

**APPROPRIATE ASSESSMENT  
&  
NATURA IMPACT STATEMENT**

**as required under Article 6(3) of the Habitats Directive  
(Council Directive 92/43/EEC)  
of  
Schull Harbour Development  
Pl. Ref 06/1375**

**On the adjacent Roaringwater Bay and Islands  
candidate Special Area of Conservation  
Site Code 00101**

**23<sup>rd</sup> June 2015**



**Moore Group Environmental Services  
On behalf of**

**Schull Community Harbour Development Company  
& Cork County Council**

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## 1. Introduction

### 1.1 Background – Appropriate Assessment

This Appropriate Assessment has been undertaken for a revised proposal with regard to a development in Schull Harbour comprising reclamation of an area of foreshore, construction of a car park and marina facilities building, a 235 berth marina, floating breakwaters, extension of the storm wall on the existing Schull Pier and additional berthage for existing fishing vessels.

The present proposed project is a scaled down version of the same project in the same location for which Cork County Council granted planning permission with conditions on 12/04/2007 (Pl. Reg. No. 06/1375).

A detailed description of the project is outlined in Section 2.1.1.

The Habitats Directive (Council Directive 92/43/EEC) requires that all plans and projects must be initially screened for potential impact on Special Areas of Conservation (SACs) or Special Protection Areas (SPAs). This process aims to establish whether a full Appropriate Assessment as required by Article 6 of the Directive is required in any particular case, see Appendix A.

Appropriate Assessment (AA) is an assessment carried out under Article 6(3) of the Habitats Directive. Article 6(3) of the Habitats Directive states:

*Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent 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.*

The AA process is divided into four stages:

### Stage 1: Screening

The process which identifies that likely impacts upon a Natura 2000 Site, either alone or in combination with other projects or plans, and considers whether these impacts are likely to be significant.

### Stage 2: Appropriate Assessment

The consideration of the impact of the project or plan on the integrity of the Natura 2000 Site, either alone or in combination with other projects or plans to the sites structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts.

### Stage 3: Assessment of Alternative Solutions

The process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site; and

### Stage 4: Assessment where Adverse Impacts Remain

An assessment of compensatory measures where, in the light of an assessment of Imperative Reasons of Overriding Public Interest (IROPI), it is deemed that the project or plan should proceed.

## **1.2 Background - The Habitats and Birds Directives**

The Habitats Directive (Council Directive 92/43/EEC of 21 May 1992) on the conservation of natural habitats and of wild fauna and flora, is the main legislative instrument for the protection and conservation of biodiversity in the EU. Under the Directive member States are obliged to designate Special Areas of Conservation (SACs) which contain habitats or species considered important for protection and conservation in a European Union context.

The Birds Directive (Council Directive 79/409/EEC as codified by 2009/147/EC) on the conservation of wild birds, is concerned with the long-term protection and management of all wild bird species and their habitats in the EU. Among other things, the Directive requires that Special Protection Areas (SPAs) be established to protect migratory species and species which are rare, vulnerable, in danger of extinction, or otherwise require special attention. Special Areas of Conservation (SACs) designated under the Habitats Directive and Special Protection Areas, designated under the Birds Directive, form a pan-European network of protected sites known as Natura 2000. The Habitats Directive sets out a unified system for the protection and management of SACs. Article 6(3) and 6(4) of the Habitats Directive sets out key elements of the system of protection including the requirement for Appropriate Assessment of plans and projects

(see Appendix A). Article 6(3) of the Habitats Directive requires an appropriate assessment of any plan or project likely to have a significant effect on an SAC. The recent ECJ ruling against Ireland in Case 418/04 EC Commission V Ireland found that Ireland had incorrectly transposed the Birds Directive as well as its implementation of relevant articles of the Habitats Directive by not providing explicitly for appropriate assessment of land use plans, (as opposed to projects), in the European Communities (Natural Habitats) Regulations, 1997. The effect of the judgment is that there is now a requirement for screening and possible appropriate assessment of plans and projects that may negatively impact areas designated as Natura 2000 sites (SACs and SPAs).

## 2. Appropriate Assessment Screening - Stage 1

Screening has been undertaken in fulfillment of the requirements of the Habitats Directive and taking into account the Department of the Environment, Heritage and Local Government's Guidance on Appropriate Assessment (Rev Feb 2010). This assessment has been carried out by Ger O'Donohoe (B.Sc.; 1993, M.Sc.; 1999), senior ecologist and environmental manager with Moore Group. Ger has 17 years experience in environmental impact assessment in terrestrial and aquatic environments and has completed numerous Appropriate Assessment Screening and Phase 2 AA Assessment with regard to LAPs, National Road projects, Powerline projects, Mixed Use developments, Marinas, Wastewater Discharge to the marine environment and wind farms.

### 2.1. Methodology

Screening has been undertaken in accordance with the European Commission's Guidance on Appropriate Assessment (European Commission, 2001) which comprises the following steps:

1. Description of the Project.
2. Identification of Natura 2000 sites potentially affected by the Project.
3. Identification and description of individual and cumulative impacts likely to result from the Project.
4. Assessment of the significance of the impacts identified on the conservation objectives of the site(s).
5. Exclusion of sites where it can be objectively concluded that there will be no significant impacts on conservation objectives.

### **2.1.1. Description of the Proposed Project**

The following is a description of the development on the foreshore:

#### **At the existing Schull Pier**

The storm wall on the existing Schull Pier will be extended and raised. New pier furniture and services will be provided as part of the works to the pier. An armoured breakwater projecting c. 270m eastwards from the eastern end of the existing Schull Pier will be constructed on the foreshore. 178m of linear heavy duty floating pontoons will be installed on the east side of the existing pier. An additional 20 pontoon berths will be provided for small inshore fishing vessels. The pontoons will be held in position using steel piles and access will be provided by a 20m aluminium gangway. Floating pontoons will be installed on the northern face of the existing pier. The pontoons will provide 10 berths for the inshore fishing fleet. The pontoons will be held in position using steel piles and access will be provided by the existing steps on the pier.

#### **At the North Shore of the Harbour**

An area of land c. 0.53 hectares will be reclaimed from the foreshore. A car park, marina facilities building and concrete slipway will be constructed on the reclaimed foreshore. The car park will provide 95 parking spaces and will be fronted by a sloping armoured revetment. The marina facilities building will provide sanitary and changing facilities to marina users. An office will also be located within the building. A 235 berth marina, with access platform, gangway, floating breakwaters and associated infrastructure will be installed to the south of the reclaimed foreshore. The marina will be constructed of floating concrete pontoons and held in position using steel piles. A services berth providing diesel refuelling facilities and a sewage removal system will be provided as part of the works.

### **2.1.2. Identification of Natura 2000 sites**

The marine environment in which the proposed development is located is within the Roaringwater Bay and Islands Special Area of Conservation (Site Code 000101).

#### **Roaringwater Bay and Islands SAC (Site Code 000101)**

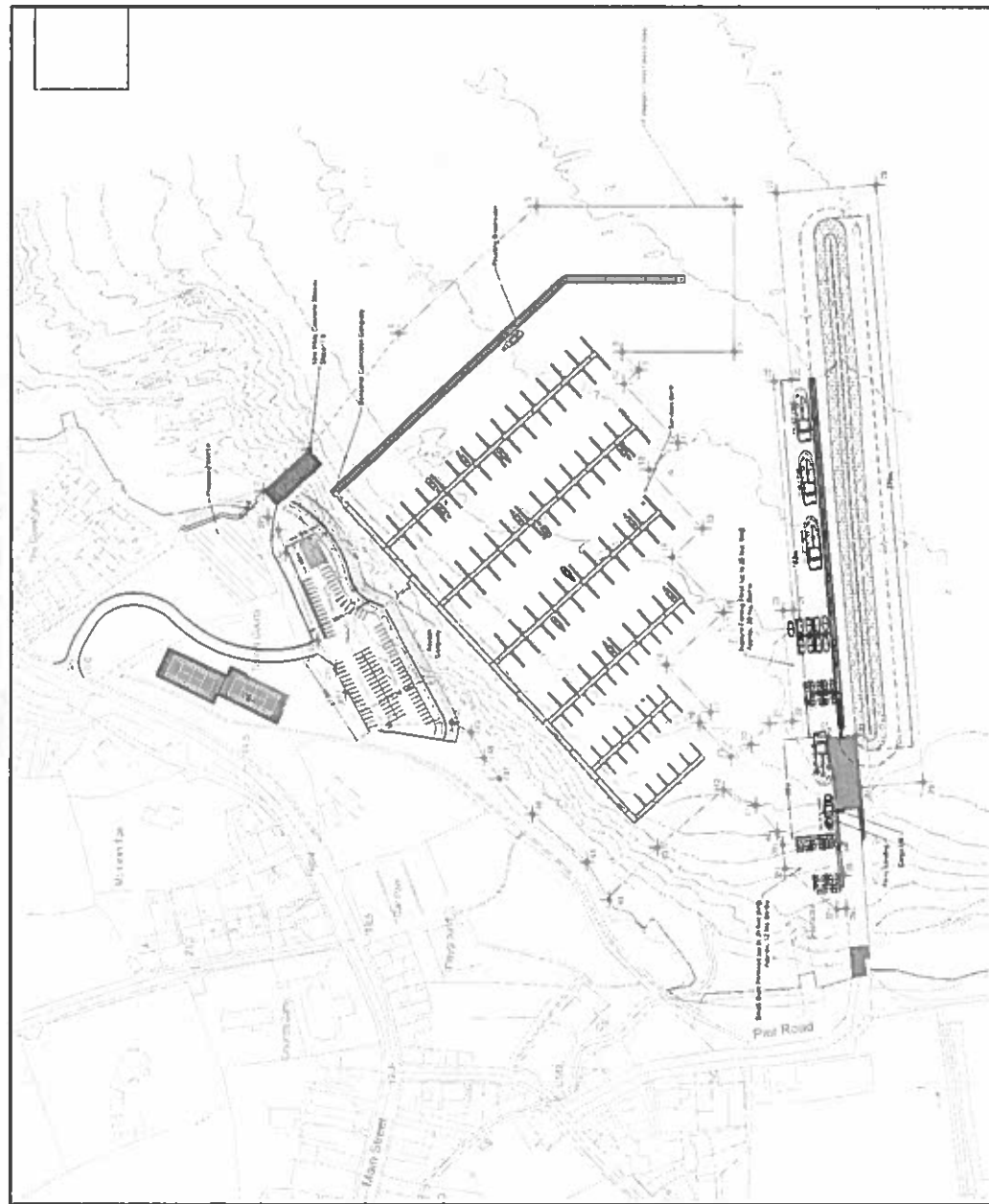
Roaringwater Bay, Co. Cork, is a wide shallow bay located on the southwest coast. The site includes the immediate coastline on the mainland from Long Island to Baltimore together with the whole bay and most of the islands. Bedrock is composed of a series of Devonian Old Red Sandstone reefs that run parallel to troughs of Devonian Carboniferous marine clastics in a north east/south west direction. These

