Natura Impact Statement

Foreshore Licence Application - Celtic Offshore Wind

26 November 2021

1265461

ESB

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Glossary

Term	Definition
Application area	Export cable corridor(s) and portion of the array area which lies within 12 nm
Export cable corridor(s)	Area within which the export cable(s) will lie
Project	The proposed wind farm (export cable corridor(s) and Wind Turbine Generator array area)
Proposed site investigation work	Suite of survey work including geophysical surveys, geotechnical surveys, Metocean surveys and environmental/ecological surveys (detailed in Table 2.1)
Survey area	The proposed wind farm (export cable corridor(s) and Wind Turbine Generator array area) plus appropriate ecological survey buffers
WTG array area	Area within which the wind turbine generators will lie

Abbreviations and Acronyms

Abbreviation	Term in Full
AA	Appropriate Assessment
CPT	Cone Penetration Testing
DAHG	Department of Arts, Heritage and the Gaeltacht
DEHLG	Department of Environment, Heritage and Local Government
EAF	East Atlantic Flyway
ESB	Electricity Supply Board
EIAR	Environmental Impact Assessment Report
FILA	Foreshore Investigation Licence Application
HWM	High Water Mark
INFOMAR	Integrated Mapping for the Sustainable Development of Ireland's Marine Resource
IUCN	International Union for Conservation of Nature
Km	Kilometre
LSE	Likely Significant Effect
MBES	Multi Beam Echosounder
MHWS	Mean High Water Springs
m	Metre
nm	Nautical mile
O&M	Operation and Maintenance (phase)
OWF	Offshore Wind Farm
PCPT	Piezocone Penetration Test
ROI	Republic of Ireland
QI	Qualifying Interest
SAC	Special Area of Conservation
SBP	Sub-Bottom Profiler
SCI	Special Conservation Interest

Abbreviation	Term in Full
SPA	Special Protection Area
Spp.	Species (plural)
SSS	Side Scan Sonar
TTS	Temporary Threshold Shift
UHRS	Ultra-High Resolution Seismic
WTG	Wind Turbine Generator

1. Introduction

1.1. The Project

Celtic Offshore Wind, off the Republic of Ireland (ROI)'s south coast, has been identified as potentially suitable for offshore wind development (Figure 1.1). The Celtic Offshore Wind project is comprised of two projects, namely Celtic One Offshore Wind a fixed foundation project and Celtic Two Offshore Wind a floating foundation project. The suitability criteria considered in identifying this potential development site included available area, water depth, seabed slope, designated nature conservation sites, planning/environmental constraints, access to the national grid, port facilities, navigation channels and cable landing locations.

This report has been prepared on behalf of ESB in support of an application for a Foreshore Licence under Section 3 of the Foreshore Act 1933, as amended, to carry out site investigation works within the Foreshore Licence Application Area as part of the preliminary assessment of the suitability of Celtic One Offshore Wind for a fixed foundation offshore wind development. The overall area the subject of this Foreshore Licence application is 617 km^2.

