón Rialtas (Ceadúnas Uimh. EN 0059208)

SITE CODE
SAC 000707
Version 1
Map Version 1
Date: August 2011

Figure 44. Location of Vegetated Sea Cliffs and Sea Caves in Sallee Islands SAC and Beaufort cable route (green)

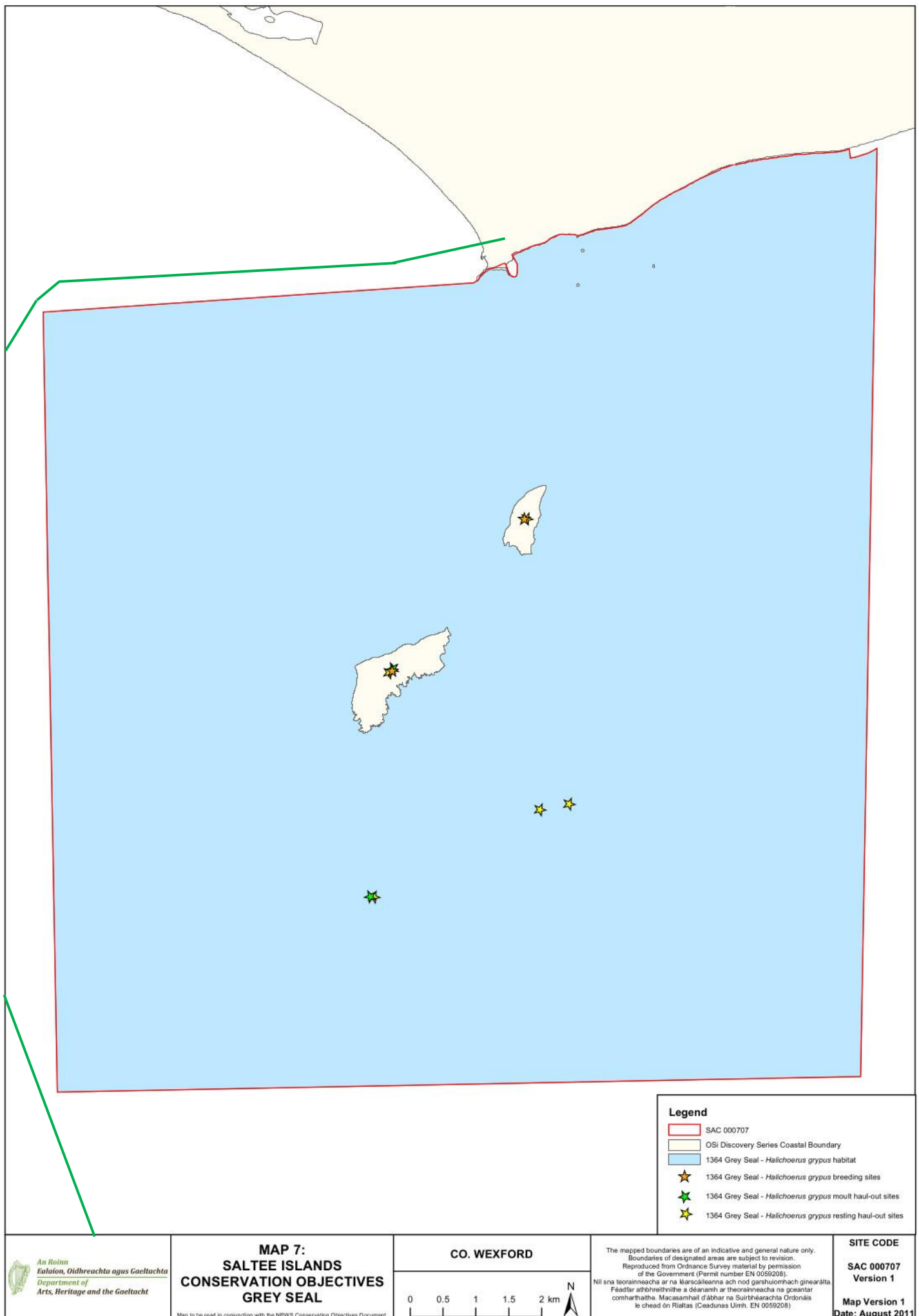


Figure 45. Location of Grey Seal in Saltee Islands SAC and Beaufort cable route

Ballyteige Burrow SPA (Site code: 004020)

As outlined in the Conservation Objectives Supporting Document “*The site contains several coastal habitats listed on Annex I of the E.U. Habitats Directive, including saltmarshes, fixed dunes and lagoon. Consequently the site is also designated as a Special Area of Conservation (SAC 0696). Most of the site is designated a Nature Reserve.*

The site is important for wintering waterbirds and provides excellent feeding grounds plus sheltered and secure high-tide roosts. The site supports non-breeding (wintering) Light-bellied Brent Goose and Black-tailed Godwit in numbers of international importance plus a further five waterbird species in numbers of all-Ireland importance.”

As outlined in the Ballyteige Burrow SPA Site Synopsis¹² (2014):

‘Ballyteige Burrow SPA is located on the south coast of Co. Wexford between the towns of Kilmore Quay and Cullenstown. It comprises a sand and shingle barrier beach, approximately 8 km in length, and the estuary of the Duncormick River. The extensive overlying sand spit is known as the Burrow, while the estuary that it encloses is known as the Cull. Some areas of adjacent polderland, particularly to the east, also form part of the site.

*The site has a range of coastal habitats, including various types of sand dunes, salt meadows, and intertidal sand and mud flats. Saltmarsh vegetation fringes The Cull, with such species as Sea Aster (*Aster tripolium*), Sea Arrowgrass (*Triglochin maritima*), Sea Lavender (*Limonium humile*) and Glasswort (*Salicornia* spp.). The estuary empties almost entirely on most tides, apart from the main central channel. Sediments vary from muds in the innermost areas, especially towards Duncormick, to sands elsewhere. In addition to the Duncormick River, the estuary receives the flow from a network of canals which drain the extensive polders to the east and north-east of the site.*

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Light-bellied Brent Goose, Shelduck, Golden Plover, Grey Plover, Lapwing, Black-tailed Godwit and Bar-tailed Godwit. The E.U. Birds Directive pays particular attention to wetlands, and as these form part of this SPA, the site and its associated waterbirds are of special conservation interest for Wetland & Waterbirds.

The principal ornithological importance of the site is wintering waterfowl, with internationally important populations of Light-bellied Brent Goose (290) and Black-tailed Godwit (474) occurring – all figures are five year mean peaks for the period 1995/96 to 1999/2000. It also supports nationally important numbers of Shelduck (167), Golden Plover (4,630), Grey Plover (69), Lapwing (7,808), and Bar-tailed Godwit (582). Several other species occur in numbers of regional importance, including Wigeon (306), Ringed Plover (133), Dunlin (1,020) and Redshank (206). The estuarine habitats provide feeding and roosting areas for the waterfowl species, though a lot of the birds also feed on the intensively managed lands of the adjacent polders.

Cullenstown Strand has a small colony of breeding Little Tern, though nesting may not occur in every year.

Ballyteige Burrow SPA is of ornithological importance because it supports internationally important populations of Light-bellied Brent Goose and Black-tailed Godwit, and nationally important populations of a further five species. Of particular note is that three of the species that occur at the site, i.e. Golden Plover, Bar-tailed Godwit and Little Tern, are listed on Annex I of the E.U. Birds Directive. Ballyteige Burrow is a Biogenetic Reserve site and part of the Ballyteige Burrow SPA is a Statutory Nature Reserve.’

The Natura 2000 Standard Data Form (2018)¹³ states that:

‘The site is located on the south coast of Co. Wexford between the towns of Kilmore Quay and Cullenstown. It is comprised of a sand and shingle barrier beach, approximately 8 km in length, and the estuary of the River Duncormick. The extensive overlying sand spit is known as the Burrow, while the estuary that it encloses is known as the Cull. The site possesses a range of coastal habitats, including various types of dunes, salt meadows, and intertidal sand and mud flats. Former estuarine areas adjacent to the site have been reclaimed as polders and are intensively managed for agriculture.

¹² <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004020.pdf>

¹³ <https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF004020.pdf>

The site has an internationally important population of Branta bernicila hrota, and supports nationally important numbers of Tadorna tadorna, Pluvialis apricaria, Charadrius hiaticula, Vanellus vanellus, Limosa limosa and Limosa lapponica. The estuarine habitats provide feeding and roosting areas for the waterfowl species, though a lot of the birds also feed on the intensively managed lands of the adjacent polders. There is a small colony of breeding Sterna albifrons in the site, though nesting may not occur every year. Salt marsh habitats are particularly well represented, with one of only two extant sites in Ireland which has halophilous scrub vegetation characterised by Arthrocnemum perenne. Within the site are 6 Red Data Book plant species and the only Irish site for the lichen Fulgensia subbracteata. The site is a Statutory Nature Reserve and managed for conservation.'

Saltee Islands SPA (Site code: 004020)

As outlined in the Saltee Islands SPA Site Synopsis¹⁴ (2012):

'The Saltee Islands SPA is situated some 4-5 km off the coast of south Co. Wexford and comprises the two islands, Great Saltee and Little Saltee, and the surrounding seas both between them and to a distance of 500 m from them. The bedrock of the islands is of Precambrian gneiss and granite. Both islands have exposed rocky cliffs on their south and east – those on Great Saltee being mostly c. 30 m high, those on Little Saltee about half this height. The northern and western sides of both islands are fringed with shingle and boulder shores, backed by boulder clay cliffs, as well as small areas of intertidal sandflats. Sea caves occur at the base of the cliffs on Great Saltee.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for the following species: Fulmar, Gannet, Cormorant, Shag, Lesser Black-backed Gull, Herring Gull, Kittiwake, Guillemot, Razorbill and Puffin. The site is also of special conservation interest for holding an assemblage of over 20,000 breeding seabirds.

The Saltee Islands are internationally important for holding an assemblage of over 20,000 breeding seabirds. The nationally important Gannet colony on Great Saltee has been well documented since its establishment in the 1920s and 2,446 pairs were present in 2004. The following species have populations of national importance (all counts in the 1998-2000 breeding seasons): Fulmar (520 pairs), Cormorant (273 pairs), Shag (268 pairs), Lesser Black-backed Gull (164 pairs), Herring Gull (73 pairs), Kittiwake (2,125 pairs), Guillemot (14,362 pairs), Razorbill (2,505 pairs) and Puffin (1,822 pairs). An estimated 250 pairs of Manx Shearwater occur on these islands. Seabird populations are monitored annually and large numbers of chicks, especially of Gannets, auks and Shags, are ringed.

Peregrine Falcon breeds (1-2 pairs) and Chough (1 pair) occurs at the eastern edge of its Irish range. Hen Harrier uses the site for autumn passage and overwintering.

Great Saltee is a major site for spring and autumn landbird migration and was the site for Ireland's first bird observatory. While the observatory is no longer operational, substantial numbers of migrants are still ringed annually. Large numbers of pipits, swallows and martins, thrushes, warblers and finches occur, while smaller numbers of a great variety of other species (some very rare in Ireland) are also recorded.

The Saltee Islands SPA is of international importance for breeding seabirds; it also supports populations of three species that are listed on Annex I of the E.U. Birds Directive, i.e. Peregrine, Chough and Hen Harrier. It is one of the best-documented sites in the country and is monitored annually.'

The Natura 2000 Standard Data Form (2020)¹⁵ states that:

'The site comprises the two Saltee Islands (Great Saltee and Little Saltee) which are situated between 4 and 5 km off the south Wexford coast. The bedrock is metamorphic schist and gneiss. The islands are exposed to prevailing wind and swells from the west. The islands were inhabited and farmed in the past but are now abandoned, although some sheep grazing occurs on Little Saltee. A community dominated by Pteridium aquilinum is the main vegetation type on the islands. Dry grassland occurs within the old field boundaries. Good examples of vegetated cliff habitat with a typical south-eastern flora occur on both islands. The shorelines vary from rocky cliffs of moderate height to shingle, sand and boulder shores. Small sections of boulder clay cliffs are exposed in places. Sea caves are found in several parts of the site. Other habitats present include springs, flushes and scrub. The site includes an area of the surrounding seas to a distance of 500 m from the shoreline where seabirds feed, bathe and socialise.

The Saltee Islands support one of the most important seabird colonies in the country (for populations and species diversity) and hold the most important colony in the south-east for populations and species diversity. The site is

¹⁴ <https://www.npws.ie/sites/default/files/protected-sites/synopsis/SY004002.pdf>

¹⁵ <https://www.npws.ie/sites/default/files/protected-sites/natura2000/NF004002.pdf>

nationally important for eleven seabird species: Fulmarus glacialis, Sula bassana, Phalacrocorax carbo, Phalacrocorax aristotelis, Larus fuscus, Larus marinus, Larus argentatus, Uria aalge, Alca torda, Rissa tridactyla and Fratercula arctica. The islands, especially Great Saltee, have a long-established seabird monitoring programme, and in particular the growth of the Sula bassana colony since its establishment in the 1920s has been well documented. There is a long-term seabird ringing programme in operation. Pyrrhocorax pyrrhocorax occurs at the eastern edge of its Irish range and Falco peregrinus breeds. Great Saltee is a major site for spring and autumn landbird migration and the island formerly had a bird observatory. Ringing of migrants still takes place. The site has a long established breeding population of Halichoerus grypus which is the only significant population in the south-east region.'

The Qualifying Interests (QI) (Features of Interest), Special Conservation Interests (SCIs) for the SAC and SPA sites and the National conservation status of the Natura 2000 sites subject to the NIS are seen in Table 6. The site specific conservation Objectives for Natura 2000 sites are seen in Table 7.

Table 6. Qualifying Interests, Conservation Status, Management Objectives, Conditions underpinning site integrity for Natura 2000 sites

Qualifying Interests, Conservation Status, Management Objectives, Conditions underpinning site integrity for relevant European sites		
Natura 2000 Site Name & Code	Qualifying Interests	Current Conservation Status & Trend
Special Areas of Conservation (SAC)		
Ballyteige Burrow SAC	[1130] Estuaries [1140] Tidal Mudflats and Sandflats [1150] Coastal Lagoons* [1210] Annual Vegetation of Drift Lines [1220] Perennial Vegetation of Stony Banks [1310] Salicornia Mud [1330] Atlantic Salt Meadows [1410] Mediterranean Salt Meadows [1420] Halophilous Scrub [2110] Embryonic Shifting Dunes [2120] Marram Dunes (White Dunes) [2130] Fixed Dunes (Grey Dunes)* [2150] Decalcified Dune Heath* [2190] Humid Dune Slacks.	Inadequate Inadequate Bad Inadequate Inadequate Favourable Inadequate Inadequate Bad Inadequate Inadequate Bad Inadequate Inadequate
Saltee Islands SAC	[1140] Tidal Mudflats and Sandflats [1160] Large Shallow Inlets and Bays [1170] Reefs [1230] Vegetated Sea Cliffs [8330] Sea Caves [1364] Grey Seal (<i>Halichoerus grypus</i>)	Inadequate Bad Inadequate Inadequate Favourable Favourable
Hook Head SAC	[1160] Large Shallow Inlets and Bays [1170] Reefs [1230] Vegetated Sea Cliffs	Bad Inadequate Inadequate
Special Protection Areas (SPA)		
Ballyteige Burrow SPA	Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Shelduck (<i>Tadorna tadorna</i>) [A048] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141]	Amber* Amber Red Amber

	Lapwing (<i>Vanellus vanellus</i>) [A142] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Wetland and Waterbirds [A999]	Red Amber Amber N/A
Saltee Islands SPA	Fulmar (<i>Fulmarus glacialis</i>) [A009] Gannet (<i>Morus bassanus</i>) [A016] Cormorant (<i>Phalacrocorax carbo</i>) [A017] Shag (<i>Phalacrocorax aristotelis</i>) [A018] Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183] Herring Gull (<i>Larus argentatus</i>) [A184] Kittiwake (<i>Rissa tridactyla</i>) [A188] Guillemot (<i>Uria aalge</i>) [A199] Razorbill (<i>Alca torda</i>) [A200] Puffin (<i>Fratercula arctica</i>) [A204]	Green Amber Amber Amber Amber Red Amber Amber Amber Amber
Keeragh Islands SPA	Cormorant (<i>Phalacrocorax carbo</i>) [A017]	Amber