reefs emerge to form the islands on the south side of the bay and within the bay. Generally the coast is low-lying but the southern edge rises, in line with the hills behind Baltimore, to culminate in a summit of 160m on Cape Clear.

The bay itself has a wide variety of reef and sediment habitats, subject to a range of wave exposures and tidal currents, and has been selected for three marine habitats listed under the EU Habitats Directive, i.e. large shallow inlets and bays, marine caves and reefs. The shores of the bay range from the exposed, rocky shores of South Sherkin Island, to the sheltered rock, sand and mud communities of the Inner Bay and estuarine communities where the rivers enter the bay.

Roaringwater Bay and Islands is a site of exceptional conservation importance, supporting diverse marine and terrestrial habitats, five of which are listed under the EU Habitats Directive. The site is also notable for the presence of Otter and Grey Seal plus a number of rare species and also supports important sea bird colonies.

The layout of the proposed development is presented in Figure 1 and the location of the development area in the context of the Natura 2000 site is presented in Figure 2 and further detail on each site is included in the National Parks and Wildlife Service's Site Synopsis in Appendix B.



**Figure 1. Layout of the proposed development in Schull Harbour.**

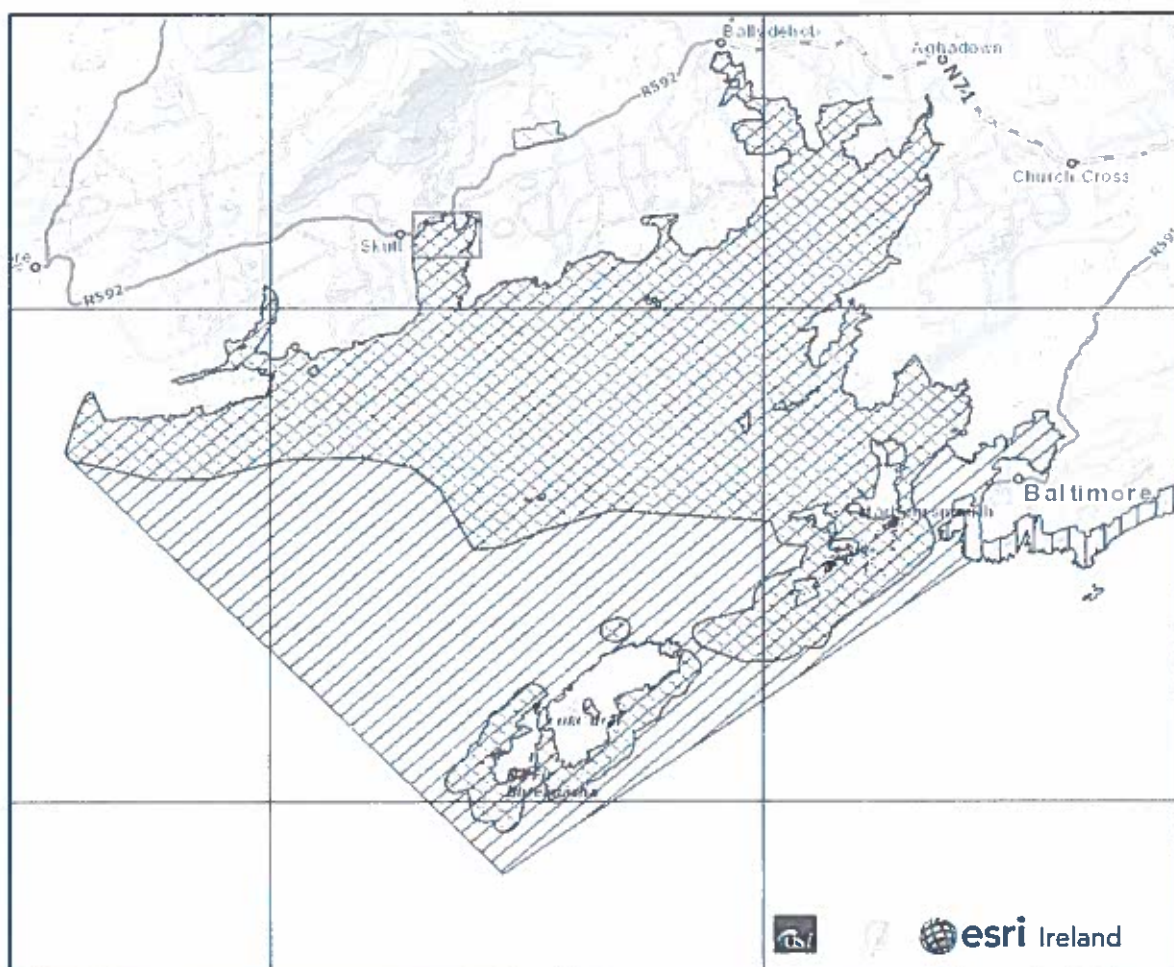


Figure 2. Location of the proposed development in relation to the Roaringwater Bay and Islands SAC.

#### 2.1.3. Identification of Potential Impacts and Assessment of Significance

The proposed project will entail the disturbance of sections foreshore and seabed within the boundary of the Roaringwater Bay and Island cSAC.

#### 2.1.4. Conclusion of Screening for Appropriate Assessment

A screening process in accordance with NPWS Guidance on the Appropriate Assessment of Land Use Plans was carried out to determine whether a full appropriate assessment in accordance with Article 6(3) of the Habitats Directive is required.



- It was concluded that the project would have the potential to have direct impacts the Roaringwater Bay and Island cSAC.

### **3. Appropriate Assessment - Stage 2**

#### **3.1. Introduction**

The screening stage of this Appropriate Assessment has concluded that Stage 2: Appropriate Assessment of the proposed development at Schull Harbour (the project) is required to identify the elements of the project that might potentially impact negatively, including potential impacts in combination with other plans or projects, on the conservation objectives of the following Natura 2000 Site:

Roaringwater Bay and Island candidate Special Area of Conservation (Site Code 000101).

The integrity of a site involves its ecological functions. The decision as to whether it is adversely affected should focus on and be limited to the site's conservation objectives.

The present report was compiled by Moore Group – Environmental Services on foot of information supplied in the Environmental Impact Statement compiled by Atkins for the project which was granted planning permission with conditions in 2007. The EIS presents a comprehensive assessment of the terrestrial habitats by Atkins and Limosa (Ecological Consultants) and marine habitats and species by EcoServe in the study area. The relevant sections of the EIS with regard to terrestrial and marine habitats and species were reviewed by Moore Group and there was no requirement for additional assessment as the proposed project will be constructed under the same footprint area, albeit in a scaled down version. Thus the assessments carried out by Atkins and EcoServe are still pertinent to the present project and in essence form the basis of this Natura Impact Statement.

#### **3.1. Consultation**

The National Parks & Wildlife (NPWS) were consulted along with all statutory consultees during the EIS process. All comments and direction from the then Department of the Environment, Heritage & Local Government and the NPWS with regard to the need for mitigation measures and monitoring of the site works are included in the present assessment.

### 3.3. Environmental Impact Assessment

Chapter 5 of the EIS assesses the impacts of the proposed development on terrestrial ecology (flora and fauna). As much of the proposed development is marine in nature this section deals largely with development of lands along the northern side of the harbour. A detailed assessment of potential impacts on marine flora and fauna is presented in Chapter 6 of the EIS. The main findings of the EIS with regard to terrestrial and marine flora and fauna are presented as follows.

#### 3.3.1 Terrestrial Flora & Fauna

A Phase 1 habitat survey of the site was conducted on 25th November 2005 using methodology developed by the Joint Nature Conservation Committee (1993). Habitats were classified using habitat descriptions and codes published in the Heritage Council's 'A Guide to Habitat Types in Ireland' (Fossitt, 2000).

The significance of impacts was assessed on a combined basis of the value of the feature being affected and the magnitude of the impact. Impacts on features of less than local value are not considered to be potentially significant. Impacts during both Construction and Operation of the proposed development were considered, as are impacts in the Short (1-7 years), Medium (7-15 years), Long term (15-60 years) or permanent (over 60 years); a temporary impact is one which is less than 1 year in duration (as per EPA methodology)..