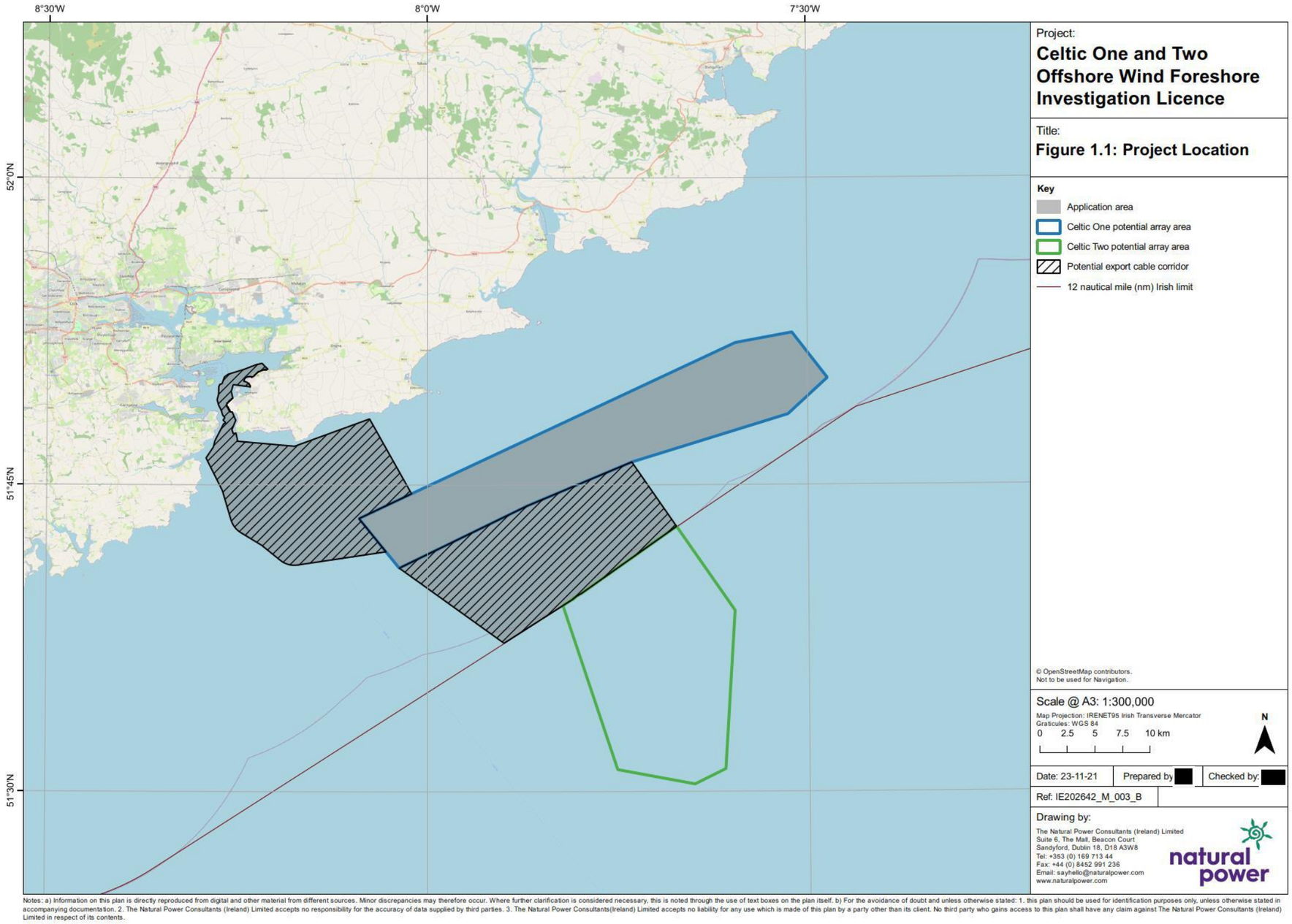

Figure 1.1: The Project area (export cable corridors and WTG array areas) and Application area (the portion of the export cable corridors and WTG array area which lie within 12 nm)

1.2. The Developer

Electricity Supply Board (ESB) are working to identify offshore wind farm sites suitable for the development of both fixed and floating foundation wind turbine technology in Ireland. It is the ambition of the ESB to explore opportunities for large scale wind projects towards commercial operation by 2030, thus contributing to the wider goals of the Irish Government on energy transition.

1.3. The Purpose of this Document

Appropriate Assessment (AA): An assessment carried out under Article 6(3) of the Habitats Directive of the implications of a plan or project, either individually or in combination with other plans and projects, on a Natura 2000 site in view of the site's conservation objectives (DEHLG, 2010).

The purpose of this document, which will accompany a Foreshore Licence Application, is to present the Natura Impact Statement (NIS) in support of the Competent Authority in its AA Determination.

The NIS assesses whether Likely Significant Effects (LSEs), associated with the Site Investigation works, identified in the accompanying Supporting Information: Screening for Appropriate Assessment document (Doc No: 1265460) will either alone, or in combination with other plans or projects, affect the integrity of Natura 2000 sites.

In line with the Department of Environment, Heritage and Local Government (DEHLG), Appropriate Assessment of Plans and Projects in Ireland, Guidance for Planning Authorities (DEHLG, 2010), and following on from the findings of the Supporting Information: Screening for Appropriate Assessment document (Doc No: 1265460), the following stages and steps have been undertaken to provide information for AA:

- Stage 2 – AA
  - Step 1 – preparation of a Natura Impact Statement (NIS; Section 3)

It should be noted that although the Foreshore Licence Application only relates to those activities occurring within the 12 nm limit, the information contained within this report (and associated Supporting Information: for Screening for Appropriate Assessment document (Doc No: 1265460)) covers all work within and outside the 12 nm limit to ensure all potential effects on the Natura 2000 Network are identified and assessed.

1.3.1. **Findings of the Supporting Information for Screening for AA Report**

1.3.1.1. **Marine Ornithology**

For the project alone or in combination with other plans or projects, LSE as a result of the proposed site investigation work (without the use of mitigation measures) could not be ruled out for the Natura 2000 site/effect/SCI combinations shown in Table 1.1. These are therefore progressed to Stage 2 and considered further in Section 3.

Table 1.1: SPA, Effect and SCI combinations progressed to Stage 2

Site	Effect	Special Conservation Interest
Mid-Waterford Coast SPA [IE0004193]	Disturbance and displacement (by above water noise and visual impacts)	[A103] Peregrine falcon (resident) [A346] Chough (resident) [A184] Herring gull (breeding)
	Disturbance and displacement (by above water noise, under water noise and visual impacts)	[A017] Cormorant (breeding)

Site	Effect	Special Conservation Interest	
Cork Harbour SPA [IE0004030]	Disturbance and displacement (by above water noise and visual impacts)	[A048]	Shelduck (wintering)
		[A056]	Shoveler (wintering)
		[A050]	Wigeon (wintering)
		[A054]	Pintail (wintering)
		[A052]	Teal (wintering)
		[A028]	Grey Heron (wintering)
		[A130]	Oystercatcher (wintering)
		[A142]	Lapwing (wintering)
		[A140]	Golden plover (wintering)
		[A141]	Grey plover (wintering)
		[A160]	Curlew (wintering)
		[A157]	Bar-tailed godwit (wintering)
		[A156]	Black-tailed godwit (wintering)
		[A149]	Dunlin (wintering)
		[A162]	Redshank (wintering)
		[A179]	Black-headed gull (wintering)
		[A182]	Common gull (wintering)
		[A183]	Lesser black-backed gull (wintering)
		[A193]	Common tern (breeding)
	Disturbance and displacement (by above water noise, under water noise and visual impacts)	[A069]	Red-breasted merganser (wintering)
		[A004]	Little grebe (wintering)
		[A005]	Great crested grebe (wintering)
		[A017]	Cormorant (wintering)
Dungarvan Harbour SPA [IE0004032]	Disturbance and displacement (by above water noise and visual impacts)	[A142]	Lapwing (wintering)
		[A162]	Redshank (wintering)
	Disturbance and displacement (by above water noise, under water noise and visual impacts)	[A069]	Red-breasted merganser (wintering)
		[A005]	Great crested grebe (wintering)
Helvick Head to Ballyquin SPA [IE0004192]	Disturbance and displacement (by above water noise and visual impacts)	[A103]	Peregrine falcon (resident)
		[A346]	Chough (resident)
		[A188]	Kittiwake (breeding)
		[A184]	Herring gull (breeding)
	Disturbance and displacement (by above water noise, under water noise and visual impacts)	[A017]	Cormorant (breeding)
Ballycotton Bay SPA [IEC004022]	Disturbance and displacement (by above water noise and visual impacts)	[A052]	Teal (wintering)
		[A137]	Ringed plover (wintering)
		[A140]	Golden plover (wintering)
		[A141]	Grey plover (wintering)
		[A142]	Lapwing (wintering)
		[A156]	Black-tailed godwit (wintering)