*Birds of Conservation Concern (BOCCI) 4: 2020 – 2026 (Gilbert et al., 2021)

Table 7. Site specific conservation objectives for Natura 2000 sites

Ballyteige Burrow SAC (000696)		
Attribute	Measure	Target
Estuaries [1130] (Maintain the favourable conservation condition)		
Habitat area	Hectares	Permanent habitat area is stable or increasing, subject to natural processes
Community distribution	Hectares	Conserve the following community types in a natural condition: Mixed sediment to sand with nematodes and <i>Tubificoides benedii</i> community complex; Sand with crustaceans and <i>Nephtys hombergii</i> community complex.
[1140] Tidal Mudflats and Sandflats (Maintain the favourable conservation condition)		
Habitat area	Hectares	Permanent habitat area is stable or increasing, subject to natural processes
Community distribution	Hectares	Conserve the following community type in a natural condition: Mixed sediment to sand with nematodes and <i>Tubificoides benedii</i> community complex..
[1150] Coastal Lagoons* (Restore the favourable conservation condition)		
Habitat area	Hectares	Area stable, subject to slight natural variation.
Habitat distribution	Occurrence	No decline, subject to natural processes
Salinity regime	Practical salinity units (psu)	Median annual salinity and temporal variation within natural range

Ballyteige Burrow SAC (000696)		
Attribute	Measure	Target
Hydrological regime	Metres	Annual water level fluctuations and minima within natural range
Barrier: connectivity between lagoon and sea	Permeability	Appropriate hydrological connections between lagoon and sea, including where necessary, appropriate management
Water quality: Chlorophyll a	µg/L	Annual median chlorophyll <i>a</i> within natural range and less than 5 µg/L
Water quality: Molybdate Reactive Phosphorus (MRP)	mg/L	Annual median MRP within natural range and less than 0.1mg/L
Water quality: Dissolved Inorganic Nitrogen (DIN)	mg/L	Annual median DIN within natural range and less than 0.15mg/L
Depth of macrophyte colonisation	Metres	Macrophyte colonisation to at least 2m depth
Typical plant species	Number and m ²	Maintain number and extent of listed lagoonal specialists, subject to natural variation
Typical animal species	Number	Maintain listed lagoon specialists, subject to natural variation
Negative indicator species	Number and % cover	Negative indicator species absent or under control
[1210] Annual Vegetation of Drift Lines (Maintain the favourable conservation condition)		
Habitat area	Hectares	Area stable, subject to slight natural processes, including erosion and succession.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes.
Physical structure: functionality and sediment supply	Presence/ absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation composition: typical species and subcommunities	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities with typical species: sea rocket (<i>Cakile maritima</i>), sea sandwort (<i>Honckenya peploides</i>), prickly saltwort (<i>Salsola kali</i>) and orache (<i>Atriplex spp.</i>)
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover
[1220] Perennial Vegetation of Stony Banks (Maintain the favourable conservation condition)		
Habitat area	Hectares	Area stable, subject to slight natural processes, including erosion and succession.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes.

Ballyteige Burrow SAC (000696)		
Attribute	Measure	Target
Physical structure: functionality and sediment supply	Presence/ absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation composition: typical species and subcommunities	Percentage cover at a representative number of monitoring stops	Maintain the typical vegetated shingle flora including the range of subcommunities within the different zones
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover
[1310] Salicornia Mud (Maintain the favourable conservation condition)		
Habitat area	Hectares	Area stable, subject to slight natural processes, including erosion and succession.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes.
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain, or where necessary restore, natural circulation of sediments and organic matter, without any physical obstructions
Physical structure: creeks and pans	Occurrence	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward
Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% of area outside creeks vegetated
Vegetation composition: typical species and subcommunities	Percentage cover	Maintain the presence of species-poor communities with typical species listed in SMP (McCorry and Ryle, 2009)
Vegetation structure: negative indicator species - <i>Spartina anglica</i>	Hectares	No significant expansion of common cordgrass (<i>Spartina anglica</i>). No new sites for this species and an annual spread of less than 1% where it is already known to occur

Ballyteige Burrow SAC (000696)		
Attribute	Measure	Target
[1320] <i>Spartina</i> swards - <i>Spartina</i> swards (<i>Spartinion maritimae</i>) was originally listed as a qualifying Annex I habitat for Ballyteige Burrow SAC. However, all stands of cordgrass in Ireland are now regarded as common cordgrass (<i>S. anglica</i>) (McCorry et al., 2003; McCorry and Ryle, 2009), an alien invasive species. Thus, no conservation objective has been prepared for this habitat. It will therefore not be necessary to assess the likely effects of plans or projects against this Annex I habitat.		
[1330] Atlantic Salt Meadows (Restore the favourable conservation condition)		
Habitat area	Hectares	Area stable, subject to slight natural processes, including erosion and succession.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes.
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions
Physical structure: creeks and pans	Occurrence	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime
Vegetation structure: vegetation height	Centimetres	Maintain structural variation within sward
Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% area outside creeks vegetated
Vegetation composition: typical species and subcommunities	Percentage cover at a representative number of monitoring stops	Maintain range of subcommunities with typical species listed in SMP (McCorry and Ryle, 2009)
Vegetation structure: negative indicator species - <i>Spartina anglica</i>	Hectares	No significant expansion of common cordgrass (<i>Spartina anglica</i>), with an annual spread of less than 1% where it is known to occur
[1410] Mediterranean Salt Meadows (Maintain the favourable condition)		
Habitat area	Hectares	Area stable or increasing, subject to slight natural processes, including erosion and succession.
Habitat distribution	Occurrence	No decline, subject to natural processes.
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions
Physical structure: creeks and pans	Occurrence	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime

Ballyteige Burrow SAC (000696)		
Attribute	Measure	Target
Vegetation structure: zonation	Occurrence	Maintain range of saltmarsh habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation structure: vegetation height	Centimetres	Maintain structural variation in the sward
Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% of area outside creeks vegetated
Vegetation composition: typical species and subcommunities	Percentage cover at a representative number of monitoring stops	Maintain range of subcommunities with characteristic species listed in SMP (McCorry and Ryle, 2009)
Vegetation structure: negative indicator species - <i>Spartina anglica</i>	Hectares	No significant expansion of common cordgrass (<i>Spartina anglica</i>), with an annual spread of less than 1% where it is already known to occur.
[1420] Halophilous Scrub (Restore the favourable conservation condition)		
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes.
Physical structure: sediment supply	Presence/ absence of physical barriers	Maintain natural circulation of sediments and organic matter, without any physical obstructions
Physical structure: creeks and pans	Occurrence	Maintain/restore creek and pan structure, subject to natural processes, including erosion and succession
Physical structure: flooding regime	Hectares flooded; frequency	Maintain natural tidal regime
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation structure: vegetation height	Centimetres	Maintain structural variation in the sward
Vegetation structure: vegetation cover	Percentage cover at a representative number of monitoring stops	Maintain more than 90% of area outside creeks vegetated
Vegetation composition: typical species and subcommunities	Percentage cover	Maintain range of subcommunities with typical species listed in SMP (McCorry and Ryle, 2009)

Ballyteige Burrow SAC (000696)		
Attribute	Measure	Target
Vegetation structure: negative indicator species - <i>Spartina anglica</i>	Hectares	No significant expansion of common cordgrass (<i>Spartina anglica</i>), with annual spread of less than 1%.
[2110] Embryonic Shifting Dunes (Maintain the favourable conservation condition)		
Habitat area	Hectares	Area stable or increasing, subject to natural processes, including erosion and succession.
Habitat distribution	Occurrence	No decline, subject to natural processes
Physical structure: functionality and sediment supply	Presence/absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation composition: plant health of foredune grasses	Percentage cover	More than 95% of sand couch grass (<i>Elytrigia juncea</i>) and/or lyme grass (<i>Leymus arenarius</i>) should be healthy (i.e. green plant parts above ground and flowering heads present)
Vegetation composition: typical species and subcommunities	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities with typical species: sand couch grass (<i>Elytrigia juncea</i>) and/or lyme grass (<i>Leymus arenarius</i>)
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-native species) to represent less than 5% cover
[2120] Marram Dunes (White Dunes) (Maintain the favourable conservation condition)		
Habitat area	Hectares	Area stable or increasing, subject to natural processes including erosion and succession.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes.
Physical structure: functionality and sediment supply	Presence/absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation composition: plant health of dune grasses	Percentage cover	More than 95% of marram grass (<i>Ammophila arenaria</i>) and/or lyme grass (<i>Leymus arenarius</i>) should be healthy (i.e. green plant parts above ground and flowering heads present)

Ballyteige Burrow SAC (000696)		
Attribute	Measure	Target
Vegetation composition: typical species and subcommunities	Percentage cover at a representative number of monitoring stops	Maintain the presence of species-poor communities dominated by marram grass (<i>Ammophila arenaria</i>) and/or lymegrass (<i>Leymus arenarius</i>)
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover
[2130] Fixed Dunes (Grey Dunes)* (Restore the favourable conservation condition)		
Habitat area	Hectares	Area stable or increasing, subject to natural processes including erosion and succession.
Habitat distribution	Occurrence	No decline, or change in habitat distribution, subject to natural processes.
Physical structure: functionality and sediment supply	Presence/absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation structure: bare ground	Percentage cover	Bare ground should not exceed 10% of fixed dune habitat, subject to natural processes
Vegetation structure: sward height	Centimetres	Maintain structural variation within sward
Vegetation composition: typical species and subcommunities	Percentage cover at a representative number of monitoring stops	Maintain range of subcommunities with typical species listed in Delaney et al. (2013)
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover
Vegetation composition: scrub/trees	Percentage cover	No more than 5% cover or under control
[2150] Decalcified Dune Heath* (Maintain the favourable conservation condition)		
Habitat area	Hectares	Area stable or increasing, subject to natural processes including erosion and succession
Habitat distribution	Occurrence	No decline or change in habitat distribution, subject to natural processes
Physical structure: functionality and sediment supply	Presence/absence of physical barriers	Maintain the natural circulation of sediment and organic matter, without any physical obstructions
Vegetation structure: zonation	Occurrence	Maintain the range of coastal habitats including transitional zones, subject to natural processes including erosion and succession
Vegetation structure: bare ground	Percentage cover	Bare ground should not exceed 10% of fixed dune habitat, subject to natural processes
Vegetation structure: sward height	Centimetres	Maintain structural variation within sward

Ballyteige Burrow SAC (000696)		
Attribute	Measure	Target
Vegetation composition: typical species and subcommunities	Percentage cover at a representative number of monitoring stops	Maintain range of subcommunities with typical species listed in Delaney et al. (2013)
Vegetation composition: negative indicator species	Percentage cover	Negative indicator species (including non-natives) to represent less than 5% cover
Vegetation composition: scrub/trees	Percentage cover	No more than 5% cover or under control
Saltee Islands SAC		
Attribute	Measure	Target
[1140] Tidal Mudflats and Sandflats (Maintain the favourable conservation condition)		
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.
Community extent	Hectares	The following community should be maintained in a natural condition: Intertidal sand to muddy sand dominated polychaetes community complex
[1160] Large shallow inlets and bays (Maintain the favourable conservation condition)		
Habitat area	Hectares	The permanent habitat area is stable or increasing, subject to natural processes.
Community extent	Hectares	The following communities should be maintained in a natural condition: Coarse sediment with <i>Pomatoceros spp.</i> and <i>Pisidia longicornis</i> community.
[1170] Reefs (Maintain the favourable conservation condition)		
Distribution	Occurrence	The distribution of reefs should remain stable, subject to natural processes.
Habitat area	Hectares	The permanent habitat area is stable, subject to natural processes.
Community structure	Biological composition	The following reef community complexes should be maintained in a natural condition: Intertidal reef community complex; and Subtidal reef dominated by echinoderms and sponges community complex.
Community extent	Hectares	The extent of <i>Laminaria</i> dominated community should be conserved, subject to natural processes.
Community structure	Biological composition	The biology of the <i>Laminaria</i> dominated community should be conserved, subject to natural processes
[1230] Vegetated sea cliffs of the Atlantic and Baltic coasts (Maintain the favourable conservation condition)		
Habitat length	Kilometres	Area stable, subject to natural processes, including erosion. For sub-sites mapped: Great Saltee Island- 5.51km and Little Saltee Island- 3.11km.

Ballyteige Burrow SAC (000696)		
Attribute	Measure	Target
Habitat distribution	Occurrence	No decline, subject to natural processes.
Physical structure: functionality and hydrological regime	Occurrence of artificial barriers	No alteration to natural functioning of geomorphological and hydrological processes due to artificial structures
Vegetation structure: zonation	Occurrence	Maintain range of sea cliff habitat zonations including transitional zones, subject to natural processes including erosion and succession
Vegetation structure: vegetation height	Centimeters	Maintain structural variation within sward
Vegetation composition: typical species and sub-communities	Percentage cover at a representative sample of monitoring stops	Maintain range of sub- communities with typical species listed in the Irish Sea Cliff Survey (Barron et al., 2011)
Vegetation composition: negative indicator species	Percentage	Negative indicator species (including non-natives) to represent less than 5% cover
Vegetation composition: bracken and woody species	Percentage	Cover of bracken (<i>Pteridium aquilinum</i>) on grassland less than 10%. Cover of woody species on grassland less than 20%
[1364] Grey Seal (<i>Halichoerus grypus</i>) (Maintain the favourable conservation condition)		
Access to suitable habitat	Number of artificial barriers	Species range within the site should not be restricted by artificial barriers to site use.
Breeding behaviour	Breeding sites	The breeding sites should be maintained in a natural condition.
Moulting behaviour	Moult haul-out sites	The moult haul-out sites should be maintained in a natural condition.
Resting behaviour	Resting haul-out sites	The resting haul-out sites should be maintained in a natural condition.
Population composition	Number of cohorts	The grey seal population occurring within this site should contain adult, juvenile and pup cohorts annually
Disturbance	Level of impact	Human activities should occur at levels that do not adversely affect the grey seal population
[8330] Submerged or partially submerged sea caves (Maintain the favourable conservation condition)		
Distribution	Occurrence	The distribution of sea caves should remain stable, subject to natural processes.
Community structure	Biological composition	Human activities should occur at levels that do not adversely affect the ecology of sea caves
Ballyteige Burrow SPA		
Attribute	Measure	Target

Ballyteige Burrow SAC (000696)		
Attribute	Measure	Target
[A046] Brent Goose (<i>Branta bernicla hrota</i>); [A048] Shelduck (<i>Tadorna tadorna</i>); [A140] Golden Plover (<i>Pluvialis apricaria</i>); [A141] Grey Plover (<i>Pluvialis squatarola</i>); [A142] Lapwing (<i>Vanellus vanellus</i>); [A156] Black-tailed Godwit (<i>Limosa limosa</i>); [A147] Bar-tailed Godwit (<i>Limosa lapponica</i>) – (Maintain the favourable conservation condition)		
Population trend	Percentage change	Long term population trend stable or increasing
Distribution	Range, timing and intensity of use of areas	No significant decrease in the range, timing or intensity of use of areas, other than that occurring from natural patterns of variation
[A999] Wetlands (Maintain the favourable conservation condition)		
Habitat areas	Hectares	The permanent area occupied by the wetland habitat should be stable and not significantly less than the area of 559 hectares, other than that occurring from natural patterns of variation.
Saltee Islands SPA		
Attribute	Measure	Target
[A009] Fulmar (<i>Fulmarus glacialis</i>); [A016] Gannet (<i>Morus bassanus</i>) - Maintain the favourable conservation condition		
Breeding population abundance: apparently occupied sites (AOSs)	Number	No significant decline
Productivity rate	Mean number	No significant decline
Distribution: breeding colonies	Number; location; area (hectares)	No significant decline
Prey biomass available	Kilogrammes	No significant decline
Barriers to connectivity	Number; location; shape; area (hectares)	No significant increase
Disturbance at the breeding site	Level of impact	No significant increase
Disturbance at marine areas immediately adjacent to the colony	Level of impact	No significant increase
[A017] Cormorant (<i>Phalacrocorax carbo</i>); [A018] Shag (<i>Phalacrocorax aristotelis</i>); [A183] Lesser Black-backed Gull (<i>Larus fuscus</i>); [A184] Herring Gull (<i>Larus argentatus</i>); [A188] Kittiwake (<i>Rissa tridactyla</i>) - Maintain the favourable conservation condition		
Breeding population abundance: apparently occupied sites (AOSs)	Number	No significant decline
Productivity rate	Mean number	No significant decline
Distribution: breeding colonies	Number; location; area (hectares)	No significant decline

Ballyteige Burrow SAC (000696)		
Attribute	Measure	Target
Prey biomass available	Kilogrammes	No significant decline
Barriers to connectivity	Number; location; shape; area (hectares)	No significant increase
Disturbance at the breeding site	Level of impact	No significant increase
[A199] Guillemot (<i>Uria aalge</i>); [A200] Razorbill (<i>Alca torda</i>) - Maintain the favourable conservation condition		
Breeding population abundance: individual adult	Number	No significant decline
Productivity rate	Mean number	No significant decline
Distribution: breeding colonies	Number; location; area (hectares)	No significant decline
Prey biomass available	Kilogrammes	No significant decline
Barriers to connectivity	Number; location; shape; area (hectares)	No significant increase
Disturbance at the breeding site	Level of impact	No significant increase
Disturbance at marine areas immediately adjacent to the colony	Level of impact	No significant increase
[A204] Puffin (<i>Fratercula arctica</i>) – Maintain the favourable conservation condition		
Breeding population abundance: apparently occupied burrow (AOB)	Number	No significant decline
Productivity rate	Mean number	No significant decline
Distribution: breeding colonies	Number; location; area (hectares)	No significant decline
Prey biomass available	Kilogrammes	No significant decline
Barriers to connectivity	Number; location; shape; area (hectares)	No significant increase
Disturbance at the breeding site	Level of impact	No significant increase
Disturbance at marine areas immediately adjacent to the colony	Level of impact	No significant increase

Additional information on species/habitats

Grey Seal

Saltee Islands have been identified as the location of a key colony and an important breeding area for Grey Seal populations in the Republic of Ireland. Outlined below are surveys and studies undertaken by NPWS in relation to Grey Seal populations in the vicinity of Kilmore Quay and Saltee Islands.