#### Existing Environment

The proposed development site adjoins Roaringwater Bay & Islands candidate Special Area of Conservation (Site Code 1011). The cSAC site includes the immediate coastline on the mainland from Long Island to Baltimore together with the whole bay and most of the islands. The bay itself has a wide variety of reef and sediment habitats, subject to a range of wave exposures and tidal currents, and has been selected for three marine habitats listed under the EU Habitats Directive, i.e. large shallow inlets and bays, marine caves and reefs (refer to marine ecology for further discussion of these habitats). The terrestrial habitats are also of conservation interest and include three habitats listed under the EU Habitats Directive, i.e. dry heath, sea cliffs and lowland hay meadows.

The cSAC site also supports a number of species listed on Annex II of the EU Habitats Directive; i.e. Harbour Porpoise, Otter and Grey Seal. Roaringwater Bay supports important numbers of Harbour porpoise. This is our smallest cetacean and is by far the most numerous species in northwestern European

continental shelf waters. In order to assess the potential impact that marine construction could have on marine mammals in general Dr. Simon Berrow of the Irish Whale & Dolphin Group undertook a review which is presented in the review of marine ecology below.

The cSAC site supports a nationally important breeding population of Chough (c. 33 breeding pairs) and several breeding pairs of Peregrine falcon. Both species are listed on Annex I of the EU Birds Directive. While a colony of Arctic/Common Terns (122 pairs) were noted as breeding on Carrigvigliash Rock2 (W0131) in 1984. Islands within Roaringwater Bay support nationally important populations of breeding Fulmar, Cormorant, Lesser black-backed gull and Black Guillemot.

Barley Cove to Ballyrisode Point cSAC (site code 1040) is located approximately 10km west of Schull harbour. This cSAC site is of conservation importance for the presence of a number of good examples of coastal habitats. Of particular significance is the fixed dune as this is a priority habitat on Annex I of the EU Habitats Directive. The concentration of rare plants is of especial note, as is the high density of Choughs.

Both Roaringwater Bay & Islands and Barley Cove to Ballyrisode Point cSAC are also proposed for designation as Natural Heritage Areas. The boundaries of Roaringwater Bay & Islands cSAC and pNHA are identical within Schull Harbour.

Derreenatra Cutaway pNHA is located 2.5km northeast of the proposed development. It adjoins the R592 Ballydehob to Schull road. This site is the only known location for the protected plant species (Flora Protection Order, 1999), Slender Cotton-Grass in County Cork. It was first found here in 1994. A number of other bog pond plant species are also found, including Marsh St. John's Wort and White Water Lily.

A number of environmental Non-Governmental Organisations undertook a review of areas of conservation importance in Ireland in 2000. The result was a publication produced by the Irish Peatland Conservation Council entitled "Protecting Nature in Ireland. "The NGO Special Areas of Conservation Shadow List" (Dwyer, 2000). This report proposes that a number of additional factors be included amongst the habitats and species for which Roaringwater Bay and Islands site is designated. These include;

1220 - Perennial vegetation of stony banks (Sherkin / Roaringwater Bay)

1351 – Harbour porpoise (Sherkin / Roaringwater Bay)

However, as noted above Harbour porpoise is in fact included in the cSAC site description.

There is a single Important Bird Area as defined by Birdlife International located in the environs of the study area (Hunt et al., 2000). Sheeps Head and Mizen Head peninsulas IBA (site code 082) is a linear coastal site encompassing two peninsulas, as well as Cape Clear and Sherkin Island. The site is of importance for breeding Chough. The site overlaps with Barley Cove to Ballyrisode Point cSAC; unfortunately as no maps accompany the register of sites it cannot be determined whether Schull Harbour is included.

Other than cSACs, SPAs and pNHAs discussed above the Cork County Development Plan (2009 -2015) does not list any additional sites of conservation importance.

#### Predicted Impacts

Terrestrial habitats within the site are of no more than Local Value and no plant species or habitats of conservation concern were recorded within the study area. As much of the proposed development is to be located on reclaimed land the direct loss of habitats will be largely restricted to those immediately along the shoreline; i.e. a narrow area of amenity grassland (GA2), two short sections of treeline along the shore, some small scrub patches (WS1; some of which are dominated by the invasive alien Japanese Knotweed) and a bed of New Zealand flax (BC4). Some amenity grassland will also be lost to accommodate the access road. None of these habitats are of more than local ecological value. Thus impacts on terrestrial habitats due to the proposed development are likely to be Imperceptible; i.e. a change in the ecology of the affected site, the consequences of which are strictly limited to within the development boundaries.

#### Mitigation Measures

Loss of habitats of local value causes an imperceptible ecological impact and so requires no specific mitigation measures. However, the proposed landscaping measures will provide for the inclusion of native tree, shrub and grassland species within the development to mitigate for loss of, for example, trees along the shoreline.

Terrestrial habitats within the site are of no more than Local Value; many cannot in fact be defined as semi-natural habitats or are dominated by non-native species. Marine habitats such as Rocky Shores and Shingle and Gravel Shores (LS1) are discussed under Marine Ecology.

### 3.3.2 Marine Ecology

As the proposed harbour development involves activities extending from the sublittoral<sup>4</sup> to the terrestrial zones, marine based studies were undertaken on the sublittoral and littoral areas. The site is of particular concern as it is located within the Roaringwater Bay candidate Special Area of Conservation (SAC), of particular note for marine habitats and species. This section also considers fisheries, cetaceans and marine mammals (particularly grey seal and harbour porpoise, which for which the SAC is designated). Potential impacts by the development are assessed and mitigation measures proposed as considered necessary.

The Marine Institute and Department of Communications, Marine and Natural Resources (at that time) were contacted to obtain any existing data on water chemistry, sediment characteristics, marine benthos for the study area and to determine the location of aquaculture and shellfish beds, and monitoring data collected as part of the EU Directive 'laying down the health conditions for the production and placing on the market of live bivalve molluscs'.

The Regional Marine Ecologist (Mr. David Lyons), Local Conservation Ranger (Mr. Declan O'Donnell) for the area and the Designations Section (Ms. Jacinta Douglas) of the Department of Environment, Heritage and Local Government (at that time) were consulted with respect to recommendations, requirements and 'Notifiable Actions' with respect to the Roaringwater Bay and Islands candidate Special Area of Conservation, as designated under the European Communities (Natural Habitats) Regulations, 1997.

An assessment of cetaceans was undertaken by the Irish Whale and Dolphin Group (IWDG).

A littoral survey was undertaken by jointly by Atkins and Limosa (Ecological Consultants) on the 1st February 2006 for a distance of approximately 550m along the north-eastern side of the existing pier, and to approximately 30m to the south of the pier during low spring water tides. The shore was walked in order to identify and map the extent and distribution of biotopes present (including soft and hard substrata), and were categorised according to Connor et al 2004 and using techniques described in the Marine Monitoring Handbook (2003). Rocky areas were examined and a total of 4 dig samples were collected from soft substrata to determine the main characteristic species. Dig samples were passed through a 1 mm mesh sieve and the material collected and preserved in 70% Industrial Methylated Spirits (IMS) and returned to the laboratory for identification and counting. Species were then identified to species level where possible and a voucher collection of specimens retained. The results were compared to existing data and interpreted using the biotope classification (Connor et al., 2004).

Eight sublittoral sites were surveyed by boat by Atkins and EcoServe (Marine Ecological Consultants) on the 20th December 2005. A 0.1 m van Veen grab was used for collection of three replica samples at each of the 8 sites. Grab samples were passed through a 1 mm mesh sieve. Material collected was sorted on board and the relative abundance of conspicuous fauna and floral species recorded. Species that could not be identified in situ were preserved in 70 % Industrial Methylated Spirits (IMS) and returned to the laboratory for identification and counting. Species were identified to species level where possible and a voucher collection of specimens retained.

Specimens were identified to the lowest possible taxonomic level using the following literature: For mysid crustaceans, Makings (1977); crabs, Crothers and Crothers (1983); shrimps and prawns, Smaldon (1993), Barnes (1994) and Hayward and Ryland (1995); for marine molluscs, Graham (1998) and Picton and Morrow (1994); for echinoderms, Picton (1993) and for marine fish, Wheeler (1978). Biotopes were identified following Connor et al. 2004.

Impacts were defined in accordance with Environmental Protection Agency criteria for Environmental Impact Assessments (EPA, 2003).

### Existing Environment

#### *Marine Habitats*

The littoral zone within the study area falls under the Annex 1 Category "Reefs". The sublittoral zone falls under the Annex 1 Category "Large Shallow Inlets and Bays". Although biotopes within the study area fall under these categories, the biotopes and species present are considered common and widespread. None of the key species for which the SAC is designated, are present within the study area.

The site was characterised by a variety of biotopes (23) with moderate species diversity (58 species), particularly within the *Laminaria digitata* zone on the sublittoral fringe. All of the major biotopes recorded in the study area are common and widespread in the British Isles according to Connor et al (1997; 2004).

The most common biotopes in the littoral zone were shingle and gravel shores (38% of the littoral zone), *Laminaria digitata* on moderately exposed sublittoral fringe rock (15.8%) and littoral mixed sediment (12.6%). The *Laminaria* zone was characterised by a high density of a range of species (15 species in total identified), particularly red algae, sponges and tunicates. The other two sediment biotopes are characterised by low species diversity and abundance, with only the occasional polychaete (*Glycera* sp.).

No rare or uncommon species were found in the study area, and none of the species for which the Roaringwater Bay and Islands Special Area of Conservation is noted, were located within the study area. Of note, was the anemone, *Anemonia viridis* that was present in large numbers in mid-shore rockpools. However, this species is considered widespread along the west and southwest coasts of Ireland (Hiscock, 2005).

Substrata consisted of infralittoral cohesive sandy mud. Water depth ranges between 0.9m and 9.1m Chart Datum according to the Admiralty Chart for the study area.