Site	Effect	Special Conservation Interest	
		[A157]	Bar-tailed godwit (wintering)
		[A160]	Curlew (wintering)
		[A169]	Turnstone (wintering)
		[A182]	Common gull (wintering)
		[A183]	Lesser black-backed gull (wintering)
Ballymacoda Bay SPA [IEC004023]	Disturbance and displacement (by above water noise and visual impacts)	[A050]	Wigeon (wintering)
		[A052]	Teal (wintering)
		[A137]	Ringed plover (wintering)
		[A140]	Golden plover (wintering)
		[A141]	Grey plover (wintering)
		[A142]	Lapwing (wintering)
		[A144]	Sanderling (wintering)
		[A149]	Dunlin (wintering)
		[A156]	Black-tailed godwit (wintering)
		[A157]	Bar-tailed godwit (wintering)
		[A160]	Curlew (wintering)
		[A162]	Redshank (wintering)
		[A169]	Turnstone (wintering)
		[A179]	Black-headed gull (wintering)
		[A182]	Common gull (wintering)
		[A183]	Lesser black-backed gull (wintering)
Sovereign Islands SPA [IEC004124]	Disturbance and displacement (by above water noise, under water noise and visual impacts)	[A017]	Cormorant (breeding)

1.3.1.2. **Marine Mammals**

No LSE as a result of any of the potential effects (auditory injury, disturbance and collision) can be concluded for all of the marine mammal QIs of all of the relevant SACs for the Project both alone, and in combination with other plans/projects.

However, although no LSE was concluded for all of the marine mammal QIs of all 14 relevant SACs for the Project both alone and in combination with other plans/projects, mitigation measures will be implemented to negate non-significant effects of auditory injury resulting from noise arising from survey works. As such, the Natura 2000 site/effect/QI combinations shown in Table 1.2. have been progressed to Stage 2 and considered further in Section 3.

Table 1.2: Marine Mammal SAC, Effect and QI combinations progressed to Stage 2

Site		Effect	Qualifying Interest
[IE0000101]	Roaringwater Bay and Islands	Auditory injury	Harbour porpoise
[UK0030397]	West Wales Marine	Auditory injury	Harbour porpoise
[UK0030396]	Bristol Channel Approaches	Auditory injury	Harbour porpoise
[UK0012712]	Cardigan Bay	Auditory injury	Bottle-nosed dolphin

Site		Effect	Qualifying Interest
[IE0002172]	Blasket Islands	Auditory injury	Harbour porpoise
[UK0013117]	Lleyn Peninsula and the Sarnau	Auditory injury	Bottle-nosed dolphin
[IE0003000]	Rockabill to Dalkey Island	Auditory injury	Harbour porpoise
[UK0030398]	North Anglesey Marine	Auditory injury	Harbour porpoise
[IE0002165]	Lower River Shannon	Auditory injury	Bottle-nosed dolphin
[IE0000328]	Slyne Head Islands	Auditory injury	Bottle-nosed dolphin
[IE0002074]	Slyne Head Peninsula	Auditory injury	Bottle-nosed dolphin
[IE0002998]	West Connacht Coast	Auditory injury	Bottle-nosed dolphin
[IE0000495]	Duvillaun Islands	Auditory injury	Bottle-nosed dolphin
[UK0019808]	Moray Firth	Auditory injury	Bottle-nosed dolphin

2. Proposed Site Investigation and Baseline Survey Work

Pending receipt of the Foreshore Licence, ESB proposes to commence site investigation and baseline survey work on a phased approach in Q2/Q3 2022 with surveys proceeding over the course of the 5-year licence period. The exact dates are to be determined (pending enactment of the Maritime Area Planning (MAP) Bill and the appointment of survey contractors) but, based on the estimated scope of works to be conducted, the duration of each project scope has been estimated. ESB undertook pre-application consultation with the Foreshore Unit within the Department of Housing, Local Government and Heritage (DHLGH) in 2020 and 2021 and will consult with the Foreshore Unit and other relevant stakeholders where appropriate prior to the commencement of the site investigation and survey work outlined within this application.

A summary of the proposed site investigation and baseline survey work is presented in Table 2.1 below. Full details of the proposed site investigation work can be found in the "Site Investigation – Schedule of Works" document (Document No. QS-000316-01-R460-002) which had been prepared to accompany ESB's application for a Foreshore Licence. Proposed (indicative) sampling locations are provided in Appendix A.

Table 2.1: Summary of the proposed site investigation and baseline survey work at Celtic One and Two Offshore Wind

Scope of work (estimated duration[1])	Purpose	Details
Geophysical surveys (3-4 months)	Provide significant seabed and sub-seabed information to assist in the consenting, design and installation phases of the OWF project	The foreseen scope of works will primarily consist of the following surveys but may also incorporate visual surveys (e.g. drop-down video, ROV etc.) pending the development of the project's ground model: Multi beam echosounder (MBES) Sub-bottom profiler (SBP)

1 Subject to change based on variables such as weather conditions onsite, unforeseen seabed conditions, unforeseen obstructions etc.

