

Environmental Impact Report *for the* Harbour Improvement Works & Associated Dredging

**North Harbour,
Cape Clear Island,
Co. Cork**



MALONE O'REGAN

2B Richview Office Park,
Clonskeagh,
Dublin 14.

Tel: +353 01 2602655
Fax: +353 01 2602660
e-mail: enviro@morce.ie

St. Catherine's House,
Catherine Street,
Waterford.

Tel: +353 51 876855
Fax :+353 51 876828
e-mail: info@waterford.morce.ie

13, Mill Street,
Galway.

Tel: +353 91 531069
Fax :+353 91 531084
e-mail: info@morce.ie



Form ES - 04



2B Richview Office Park
Clonskeagh, Dublin 14
Tel: +353- 1- 260 26 55
Fax: +353- 1- 260 26 60
Email: enviro@MORce.ie

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Prepared By: Jose Alonso

Signed: 

Checked By: pp Siobhan Maher

Signed: 

Approved By: pp Siobhan Maher

Signed: 

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NON-TECHNICAL SUMMARY

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INTRODUCTION

Malone O' Regan (MOR) was commissioned by the Department of Agriculture, Food and the Marine (DAFM) to prepare an Environmental Impact Report (EIR) in order to identify, assess and develop mitigation measures where necessary with regard to potential significant impacts arising from the reconstruction works to Bull's Nose, the installation of a new storm gate and strengthening works to Duffy's Pier at the North Harbour of Cape Clear Island, Co. Cork. The proposed works will also comprise of associated dredging and reclamation works and the construction of a new slipway.

This EIR has been prepared to support a planning application for the proposed works required under the Planning and Development Regulations, 2001 – 2011 and a foreshore license application required under the Foreshore Act, 1933 - 2003 (amended).

ANALYSIS OF THE NEED FOR THE DEVELOPMENT

In recent years the condition of the Bull's Nose at the North Harbour has deteriorated. Its condition is now very poor and there is a risk that it may collapse. Should the Bull's Nose collapse, the Outer Harbour and the Basins would be exposed to severe storm waves which could cause very serious damage to vessels in the harbour and to property all around the harbour. Furthermore, the collapse of the Bull's Nose would seriously affect the sustainability of the island community as collapsed material would block the entrance to the Outer Basin thus affecting access to the island for islanders and tourists alike.

PROJECT DESCRIPTION

The proposed works will consist of the following:

- Demolition of the existing Bull's Nose.
- Excavation and dredging works down to formation level.
- Construction/ installation of a storm gate support structure incorporating a replacement structure for the demolished Bull's Nose and strengthening works to the outer end of Duffy's Pier.
- Provision of a Biparting storm gate and associated hydraulic rams and controls.
- Armour protection on the seaward side of the reconstructed Bull's Nose.
- Use of the excavated and dredged material to reclaim a section of the Inner Basin.
- The reclamation area will enable the road which currently runs adjacent to the front of the Bird Observatory Building to be relocated away from the building. Space will then be available for parking, landscaping or some seating in front of the Observatory which will be a benefit to the operation of the Observatory.

Figure 2 illustrates the proposed layout.

Dredge Spoil Generation and Beneficial Reuse

It is estimated that approx. 3,150m³ of material will be removed by excavation or dredging using excavators and rock breakers mounted on Duffy's Pier and on the partly demolished Bull's Nose. The material will be loaded onto trucks and transported to the northern end of the Inner Basin where it will be used for reclamation works. Some of the excavated material (approx. 1,200m³) will also be used to backfill and infill the new structures and as backing behind the armouring.

In general it is envisaged that the construction will take place between April and October 2013.

During the construction phase the methods of working will comply with all relevant legislation and best practice in reducing the environmental impacts of the works. Although construction phase impacts are generally short-term and are localised in nature, the impacts will be reduced as far as practicable through compliance with the mitigation measures stated in the EIR and current construction industry guidelines (such as CIRIA C584 Coastal and Marine Environmental Site Guide, 2003) where applicable.

The relevant mitigation measures, methods statements, pollution contingency planning, guidance and best practice requirements will be formalised in an Environmental Operating Plan (EOP) which will be prepared in accordance with relevant Guidelines including "Guidelines for the Creation, Implementation and Maintenance of an EOP, 2007" published by the NRA as part of the overall mitigation strategy. The EOP will assist in preventing, managing and/or minimising significant environmental impacts during the construction phase.

To achieve this objective the EOP will:

- Incorporate all Environmental Commitments/ Mitigation Measures/ Procedures set out in the Contract documents which will include conditions of any Approval as may be granted and any further requirements of Statutory Bodies;
- Provide a method of documenting compliance with these Environmental Commitments/ Mitigation Measures;
- List all relevant environmental legislative requirements and provide a method of documenting compliance with these requirements; and,
- State methods and procedures by which construction work will be managed to avoid, reduce or remedy potential adverse impacts on the environment.

ALTERNATIVES ADDRESSED

The main alternatives with respect to environmental issues addressed in this report relate to alternative dredge methods proposed, uses of the dredged spoil for beneficial purposes, timing of the works to minimize disturbance to cetaceans and the Do Nothing Alternative. The final option chosen in all regards minimizes impact on the environment.