A total of 41 taxonomic groups were identified in 24 benthic samples (3 replicas at 8 sites) collected within the sublittoral environment. The majority of samples were broadly similar in their composition and comprise a variation of the marine biotope "*Melinna palmata* with *Magelona* spp and *Thyasira* spp in infralittoral sandy mud" (Biotope code: SS.SMU.IsaMu.MeIMagThy) according to Connor et al 2004. This biotope contains the muddier aspect of the old biotope "*Spio filiformis* and *Spiophanes bombyx* in infralittoral clean or muddy sand" (Biotope code: IMS.FaMS.SpiSpi) (Connor et al, 1997). This muddy sand biotope, containing the polychaete worms, *Spio filiformis* and *Spiophanes bombyx* has been discontinued as it is seen as a transitional biotope between other biotopes. Those recorded previously under this biotope are now contained within a variety of other biotopes with shallower muddier examples falling into in the new biotope "*Melinna palmata* with *Magelona* spp and *Thyasira* spp in infralittoral sandy mud" (representative of the study area).

The area is not considered of high ecological importance as species and habitats present are considered common and widespread, while diversity indices show that the marine benthic community has a low to moderate diversity and evenness. None of the species for which the Special Area of Conservation was designated were found in the study area.

#### *Cetaceans & Seals*

The Irish Whale and Dolphin Group (IWDG) recorded a total of 33 cetacean sightings in Roaringwater Bay, covering the period from March 1992 to January 2006 inclusive. This includes nine sightings from Castle Point and three from Crookhaven. At least six species have definitely been recorded including both species (harbour porpoise and bottlenose dolphin) on Annex II of the EU Habitats Directive. Other species recorded include two sightings each of common dolphin (*Delphinus delphis*) and minke whale (*Balaenoptera acutorostrata*). There was also one sighting each of killer whales (*Orcinus orca*) and pilot whales (*Globicephala melas*). Sightings not identified to species level include two unidentified dolphin species and one large whale sighting. None of the 33 sightings reported here were within Schull harbour,

with the major concentrations off the Calf islands around 4 nmls (7km) from the proposed development site.

There were cetacean sightings in Roaringwater Bay in all months except September, November and December. The greatest number of sightings were made in June and the greatest number of individuals in August. Records were too few to explore in any detail, but it would be reasonable to say that harbour porpoise are present in the bay throughout the year with periodical incursions by common and bottlenose dolphins, especially in the summer. Minke whales are present in the outer bay in the summer months and transient species such as killer and pilot whales also occasionally occur.

More recent information with regard to the development of Baltimore Harbour in 2010 has shown that common dolphin are quite often observed between Baltimore and Sherkin, bottlenose dolphins also be less regularly, minke whales off the beacon and very occasionally fin whales too (S. Berrow, pers. comm.) Both species on Annex II of the Habitats Directive, *Tursiops truncatus* and *Phocoena phocoena*, have been recorded, one of these (harbour porpoises) regularly and throughout the year. During a study carried out in 2008 (submitted to NPWS, unpublished), most sightings of porpoise were around Gascanane Sound between Sherkin and Clear Islands and off the western tip of Cape Clear.

A review of National Parks and Wildlife Service surveys on grey and common or harbour seals showed that both grey and harbour seals occur in Roaringwater Bay and do occasionally pup on the islands (Lyons, 2004). There were 13 sites around the country including Roaringwater Bay, where NPWS have made more than 10 observations between 1978 and 2003. Five counts of harbour seals revealed a mean of 7 seals (maximum 15) in Roaringwater Bay and 12.8 (maximum 43) grey seals. Harbour seal pups were reported in 1985 and grey seal pups in 1978 and 1983. During an aerial survey in 2003, a total of 52 harbour seals were counted in Roaringwater Bay, mainly off Ballydehob and on Ringarogy Island (Cronin et al. 2004). Although this was predominantly a harbour seal survey, 55 grey seals were also counted in Roaringwater Bay, mainly on Ringarogy Island (Cronin et al. 2004).

The maximum-recorded number of harbour seals equates to around 1.2% of the estimated 2,905 harbour seals estimated to occur in Ireland (Cronin et al. 2004). No current population estimates for grey seals occur but previous estimates suggest the breeding population is around 2-2,500 seals (Summers 1983). However many of those seals recorded in Roaringwater bay are not breeding thus the proportion of the Irish population using the Bay cannot be calculated.



### *Fisheries & Aquaculture*

The southwest of Ireland (Cork Harbour to Loop Head) consists of a mixed fishery. The area is important for herring and whitefish. In 2002, a total of 1,234 tonnes of seafood were landed at Schull, representing 0.5% of total sea fish landings in Ireland and compared with 5,909 tonnes landed at Castletownbere (the largest port in the south-west representing 2.4% of Irelands total) and Killybegs, Irelands largest port (80,594 tonnes, representing 32.9% of Irelands total) (CSO, 2003). See also Chapter 3 on human beings for fisheries in relation to human beings.

Roaringwater Bay is a Class B Shellfish Production Area for mussels under the EC Directive 'laying down the health conditions for the production and the placing on the market of live bivalves molluscs' (CEC, 1991). Baltimore Harbour is a Class B Shellfish Production Area for Oysters, while Sherkin North is designated Class B for Oysters, and Sherkin Kinish designated as Class A for Oysters. The Department of Communications, Marine and Natural Resources (DCMNR) are the competent authority in Ireland for the classifying shellfish production areas (under S.I. No. 147 of 1996). For Class B Shellfish Production Areas, there must be less than 6000 faecal coliforms or 4600 Ecoli in 90% of samples of shellfish flesh (per 100g of shellfish flesh5).

There are a number of licensed aquaculture beds within the areas of Roaringwater Bay, Baltimore Harbour, Sherkin/Kinish, and Schull Harbour. However, none of the licensed beds are located directly within Schull harbour itself. The nearest beds are 'applications' at Castleisland Channel, located approximately 3km southeast of the proposed marina development, and in the Long Island Channel located approximately 4km southwest of the proposed development (DCMNR, unpublished data).

The Schull Harbour area itself is likely to provide an important spawning and nursery area for inshore fish, which feed on marine benthic communities, particularly the rich concentration of bivalves and polychaetes present, as discussed earlier.

### Predicted Impacts

The greatest impact of the proposed harbour development is direct loss of habitat and species contained within. During the construction phase, the key impacts are disturbance to marine communities, and risk of sedimentation and pollution from plant and materials. The construction phase will last for approximately 2.5 years.

The majority of the proposed development is located on the foreshore. The proposed development will require reclamation of 0.53 hectares of littoral foreshore for various facilities (i.e. car parking facilities, landscaping, utility building etc).

#### Construction Impacts

The construction of the armoured breakwater will result in a permanent loss of 0.84 ha of sublittoral habitat. The installation of the fishing and commercial vessel pontoon will result in a loss 0.07ha of sublittoral habitat and an additional 0.41ha will be lost as a result of 235 floating marina berths, which will be covered (although not resulting in actual total removal of seabed). This loss of habitat will be temporary in the latter case, as species will recolonise once construction is complete. The habitats and species present in the study area are widespread and common, and the site classified as 'moderately polluted', so that impacts on loss of sublittoral habitat are considered slight.

Construction works have a significant potential to cause the release of sediments directly into the marine waters of Schull harbour. The construction phase will last approximately 2.5 years, with different phases during the development. Most sediment loads will be generated from the breakwater construction works, which will take place in 3 stages over an 18-24 month period, and from land reclamation works, which will take place over a 9 to 10 month period. Approximately 20,000 m<sup>3</sup> of material (predominantly crushed stone) will be required for reclamation and a further 52,000m<sup>3</sup> for construction the armoured breakwater. The placing of stone will lead to a short-term increase in the turbidity of the sublittoral waters. However, the extent of the impact is dependant on the timing of works.

The reclaimed area will be constructed as follows: engineered fill material will be placed on the sea bed to approximately mid-tide level. Rock armour will then be positioned on the seaward face to form a revetment. Further engineering fill will be built up to deck level and rock armour will be utilised to construct the revetment to its design level. A reinforced concrete deck will finally be cast on top of the engineered fill. A grassed area with natural planting and a storm wall will be incorporated into the reclaimed area.

This increase in turbidity may lead to increased siltation and smothering of marine organisms and habitats. High levels of suspended solids settling on the seashore and seabed can alter habitats resulting in a potential loss of feeding, nursery and spawning grounds for fish. The sublittoral habitats within Schull harbour are already muddy, containing tolerant polychaetes species and are subject to silt loadings from existing port activity. It is therefore predicted that the impact will be slight. In addition, there is a risk of pollution from machinery.

There is a risk of release of pollutants from plant and equipment to be used during the construction phase. It is envisaged that piles for the marina and pontoons will be transported to the site by sea, while all other materials will be transported to the site by road. It is understood that protective coating of piles is likely to be coal-tar epoxy grade PC2, which would be applied to the piles prior to transportation to the site, so that pollution impacts will not occur. Pollutants and chemicals used during the construction phase could have toxic impacts on the fauna and flora in the littoral and sublittoral zones. Likely pollutants would include fuel oil and leakages from equipment. Approximately 5,000m<sup>3</sup> of concrete will be required for construction works, which it is envisaged will be transported to site as ready-mixed wet concrete, before being poured or pumped into place. If waters become polluted, species more tolerant to pollution can extend their distribution, thus altering species composition. Sensitive species were not found in the sublittoral survey, and the survey area is considered 'moderately polluted'. Thus, the potential polluting impact during construction works is considered **slight to moderate** due to the ability of existing species to tolerate such impacts. Further details of potential pollutants are discussed under operational impacts.