Scope of work (estimated duration[1])	Purpose	Details
		Ultra-high resolution seismic (UHRS) Side scan sonar (SSS) Magnetometer
Geotechnical surveys (2-3 months)	Provide sufficient geotechnical data to allow the characterisation of the sub-seabed strata in order to refine a 3D soil model of the offshore wind farm site. These details will be used to initiate the design of the WTG and substation foundations and to carry out a comprehensive analysis of the installation methodology	The works will include the following: Seabed Piezocone Penetration Test (PCPT) testing at a pre-defined number of locations within seabed sediments, to refusal Sampling/coring boreholes at a pre-defined number of locations to a nominal depth Vibro-coring at a pre-defined number of locations to a nominal depth Down-the-hole (or similar) Cone Penetration Testing (CPT) inside the boreholes at different depths as dictated by geotechnical conditions Grab sampling at a pre-defined number of locations Trial pits at specified locations within cable pull-in zone Offshore and onshore laboratory testing of recovered samples
Metocean surveys (fixed 12- to 36-month period including the need for site access for data collection and maintenance as needed)	Collect accurate wind, wave, temperature, current and water level information from the project site that will be used to conduct energy yield assessments, feed into offshore sub-structure design and estimate workability range at offshore sites for defining the construction and O&M strategies	The works will include the following: Acoustic Doppler Current Profiler (ADCP) Wave buoys Floating Lidar buoy
Environmental/Ecological surveys (periodically across a 12- to 24-month period)	Collect baseline data which will be used to inform the Environmental Impact Assessment Report (EIAR)	The works may include the following: Benthic sampling Static acoustic monitoring Walkover surveys Ornithology surveys* Marine mammal surveys*

Scope of work (estimated duration[1])	Purpose	Details
		Fisheries, fish and shellfish surveys*
		Shipping and navigation surveys*
		Archaeological survey

** Outside scope of Foreshore Investigation Licence application but included for completeness*

3. Stage 2: Natura Impact Statement (NIS)

Preparation of a Natura Impact Statement (NIS) is required as part of Stage 2 of the Appropriate Assessment process. A NIS is required where it cannot be excluded, on the basis of objective information (without the use of mitigation measures), that proposed works, individually or in combination with other plans or projects, will have a LSE. The purpose of the NIS is to assess the implications of the Project, either alone or in-combination with other projects or plans, on the integrity of Natura 2000 sites where LSE could not be ruled out at Screening stage in view of the sites conservation objectives.

3.1. Marine Ornithology

Each Natura 2000 Site / Impact / SCI combination for which LSE could not be ruled out in the Supporting Information for Screening for AA document (Doc No: 1265460) has been assessed further in Tables 3.1 to 3.5.

A table of projects and plans considered as part of the In-Combination Assessment is provided in Appendix C.

Table 3.1: Assessment of the potential for an adverse effect on site integrity for the Cork Harbour SPA both alone and in-combination with other plans and projects

Special Conservation Interest	Conservation Objectives	Effect	Attribute	Target	Assessment
[A048] Shelduck [A056] Shoveler [A050] Wigeon [A054] Pintail [A052] Teal [A028] Grey Heron [A130] Oystercatcher [A142] Lapwing [A140] Golden plover [A141] Grey plover [A160] Curlew [A157] Bar-tailed godwit [A156] Black-tailed godwit [A149] Dunlin [A162] Redshank [A179] Black-headed gull [A182] Common gull [A183] Lesser black-backed gull	To maintain the favourable conservation condition of designated bird species in the Cork Harbour SPA.	Disturbance and displacement: Visual Above water noise	Distribution	No significant decrease in the range, timing or intensity of use of areas by wintering non-diving birds, other than that occurring from natural patterns of variation	**Wintering non-diving birds:** Waders and wildfowl show different responses to disturbance depending on the species, the type of disturbance, the duration and context of their surrounding habitat, and activity they are undertaking (Cutts *et al.* 2013, Goss-Custard *et al.*, 2019). Species like wigeon may be highly sensitive to some disturbance (Mathers *et al.*, 2000), whilst dunlin and ringed plover exhibit low sensitivity to audio and visual disturbances (Cutts *et al.,* 2013). Other species show varied responses depending on the stimuli, for example redshank and knot exhibit high disturbance responses to noise, but low or tolerated responses to visual disturbance (Cutts *et al.,* 2013). Gulls display varied behaviour to disturbance, depending on the stimuli, but often gulls can tolerate a degree of disturbance and re-settle easily depending on the duration (Morrison & Allcorn, 2006). This SPA is in close proximity to a high amenity area and the species would be accustomed to a high level of above water noise and visual disturbance. Additionally, the level of noise expected from survey activities above and below water is not considered to be significantly greater than existing vessel noise. **Mitigation:** A precautionary approach to ensure prevention of significant adverse effects to the conservation objectives of the SCIs at this site has been followed and mitigation applied. Given the variation in disturbance sensitivity of the wintering assemblages of birds, a restriction to works within 1 km of the SPA between the months of September to March inclusive will eliminate the effect of noise or visual disturbance and prevent a pathway occurring that may result in a potential adverse effect to the wintering bird assemblages at this SPA. Therefore, with the proposed mitigation measures, no potential adverse impacts to any conservation objectives are identified for these wintering SCIs. Therefore, it is concluded that there will be no adverse effects upon site integrity as a result of the proposed works either alone or in combination with other plans or projects
[A069] Red-breasted merganser [A004] Little grebe [A005] Great crested grebe [A017] Cormorant	To maintain the favourable conservation condition of designated bird species in the Cork Harbour SPA.	Disturbance and displacement: Visual Above water noise Below water noise	Distribution	No significant decrease in the range, timing or intensity of use of areas by wintering diving birds, other than that occurring from natural patterns of variation	**Wintering diving birds:** Birds which forage underwater are vulnerable to underwater noise effects in addition to above water noise and visual effects. Red-breasted mergansers in particular are notably sensitive to the disturbance associated with shipping traffic (Fleissbach *et al.*, 2019) Consequently, they may be more likely to avoid areas associated with shipping activity. **Mitigation:** As the levels of above and below water noise and visual impacts expected from survey activities are not considered to be much greater than those resulting from existing vessel noise from vessels transiting through the area, a precautionary buffer restricting works within 1 km of the Cork Harbour SPA from September to March will serve to eliminate any potential adverse impacts from disturbance and displacement effects.