As outlined in the “Grey seal moult population survey in the Republic of Ireland, 2007”¹⁶:

Grey Seal Distribution Recorded During Moult Surveys

Data gathered during February and March 2007 indicated that moulting grey seals were particularly concentrated along the Atlantic coastline of Ireland in Counties Kerry, Galway, Mayo and Donegal (Fig. 54). However, nationally-significant haul-out groups were also recorded at key sites off the coasts of Co. Cork, Co. Dublin and Co. Wexford (Appendix III). The research also indicated that national grey seal distribution ashore during the moult season may be somewhat narrower than that observed during breeding (Fig. 54), when the recording of newborn pups is the primary focus of survey effort (Ó Cadhla et al., 2007). Such differences were most apparent in haul-out data from Counties Galway, Mayo and Donegal (Appendix III).

Minimum Population Estimates in March 2007

Based on count data obtained by means of aerial survey imagery and a small number of real time counts, the minimum population estimate delivered by the survey programme was as follows:

Republic of Ireland moult population estimate, 2007 = 5,343 grey seals

Two islands – Inishkea North, Co. Mayo and the Great Blasket Island, Co. Kerry, contained over 45% of all grey seals recorded nationally during the moult survey. Large haul-out group sizes of over 900 animals were recorded on large sheltered sandy beaches at each of these islands (Appendix III). In total 27.7% of all grey seals recorded during the nationwide survey (Fig. 55) were located at Inishkea North, most centred about a site known as ‘the Dock’ (Plate 2). The Inishkea Group as a whole contained a minimum estimate of 1,882 grey seals on 2nd March – over 35% of the national figure.

Other haul-out group sizes noteworthy in a regional context (Fig. 2; Appendix III) were recorded at Low Island, the West Calf Island (Plate 3) and Carbery Island (Co. Cork), Ferroon Rocks, Chapel Island & Inishgort (Co. Galway), Inishkea South & Inishkeeragh (Co. Mayo), Slievetooy (within Location 109: Glenlough to Maghera) & Inishtrahull (Plate 4; Co. Donegal), St. Patrick’s Island & Lambay Island (Co. Dublin), and Raven Point & Great Saltee Island (Co. Wexford).

Terrestrial habitats used by moulting grey seals around the Irish coastline varied from rocky skerries (e.g. Bomore, Co. Sligo), island coastlines consisting of rock ledges and outcrops to sand beaches and sandbanks (e.g. Ballisadare Bay, Co. Sligo; Raven Point, Co. Wexford). In two cases (Ferroon Rocks and Glassillan, Co. Galway), haul-out groups were recorded on the grassy summits of islands.

¹⁶<https://www.npws.ie/sites/default/files/publications/pdf/OCadhla & Strong 2007 Grey Seal Moulting Survey.pdf>

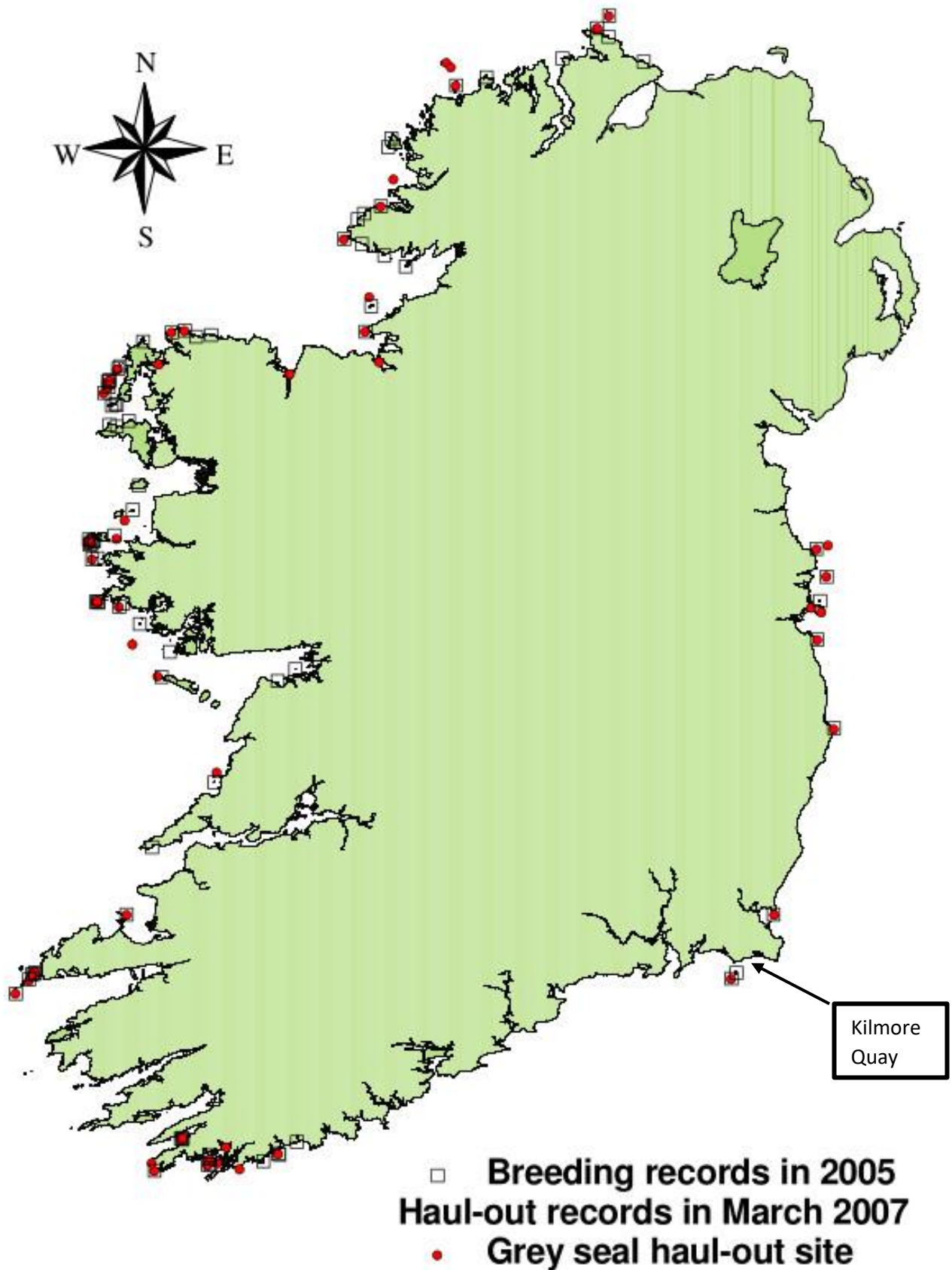


Figure 46. The distribution of grey seal haul-out sites in the Republic of Ireland in March 2007, relative to known breeding locations recorded in 2005. Haul-out locations are plotted as the centre points assigned to individual sites

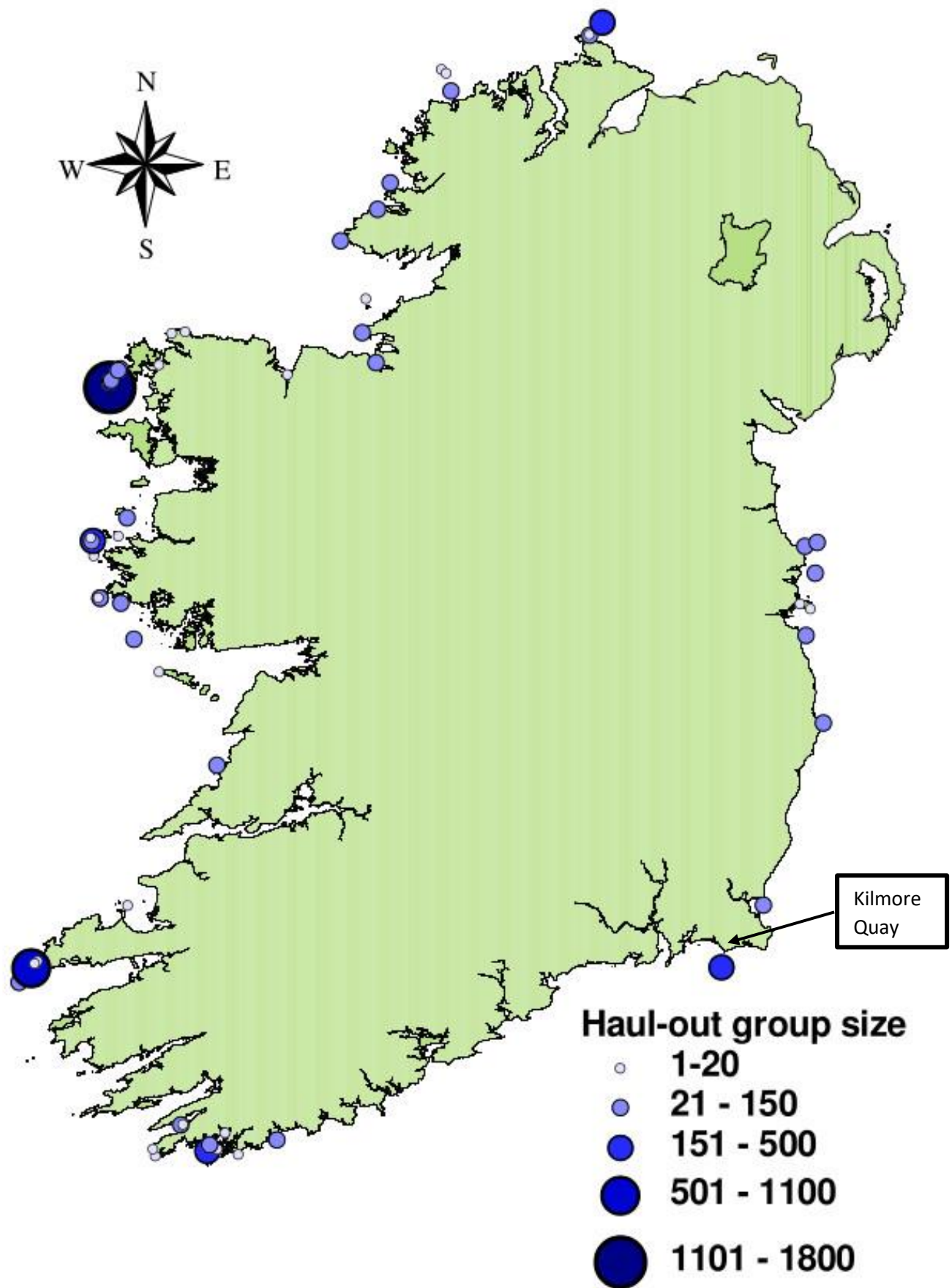


Figure 47. Grey seal regional distribution and group sizes derived from aerial imagery and data gathered in the Republic of Ireland in March 2007, during the annual moult season.

Discussion

The 2007 moult survey represents the first large-scale numerical assessment conducted in Irish or UK waters during the season and confirms the method's potential use as a long-term population monitoring tool. Heretofore efforts to estimate grey seal populations have traditionally focused on the breeding period (Ó Cadhla et al., 2007). In this context the survey established an important reference point in the investigation of grey seal stock distribution throughout the year, building on similar data collected during the summer of 2003 (Cronin et al., 2004).

The moult survey delivered a figure approaching the 2005 minimum population estimate of 5,509-7,083 (Ó Cadhla et al., 2007). It must be noted, however, that the survey programme was short-term in nature, with reconnaissance and aerial surveys spanning only 2-3 weeks of a protracted season (November-April; Kiely, 1998). Given that a turnover in animals doubtlessly occurs throughout the entire moult season, the total 5,343 grey seals counted between 1st-9th March must be considered a minimum subset of the available all-age population during the season. Based on data collected historically in Ireland (Kiely, 1998; Kiely et al., 2000) similar nationwide surveys conducted in the months of December, January and February would provide significant additional context to the current estimate and better address questions of population size, distribution and habitat use during the season as a whole.

The data obtained in 2007 confirmed, in a national context, several findings from previous research during the moult season in Ireland. Firstly the importance of islands in the Inishkea Group and Blasket Islands for moulting grey seals (Kiely, 1998) was reiterated in 2007 and given a national setting. Previous moult data gathered at the Inishkea Group recorded up to 2,200 grey seals among haul-out sites in the area with group sizes variable from day to day and month to month (Kiely, 1998). The 2007 data also reaffirmed the importance of specific moult sites within the Inishkea Group, most significantly 'the Dock' site, the use of which appears to be confined to the moult season only. The nearby island of Inishkeeragh also contains a specific moult site not utilised at other times of the year (Kiely, 1998). Such data highlight the need to consider a seasonal component in conservation and management planning to account for changes in terrestrial site use by the species.

The total of 989 grey seals recorded at the Blasket Islands in 2007, 947 of which were ashore on the Great Blasket Island, represents the highest number on record at these islands, more than twice that obtained in 1996-97 (Kiely, 1998) and considerably higher than that provided by anecdotal or unpublished sources (O. Ó Cadhla, CMRC, unpubl.). While it is difficult to interpret the result, given inconsistent and breeding-focused monitoring, it is noteworthy that the figure exceeds the 2005 all-age population estimate by c. 150 seals (see Ó Cadhla et al., 2007). Group sizes at several other locations (e.g. Low Island, Calf Islands, Carbery Island, the Inishkea Group) also exceeded population estimates based on breeding data (Ó Cadhla et al., 2007) suggesting a level of seasonal immigration first described at the Inishkea Group (Kiely, 1998).

In contrast, 2007 moult estimates for several other key breeding areas (e.g. Saltee Islands, northwest Galway, southwest Donegal) were well below 2005 breeding population figures, which is to be expected in a 'closed population' scenario where only a proportion of the animals associated with a given location are moulting simultaneously and a level of moult population turnover occurs during the season as a whole.

The 2007 survey thus indicated that changes in population distribution may occur seasonally in the Republic of Ireland, operating on a regional scale and conferring on certain sites an importance exceeding breeding population expectations. Data gathered in 2005 indicate that Ireland's breeding population may be increasing at key colonies (Ó Cadhla et al., 2007). Given that the species' moult phase occurs prior to the key annual foraging period, whether male or female (Bonner, 1990), it is important that moult-based research and monitoring continue, to facilitate a better understanding of Ireland's changing grey seal population and its role in the wider marine ecosystem.