It is envisaged that piles for the marina and pontoons will be transported to the site by sea, while all other materials will be transported to the site by road. However, the Contractor may choose to transport additional materials by sea, such as stone for the breakwater. The impact from construction of the proposed marina and associated facilities is likely to be limited to the harbour with little direct impact in the Bay. No dredging or blasting is proposed and equipment and materials are to be brought in by road. If dredging or blasting was to be considered then a pre-survey to ensure no marine mammals are within 2.5km of the site should be carried out.

Pile driver-generated noise has the potential to affect dolphin populations adversely as it is detectable up to 40km from the source. At 9kHz, this noise is capable of masking strong vocalisations within 10-15 km and weak vocalisations up to approximately 40km (David, 2006). The threshold peak impulse sound pressure for direct physical trauma in marine mammals, birds and fish is generally considered to be greater than 200dB (David, 2006). The response thresholds of cetaceans are usually the lowest for pulsed sounds, and pile driving is one of the loudest sources of this type of noise (David, 2006). It is recommended that the received level of noise for cetaceans should not exceed 150dB (IWDG, unpublished data). The impact of construction activities on cetacean species **could be significant** if mitigation measures provided in this report are not followed.

There are no fisheries located within the actual construction zone. The nearest licensed aquaculture beds are located over 2.5km from the proposed development. Thus, there will not be direct impacts on fishing

or aquaculture during construction works. Construction works will take place on a phased basis. Temporary mooring facilities for small fishing boats will be made available at all times during the construction phase. However, larger trawlers will not be able to berth at Schull Harbour during the construction phase. However, there will be some disturbance and a slight short-term impact on fish landings during this period.

There are no designated bathing waters in the vicinity of Schull Harbour. The nearest blue flag beach and designated bathing water, located at Crookhaven, Barleycove is located more than 15km to the west of the proposed development. There are some small beaches within Schull Harbour, however, which are likely to be used for bathing, particularly during the summer period. There is a small gravel beach directly to the east of the proposed floating breakwater and new leisure craft slipway. This beach would be subject to sedimentation and possible pollution during the construction phase, particularly during works on the reclamation area, and piling operations in the vicinity of the beach. This work will take approximately 9-10 months for land reclamation and a further 2-3 months for construction of the marina. These impacts are considered short-term slight to moderate.

#### Operational Impacts

Alteration to the hydrology and sediment deposition routine in the area from the new pier breakwater could lead to subsequent alteration of marine benthic communities. An assessment of the wave and sediment climate has indicated that there will not be a significant alteration to marine sediment movements as a result of the harbour development. Consequently, the impact on marine benthic communities is considered to be neutral.

Schull Harbour provides an interface between land waste management and disposal system for ships and boats. Operational waste from vessels, if not properly managed, can end up in the sea where the potential for contamination or pollution occurs. The Marine and Coastguard Agency in the UK ([www.mcga.gov.uk](http://www.mcga.gov.uk)) provide environmental and health and safety guidance on the operation of boats. In addition, a 10,000 litre capacity fuel storage tank and refuelling point will be included within the proposed development. This storage tank will be located underground in the vicinity of the Utility Building, and will include hydrocarbon interceptors and bunding in the design of the tank, to prevent pollution. Key waste issues are as follows (which are important issues during both construction and operation of the harbour development):

**Oil & Organics:** This may be from operational, accidental and illegal discharges from boats. Sources of oil contamination include spills of fuel and lubricating oils, exhaust emissions, wood treatment solutions, and

run-off from marina parking lots. Marine animals and plants tend to be tolerant of low-level concentrations of oil in sediments. However, exposure to major and minor oil spills can lead to the mass mortality of benthic communities, fish, marine mammals and birds. In sediments, as it is organic, oil will be broken-down relatively quickly by micro-organisms which may result in the localised removal of oxygen from the sediments and surrounding water with possible effects on marine life. Schull Harbour supports approximately 12 large to medium sized fishing trawlers, and this number is not expected to increase. The proposed harbour development will support primarily an increase in leisure craft, under 40ft long, which are less likely to contribute to a major pollution event. Tolerant benthic communities are present in the vicinity of Schull Harbour so potential impacts are considered to be imperceptible, but with the potential for significant impacts in the case of a boating accident within the SAC. This risk, however, is not likely to be much greater than the current risk. The proposed harbour development will predominantly cater for existing boat traffic within Schull. 177 out of the total 235 berths will cater for existing users of Schull Harbour, the remaining 58 berths will be made available for visiting recreational boats which will visit the site mainly from Ireland, the UK and the north of France. It is expected that some of the 177 berths will also be rented out to visitors to Schull, when vacant.

**Sewage:** There is no legislation regarding the environmental requirements for harbours at an EU level or within Ireland. Sewage may affect the marine environment in three main ways, through oxygen depletion, causing disease, and by nutrient enrichment. Ancillary development for the proposed harbour provides toilet and showering facilities, and laundry facilities for less than 20 people, but no kitchen facilities will be provided. Therefore the quantity of foul sewage from the site will be extremely low. This foul sewage will discharge into the proposed Schull Wastewater Treatment Plant, adjacent to the development; operators of the new facilities will not discharge untreated sewage into the cSAC. It is not possible to purge sewage holding tanks on modern recreational vessels directly into the sea. There will be a service point located adjacent to the refuelling facility, which will facilitate removal of wastewater from incoming recreational vessels for treatment at Schull WWTP. As older vessels are retired or retro-fitted with holding tanks, the risk of sewage being discharged directly to the sea will reduce. This process is being driven by EU Directives and national Enabling Legislation, and will be assisted by providing sewage removal facilities at Schull. The risk of pollution from wastewater from incoming boats is considered neutral. Impacts from the proposed harbour development are expected to be neutral.

**Garbage:** Garbage enters the port and harbour environment via numerous pathways, both from on and offshore, one of which is through overboard dumping from ships and boats. Many ships and boats rely on adequate and convenient reception facilities being available in ports and harbours for the disposal of garbage. Inadequate reception facilities may discourage users from disposing of their litter responsibly

ashore, and may lead to garbage being disposed of overboard at sea. Impacts of littering are expected to be slight.

*Ballast Water:* The movement of vessels around the world requires the intake of ballast water to give them a safe degree of stability when light. This disposal of water, when it takes place within ports and harbours is classed as a waste product. The ballast water that is disposed of may contain a variety of harmful substances, including in certain cases oil contaminants, non-native marine animals and plants, and disease causing organisms in sewage-contaminated water. The non-native barnacle, *Elminius modestus* is currently present within Schull Harbour. This species was likely introduced from ballast water from boats. The proposed harbour development will support mainly small leisure craft and existing, local fishery boats, which do not contain ballast water. Therefore the potential impact of introduction of non-native is considered neutral.

*Anti fouling paint scraps and maintenance wastes:* The proposed harbour development will facilitate existing fishing trawlers and new light recreational boats predominantly. The removal and application of anti-fouling will be forbidden at the proposed harbour development, so that the impact is considered to be neutral.

#### *Cetaceans and Seals*

At least six cetacean species and two seal species have been sighted adjacent to the site of interest and two additional cetacean species (one historical) has been stranded in the vicinity of the proposed development. There is no evidence of cetaceans regularly entering Schull harbour. Grey and common seals are present in the bay and occasionally pup on the islands and may enter the harbour while foraging but there are no records to support this. One cetacean species (harbour porpoise) is probably present in the area throughout the year while the others are seasonal (minke whale) or transient. Both species on Annex II of the Habitats Directive have been recorded, one of these (harbour porpoises) regularly and throughout the year. Thus any impact of this development is likely to be limited to harbour porpoise.

#### *Fisheries & Aquaculture*

There will some loss of sublittoral habitat and species contained within. The polychaete and bivalve species dominant in sublittoral sediments provide a food source for fish species. However, this loss of food source and potential fish habitat is considered slight to imperceptible as these species are common and widespread throughout the harbour, and the area of impact represents a small proportion of the wider habitat available (<0.2% comparing sublittoral habitat loss with area of sublittoral biotope available within Schull Harbour, based on sampling undertaken).

There is currently cramped access, and inadequate mooring facilities for local fishing boats. Inland Fisheries has targeted the Mizen peninsula and surrounding inshore waters as an area for promotion as a sea-angling destination. The proposed harbour development will provide for better mooring and storage facilities for local fishing boats. All known local fishermen, and fishery organisations were consulted as part of the EIS to ensure that their needs are accommodated with the proposed harbour development. A designated area will be provided for the storage of inshore fishery gear. The breakwater will provide more microhabitats for fish themselves and more fishing spots for shore anglers on the longer term. It will be possible for fishermen to generate additional revenue through developing opportunities for providing whale watching and sea angling trips to tourists. The impacts on fisheries and aquaculture are therefore considered **long-term positive**.

#### *Bathing & Recreational Waters*

There are no designated bathing waters in the vicinity of the site. However, there is a small gravel beach to the east of the development, which is likely to be used as a bathing area. There will be no discharges from the proposed development. The construction of the Wastewater Treatment Plant by Cork County Council is likely to improve water quality in the area. The impacts of the proposed harbour development are considered **neutral**.

#### Mitigation Measures

##### *Construction Impacts Mitigation*

There will be loss of habitat from reclamation works and from construction of the breakwater. However, the new pier and rubble breakwater will provide new habitat for a range of species. The design of the armoured breakwaters, especially below the tide line, should seek to incorporate as much microstructure as possible to allow niches for lobster crab and fish to shelter or breed in the structure. A diversity of boulder sizes and rock placed along the outer edge of the breakwater would be useful in this respect. This would facilitate maximum biodiversity at the site.

Examples of general sensitive times for selective marine animals and plants are presented in Table 3.1 below. Construction works should be minimised during these sensitive periods where possible.