Special Conservation Interest	Conservation Objectives	Effect	Attribute	Target	Assessment
					Although it is acknowledged that low frequency noise can travel further underwater than in air, the 1 km buffer is deemed precautionary for eliminating disturbance to diving birds or foraging displacement on the basis that the surveys are temporary, localised and short in duration. With proposed mitigation measures, no potential adverse impacts to any conservation objectives are identified for these wintering SCIs. Therefore, it is concluded that there will be no adverse effect upon site integrity as a result of the proposed works either alone or in combination with plans or projects.
[A193] Common tern	To maintain the favourable conservation condition of designated bird species in the Cork Harbour SPA.	Disturbance and Displacement: Visual Above water noise	Breeding population abundance	No significant decline in number	**Breeding common tern:** Common terns breed within Cork Harbour SPA on various artificial structures, notably derelict steel barges and the roof of a Martello Tower, and in particular around Ringaskiddy in the south west of the SPA. Cork Harbour contains highly industrialised areas and high vessel traffic routes, with common tern colonies described as experiencing “extraordinarily high levels of anthropogenic disturbance to which the birds appear habituated” (RPS, 2014). This disturbance is further described to include “loud, irregular noise from humans, machinery, vehicles and vessels and the presence of people in high-visibility clothing”, road traffic within 100 m, human voices, pedestrians and very large vessels within 30 m. Other studies, from less disturbed areas, suggest that breeding common terns may be disturbed on approach to their colonies and such disturbance can have consequences such as reduced breeding success. The distance or stimulus for disturbance can depend on several factors (Cabot & Nisbet, 2013). Buffer sizes described to eliminate disturbance to common terns range from 100 m to 200 m (Erwin *et al.*, 1989, Rogers & Schwikert 2002, Althouse *et al.*, 2012). Foraging common terns are considered to be of low sensitivity to disturbance from vessel traffic and associated activities (Garthe & Hüppop, 2004; Bradbury *et al.*, 2014). Indeed, common terns are known to forage where vessel traffic levels are already high (Wilson *et al.*, 2014). **Mitigation:** Given the high levels of anthropogenic activity around common tern breeding colonies and that the nature of the surveys proposed are highly localised, temporary and short in duration, proposed works are considered not to increase visual and acoustic disturbance levels significantly above existing baselines. Despite this, to ensure no adverse effects to breeding common terns, mitigation in the form of 200 m buffers around identified common tern breeding colony locations in the Cork Harbour SPA is considered appropriate. No survey works will be undertaken within these buffer areas during the period April to July, inclusive to eliminate any potential disturbance to breeding birds (Althouse *et al.* 2019, Rogers and Schwikert 2002, Erwin 1989). With proposed mitigation measures, no potential adverse impacts to any conservation objectives are identified for this breeding SCI. Therefore, it is concluded that no adverse effects upon site integrity as a result of the proposed works either alone or in combination with other activities and developments.
			Distribution: breeding colonies	No significant decline in area	
			Disturbance at breeding site	Human activities should occur at levels that do not adversely affect the breeding tern populations	

Table 3.2: Assessment of the potential for an adverse effect on site integrity for the Ballycotton Bay SPA both alone and in combination with other plans and projects

Special Conservation Interest	Conservation Objectives	Effect	Attribute	Target	Assessment
[A050] Wigeon [A052] Teal [A137] Ringed plover [A140] Golden plover [A141] Grey plover [A142] Lapwing	To maintain the favourable conservation condition of designated bird species in the Ballymacoda Bay SPA.	Disturbance and displacement: Visual Above water noise	Number and range of areas used by waterbirds	There should be no significant decrease in the numbers or range of areas used by wintering bird species, other than that occurring from natural patterns of variation	**Wintering birds:** Wintering estuarine SCIs from Ballymacoda Bay SPA may also utilise estuarine habitats within Cork Harbour (parts of the Cork Harbour SPA), as individuals move between these two relatively close sites (15 km separation). Parts of the Cork Harbour SPA overlap or lie within 1 km of proposed works and, as such, there is the potential for proposed works to have ex-situ impacts upon SCIs from Ballymacoda Bay SPA. The majority of Ballymacoda Bay SPA SCIs are, however, also SCIs for Cork Harbour SPA and ex situ impacts upon these SCIs are therefore assessed for Cork Harbour SPA (and mitigated accordingly). Three

Special Conservation Interest	Conservation Objectives	Effect	Attribute	Target	Assessment
[A144] Sanderling [A149] Dunlin [A156] Black-tailed godwit [A157] Bar-tailed godwit [A160] Curlew [A162] Redshank [A169] Turnstone [A179] Black-headed gull [A182] Common gull [A183] Lesser black-backed gull					SCIs of Ballymacoda Bay SPA are, however, not SCIs of Cork Harbour SPA, namely ringed plover, turnstone and sanderling. As such these SCIs may experience ex-situ impacts should they forage in parts of Cork Harbour SPA. Two of these species are noted components of Cork Harbour SPA's Natura 2000 Form (51 wintering ringed plover and 99 wintering turnstone). All three species are considered to be extremely tolerant and habituate rapidly to anthropogenic disturbance (Cutts *et al.,* 2013). **Mitigation:** A precautionary approach to ensure prevention of significant adverse ex situ effects to the conservation objectives of the SCIs at this site has been followed and mitigation applied. A restriction to works within 1 km of Cork Harbour SPA between the months of September to March inclusive will eliminate the effect of noise or visual disturbance and prevent a pathway occurring that may result in a potential adverse effect to the wintering bird assemblages at this SPA. With the proposed mitigation measures, no potential adverse impacts to any conservation objectives are identified for these wintering SCIs. Therefore, it is concluded that there will be no adverse effects upon site integrity as a result of the proposed works either alone or in combination with other plans or projects

Table 3.3: Assessment of the potential for an adverse effect on site integrity for the Ballymacoda Bay SPA both alone and in combination with other plans and projects