Conclusions

Grey seal moult population size in the Republic of Ireland

The current grey seal moult population estimate for the Republic of Ireland is 5,343 seals of all ages. This is a minimum estimate and as such represents an appropriate national baseline figure during this phase of the annual cycle.

Areas of importance for moulting grey seals, regional and local

The moult population assessment underlined the importance on a national scale of nine key colonies located in Counties Donegal (north and southwest), Mayo (Inishkea Group), Galway (Inishgort & adjacent islands; Slyne Head islands), Kerry (Great Blasket Island), Cork (Western Calf Island), Wexford (Great Saltee Island) and Dublin (Lambay Island). Other moult haul-out sites of regional and local importance were identified. Most occurred along the Atlantic coastline from west Cork to Donegal.

Population changes at key colonies

Seasonal changes in population size at grey seal colonies are to be expected. The data gathered nationally during the moult season indicate that a number of locations may experience seasonal immigration during this phase of the annual cycle. It is not clear at this stage whether the represents a regional redistribution of national stock or the involvement of breeding stocks from outside the island of Ireland.'

As outlined in the "Summary of National Parks & Wildlife Service surveys for common (harbour) seals (*Phoca vitulina*) and grey seals (*Halichoerus grypus*), 1978 to 2003"¹⁷:

'Grey seals in Ireland are widespread but greatest concentrations are found on exposed south-western, western and northern coasts. Populations of grey seals are also found on the east and south coasts (Kiely et al., 2000). The largest populations of grey seal on the Irish Coast are found on the Blasket Islands, Inishkea Island group, the Saltees and the Raven (both off County Wexford). Between the tides they haul themselves out on to rocks, usually on uninhabited offshore islands, though some haul-outs are on secluded mainland beaches. Grey seals are gregarious at these haul-outs, sometimes forming large groups of several hundred animals, especially when they are moulting their fur in the spring.'

'Whilst NPWS surveys have concentrated on the Inishkeas and Blaskets, a number of other important populations are found on the Irish Coast (see Appendix I). However, it is notable that most sampling effort has been undertaken upon the west coast. A recent study on the Irish and Celtic Seas (Kiely et al. 2000) has shown that there are some relatively large populations that have remained to a large extent outside of NPWS sampling effort. The most important in order of grey seal abundance and all-age estimates calculated concurrently during surveys by Kiely et al. (2000) during 1997 and 1998 were:

The Saltees (78.9 ± 9.2 (SE)) (Co. Wexford)
Raven Point (75.6 ± 7.2 (SE)) (Co. Wexford)
Lambay Island (53.0 ± 4.0 (SE)) (Co. Dublin)
Skerries Islands (28.2 ± 3.7 (SE)) (Co. Dublin)
Blackrock (24.5 ± 3.9 (SE)) (Co. Wexford)
Carnsore Point (12.2 ± 3.1 (SE)) (Co. Wexford)
Rockabill (9.7 ± 3.9 (SE)) (Co. Dublin)
Ireland's Eye (9.3 ± 2.7 (SE)) (Co. Dublin).'

Further, there is an Appendix to this study that outlines the Moult Haul-Out Data for the Republic of Ireland, 2007. From this dataset, the estimated haul-out group size (Ng) for Great Saltee Island is 246, whilst there was a recorded Ng of 0 for Little Saltee Island.

The "Grey seal breeding population assessment in the Republic of Ireland, 2005"¹⁸ also identifies the Saltee Islands as a key breeding area for grey seals. A research project designed to carry out a comprehensive survey and deliver a reliable breeding population estimate for grey seals in Ireland, this study estimates a minimum pup count of 163 across both Great and Little Saltee Island, with a mean birth date of September 21st. An all-age population size was estimated to be between 571-734. These population estimates are visualised in the figure below.

¹⁷<https://www.npws.ie/sites/default/files/publications/pdf/IWM13.pdf>

¹⁸[https://www.npws.ie/sites/default/files/publications/pdf/OCadhla et al 2005 Grey Seal Population Survey.pdf](https://www.npws.ie/sites/default/files/publications/pdf/OCadhla%20et%20al%202005%20Grey%20Seal%20Population%20Survey.pdf)

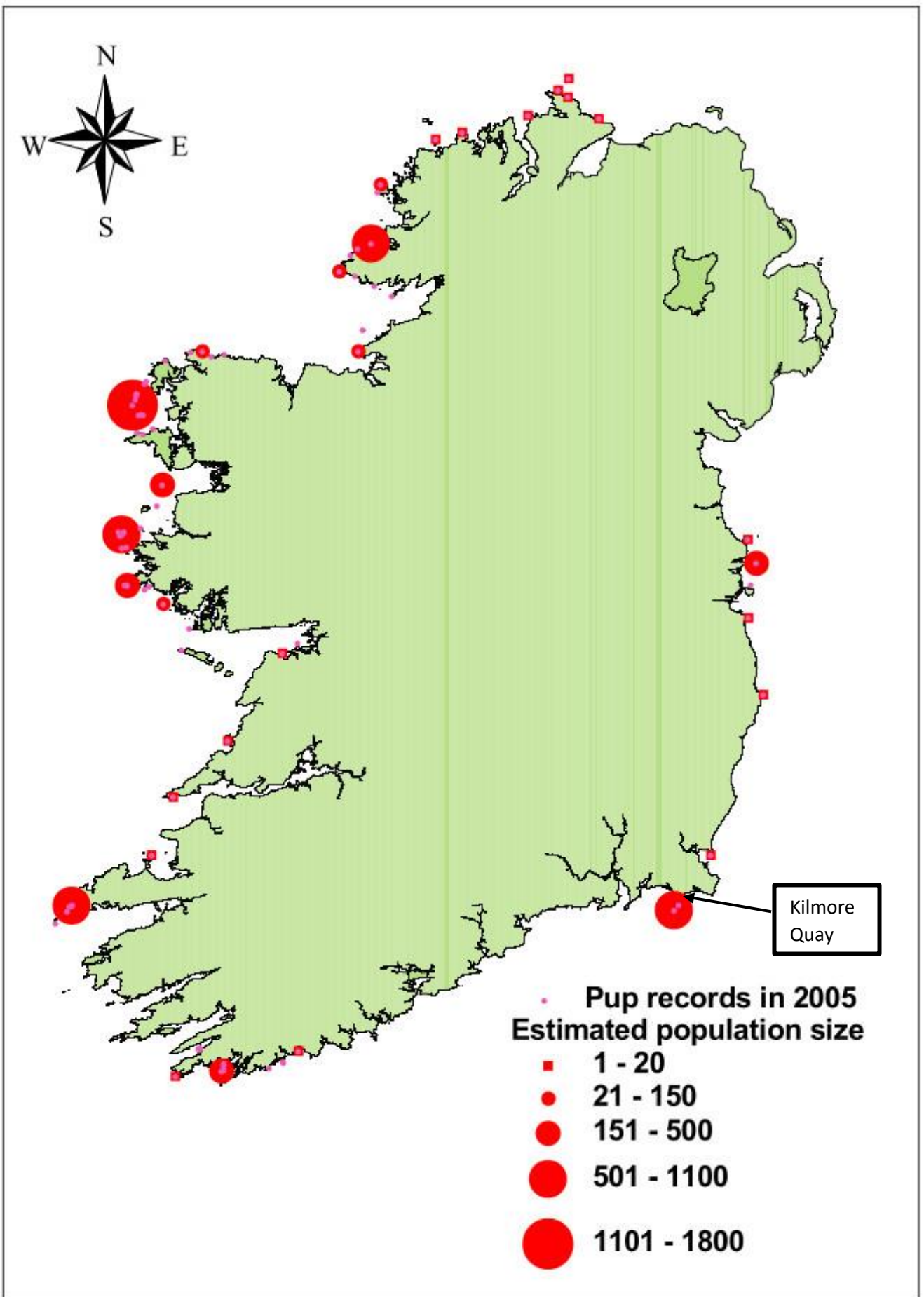


Figure 48. All-age grey seal population sizes and regional distribution derived from data gathered in the Republic of Ireland, August – December 2005. Data for low-production breeding colonies are pooled and included within nearby population estimates as appropriate

As demonstrated in the “Harbour seal population assessment in the Republic of Ireland” (August, 2003)¹⁹, there have been a number of recorded sightings of grey seals in the vicinity of Kilmore Quay (red circle).

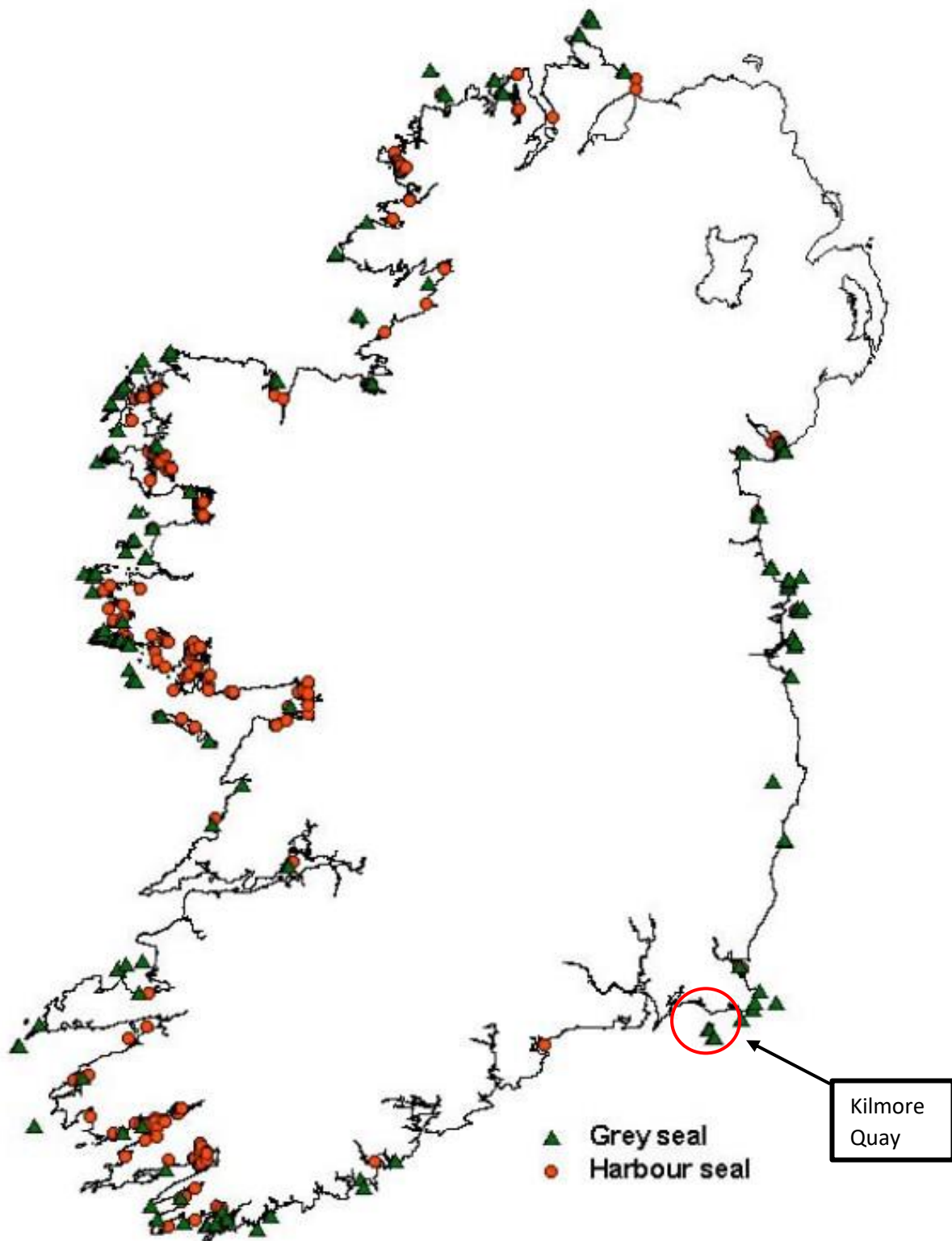


Figure 49. Map of the locations of groups of grey seals (*Halichoerus gyprus*) and harbour seals (*Phoca vitulina*) recorded on the Republic of Ireland and Carlingford Lough, Co. Down, August 2003.

¹⁹<https://www.npws.ie/sites/default/files/publications/pdf/IWM11.pdf>

As demonstrated in “An aerial survey of harbour seals in Ireland: Part 2- Galway Bay to Carlingford Lough” (August – September 2012)²⁰, grey seals have been recorded in close proximity to Kilmore Quay. Surveys undertaken in August 2003 recorded 61 grey seals in the vicinity of Saltee Islands, whilst surveys in August-September 2012 recorded 95 grey seals in the vicinity of Saltee Islands. Recordings of grey seals in close proximity to Kilmore Quay are outlined below:

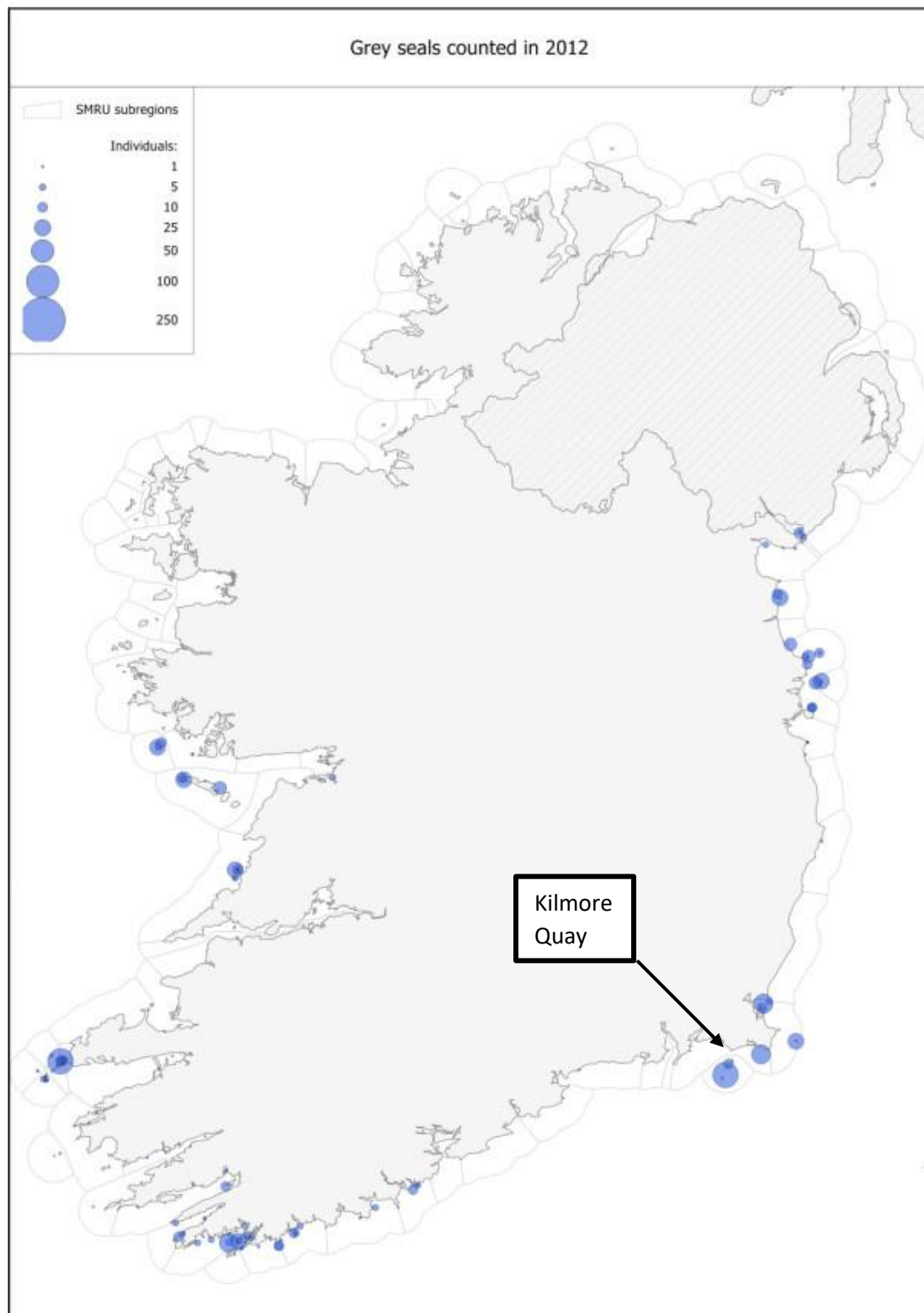


Figure 50. The number and distribution of grey seals counted in the west, south-west, south and east of Ireland in August-September 2012.