Type of Organism	Sensitive Stage in Life Cycle	Period
<i>Benthic Animals</i>	<i>Spawning</i>	<i>Spring</i>
	<i>Highest growth rates (shellfish)</i>	<i>Early Summer May - July</i>
	<i>Highest numbers of eggs and larval stages (shellfish)</i>	<i>Early Summer March - July</i>
<i>Fish</i>	<i>Migration of salmon and sea trout (smolt) from rivers to the sea</i>	<i>Spring &amp; early Summer</i>
	<i>Highest numbers of eggs and larval stages</i>	<i>Early Summer</i>
<i>Microalgae (phytoplankton)</i>	<i>Highest growth rates (highest potential for algal bloom formation)</i>	<i>April through July</i>
<i>Seals</i>	<i>Breeding</i>	<i>Summer</i>

Table 3.1 – Sensitive times for selected marine animals and plants (ABP, 1999)

#### *Sedimentation*

The impacts of sedimentation and increased turbidity during construction works are not considered significant due to the high tolerance of species present within the vicinity of the proposed dredge area. The impacts of increased sedimentation and suspended solids are greatest during the larval stage of marine species. Construction works should avoid sensitive periods for marine animals. Spawning and larval stages for many species take place during the summer months, for example between June and September for *Ostrea edulis*. It is recommended that construction work on the seabed be maximised during low tide and during neap tides as the extent of effects would be less than during high tide or spring tides.

Construction runoff will be kept to a minimum in order to control the level of suspended solids released into the water column. Perimeter controls such as earth dykes and silt fences should be installed at the edge of the construction site to retain or filter runoff before being discharged into surrounding waters. Needless clearing and grading will be minimised. Sediment traps or basins will be installed to allow captured sediments to settle out and will be regularly maintained. To improve trapping efficiency, these basins will be designed to incorporate features such as larger volumes, use of baffles, skimmers and other outlet devices and multicell construction.

#### *Pollutants*

All machinery used during the construction phase of the works will be required to be in good working order and free from oil and hydraulic fluid leakages. If machinery maintenance has to take place, it will be carried out at least 100m away from the sea. Fuel for machinery or any chemicals will be required to be



stored in a secure and bunded area. Oil interceptors will also be installed at appropriate locations. Equipment will be regularly maintained and leaks repaired immediately away from the site. Accidental spillages will be contained and cleaned up immediately.

Certain elements of the works will be constructed using reinforced in-situ concrete. No losses of concrete (cement) to the sea will be permitted during this phase of the works.

All surface water drainage from the development area will be directed to petrol interceptors before being discharged to the sea.

During the construction phase, contained chemical portable toilets will be used and all sewage will be removed from site to an authorised treatment works.

#### *Cetaceans & Seals*

The area surrounding pile-driving operations should be scanned for cetacean populations; this could include the use of hydrophones, which would be particularly useful in bad weather. An exclusion zone of 500m radius should be monitored for at least 30 minutes before the start of piling (Joint Nature Conservation Committee, 2004). If cetaceans are observed in the exclusion zone, marine works should be delayed until they have left the area. If cetaceans enter the exclusion zone after piling has commenced, marine works should cease until they have left (JNCC, 2004). Alternatively, to give cetaceans some warning of the impending acoustic impact of piling, driving of new piles should start with a few light taps before the main hammering begins.

The presence of seals or cetaceans close to operating machinery must be reported to the National Parks and Wildlife Service who will advise on the best course of action.

For any of the proposed works, operations during the winter months would be less likely to impact marine mammals than during the summer months.

#### *Fisheries & Aquaculture*

Alternative berths or moorings will be provided for small fishing boats during the construction phase although larger trawlers will not be able to berth at the south and west faces of Schull Pier during the construction phase. As detailed above, design of the rubble breakwater will maximise the potential for creation of microhabitats for fish and other marine species.

### *Bathing & Recreation*

Mitigation measures for reduction of sedimentation and pollution above will also protect bathing and recreational waters.

### Operational Impacts Mitigation

#### *Habitat Alteration*

A hydrodynamic assessment of the proposed development has shown that impacts are considered neutral and no mitigation is required.

#### *Pollutants*

An Oil Spill Contingency Plan should be drawn up for the Harbour by the Harbour Service Provider in consultation with Cork County Council, including identification of areas where the use of dispersants presents little or no concern. The National Parks and Wildlife Service can provide advice. The highest possible standards should be maintained during the operation of the harbour and associated infrastructure. Potential pollutants such as fuel oils should not be stored in the vicinity of the marine environment (a minimum buffer zone of 100m is recommended). Long term management of boat activities associated with the pier is necessary to reduce impacts in terms of disturbance and pollutants within the SAC.

Foul sewage from the proposed development will be piped to the new Schull Wastewater Treatment Plant. Wastewater from incoming vessels will be removed at a designated 'service area', for removal from the site and treatment at Schull WWTP. There will not be any discharge to the marine environment from the proposed harbour development. Impacts in this respect are considered neutral.

There must be adequate provision for port-generated waste in accordance with Cork County Waste Management Plan. The Harbour Service Provider should encourage the responsible management of waste, including minimisation and recycling, at the point of generation on boats, reception at Schull Harbour, transportation and disposal. Cork County Council must ensure that users of the pier report large pieces of floating garbage and should consider the collection of marine litter, particularly plastics, where considered necessary. Due to the low volumes of traffic anticipated at Schull Harbour, and with good management impacts of littering should be neutral.

There will be no ballast water generated from vessels entering the proposed development, as this is to cater for local fisheries only, and recreational craft that do not contain ballast. Cork County Council should

prohibit the unnecessary discharge of ballast water at Schull Harbour should larger boats visit the site. Following these recommendations, impacts of ballast water should be neutral.

Removal and application of antifouling will be prohibited at Schull Harbour, and activities prevented, that have the potential for release of these contaminants within the SAC.

#### *Cetaceans & Seals*

The impact of this development is considered minor and local. It is recommended that the operators of the harbour provide educational material on the marine mammals of the area and encourage a Code of Good Practice by boat operators based on Departmental recommendations outlined as follows:

- When whales or dolphins are first encountered, craft should maintain a steady course;
- Boat speed should be maintained below 7 knots;
- Do not attempt to pursue whales or dolphins encountered;
- In the case of dolphins, they will very often approach craft and may engage in "bow riding". Always allow dolphins approach a boat rather than attempt to go after them;
- Maintain a distance of at least 100m from whales;
- Maintain a distance of 200m between any other boats in the vicinity;
- Attempt to steer a course parallel to the direction whales or dolphins are taking;
- Do not corral whales or dolphins between boats;
- Special care must be taken when young calves are seen - do not come between a mother and her calf;
- Successive boats must follow the same course;
- Boats should not spend more than 30 minutes with whales or dolphins;
- DO NOT attempt to swim with them.
- 

With respect to oil spillages, studies have shown cetaceans avoid such areas and would be very unlikely to surface in a slick.

A seal scarer can be used to clear the harbour of seals in the event of a spill and also during construction works.

#### *Fisheries & Aquaculture*

Mitigation outlined above for prevention of pollution will benefit fisheries and aquaculture within the area. As detailed above, design of the rubble breakwaters will maximise the potential for creation of

microhabitats for fish and other marine species. The provision of a wide range of rock sizes in the bedding stone will provide a mosaic of micro- habitats for fish food organisms, thereby attracting fish for food and shelter.

Breakwaters provide habitat comparable to natural rocky habitat and can be potentially more complex in structure. Most structures have scattered, isolated boulders at their base, which support a rich diversity of organisms. There would be considerable ecological value in deliberately adding such elements to the breakwater design for this project. Species likely to use the breakwaters include crabs and lobsters and especially prawns (DEFRA, 2001).

Algae especially the kelps, add an additional layer (up to 1m deep) of habitat complexity to the structure. This appears to be especially important for many fish species including, sand smelt, wrasse and 2 spot gobies. This algal cover may also contribute to the success of the structure as a habitat for crustacea. The following recommendations, extracted from DEFRA, 2001 are recommended when construction the rubble breakwaters:

- Opportunities for fishery habitat enhancement increase with water depth;
- Maximise the diversity of crevices as this will increase the chances of a more diverse biological community;
- Consider using a mix of materials to provide a wider range of chamber sizes;
- Where possible incorporate 'animal friendly' features into the design. For example, isolated boulders for scour pools and projections to create under hangs.

#### *Bathing & Recreation*

Mitigation outlined above for prevention of pollution will benefit bathing and recreational sites. The proposed harbour development will strive to attain Marine Blue Flag Status. No further mitigation is required.

### 3.3.3. Appropriate Assessment Report

Headings in blue below relate to the Methodological Guidance on the provisions of Article 6(3) and (4) of the Habitats Directive suggested matrix for an Appropriate Assessment Report.

Describe the individual elements of the project (either alone or in combination with other plans or projects) likely to give rise to impacts on the Natura 2000 sites.

The construction work has the potential to impact on habitats, species and water quality. Direct impact in terms of loss of habitats of conservation concern such as shallow bays and reefs are considered as well and indirect impacts from reduced water quality and noise disturbance on species such as marine mammals and qualifying interests including *Lutra lutra*; *Phoca vitulina*; *Halichoerus grypus* are considered in the assessment.

#### *In-combination Effects*

The in-combination effects are considered below with regard to other constructed, consented or in-planning developments and general land use issues with regard to the study area up to 5km from the boundary of the foreshore site.

There are plans to extend the existing north pier at Baltimore Harbour and to install a floating pontoon in the inner harbour. Natura Impact Statements for both of these developments found that there would be no significant impact on the Roaringwater Bay and Island SAC if appropriate mitigation measures outlined in the NIS were adhered to.