Special Conservation Interest	Conservation Objectives	Effect	Attribute	Target	Assessment
[A050] Wigeon [A052] Teal [A137] Ringed plover [A140] Golden plover [A141] Grey plover [A142] Lapwing [A144] Sanderling [A149] Dunlin [A156] Black-tailed godwit [A157] Bar-tailed godwit [A160] Curlew [A162] Redshank [A169] Turnstone [A179] Black-headed gull [A182] Common gull [A183] Lesser black-backed gull	To maintain the favourable conservation condition of designated bird species in the Ballymacoda Bay SPA.	Disturbance and displacement: Visual Above water noise	Number and range of areas used by waterbirds	There should be no significant decrease in the numbers or range of areas used by wintering bird species, other than that occurring from natural patterns of variation	**Wintering birds:** Wintering estuarine SCIs from Ballymacoda Bay SPA may also utilise estuarine habitats within Cork Harbour (parts of the Cork Harbour SPA), as individuals move between these two relatively close sites (15 km separation). Parts of the Cork Harbour SPA overlap or lie within 1 km of proposed works and, as such, there is the potential for proposed works to have ex-situ impacts upon SCIs from Ballymacoda Bay SPA. The majority of Ballymacoda Bay SPA SCIs are, however, also SCIs for Cork Harbour SPA and ex situ impacts upon these SCIs are therefore assessed for Cork Harbour SPA (and mitigated accordingly). Three SCIs of Ballymacoda Bay SPA are, however, not SCIs of Cork Harbour SPA, namely ringed plover, turnstone and sanderling. As such these SCIs may experience ex-situ impacts should they forage in parts of Cork Harbour SPA. Two of these species are noted components of Cork Harbour SPA's Natura 2000 Form (51 wintering ringed plover and 99 wintering turnstone). All three species are considered to be extremely tolerant and habituate rapidly to anthropogenic disturbance (Cutts *et al.,* 2013). **Mitigation:** A precautionary approach to ensure prevention of significant adverse ex situ effects to the conservation objectives of the SCIs at this site has been followed and mitigation applied. A restriction to works within 1 km of Cork Harbour SPA between the months of September to March inclusive will eliminate the effect of noise or visual disturbance and prevent a pathway occurring that may result in a potential adverse effect to the wintering bird assemblages at this SPA. With the proposed mitigation measures, no potential adverse impacts to any conservation objectives are identified for these wintering SCIs. Therefore, it is concluded that there will be no adverse effects upon site integrity as a result of the proposed works either alone or in combination with other plans or projects

Table 3.4: Assessment of the potential for an adverse effect on site integrity for the Helvick Head to Ballyquin SPA both alone and in combination with other plans and projects

Special Conservation Interest	Conservation Objectives	Effect	Attribute	Target	Assessment
[A188] Kittiwake [A184] Herring gull	To maintain the favourable conservation condition of designated bird species in the Helvick Head to Ballyquin SPA.	Disturbance and displacement: Visual Above water noise	Population dynamics, species range and habitat availability.	Population dynamics data on the species concerned indicate that they are maintaining themselves on a long-term basis as viable components of their natural habitats; the natural ranges of the species are neither being reduced nor are likely to be reduced for the foreseeable future; and; there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.	**Breeding Seabirds:** Breeding Kittiwake and herring gull from the Helvick Head to Ballyquin SPA may forage within the Application area and thereby experience potential impacts in association with proposed works. Kittiwake and herring gull show comparatively low sensitivities to vessel disturbance (Fleissbach *et al.*, 2019). Furthermore, this SPA lies adjacent to Dungarvan town, an active port with regular vessel traffic. The SPA is also subject to aquaculture activities, with an extensive oyster farm present within much of the south-central region of the SPA. As such, the species present are likely to be accustomed to a moderate to high levels of noise and visual disturbance associated with anthropogenic activities. The nature of the surveys proposed are highly localised, temporary and short in duration and the level of visual disturbance and above water noise expected from survey activities is not considered to be significantly greater than existing levels. Therefore, it is concluded that there will be no adverse effects upon site integrity as a result of the proposed works either alone or in combination with other plans or projects **Mitigation:** None proposed.
[A017] Cormorant	To maintain the favourable conservation condition of designated bird species in the Helvick Head to Ballyquin SPA.	Disturbance and displacement: Visual Above water noise Below water noise	Population dynamics, species range and habitat availability.	Population dynamics data on the species concerned indicate that they are maintaining themselves on a long-term basis as viable components of their natural habitats; the natural ranges of the species are neither being reduced nor are likely to be reduced for the foreseeable future; and; there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.	**Breeding birds:** Breeding cormorants from the Helvick Head to Ballyquin SPA may forage within the Application area and thereby experience potential impacts in association with proposed works. Cormorant is considered to be of moderate sensitivity to disturbance from vessel traffic and associated activities (Garthe & Hüppop, 2004; Bradbury *et al.*, 2014). However, this SPA lies adjacent to Dungarvan town, an active port with regular vessel traffic. The SPA is also subject to aquaculture activities, with an extensive oyster farm present within much of the south-central region of the SPA. As such, the species present are likely to be accustomed to a moderate to high levels of noise and visual disturbance associated with anthropogenic activities. The nature of the surveys proposed are highly localised, temporary and short in duration and the level of visual disturbance and underwater and above water noise expected from survey activities is not considered to be significantly greater than existing levels. Therefore, it is concluded that there will be no adverse effects upon site integrity as a result of the proposed works either alone or in combination with other plans or projects **Mitigation:** None proposed.

Table 3.5: Assessment of the potential for an adverse effect on site integrity for the Sovereign Islands SPA both alone and in combination with other plans and projects

Special Conservation Interest	Conservation Objectives	Effect	Attribute	Target	Assessment
[A7] Cormorant	To maintain the favourable conservation condition of designated bird species in the Sovereign Islands SPA.	Disturbance and displacement: Visual Underwater noise Above water noise	Population dynamics, species range and habitat availability.	Population dynamics data on the species concerned indicate that they are maintaining themselves on a long-term basis as viable components of their natural	**Breeding birds:** Breeding cormorants from the Sovereign Islands SPA may forage within the Application area and thereby experience potential impacts in association with proposed works. Given the distance between the Application area and the SPA (14 km) and the foraging range of cormorants (mean max foraging range = 25 km; Woodward *et al*., 2019), foraging locations within the Application area are likely to be toward the outer peripheries used by cormorants from the Sovereign Islands SPA and unlikely to constitute the core areas