²⁰https://www.npws.ie/sites/default/files/publications/pdf/Harbour%20seal%202012_2%20Duck_Morris.pdf

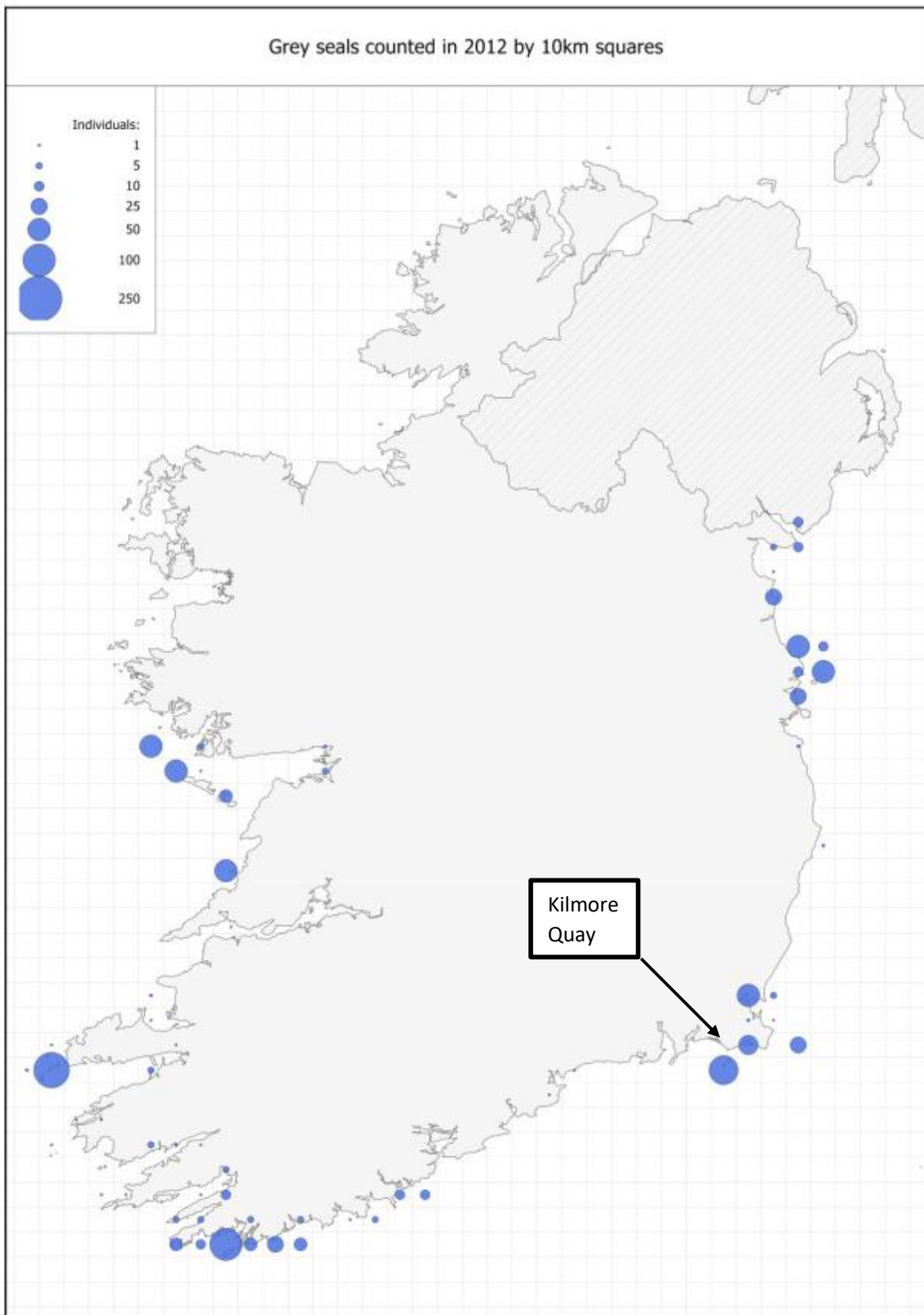


Figure 51. This map shows the same grey seal data in the west, south-west, south and east of Ireland as Figure 34 but counts are aggregated by 10km squares (background grid).

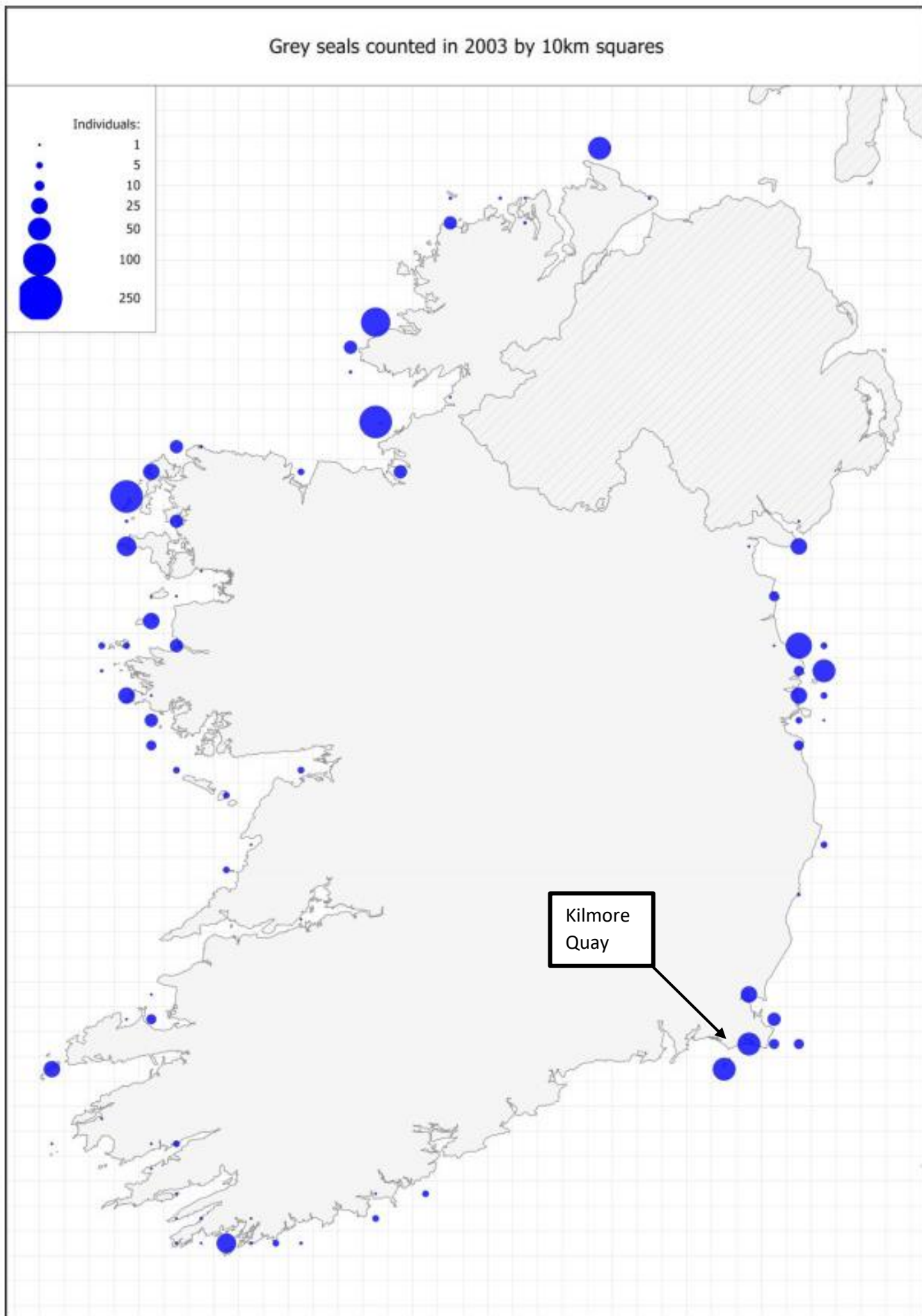


Figure 52. Grey seal distribution in Ireland in August 2003, with counts aggregated by 10km squares (background grid). This Figure is included for comparison with the 2011/2012 data (Figure 35).

Potential Impact of the Proposed works

Natura 2000 Sites

The potential impact of the proposed works for the screened IN NATURA 2000 sites are summarised in the table below (Table 8):

Table 8: Potential impact on Qualifying interests/Features of interest of Natura 2000 sites.

IE 000696 Ballyteige Burrow SAC	
Features of interest	Impact in the absence of mitigation
<p>Estuaries [1130] Mudflats and sandflats not covered by seawater at low tide [1140] Coastal lagoons [1150] Annual vegetation of drift lines [1210] Perennial vegetation of stony banks [1220] Salicornia and other annuals colonising mud and sand [1310] Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>) [1330] Mediterranean salt meadows (<i>Juncetalia maritimi</i>) [1410] Mediterranean and thermo-Atlantic halophilous scrubs (<i>Sarcocornetea fruticosi</i>) [1420] Embryonic shifting dunes [2110] Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] Atlantic decalcified fixed dunes (<i>Calluno-Ulicetea</i>) [2150] Humid dune slacks [2190]</p>	<p>The proposed beach access and excavation works are within the Mudflats and sandflats not covered by seawater at low tide [1140] habitat. There is potential for localised short term compaction, disturbance in addition to risk in relation to pollution discharges from machinery. The beach access route is 167m long x 4m wide (668m²). The area of disturbance from excavations/trenching is 50m x 5m (250m²) (Total= 918m² /0.0918ha). Total habitat area in SAC is 201ha. The proposed works represent 0.04567% short term disturbance of this habitat.</p> <p>Shifting dunes along the shoreline with <i>Ammophila arenaria</i> (white dunes) [2120] and Fixed coastal dunes with herbaceous vegetation (grey dunes) [2130] habitats are in the vicinity of the terrestrial works. However, existing cable ducts are present on site and no excavations are required in the dune areas. Potential impacts on dune habitat include compaction and accidental removal /damage to dune habitat from personnel and machinery. The formal and informal access path is 175m long from the car park area to the beach manhole. The existing pedestrian path to the beach including steps is 47m long.</p> <p>Other habitats noted as features of interest are not within proximity of the proposed cable route and no impact is foreseen in relation to these habitats. However, mitigation measures will be implemented for these habitats based on precautionary principle.</p> <p>Mitigation measures are required to limit the potential impacts on the features of interest of the SAC.</p>

IE 000707 Saltee Islands SAC	
Qualifying Interest	Impact in the absence of mitigation
<p>Mudflats and sandflats not covered by seawater at low tide [1140] Large shallow inlets and bays [1160] Reefs [1170] Vegetated sea cliffs of the Atlantic and Baltic coasts [1230] Submerged or partially submerged sea caves [8330]</p>	<p>Works were designed to avoid this SAC in consultation with NPWS. No works or access will be carried out within this SAC. However, the removal of the cable will border the SAC and the cable laying works will be 230m from the SAC. In the absence of supervision there is potential for cable removal and laying to extend within the SAC and that excessive silt would be generated during works e.g. due to higher vessel speeds etc. This would have the potential to impact on reef habitat. In addition, Grey Seal moulting on Great Saltee will be between December and April and would be sensitive to disturbance during cable removal and main lay (Q2-Q3). Mitigation measures in the way of ecological supervision are required to ensure all aspects of the works are carried out as per NIS and accompanying EclA and that no impacts are seen on the conservation objectives of this SAC.</p> <p>Trenching on the beach and subtidal will involve the disturbance of the seabed to 1.5m. In the subtidal the process will involve a ship moving at a speed of approximately 0.5kn and generating acoustic noise akin to dredging activity. A plume of sediment will be generated. However, due to the speeds and equipment (on skids) involved this plume will be very</p>

IE 000707 Saltee Islands SAC	
Qualifying Interest	Impact in the absence of mitigation
Grey Seal (<i>Halichoerus grypus</i>) [1364]	<p>localised. It should be noted that the project minimises impacts SAC by using existing terrestrial infrastructure and leaving the existing ESAT 1 Cable in-situ and installing a replacement cable outside the boundary of the SAC. It is possible that burial of the cable adjacent to the western boundary of the Saltee Islands SAC could have an indirect impact in terms of deposition of water-borne sediment within the SAC. The creation of a trench for the installation of the cable will disturb the seabed and in the formation of a locally mobilised sediment in the water column. This would arise particularly when jetting has to be used. In this situation the displaced material can be up to 50% of the depth of the trench. However, the heavier sediment invariably settle within 5m on either side of the trench and this is borne out by the fact that the trench backfills naturally within a few tidal cycles. The tidal streams run east-west in Bannow Bay and the section of the cable trench between the landfall and the first major turning point at KP 7.87, all of which are outside of the Saltee Island SAC. The section of cable outside the western boundary of the SAC (KP 7.87 to KP17.65) runs north-south over a distance of just less than 10km. With a vessel operating speed of the order of 0.5 knots the cable in that section is expected to be installed within 1 tidal cycle. The probability is that this would mean that 50% of work would be undertaken on the west-going tidal stream and 50% on the east-going tidal stream. In effect, the situation is that the only material which could indirectly affect the SAC would be limited to the fine sediment which would be in suspension in the water column and the duration would be no more than 50% of the time i.e. the duration of the east going tidal stream. In addition, the cable installation is a continuous operation and accordingly any effect would be uniformly distributed along 50% of the SAC and confined to the east-going tide. Given the moderately exposed nature of the reef habitat in this area, it would be expected that the deposition of fine silt on reef would be minor and short term and would be removed by wave action and or tidal currents, in a matter of days depending on the weather and tidal conditions post burial.</p>

IE 004020 Ballyteige Burrow SPA	
Qualifying Interest	Impact in the absence of mitigation
Light-bellied Brent Goose (<i>Branta bernicla hrota</i>) [A046] Shelduck (<i>Tadorna tadorna</i>) [A048] Golden Plover (<i>Pluvialis apricaria</i>) [A140] Grey Plover (<i>Pluvialis squatarola</i>) [A141] Lapwing (<i>Vanellus vanellus</i>) [A142] Black-tailed Godwit (<i>Limosa limosa</i>) [A156] Bar-tailed Godwit (<i>Limosa lapponica</i>) [A157] Wetland and Waterbirds [A999]	<p>No works are proposed in the SPA. Cable removal and mainlay will take place outside the wintering bird season in Q2-Q3. The works are on a busy section of beach beside a car park. However, mitigation measures will need to be implemented in the way of ecological supervision in the event that qualifying interests of this SPA are near the works area. The cable route would see invertebrate mortalities along the machinery access areas and in the vicinity of the excavations. This would be primarily due to compression by the machinery in a maximum 4m wide track and the disturbance of sand during the burial action, during one tidal cycle (outside SPA).</p>

IE 004002 Saltee Islands SPA	
Qualifying Interest	Impact in the absence of mitigation
Fulmar (<i>Fulmarus glacialis</i>) [A009] Gannet (<i>Morus bassanus</i>) [A016] Cormorant (<i>Phalacrocorax carbo</i>) [A017] Shag (<i>Phalacrocorax aristotelis</i>) [A018] Lesser Black-backed Gull (<i>Larus fuscus</i>) [A183] Herring Gull (<i>Larus argentatus</i>) [A184] Kittiwake (<i>Rissa tridactyla</i>) [A188] Guillemot (<i>Uria aalge</i>) [A199] Razorbill (<i>Alca torda</i>) [A200] Puffin (<i>Fratercula arctica</i>) [A204]	<p>No works are proposed in the SPA. It is possible that the qualifying interests of the SPA are in the vicinity of the proposed works and could be impacted by disturbance. The works are on a busy section of beach beside a car park. However, mitigation measures will need to be implemented in the way of ecological supervision to ensure that the works do not impact on qualifying interests of this SPA that may be near the works area including offshore.</p>

Marine Mammals

All cetaceans are listed under Annex IV of the Habitats Directive, which means that they are protected wherever they occur. Bottle-nosed Dolphin and Harbour Porpoise are also listed under Annex II of the Directive. Annex II species require that core areas of their habitat are designated as sites of Community importance.