A new Wastewater Treatment Plant is due to be completed at Schull, which will lead to an improvement in water quality within Schull Harbour and subsequent changes to species and habitat composition. Currently there is a lack of suitable mooring facilities within Schull Harbour for fishing, aquaculture and recreational vessels. Should the proposed harbour development not proceed, the lack of a coherent control on management and mooring of boats may lead to a deterioration in water quality and damage to benthic habitats and species.

The proposed harbour development will predominantly cater for existing boat traffic within Schull. 177 out of the total 235 berths will cater for existing users of Schull Harbour, the remaining 58 berths will be made available for visiting recreational boats which will visit the site mainly from Ireland, the UK and the

north of France. It is expected that some of the 177 berths will also be rented out to visitors to Schull, when vacant.

Foul sewage from the proposed development will be piped to the new Schull Wastewater Treatment Plant. Wastewater from incoming vessels will be removed at a designated 'service area', for removal from the site and treatment at Schull WWTP. There will not be any discharge to the marine environment from the proposed harbour development. Impacts in this respect are considered neutral

Set out the conservation objectives of the site

The Qualifying Interests and Conservation Objectives for the Roaringwater Bay and Islands SAC are outlined in the Conservation Objectives Document (Vers. 1.0 19<sup>th</sup> July 2011) as follows:

**1160 Large shallow inlets and bays**

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

Habitat area; Hectares - The permanent habitat area is stable or increasing, subject to natural processes.

Community extent; Hectares - The extent of the *Zostera*-dominated and maërl-dominated communities should be conserved, subject to natural processes.

Shoot density; Shoots per m<sup>2</sup> - The quality of *Zostera*-dominated communities should be conserved, subject to natural processes.

Community structure; Biological composition - The quality of maërl-dominated communities should be conserved, subject to natural processes.

Community distribution; Hectares - The following communities should be conserved in a natural condition: Muddy sand with bivalves and polychaetes community complex; Mixed sediment community complex; Shallow sand/mud community complex.

**1170 Reefs**

To maintain the favourable conservation condition of Reefs in Roaringwater Bay and Islands SAC, which is defined by the following list of attributes and targets:

Habitat distribution, Occurrence - The distribution of Reefs is 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: Exposed to moderately exposed intertidal reef; Exposed to moderately exposed subtidal reef below 20m; Sheltered reef.

Community extent; Hectares - The extent of *Laminaria*-dominated communities should be conserved, subject to natural processes.

Community structure; Biological composition - The biology of Laminaria - dominated communities should be conserved, subject to natural processes.

**1230 Vegetated sea cliffs of the Atlantic and Baltic coasts**

To maintain the favourable conservation condition of Vegetated sea cliffs in the Roaringwater Bay and Islands SAC, which is defined by the following list of attributes and targets:

Habitat distribution; Occurrence - No decline, subject to natural processes.

Habitat length, Kilometres - Area stable or increasing, subject to natural processes, including erosion. Total length of cliff section mapped within SAC: 21.01km.

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, Centimetres - Maintain structural variation within sward.

Vegetation composition: typical species and sub - communities, Percentage cover at a representative sample of monitoring stops - Maintain range of subcommunities 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 (*Pteridium aquilinum*) on grassland and/or heath to be less than 10%. Cover of woody species on grassland and/or heath to be less than 20%.

**1351 Harbour porpoise *Phocoena phocoena***

To maintain the favourable conservation condition of Harbour Porpoise in Roaringwater Bay and Islands SAC, which is defined by the following list of attributes and targets:

Access to suitable habitat; Number of artificial barriers - Species range within the site should not be restricted by artificial barriers to site use.

Disturbance; Level of impact - Human activities should occur at levels that do not adversely affect the harbour porpoise community at the site.

**1355 Otter *Lutra lutra***

To restore the favourable conservation condition of Otter in the Roaringwater Bay and Islands SAC, which is defined by the following list of attributes and targets:

Distribution, Percentage positive survey sites - No significant decline.

Extent of terrestrial habitat, Hectares - No significant decline. Area mapped and calculated as 171ha above high water mark (HWM); 3ha along river banks/ around ponds.

Extent of marine habitat, Hectares - No significant decline. Area mapped and calculated as 0.74ha.

Extent of freshwater (river) habitat, Kilometers - No significant decline. Length mapped and calculated as 500.1km.

Couching sites and holts, Number- No significant decline.

Fish biomass available, Kilograms - No significant decline.

Barriers to connectivity, Number - No significant increase.

#### **1364 Grey seal *Halichoerus grypus***

To maintain the favourable conservation condition of Grey Seal in Roaringwater Bay and Islands SAC, which is defined by the following list of attributes and targets:

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; Moulting haul-out sites - The moulting 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 at the site.

#### **4030 European dry heaths**

To maintain the favourable conservation condition of European dry heaths in Roaringwater Bay and Islands SAC, which is defined by the following list of attributes and targets:

Habitat distribution; Occurrence - No decline from current habitat distribution, subject to natural processes.

Habitat area; Hectares - Area stable or increasing, subject to natural processes. Habitat area is not known but estimated as 5% (or 414ha) of the area of the SAC.

Physical structure: outcropping rock; Occurrence - No increase or decrease in outcropping rock or scree, subject to natural processes. (Where rock has been exposed due to human activities, decrease necessary)

Vegetation structure: dwarf shrub indicator species; Percentage cover - Cover of characteristic dwarf shrub indicator species (heather (*Calluna vulgaris*), bell heather (*Erica cinerea*) and Western gorse (*Ulex gallii*)) at least 25%.

Vegetation structure: senescent *Calluna vulgaris*; Percentage cover - Cover of senescent *Calluna vulgaris* less than 50%.

Vegetation structure: browsing; Percentage cover - Long shoots of palatable dwarf shrubs with signs of browsing collectively less than 33%.



Vegetation structure: native trees and shrubs; Percentage cover - Cover of scattered native trees and shrubs less than 20%.

Vegetation composition: positive indicator species; Number - Number of positive indicator species at least 2 (e.g. heather (*Calluna vulgaris*), bell heather (*Erica cinerea*) and Western gorse (*Ulex gallii*) or other characteristic dry heath grass and herbaceous species for this SAC).

Vegetation composition: positive indicator species; Percentage cover - Cover of positive indicator species at least 60%. This should include plant species characteristic of dry heath in this SAC including 'southern' plant species.

Vegetation composition: bryophyte and non-crustose lichen species; Number - Number of bryophyte or non-crustose lichen species present at least 2.

Vegetation composition: bracken; Percentage cover - Cover of bracken (*Pteridium aquilinum*) less than 10%.

Vegetation composition: weedy negative indicator species; Percentage cover - Cover of agricultural weed species (negative indicator species) less than 1%.

Vegetation composition: non-native species; Percentage cover - Cover of non - native species less than 1%.

Vegetation composition: rare/scarse heath species; Location, area and number - No decline in distribution or population sizes of rare/scarse species, including hairy birdsfoot trefoil (*Lotus subbiflorus*), bird's foot (*Ornithopus perpusillus*), spotted rockrose (*Tuberaria guttata*); soft clover (*Trifolium striatum*); pale dog - violet (*Viola lactea*), bird's foot clover (*Trifolium ornithopodioides*), heath pearlwort (*Sagina subulata*).

Vegetation structure: disturbed bare ground; Percentage cover - Cover of disturbed bare ground less than 10% (but if peat soil less than 5%).

Vegetation structure: burning; Occurrence - No signs of burning within sensitive areas.

### **8330 Submerged or partly submerged sea caves**

To maintain the favourable conservation condition of Submerged or partly submerged sea caves in Roaringwater Bay and Islands SAC, which is defined by the following list of attributes and targets:

Distribution; Occurrence - The distribution of sea caves occurring in the site 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 at the site.

Describe how the project or plan will affect key species and key habitats.

Acknowledge uncertainties and any gaps in information.

Potential impacts on marine mammals will be avoided by the employment of a Marine Mammal Observer during the installation of the cofferdam and construction works.

Describe how the integrity of the site (determined by structure and function and conservation objectives) is likely to be affected by the project or plan (e.g. loss of habitat, disturbance, disruption, chemical changes, hydrological changes and geological changes, etc.). Acknowledge uncertainties and any gaps in information.

If the mitigation measures outlined in Section 3. (and reiterated below) are employed the integrity of the site would not be affected by the proposed development.

Describe what mitigation measures are to be introduced to avoid or reduce the adverse effects on the integrity of the site. Acknowledge uncertainties and any gaps in information.

Mitigation is best achieved through avoidance of negative impacts where possible. Measures are proposed for the avoidance and reduction of impacts on water quality as outlined in detail in Section 3.

With regard to marine mammals the following additional mitigation will be enforced:

- A qualified and experienced Marine Mammal Observer (MMO) shall be appointed, with appropriate optical equipment to undertake a presurvey to establish that no marine mammals are present within 500 m of the site prior to commencing pile driving.
- The MMO will monitor marine mammals, particularly seals, to inform the relevant sound-producing operations (e.g. pile driving for cofferdam) and to log all relevant events using standardised data forms from the National Parks and Wildlife Services, to ensure that no marine mammals and their habitats are affected by the proposed development.
- The MMO will follow suitable guidelines as set out by the planning authority and the NPWS in relation to observations.

These mitigation measures will be presented in a Method Statement and secured by the Consulting Engineers and implemented by the Contractor according to the direction of the Consulting Engineers.

#### 4. Overall Conclusion & Statement for Appropriate Assessment

If the prescribed appropriate mitigation for avoidance and reduction of potential pollution of water quality is undertaken during the construction phases of adjacent projects, then there should be no in-combination impacts with regard to the Roaringwater Bay and Islands cSAC.

If the mitigation measures proposed as per the EIS and Construction Method Statement are employed there should be no indirect impact on the Roaringwater Bay and Islands SAC.