Special Conservation Interest	Conservation Objectives	Effect	Attribute	Target	Assessment
				habitats; The natural ranges of the species are neither being reduced nor are likely to be reduced for the foreseeable future; and There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.	used by the sovereign Islands SPA population. Cormorant is considered to be of moderate sensitivity to disturbance from vessel traffic and associated activities (Garthe & Hüppop, 2004; Bradbury *et al.*, 2014). Cormorants breeding within the SPA are already likely to be subject to anthropogenic disturbance within the SPA (vessel traffic), and, given the highly localised and temporary nature of the proposed surveys, are unlikely to be adversely affected by additional disturbance generated by the proposed surveys. Breeding cormorant using marine foraging sites within the Application Area, but outside the SPA, are considered not to be adversely impacted by any impacts associated with proposed site investigation works. Therefore, it is concluded that there will be no adverse effects upon site integrity as a result of the proposed works either alone or in combination with other plans or projects **Mitigation:** None proposed.

3.2. Marine mammals

Although no LSE was concluded for any of the marine mammal QIs of all relevant SACs for the proposed site investigation works both alone and in combination with other plans/projects, mitigation measures will be implemented to negate potential effects of auditory injury resulting from noise arising from survey works on the QIs of relevant SACs.

Mitigation measures which the proposed site investigation works will implement include pre-start monitoring and procedures for ramp-up, survey line or station changes and breaks in sound output (as per section 4.3.4 of DAHG, 2014).

With (or without) these mitigation measures, the proposed site investigation work will not adversely affect the conservation objectives any of the relevant SACs with marine mammal QIs, either alone or in combination with other plans or projects.

Therefore, it can be concluded that there is no adverse effect on the integrity of any of the relevant SACs with marine mammal QIs as a result of the proposed site investigation work, either alone or in combination with other plans or projects.

4. Summary of NIS

The assessment presented in this NIS has concluded that following application of suitable mitigation measures the site investigation work, either alone or in-combination with other plans or projects, will not have an adverse effect on the integrity of any Natura 2000 site.

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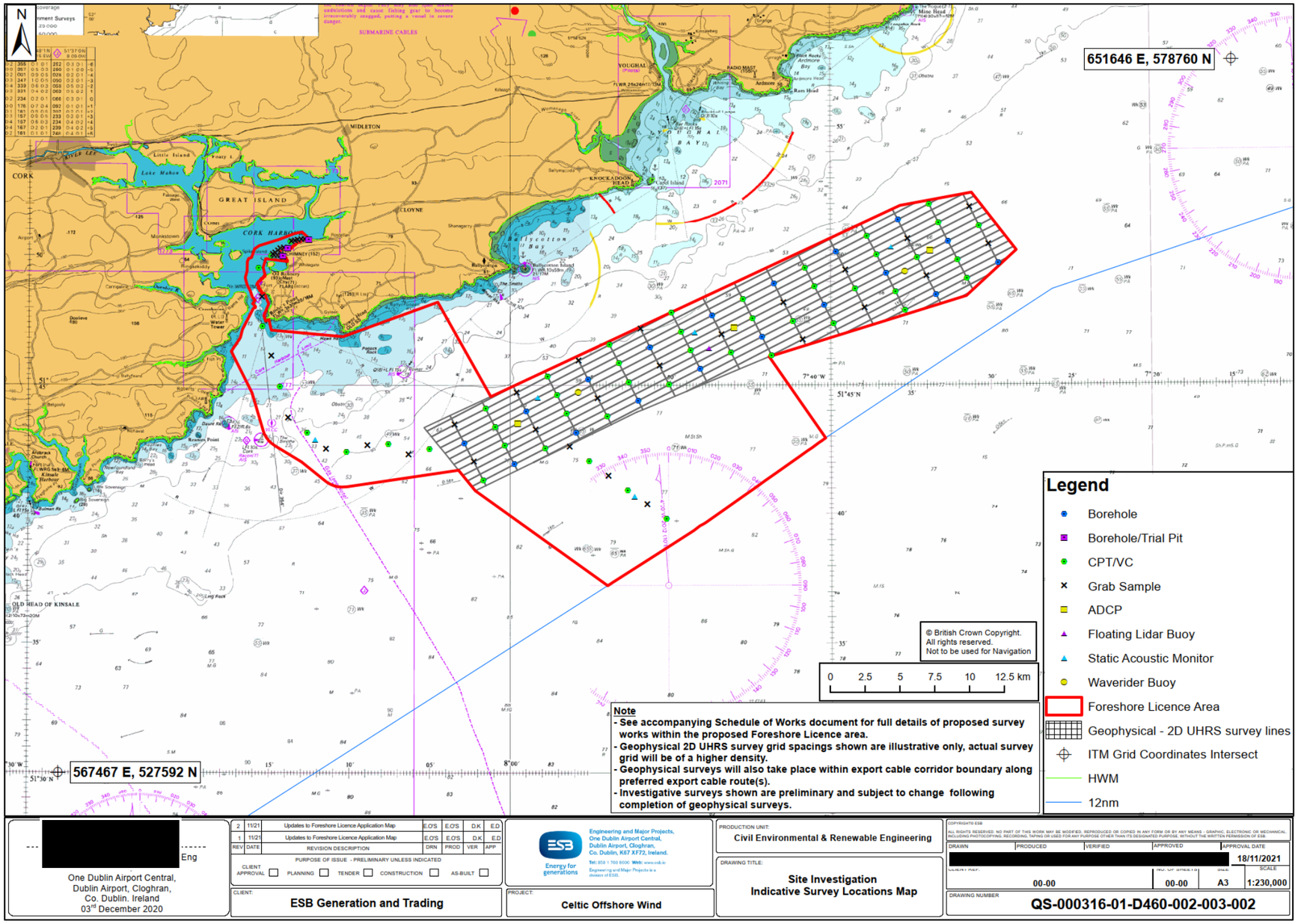
Appendices