The proposed cable lay would be expected to impact on cetaceans primarily through the emission of noise due to the vessel and acoustics from the USBL equipment. As outlined by O'Brien (2005), "sound travels 4.5 times faster in water than in air and low frequency sounds travel farther underwater than high frequency sounds."

Southall *et al.* (2019) outlined in their publication "Marine Mammal Noise Exposure Criteria: Updated Scientific Recommendations for Residual Hearing Effects" revised the marine mammal hearing groups, which are seen in Table 10.

Table 10. Marine Mammal Functional Hearing Groups and Estimated Functional Hearing groups Proposed by Southall *et al.* (2019)

Marine mammal hearing group	Auditory weighting function	Genera (or species) included
Low-frequency cetaceans	LF	<i>Balaenidae</i> (<i>Balaena</i> , <i>Eubalaenidae</i> spp.); <i>Balaenopteridae</i> (<i>Balaenoptera physalus</i> , <i>B. musculus</i>)
		<i>Balaenopteridae</i> (<i>Balaenoptera acutorostrata</i> , <i>B. bonaerensis</i> , <i>B. borealis</i> , <i>B. edeni</i> , <i>B. omurai</i> ; <i>Megaptera novaeangliae</i>); <i>Neobalenidae</i> (<i>Caperea</i>); <i>Eschrichtiidae</i> (<i>Eschrichtius</i>)
High-frequency cetaceans	HF	<i>Physeteridae</i> (<i>Physeter</i>); <i>Ziphiidae</i> (<i>Berardius</i> spp., <i>Hyperoodon</i> spp., <i>Indopacetus</i> , <i>Mesoplodon</i> spp., <i>Tasmacetus</i> , <i>Ziphius</i>); <i>Delphinidae</i> (<i>Orcinus</i>)
		<i>Delphinidae</i> (<i>Delphinus</i> , <i>Feresa</i> , <i>Globicephala</i> spp., <i>Grampus</i> , <i>Lagenodelphis</i> , <i>Lagenorhynchus acutus</i> , <i>L. albirostris</i> , <i>L. obliquidens</i> , <i>L. obscurus</i> , <i>Lissodelphis</i> spp., <i>Orcaella</i> spp., <i>Peponocephala</i> , <i>Pseudorca</i> , <i>Sotalia</i> spp., <i>Sousa</i> spp., <i>Stenella</i> spp., <i>Steno</i> , <i>Tursiops</i> spp.); <i>Montodontidae</i> (<i>Delphinapterus</i> , <i>Monodon</i>); <i>Plantanistidae</i> (<i>Plantanista</i>)
Very high frequency cetaceans	VHF	<i>Delphinidae</i> (<i>Cephalorhynchus</i> spp.; <i>Lagenorhynchus cruciger</i> , <i>L. australis</i>); <i>Phocoenidae</i> (<i>Neophocaena</i> spp., <i>Phocoena</i> spp., <i>Phocoenoides</i>); <i>Iniidae</i> (<i>Inia</i>); <i>Kogiidae</i> (<i>Kogia</i>); <i>Lipotidae</i> (<i>Lipotes</i>); <i>Pontoporiidae</i> (<i>Pontoporia</i>)
Phocid carnivores in water	PCW	<i>Phocidae</i> (<i>Cystophora</i> , <i>Erignathus</i> , <i>Halichoerus</i> , <i>Histriophoca</i> , <i>Hydrurga</i> , <i>Leptonychotes</i> , <i>Lobodon</i> , <i>Mirounga</i> spp., <i>Monachus</i> , <i>Neomonachus</i> , <i>Ommatophoca</i> , <i>Pagophilus</i> , <i>Phoca</i> spp., <i>Pusa</i> spp.)

The Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (NOAA, 2018) outlined the hearing groups of marine mammals including the generalised hearing range of these cetacean groups (Table 10). They also noted that "Exposures exceeding the specified respective criteria level for any exposure metric are interpreted as resulting in predicted temporary threshold shift (TTS) or permanent threshold shift (PTS) onset." The onset of PTS on marine mammals was also outlined in NOAA 2018 (Table 11). The updated figures for PTS and TTS for are outlined in Table 12.

Table 10. Hearing Groups of Marine Mammals (NOAA, 2018)

Hearing Group	Generalized Hearing Range*
Low-frequency (LF) cetaceans (baleen whales)	7 Hz to 35 kHz
Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales)	150 Hz to 160 kHz
High-frequency (HF) cetaceans (true porpoises, Kogia, river dolphins, cephalorhynchid, Lagenorhynchus cruciger & L. australis)	275 Hz to 160 kHz
Phocid pinnipeds (PW) (underwater) (true seals)	50 Hz to 86 kHz
Otariid pinnipeds (OW) (underwater) (sea lions and fur seals)	60 Hz to 39 kHz

* Represents the generalized hearing range for the entire group as a composite (i.e., all species within the group), where individual species' hearing ranges are typically not as broad. Generalized hearing range chosen based on ~65 dB threshold from normalized composite audiogram, with the exception for lower limits for LF cetaceans (Southall et al. 2007) and PW pinniped (approximation).

Table 11. Onset of PTS in Marine mammals

Hearing Group	PTS Onset Thresholds (Received Level)	
	Impulsive ¹	Non-impulsive ²
Low-Frequency (LF) Cetaceans	Cell 1 <i>Lpk,flat</i> : 219 dB <i>LE,LF,24h</i> : 183 dB	Cell 2 <i>LE,LF,24h</i> : 199 dB
Mid-Frequency (MF) Cetaceans	Cell 3 <i>Lpk,flat</i> : 230 dB <i>LE,MF,24h</i> : 185 dB	Cell 4 <i>LE,MF,24h</i> : 198 dB
High-Frequency (HF) Cetaceans	Cell 5 <i>Lpk,flat</i> : 202 dB <i>LE,HF,24h</i> : 155 dB	Cell 6 <i>LE,HF,24h</i> : 173 dB
Phocid Pinnipeds (PW) (Underwater)	Cell 7 <i>Lpk,flat</i> : 218 dB <i>LE,PW,24h</i> : 185 dB	Cell 8 <i>LE,PW,24h</i> : 201 dB
Otariid Pinnipeds (OW) (Underwater)	Cell 9 <i>Lpk,flat</i> : 232 dB <i>LE,OW,24h</i> : 203 dB	Cell 10 <i>LE,OW,24h</i> : 219 dB

¹Impulsive: produce sounds that are typically transient, brief (less than 1 second), broadband, and consist of high peak sound pressure with rapid rise time and rapid decay (ANSI 1986; NIOSH 1998; ANSI 2005).

²Non-impulsive: produce sounds that can be broadband, narrowband or tonal, brief or prolonged, continuous or intermittent) and typically do not have a high peak sound pressure with rapid rise/decay time that impulsive sounds do (ANSI 1995; NIOSH 1998).

Table 12. Southall *et al.* (2019) TTS- and PTS-onset thresholds for marine mammals exposed to impulsive noise: SEL thresholds in dB re 1 $\mu\text{Pa}^2\text{s}$ under water and dB re (20 μPa)²s ; and peak SPL thresholds in dB re 1 μPa under water.

Hearing Group	Impulsive Noise		Non-impulsive Noise
	Unweighted SPLpeak(dB re 1 μPa)	Weighted SELcum (dB re 1 $\mu\text{Pa}^2\text{s}$)	Weighted SELcum (dB re 1 $\mu\text{Pa}^2\text{s}$)
PTS Criteria			
Low-frequency (LF) cetaceans	219	183	199
High-frequency (HF) cetaceans	230	185	198
Very-frequency cetaceans (VHF)	202	155	173
Phocid carnivores in water (PCW)	218	185	201
TTS Criteria			
Low-frequency cetaceans	213	168	179
High-frequency cetaceans	224	170	178
Very high-frequency cetaceans	196	140	153
Phocid carnivores in water	212	170	181

The hearing ranges and sensitivity of marine mammals differ from one species to another depending on their audiogram. “For example, harbour porpoises are sensitive from 3 kHz to 130 kHz, with peak sensitivity at 125-130 kHz, and bottlenose dolphins from 5-110 kHz, with peak sensitivity at 40 and 60-116 kHz” (Southall *et al.*, 2007). Common seals are sensitive 4-45 kHz (peak sensitivity at 32 kHz) and grey seals 8-40 kHz. Humans are sensitive only to frequencies from 20 Hz to 16-18 kHz but with peak sensitivity from 2-4 kHz. Most small cetaceans, excluding harbour porpoise, have an auditory bandwidth of 150 Hz to – 160 kHz, while harbour porpoise have an auditory bandwidth within 200 Hz to 180 kHz. Pinnipeds in water are thought to have an auditory bandwidth of between of 75 Hz to 75 kHz and from 75 Hz to 30 kHz in air (Southall *et al.* 2007).”

The proposed USBL equipment and the noise frequency emissions are seen in Table 13. The low frequencies emitted from the equipment (18-36 kHz) are below the auditory range of the high and very frequency cetaceans but are within the hearing range of low frequency cetaceans that would be seen on the cable route (Table 11).

Table 13. Details of the proposed types of geophysical equipment which emit sound

Equipment Type	Typical Source Pressure Level (dB re 1 μ Pa @ 1 m)	Potential for auditory injury?	Typical Frequency Range (kHz)
USBL System (Transducers)	< 220	Potential risk	18-36
USBL Beacons (Transponders)	< 206	Potential risk	18-36

The noise emitted from a USBL is above the TTS- and PTS-onset threshold injury levels indicated by Southall *et al.* (2019), negative impacts may be foreseen if Low Frequency Cetaceans are close enough to the equipment to receive sound levels above this indicative threshold.

The operations would comply with the NPWS (2014) “*Guidance to manage the risk to marine mammals from man-made sound sources in Irish waters*”. These guidelines would be deemed adequate to mitigate the negative impacts of the proposed works. Cetaceans in the vicinity of the vessel during start up procedures would be given ample time to leave the site with the soft start procedures outlined in the guidelines. In addition, vessel speeds are extremely slow which would give marine mammals ample opportunity to move from the area.

The Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing

Southall (2019) outlined the main differences between their publication and previous publications including NOAA (2018) which was referenced as NMFS (2018) in Southall (2019). Southall (2019) states that “*The noise criteria here represent the next step in a sequential process of evolution of the criteria proposed by Southall et al. (2007), substantially modified with new analytical methods by Finneran (2016), and recently adopted as U.S. regulatory guidance by the NMFS (2016, 2018). While the quantitative process described herein and the resulting exposure criteria here are based on, and in many respects are identical to, those derived by Finneran (2016) and adopted by the NMFS (2016, 2018), there are a number of significant distinctions. The exposure criteria here appear in a peer-reviewed publication and include all marine mammal species for all noise exposures, both under water and in air for amphibious species. NMFS (2016, 2018) provides regulatory guidance only for the subset of marine mammals under their jurisdiction and do not include criteria for aerial noise exposures, an important consideration in many locations for which some earlier assessments were made (Finneran & Jenkins, 2012). The exposure criteria here, while based on the Finneran (2016) quantitative method and consistent with the NMFS (2016, 2018) guidance where they overlap, are thus more broadly relevant, peer-reviewed, and less subject to potential changes in national regulatory policy.*”

Southall (2019) also stated that “*It should be noted that this results in some proposed differences in the terminology of hearing groups relative to those used in Finneran (2016) and NMFS (2016, 2018). These proposed differences in nomenclature may be confusing, but we believe they are justified (see the “Marine Mammal Hearing Groups and Estimated Group Audiograms” section and Appendices 1-6) and will support future criteria as new information emerges.*”

The difference in nomenclature between NOAA 2018 and Southall (2019) is that NOAA (2018)²¹ classified cetaceans as Low-frequency (LF) cetaceans (baleen whales), Mid-frequency (MF) cetaceans (dolphins, toothed whales, beaked whales, bottlenose whales) and High-frequency (HF) cetaceans (true porpoises, Kogia, river dolphins, cephalorhynchid, Lagenorhynchus cruciger & L. australis) while Southall reclassified these groups to Low-frequency cetaceans, High-frequency cetaceans, Very high-frequency cetaceans. As outlined in Southall (2019) “*The distinction between HF and VHF cetacean groups (as opposed to mid- and high-frequency) reflects the regions of best hearing sensitivities within these groups, often including frequencies approaching or exceeding 100 kHz; these frequencies would be more appropriately described within marine bioacoustics as high to very high. Further, as discussed in more detail below, a number of anatomical and sound production properties suggest a potential distinction of very low- (VLF) and LF cetaceans among mysticetes. Some evidence also suggests a potential segregation of mid-frequency (MF) and HF cetaceans in addition to the distinction of HF and VHF cetaceans.*” This is in effect a relabelling of Mid-Frequency (MF) Cetaceans and High-Frequency (HF) Cetaceans to High-frequency cetaceans and Very high-frequency cetaceans respectively. It should be clearly noted that the PTS values within the updated groups were identical between NOAA, 2018 and Southall 2019 and it was in effect a renaming of the groups.

²¹ NOAA 2018 Revision to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing (Version 2.0) Underwater Thresholds for Onset of Permanent and Temporary Threshold Shifts. NOAA Technical Memorandum NMFS-OPR-59 April 2018.

Lurton (2016) modelled the sound field radiated by multibeam echosounders for acoustical impact assessment. He stated that *“considering the injury criteria, the results illustrate that injury hazards are possible only at very short distances from the source: e.g. about 5 m for maximum Sound Pressure Level and 12 m for cumulative Sound Exposure Level in the case of a 240-dB source level, considering cetaceans. For behavioural response criteria, the corresponding values are 9 m and 70 m.”*

Based on these data it is concluded that an underwater source noise level of 220dB (which the proposed cable removal and mainlay will not exceed) does not result in injury hazards once a minimum separation distance of 12 metres is maintained between the source of the noise and a cetacean. Equally there is no behavioural response once a minimum separation distance of 70 metres is maintained between the source of the noise and a cetacean. The proposed survey guidelines (DAHG, 2014) require a 1000m distance between the vessel and cetaceans prior to the commencement of vessel operations.

The operations would comply with the NPWS (2014) *“Guidance to manage the risk to marine mammals from man-made sound sources in Irish waters”*. These guidelines would be deemed adequate to mitigate the negative impacts of the proposed works. Cetaceans in the vicinity of the vessel during start up procedures would be given ample time to leave the site with the soft start procedures outlined in the guidelines. It should be noted that the vessel will be operating at a very slow speed on a 24 hour basis with a MMO on board. It is considered that due to the fact that the ship will be operating on this basis, a MMO will be onboard operating to MMO guidance procedures, it will be providing significant time for cetaceans to leave the area. In addition, vessel speeds are extremely slow which would give marine mammals ample opportunity to move from the area.

UK Natura 2000 Sites.

The Foreshore licencing in Ireland relates to licence applications out to the Irish 12nm limit. The Marine Protected Areas (MPA's), SAC's and SPA's within UK waters are seen in Figures 53-57. As a consequence of Brexit, from 1st January 2021, previously designated UK sites are no longer part of the Natura 2000 network but have designation as SAC's and SPA's and protection under UK law. The licencing within the UK waters is covered by a permitting licence system managed by the Marine Management Organisation (MMO), Marine Scotland and Natural Resources Wales, depending on UK jurisdiction. The proposed routes within UK waters will be subject to this UK permitting process and the potential impacts on designated sites, are subject to a separate application process and will be assessed by UK authorities. Because the proposed cable system passes through UK waters and UK designated sites, it is expected that mitigation measures will be implemented to protect the qualifying interests of the UK designated sites. For example, these mitigation measures will include the presence of a marine mammal observer onboard the lay vessel. It should be noted that a marine mammal observer will already be in place within Irish waters.

For the UK element of the proposed cable lay to proceed, it must be approved by UK authorities and the reporting must conclude that following the implementation of appropriate mitigation the proposed project would not adversely affect the integrity of UK designated sites, alone or in combination with other projects. For this overall project to take place it will require permitting both within UK and Irish waters. Therefore, no cable lay works on this project will commence until both licencing countries have permitted the proposed development.

The nearest UK designated site to the proposed cable route within the 12nm limit is Skomer, Skokholm and the Seas off Pembrokeshire is 53km from the 12nm limit and 20km from the Irish EEZ (within UK waters). Given the distance from the proposed route within the Irish marine area to UK designated sites, the project would not adversely affect the integrity of UK designated sites.