As the proposed harbour development will mainly facilitate existing users of the bay (circa 75%), the cumulative impact is considered neutral once mitigation measures outlined in Section 3 are adhered to.

There would be no impact on the Conservation Objectives or overall integrity of the Roaringwater Bay and Islands SAC.

## Appendix A

### Article 6(3) and (4) of the Habitats Directive

3. Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent 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.

4. If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of a social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.

Where the site concerned hosts a priority natural habitat type and/or a priority species, the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.

## **Appendix B**

### **National Parks and Wildlife Service Site Synopsis**

**Site Name: Roaringwater Bay and Islands SAC**

**Site Code: 000101**

Roaringwater Bay, Co. Cork, is a wide, shallow bay located on the south-west coast of Ireland. The SAC includes the immediate coastline on the mainland from Long Island to Baltimore, together with the whole bay and most of the islands. Some of the larger islands included are Sherkin Island, Cape Clear Island, Heir Island, Horse Island, Castle Island and Long Island. The bedrock in the area is composed of a series of Devonian Old Red Sandstone reefs that run parallel to troughs of Devonian Carboniferous marine clastics in a north-east/south-west direction. These reefs emerge to form the islands on the south side of the bay and within the bay. Generally the coast is low-lying but the southern edge rises, in line with the hills behind Baltimore, to culminate in a summit of 160 m on Cape Clear.

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):

[1160] Large Shallow Inlets and Bays
[1170] Reefs
[1230] Vegetated Sea Cliffs
[4030] Dry Heath
[8330] Sea Caves
[1351] Harbour Porpoise ( <i>Phocoena phocoena</i> )
[1355] Otter ( <i>Lutra lutra</i> )
[1364] Grey Seal ( <i>Halichoerus grypus</i> )

The bay itself has a wide variety of reef and sediment habitats, subject to a range of wave exposures and tidal currents. Within the habitat 'large shallow inlets and bays' are found the following communities: muddy sand with bivalves and polychaetes complex, mixed sediment community complex, and shallow sand-mud community complex. Also found are marine caves and reefs. The shores of the bay range from the exposed, rocky shores of South Sherkin Island, to the sheltered rock, sand and mud communities of the Inner Bay and estuarine communities where the rivers enter the bay. The shallow subtidal reefs have good examples of kelp forest community grazed by the sea urchin *Echinus esculentus*. The animal dominated reefs includes the feather star *Antedon bifida* community, the hydroid *Sertularia argentia* and *Hydrallmania falcata* community, and sponge and ascidian communities. Some of these are species-rich and at least two rare species occur; the sponge *Tethyspira spinosa* and the rare red alga *Phyllophora sicula*. The scarce hydroid *Tamariscia tamariscia* occurs at a number of sites within the bay. These communities are typical of very sheltered areas

with some current present. The cave community on Sherkin Island is home to the rare filamentous red alga, *Pterosiphonia pennata*. The sedimentary communities in Roaringwater Bay are exceptional. Of particular interest is the extensive bed of the calcareous free living red alga *Lithophyllum dentatum*, (generally termed maerl, but may be locally known as 'coral'), which is the largest in the country for this species. This bed typically contains specimens that are very large and uniquely flattened in form, with the rare filamentous red alga *Spyridia filamentosa*. *Lithophyllum dentatum* is only known from two other sites. There are also other maerl communities and several Eelgrass (*Zostera marina*) beds which may co-occur with a particularly good example in Horseshoe Bay, Sherkin Island.

The terrestrial habitats at this site are also of conservation interest and include good examples of two habitats listed under the E.U. Habitats Directive, i.e. dry heath and sea cliffs. The coastal heath vegetation is typified by an abundance of Western Gorse (*Ulex gallii*), Heather (*Calluna vulgaris*) and Bell Heather (*Erica cinerea*). This is regularly burnt in most places so that there are clearings where grasses and herbs such as Wood Sage (*Teucrium scorodonia*), Common Dog-violet (*Viola riviniana*) and Tormentil (*Potentilla erecta*) have a temporary rise to prominence before the shrubs grow again. Outcrops of rock bring variety into the heath and these areas are sometimes host to interesting species. These include many plants of southern distribution, for example the rare Red Data Book species Bird's-foot (*Ornithopus perpusillus*), Spotted Rock-rose (*Tuberaria guttata*), Hairy Bird's-foot-trefoil (*Lotus subbiflorus*), Pale Dog-violet (*Viola lactea*) and Lanceolate Spleenwort (*Asplenium billotii*). The latter three on this list are also protected under the Flora (Protection) Order, 1999. In addition there is a small amount of Deptford Pink (*Dianthus armeria*), one of only a very small number of places it grows in Ireland, though it may have been introduced here, as at other sites. Flushes and damp places through this vegetation support some interesting liverworts, as well as Bird's-foot Clover (*Trifolium ornithopodioides*) and the special annual plants of the south-west, Chaffweed (*Anagallis minima*), Yellow Centaury (*Cicendia filiformis*) and Allseed (*Radiola linoides*). Chamomile (*Chamaemelum nobile*) is also common, with Yellow Bartsia (*Parentucellia viscosa*) somewhat less so. Most of the species mentioned above have restricted distributions in Ireland.

High rocky sea cliffs are confined to the southern and south-eastern sides of Clear Island and Sherkin Island. The steep areas of rocky cliffs are generally between 30 and 60 m in height, but more sloping ground with a heath covering extends to 120 m on Clear Island and to 100 m on Sherkin Island. Low, gently sloping cliffs occur elsewhere on some of the islands and on coastal sections of the mainland (mostly less than 30 m). The cliffs have typical maritime vegetation, with Thrift (*Armeria maritima*), scurvygrass (*Cochlearia* spp.), Red Fescue (*Festuca rubra*), Sea Campion (*Silene vulgaris* subsp. *maritima*), plantains (*Plantago maritima* and *P. coronopus*), Rock Samphire (*Crithmum maritimum*), Tree-mallow (*Lavatera arborea*) and, locally, Dotted Sedge (*Carex punctata*) and the Slender Spike-rush (*Eleocharis uniglumis*).

Two Red Data Book plants, Little-Robin (*Geranium purpureum*) and Sea Pea (*Lathyrus japonicus* subsp. *maritimus*), occur rarely on shingle beaches within the site, while

Ray's Knotgrass (*Polygonum oxyspermum* subsp. *raii*) is more widespread. Sea Pea is listed in the Flora (Protection) Order, 1999. Several streams have been ponded by such beaches to create marshes of Common Reed (*Phragmites australis*) where Marsh Pennywort (*Hydrocotyle vulgaris*), Marsh Cinquefoil (*Potentilla palustris*) and marsh-orchids (*Dactylorhiza majalis* and *D. incarnata*) are frequent, together with some Creeping Willow (*Salix repens*) and Gypsywort (*Lycopus europaeus*). On Clear Island a similar marsh has developed into a bog with abundant bog mosses (*Sphagnum* spp.), Bogbean (*Menyanthes trifoliata*) and Marsh St John's-wort (*Hypericum elodes*). Sand is a notable feature of Sherkin Island and occurs to a small extent elsewhere. Wild Radish (*Raphanus raphanistrum*), Crested Hair-grass (*Koeleria macrantha*) and Sea Stork's-bill (*Erodium maritimum*) grow in this habitat, with a little Hare's-foot Clover (*Trifolium arvense*), Knotted Clover (*T. striatum*) and the Red Data Book species Lesser Centaury (*Centaureum pulchellum*). The last species is also listed under the Flora (Protection) Order, 1999.

Otter, Grey Seal and Harbour Porpoise, all mammal species listed on Annex II of the E.U. Habitats Directive, occur within the site. Grey Seal is present at the site throughout the year during all aspects of its annual life cycle which includes breeding, moulting, non-breeding, foraging and resting phases. A minimum population for all ages was estimated at 116-149 in 2005. Roaringwater Bay may be one of the most important sites in Ireland for Harbour Porpoise. Harbour Porpoise in Irish waters are largely resident and observations have shown that they are regular in the waters of Roaringwater Bay. Most observations are in the autumn, when more than 100 individuals have been recorded in a day. The population has been estimated (in 2008) to be 117-201 individuals. The main threat to Harbour Porpoise is incidental capture in fishery gear, especially set gillnets but also drift nets.

Seabirds breed on some of the islands in the bay. A survey on Clear Island in 1995 reported the following species: Fulmar - 716 pairs, Shag - 59 pairs, Lesser Black-backed Gull - 160 pairs, Herring Gull - 51 pairs, Great Black-backed Gull - 50 pairs, Guillemot - 42 individuals and Razorbill - 31 individuals. Cormorants breed on Calf Island, Carrigmore and The Catalogues (approx. 100 pairs in mid 1980s), and there is a scattering of gulls on several other islands. Roaringwater Bay has a nationally important population of Black Guillemot, with 198 individuals counted in 1999. Terns (Arctic/Common) bred within the site in the 1980s, with a large colony of 122 pairs on Carrigvish Rock in 1984. Such large numbers, however, have not been seen since and there have been no records of breeding in recent years. The site holds a very important concentration of Chough (33 pairs in 1992), as well as several pairs of Peregrine Falcon. Both of these species are listed on Annex I of the E.U. Birds Directive. Clear Island has Ireland's only manned bird observatory (established in 1959) and there is a marine research station on Sherkin Island.

In conclusion, Roaringwater Bay and Islands is a site of exceptional conservation importance, supporting diverse marine and terrestrial habitats, five of which are listed under the E.U. Habitats Directive. The site is also notable for the presence of Otter, Grey Seal and Harbour Porpoise, and supports important sea bird colonies.



Further, the site supports a large number of plants which are rare or scarce in Ireland, a number of which are listed under the Flora (Protection) Order, 1999.