Appendix A - Proposed (Indicative) Sampling Locations



Appendix B - Summary of noise sources

From Site Investigation – Schedule of Works document (Document No. QS-000316-01-R460-002-)

Table B.1: Summary of noise sources

Noise Source	Typical Frequency	Typical Sound Pressure Level (dB re 1µPa @ 1m)
Survey Vessel	maximum 100 kHz	118 -145 dB
MBES	400 to 700 kHz	200-228 dB
SSS	300 to 900 kHz	228 dB
SBP – Pinger/Chirp	2 to 16 kHz	200 dB
UHRS – Boomer	0.3 – 2.5 Hz	212 – 215 dB
UHRS – Sparker	0.3 – 1.5kHz	226 dB
Rotary Boreholes	maximum 600 Hz (low frequency)	145-190 dB
CPT	-	118 -145 dB
Vibrocorer	50 Hz (low frequency)	188

Appendix C - Plan/Project List for In-Combination Assessment

The following list is based on plans/projects that may have similar activities occurring over a similar timescale to those assessed as part of the project alone and that may affect SCIs or QIs which are present within the vicinity of the proposed Works (i.e. south coast of Ireland).

Table 1: Plan/project list for in-combination assessment

Plan/project	County	Description
Offshore Wind Farms (OWF) and Subsea Cables and Pipelines		
Codling Wind Park Ltd	Wicklow	Codling Wind Park - Site Investigation Licence Application to inform the design of a possible wind farm at this site
Codling Wind Park II Ltd	Wicklow	CWPII original foreshore lease for OWF
Sure Partners Site Investigation at Arklow Bank	Wicklow	Site Investigations to inform the engineering and design of an offshore wind farm
Energia Site Investigation	Wexford	Site Investigations to inform on possible construction of a wind farm off the Wexford coast
Hibernian Wind Power	Wexford	Foreshore licence application to undertake surveys and investigations in order to further assess the site and seabed, in order to select an optimum route for the submarine electricity cables required for the development of an offshore wind farm to acquire baseline data to allow cable design and the development of cable installation methodologies, to acquire baseline data to optimise the wind farm layout design and finalise offshore foundation locations, to acquire baseline data on the wind resource and baseline information for environmental studies of the area
Eir	Waterford	Site investigation works for the proposed Eir fibre optic cable
Energia- Application for Site Investigation Licence for Wind farm off Helvick Head	Waterford	Geophysical, Geotechnical, Archaeological, Ecological, Oceanographic and Meteorological investigations to determine optimum design for wind farm, cabling and associated structures
SSE Renewables Celtic Sea	Waterford	Geophysical, Geotechnical and Environmental Site Investigation works
Helvick Head OWF	Cork	Site Investigations to inform the engineering and design of an offshore wind farm. Cable route option to Cork Harbour.
Eirgrid PLC – Ballinwilling Strand, Redbarrn Beach and Claycastle Beach	Cork	Foreshore Licence application for geophysical marine survey works
Irish Water – Ballycotton	Cork	Foreshore Licence application for ground investigation works and sampling
Simply Blue Emerald Site Investigations for	Cork	Site investigations to inform the design of a possible deep-water offshore wind power generation project off Kinsale

Plan/project	County	Description
possible Floating Offshore Wind project off Kinsale		
Site Investigation to assess wind farm of Inis Ealga	Cork	Site Investigation to assess the proposed Inis Ealga site and associated seabed Investigations will include Geotechnical, Geophysical, Archaeological, Benthic, Intertidal, Bird, Mammal, Wind and Metocean Surveys
Port and Harbour Activities		
Bord Gais Eireann - Whitegate	Cork	Foreshore Licence application for an effluent discharge pipeline
Irish Water Storm Outfall Pipe at Gibbon's Quay	Cork	40 m extension of an existing public storm water outfall pipe to move the outfall location from the High Water Mark (HWM) to below Mean Low Water Spring (MLWS)
Irish Water Whitegate	Cork	Marine Site Investigation works associated with the construction of a proposed Waste Water Treatment Plant in Whitegate - Aghada. This treatment plant will include the construction of a sea outfall, approximately 500 metres long
Irish Water Site Investigation for Storm Water Outfall Extension	Cork	Site Investigation - a geotechnical investigation to inform the proposed extension of a storm water outfall at Gibbon's Quay
Comharchumann Chleire Teo	Cork	Foreshore licence application for the installation of outfall pipes from a proposed distillery development
Cork City Council – Flood Defence Works	Cork	Foreshore application for flood defence works and a public amenity area
Department of Defence- Alexandra Breakwater Repairs	Cork	Foreshore Consent application for the carrying out of remediation works to the Alexandra Breakwater
Ballycotton Coastal Protection - Pierce Flynn	Cork	Foreshore application for the construction of a rock armour revetment
Cork County Council Dredging at Courtmacsherry Pier, Cork	Cork	Maintenance dredging at Courtmacsherry Pier
Ahakista Community Association Ltd	Cork	Foreshore Lease application for the installation of a floating pontoon attached to Ahakista Pier
Cork County Council Youghal Pontoon	Cork	Foreshore application for the installation of floating pontoon and visitor moorings

Plan/project	County	Description
Cork County Council-Dredging at Courtmacsherry Pier	Cork	The bed under the footprint of the pontoon and the immediate area are to be dredged to -7.0mODM. Dredge spoil is to be removed off-site for disposal. Pontoon will be removed temporarily for the duration of the works
Cork County Council Dredging at Glengarriff Pier	Cork	Dredging of the bed around the western and southern sides of the pontoon at Glengarriff Pier to -5.00mODM. Dredge spoil to be removed off-site for disposal. Pontoon will be removed temporarily for the duration of the works
Cove Sailing Club	Cork	Foreshore lease application for the installation of a 74-berth marina with access platform, gangway and associated infrastructure
Maintenance dredging at Reen, Skibbereen	Cork	Dredging around pier at Reen, Skibbereen
Skibbereen Rowing Club	Cork	Construction of concrete wall, floating pontoon and three gangways

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