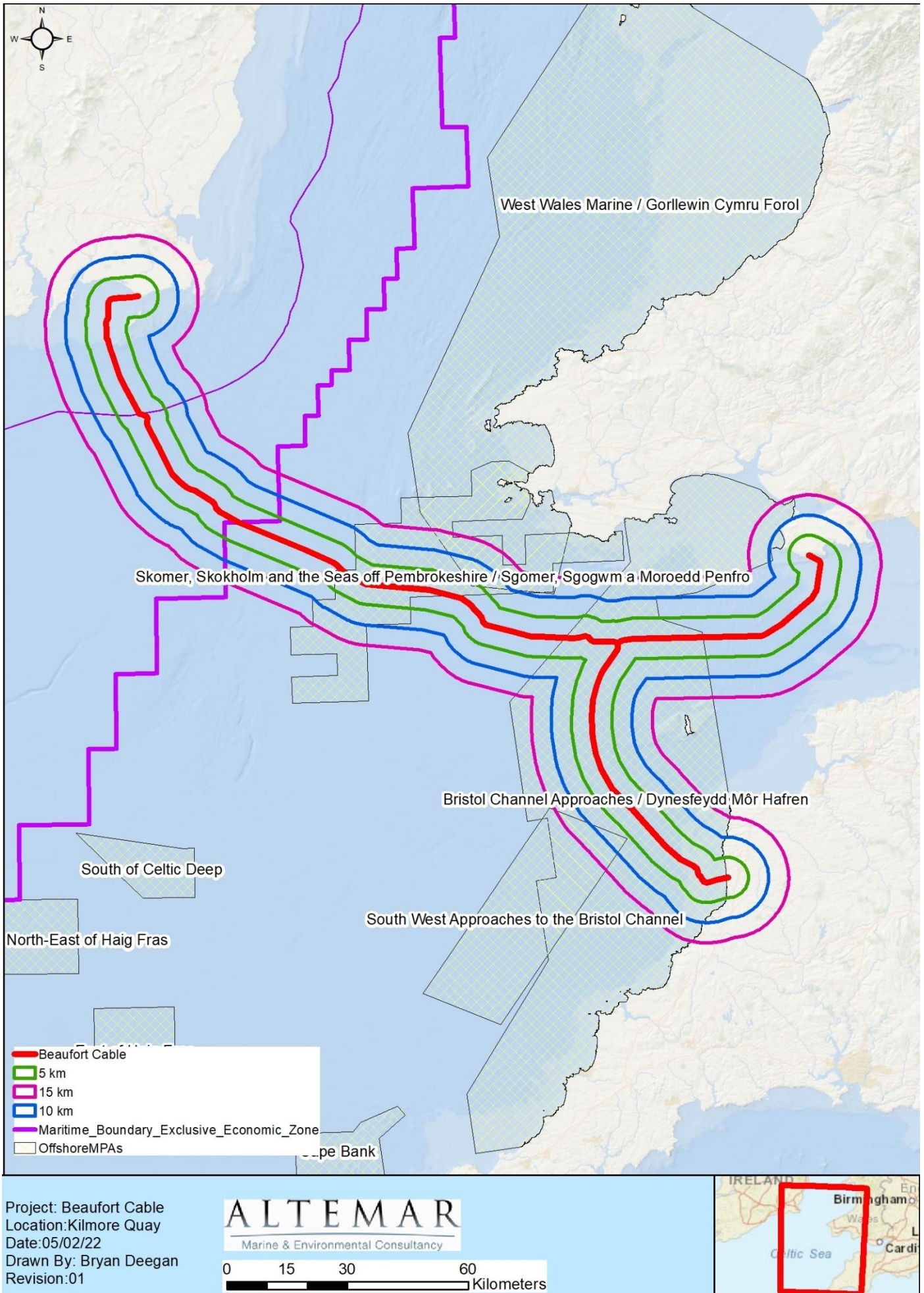


Figure 52. Proposed fibre optic cable route, EEZ and UK MPA's.

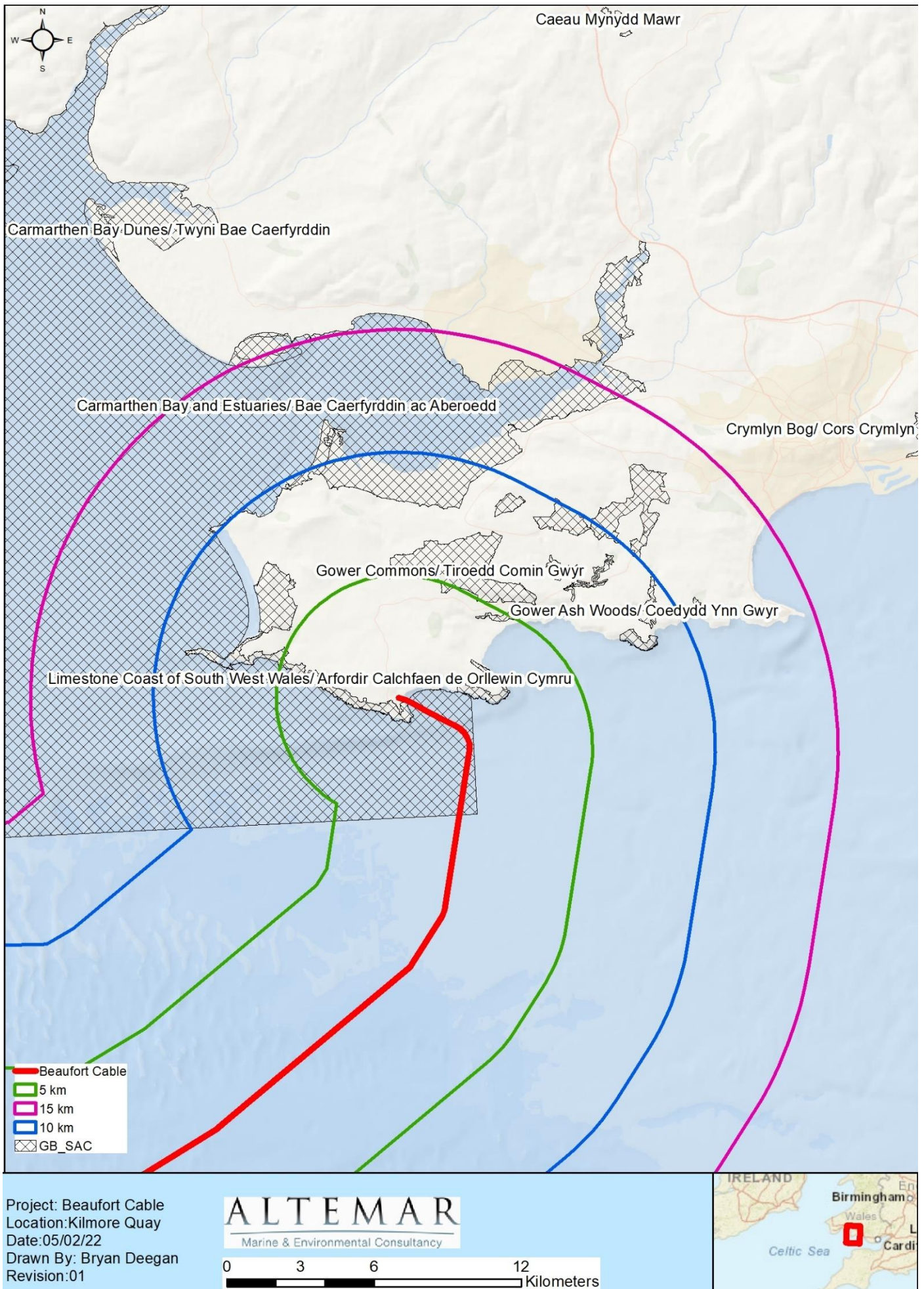


Figure 53. Proposed fibre optic cable route and UK SAC's in the vicinity of the northern landfall location.

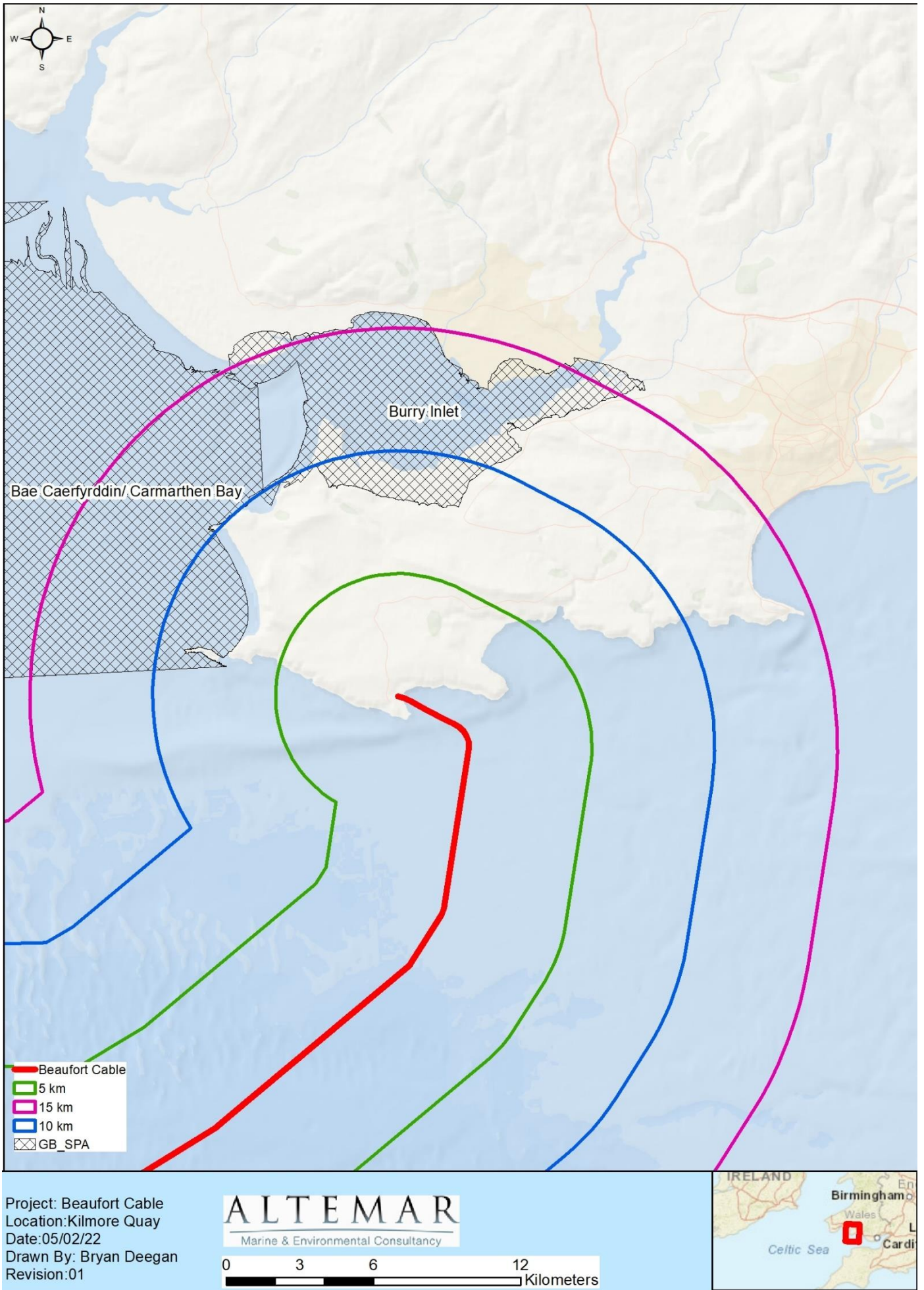


Figure 54. Proposed fibre optic cable route and UK SPA's in the vicinity of the northern landfall location.

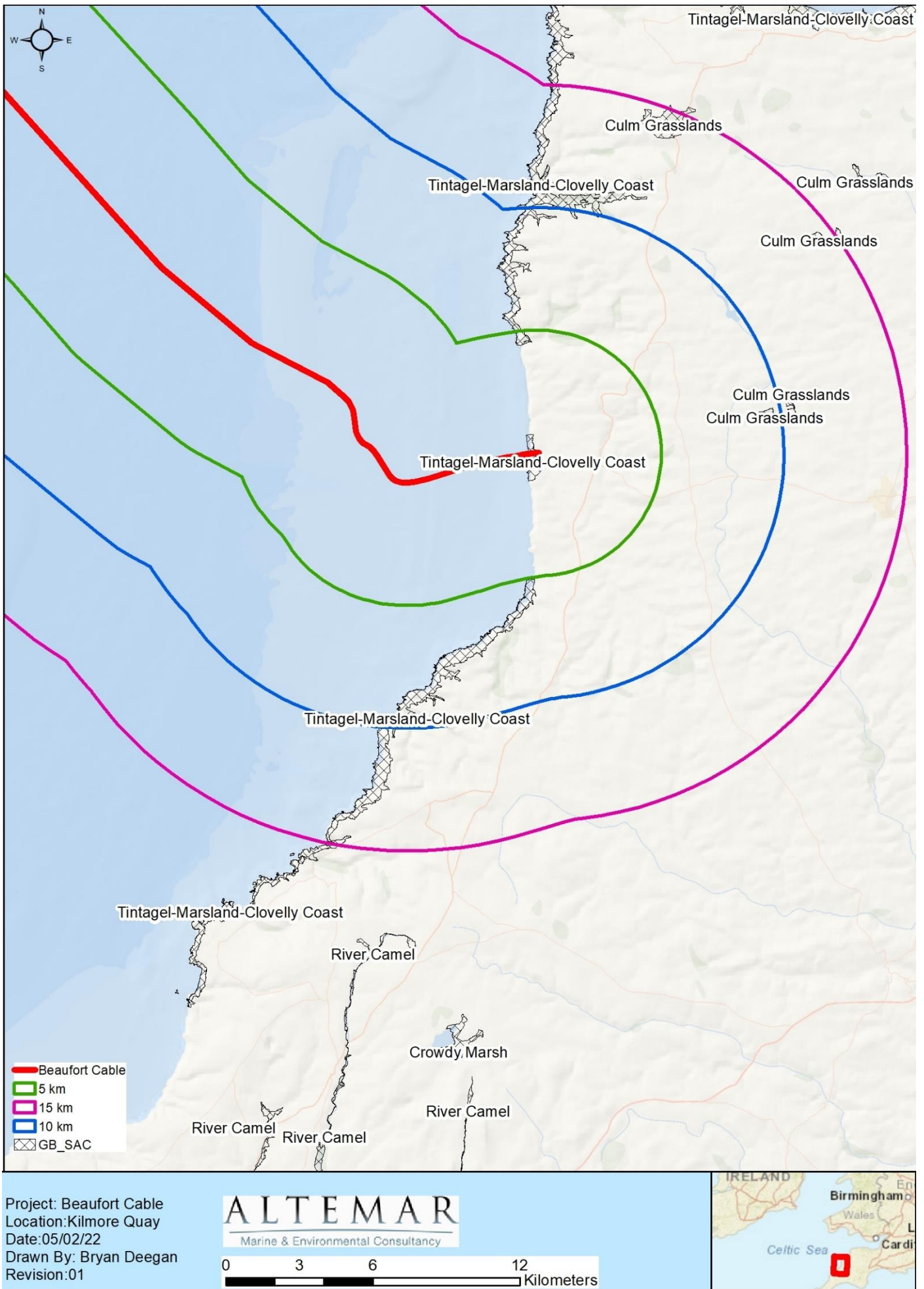


Figure 55. Proposed fibre optic cable route and UK SAC's in the vicinity of the southern landfall location.

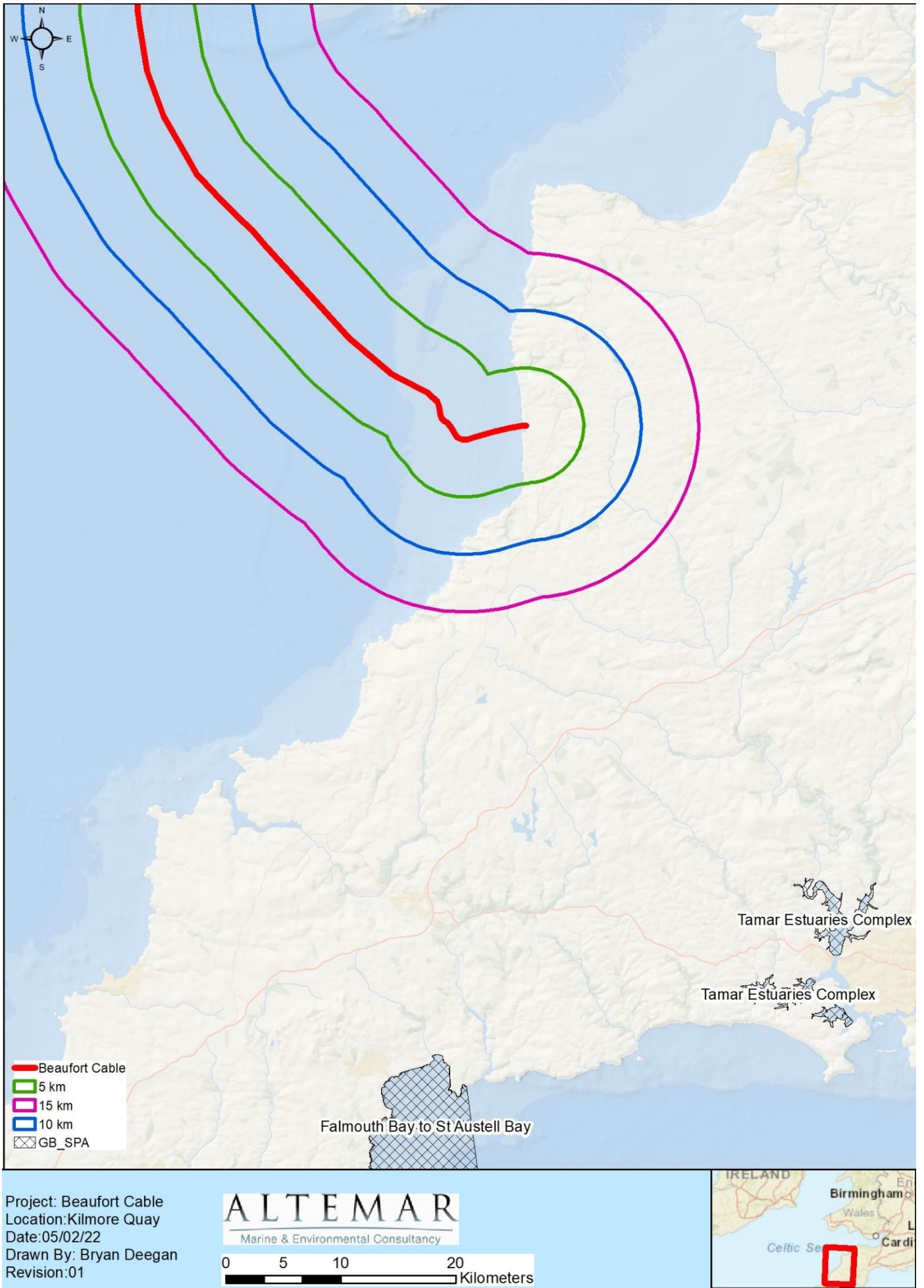


Figure 56. Proposed fibre optic cable route and UK SPA's in the vicinity of the southern landfall location.

Mitigation Measures

Minor short-term impacts may result as a consequence of the project, but these are believed not to be at the scale to impact on the integrity of the Natura 2000 sites, species or the Site Specific Conservation Objectives. However, following the precautionary principle, substantial mitigation measures have been developed to minimise the ecological impacts of the project, not only in relation to Natura 2000 Annex habitats and species, but also additional species and habitats of conservation importance that have been recorded in the area including marine mammals offshore.

Mitigation measures are proposed including having an ecologist present on site to ensure birds (roosting or foraging) are not disturbed by the proposed works. The cable route would see invertebrate mortalities along the machinery access areas and in the vicinity of the beach access, excavation and burial. This would be primarily due to compression by the burial tool/machinery in a maximum 4m wide track and the disturbance of sand during the burial action, during one tidal cycle. These impacts would be limited in nature and would be short term.

Pre cable laying mitigation

Route Planning

A strict route selection process was carried out to assess the optimal route and landing site of Kilmore Quay, taking into account the lowest environmental impact, highest resource efficiency and wave exposure on the basis of sound and comparable data. This included addressing engineering issues as well as environmental concerns which included discussion with the NPWS and Foreshore Unit and assessing existing infrastructure. Altemar were involved in and an integral part of the route selection, methodology and planning process from the outset.

The proposed landfall location is within a Natura 2000 site of conservation significance (SAC). The conservation significance of the features of interest of the Natura 2000 sites was assessed. The route through the terrestrial element of the conservation site is an existing duct and the intertidal route is on a moderately exposed beach with high levels of human disturbance. The route was deemed to be the optimal route of satisfying conservation significance (within the designated sites) based on the assessment of NPWS ratings data, the optimal from an engineering perspective and for the stability and longevity of the cable.

Timing of Cable Lay

The assessment of environmental factors within the landfall area was critical to the timing of the project and mitigation of impacts on species of conservation importance. The primary conservation interest of the nearby SPA is over-wintering birds. The cable lay is to be carried out at the latter end of the wintering bird season in an area of high disturbance.

- ESAT-1 Decommissioning Q2-Q3
- Main-Lay Q2-Q3

Grey Seals will be moulting at the Saltee Islands between December - April. The cable installation is at minimum 5.1km from the nearest breeding site (Great Saltee Island).

Construction phase mitigation measures

Terrestrial

There are existing ducts from the landing station to the end of the landfall duct on the beach. There is potential from trampling by pedestrian and machinery on to dune habitats and other Annex Habitats in the absence of ecological supervision. There is also potential for localised pollution from machinery. The following will need to be provided or confirmed to the project ecologist prior to commencement of works:

a) Supervision and Notification

An ecologist with previous experience with cable operations in the terrestrial/intertidal/subtidal will observe all works. NPWS and IFI should be notified of pending operations at least 1 week before operations commence and of any breaches of compliance. All access routes will be marked locally by an ecologist. Pedestrians or machinery will not stray from appointed and existing routes. The route on the beach will also be marked out to limit the potential impact on infauna. An Ecological Clerk of Works reports will be provided to NPWS.

b) Pollution

The presence of machinery on the intertidal and terrestrial environments could pose a threat of pollution. Toilet facilities will need to be provided on site. In order to minimise pollution the following will take place:

- 1) All machinery will only be fuelled on the hard stand area of a car park or road at least 10m from a drain or gully.
- 2) All waste from operations will be removed from the site.
- 3) Any fluid leaks/spills will be cleaned up immediately.

Intertidal

As was seen during the fieldwork, the beach at which the intertidal works are to be carried out on is moderately exposed. Even though the construction phase of the project is outside over-wintering bird season and during the summer when there is increased human visitor activity on the beach, disturbance of resident birds, summer visiting birds, otters and harbour seals may occur. As a result, mitigation of impacts in the intertidal will concentrate on minimising the following:

Disturbance

The proposed route is within a popular beach which will have increased activity during spring months. As a result, the presence of additional personnel on the shore during spring would not cause a significant additional disturbance. However, the presence of machinery and digging generated noise could cause a localised disturbance to bird populations. In order to minimise disturbance of the intertidal habitat and species the following mitigation measures would be carried out:

1. An ecologist would be onsite for cable removal, trenching, and burial process in order to minimise disturbance and ensure site integrity is maintained. If roosting birds or mammals of conservation importance are present on the shore or in the vicinity of the works, the cable lay will be postponed until the birds depart, without provocation.
2. ecologist would be onsite for cable removal, trenching, and burial process in order to minimise disturbance and ensure site integrity is maintained. If roosting birds are present on the shore, the cable lay will be postponed until the birds depart, without provocation.

3. Drift lines in close proximity to the proposed route would contain the highest proportion of potential food source for bird species. If present, these will be avoided by machinery and personnel.
4. Noise generated from machinery could cause a disturbance. The bucket of the digger used in gaining access to the duct will have teeth, so as to minimize scraping of metal against the cobble or boulders (if present).
5. The cable route on the shore will be backfilled on a receding tide. This is to ensure all operations are done within one tide. Operations must be completed before an incoming tide when many of the birds return to feed. This will result in the cable route being imperceptible following a single or small number of tidal cycles.
6. The operations in the intertidal will each (removal and cable lay) take one day and will commence under the intertidal element, on a receding tide when the area above the end of the duct has no water and will be completed within one tidal cycle.
7. Any temporary access arrangements or structures that are put in place to allow machinery access to the beach area will be prepared in consultation with an ecologist and the site will be fully reinstated post works.

Reinstatement

Reinstatement of the terrestrial and intertidal habitat will be carried out to pre-construction conditions. Any concerns in relation to the trenching process or resulting reinstatement of the habitat to pre construction conditions will be raised with NPWS by the project ecologist prior to the removal of personnel from the site. A report on the trenching and reinstatement of the intertidal habitat, with imagery, will be submitted by the project ecologist to NPWS within 1 week of the completion of works.

Subtidal

Mitigation impacts are primarily concerned with the construction phases of the project as minimal impacts are foreseen during the operation phase, with the exception of potential underwater noise, disturbance of marine mammals and human intervention in relation to a break or fault in the cable. Impacts in a decommissioning stage are similar to those of the construction phase. Repairing the cable may involve several scenarios, from *insitu* repair with divers to the use of a grapnel to lift the cable on board a repair vessel so that repairs can be carried out at sea. As a result the following mitigation measures would be enforced during construction, repair and/or decommissioning.

1. A marine biologist will be present onboard the lay vessel during cable laying to ensure minimal impact on the benthic communities.
2. A MMO will be onboard the vessel at all times in Irish waters to enforce mitigation measures. "Guidance to Manage the Risk to Marine Mammals from Man-made Sound Sources in Irish Waters" will be applied to ensure noise introduced into the marine environment have minimum effect. Under no circumstance should seals hauled out in the area be disturbed such that they enter the water. This is unlikely, as this area is not recognised as a haul out area. Cable laying is to be carried out outside of breeding and haul out areas, but will be carried out during haul out period.
3. No hydroacoustics are to be used during the cable lay without consultation with the MMO so as to limit disturbance to cetaceans.
4. Additional permissions would be sought from NPWS in the case of repair/removal of the cable etc. prior to carrying out works.
5. In order to ensure the integrity of Annex habitats and additional habitats and species of conservation importance are retained in the vicinity of the planned project a marine ecologist will be onsite during all intertidal works including the final making good of the site, including back filling and removal of machinery. The ecologist will also ensure that birds of conservation importance roosting on the shore will not be disturbed during works.
6. Mitigation measures will include the presence of a MMO onboard the vessel. The purpose of the MMO is to ensure that there is no disturbance of seal /cetacean populations, to ensure that the vessel stays within 250m of the cable route and that vessel-generated noise is restricted to engines and winches only.
7. On approaching the landfall area the cable ship will approach its closest point to shore at the lower end of an incoming tide. No discharges from the vessel will be made from the ship within 5km of landfall. The MMO/ecologist will ensure that mitigation measures are carried out. Sufficient resources will be made

immediately available on the vessel to deal with accidental oil spills including hydraulic hoses bursting etc. and reported to the on-board ecologist.

8. Laying of the cable will be carried out in calm weather to ensure that there is no risk of vessel grounding. The vessel will not carry out the landfall operations in strong westerly winds (>force 3) due to the presence of intertidal reef to the east. If reef is present the cable will be surface paid and reef will not be removed or significantly impacted.
9. The cable lay vessel will at all times be within 500m of the cable lay route in order to minimise disturbance of breeding birds in the surrounding SPA's.

Post-lay Monitoring

Given the location of the cable, buried in marine sediments or laid across reef areas, monitoring of the cable would pose more of an impact on the marine environment than just leaving the cable *insitu* unmonitored. Underwater cables by their nature are passive on/within the seabed. It is not expected that the cable will move, deteriorate or impact on marine/intertidal habitats over time, unless impacted by anthropogenic /storm influence. Problems, if they arise would be expected to result in a loss of signal and subsequent location of the break/damage and repair.

Monitoring of the intertidal could take place to assess the levels of sediment cover over the cable across the intertidal. However, the burial method ensures effective burial and reinstatement within one or a small number of tides depending on weather conditions.

Ecological supervision

In order to ensure the integrity of Annex habitats and additional habitats/species of importance are retained in the vicinity of the planned project, the following is recommended:

- a) An ecologist (appointed by applicant) will be onsite for all terrestrial and intertidal works.
- b) An ecologist will be onsite to observe the making good of site, including back filling and removal of machinery. Images will be taken of the process and submitted to NPWS as part of an ecological report.
- c) A MMO will be present during cable laying and ship cable laying to minimise any impact on marine mammals.
- d)** A marine biologist will be on the lay vessel proximate to Saltees Islands SAC.

Adverse Effects on the conservation objectives of Natura 2000 sites likely to occur from the project (post mitigation)

The conservation objectives of Natura 2000 sites within 15km of the proposed works in addition marine mammal activity were assessed. Given the minor and localised nature of the works, no impacts were foreseen beyond 15km. The proposed works are not in a SPA but will be carried out at the latter end of the over-wintering bird season (Q2-Q3) in an area of existing high disturbance. In the absence of mitigation the project would cause localised disturbance to the Mudflats and Sandflats and the dune systems within Ballyteige Burrow SAC in addition to reef, grey seals and cetaceans during the cable removal and main lay periods. A robust series of mitigation measures are outlined that will see ecological supervision of all aspects of the works on the beach and terrestrial works within Ballyteige Burrow SAC. A marine biologist and MMO will be in place during all vessel works.

In conclusion, no adverse effects are likely on the features of interest or the site specific conservation objectives of Natura 2000 sites within 15km of the proposed cable removal and cable laying operations associated with the proposed fibre optic cable routing within Irish waters and at the landfall at Ballyteige Burrow, individually or in combination with other plans or projects. However, mitigation measures and construction phase controls are required and will be carried out in consultation with an ecologist and NPWS. The proposed project, alone or in combination with other plans or projects will not adversely affect the integrity of the European sites.

Trans-boundary effects

The potential impact footprint of the proposed cable lay is very small with localised temporary non significant impacts only seen during removal or main lay operations. No operational impacts are foreseen unless the cable is damaged and repair will involve localised disturbance of the cable and reburial of the cable with ROV. Removal of the cable if/when required will be subject to an additional licencing process. The cable is not expected to have any transboundary ecological or environmental impacts. The UK element of the project will be covered under UK licencing.

5. Conclusion

The Foreshore Licence application relates to the removal of a disused cable and, installation and operation of the proposed Beaufort fibre optic cable. The planned cable will extend from Kilmore Quay on the south-east coast of Wexford in Ireland to a Branching Unit off the Pembrokeshire coast to include a link to South Wales, and also a link to the west coast of Cornwall. Potential impacts on Natura 2000 sites and cetaceans are outlined. With the implementation of the mitigation measures outlined in the NIS, no adverse effects on water quality, disturbance or underwater noise are foreseen from the construction or operation of the proposed project. No Natura 2000 sites, conservation objectives or qualifying interests will be compromised as a result of the proposed works based on the successful implementation of the mitigation measures outlined. No significant adverse impacts on the conservation objectives of Natura 2000 sites are likely following the implementation of the mitigation measures outlined above.

In conclusion, no adverse effects are likely on the qualifying interests or the site specific conservation objectives of Natura 2000 sites as a result of the installation or operation of the cable, individually or in combination with other plans or projects. However, mitigation measures and construction phase controls are required and will be carried out in consultation with an ecologist. The proposed project will not adversely affect the integrity of Natura 2000 sites.

This report presents a Natura Impact Statement for the proposed laying of a marine fibre optic cable. It outlines the information required for the competent authority to screen for appropriate assessment and to determine whether or not the proposed development, either alone or in combination with other plans or projects, in view of best scientific knowledge and in view of the sites conservation objectives, will adversely affect the integrity of the European site. On the basis of the content of this report, the competent authority is enabled to conduct an Appropriate Assessment and consider whether, either alone or in combination with other plans or projects, in view of best scientific knowledge and in view of the sites conservation objectives, will adversely affect the integrity of the European site.

The proposed project will not adversely affect the integrity of the European site.

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