IMPACTS ON THE ENVIRONMENT

HUMAN BEINGS - SOCIO-ECONOMIC

The North Harbour is the main access point for the people of Cape Clear and is of the utmost importance to the survival of the island community comprising approx. 124 persons. The harbour is at the centre of the island economy as the base for tourism, fishing activities and all types of transport to and from the island, passenger and cargo.

Economic activity on Cape Clear Island includes beef, goat, organic and fish farming as well as computer based services such as translation.

Tourism figures had been increasing steadily over the last decade in particular but have declined slightly in the last couple of years; this can be attributed in the main to the economic decline. Yearly visitor numbers are around the 30,000 mark bringing with them a significant economic benefit to the island.

Businesses community and services located within approximately 300m of the proposed works include:

- Bird Observatory;
- Co-op;
- Petrol Pump;
- Church ruins and old graveyard;
- Library;
- General Shop and restaurant;
- Tourist office;
- Bus stop;
- Craft shop; and,

- Public bar.

There will be no direct impacts to buildings or dwellings although the proposed works have the potential to indirectly impact on businesses through temporary loss of amenity and due to issues such as noise disturbance for which mitigation is proposed. Existing ferry services will continue to operate therefore there will be no disruption to businesses on the island in this regard.

Construction trucks will avoid the road opposite the Bird Observatory to minimise construction traffic impact on it.

The proposed reclamation area outside the Bird Observatory will be a positive benefit for visitors and locals as the road outside can be realigned away from the building. Space will then be also available for parking or optional seating.

The proposed improvement works are expected to provide a temporary positive impact on employment in the local area through the generation of jobs during the proposed improvement works, and local businesses and services may experience a small increased turnover from the supply of goods and services to workers.

The proposed works will remove the imminent risk of collapse of the Bull's Nose and the catastrophic effect that could have to islanders. Accordingly the proposed works are fundamentally necessary to ensure that island life is sustainable and that current fisheries and tourism businesses are supported.

The works are also part of an overall plan for the development of the harbour to encourage growth in tourism and improve facilities for fishing and sailing vessels and on the delivery of the Ro-Ro services to the islands in certain weather conditions.

There will be no increased risk of flooding due to potentially greater wave exposure in the long term to existing properties as a result of the proposed works.

Overall it is considered that the proposed works represent a long term major significant positive impact in socio-economic terms.

Fisheries

Fisheries comprise mainly of shrimp, lobster and crab potting. There are no operating aquaculture sites on the shores of the island. A live fish tank located close to the works may be temporarily moved as a result of the proposed works. Due to the small quantity and nature of the material to be removed, it is not considered likely that there will be any significant impact on fishing activity and fish spawning grounds just beyond the approaches to the harbour.

FLORA AND FAUNA

The waters around the North harbour have been designated as part of the Roaringwater Bay and Islands Special Area of Conservation (SAC) for a number of qualifying Annex I habitats; - large shallow inlets and bays, reefs, vegetated sea cliffs, European dry heaths and submerged or partly submerged sea cliffs. The site is also designated for three mammal species, the otter, the grey seal and the harbour porpoise. Other marine mammal species known to frequent the harbour occasionally are minke whale, fin whale and Bottlenose dolphins. Basking shark, a large fish species, is also known to come into the harbour.

Intertidal, sub-tidal and terrestrial flora and fauna and marine mammal surveys were completed as part of the assessment of impact on flora and fauna.

As a result of the surveys completed and resulting characterization of the habitats present the following impacts will occur:

- Inner Basin Reclamation Area. Loss of 1,137m² of the listed Annex I habitat *Large Shallow Inlets and Bays*. This change will be negligible negative and permanent because of the small areas involved and the low overall diversity of these habitats as well

as their extensive occurrence elsewhere within the SAC (approx. 12,809ha.) The impact will be offset in part by the inclusion of a rock armoured bund at this location.

- Alterations to the Bull's Nose and the head of Duffy's pier will have a neutral impact in that the net change in habitat will be negligible negative to neutral and short term.
- The new slipway will result in a significant change to a portion of rocky intertidal and rocky sub-tidal reef habitat lying immediately to the north of the Bull's Nose. All of these habitats are widespread within Cape Clear and the innumerable rocky inlets and outcrops around the other islands and the mainland area of the SAC. As a result, the loss of this habitat would be considered negligible, negative and permanent.

Mitigation regarding the identified habitat loss is mainly confined to the choice of materials for the rock armour installation. There is a lack of large rocks (>400mm) which can be sourced on the island for the defences therefore tetrapods or X-Blox will be required although the use of the existing demolition material will be considered for the defence outer surfaces where possible.

Dredging works are not anticipated to adversely impact on flora and fauna due to the nature of the material to be dredged which will settle out quickly within the dredge site and which, based on analysis, is not considered to pose a risk to the environment.

During the construction phase potential impacts due to escapement of bulk liquid cement, wash-off of suspended solids or escapement of oil is not anticipated to occur due to the mitigation measures to be implemented as part of the EOP. Measures will also be implemented to ensure that invasive species are not introduced as a result of the proposed works.

Construction noise can impact on otters, birds and Annex IV cetaceans and can include disturbance, behavioural impacts (such as impact on breeding habits), stress and displacement from feeding grounds. Underwater noise generated from construction within the water column can travel much further distances than noise generated in air and therefore could reach off-site breeding grounds etc. However it is not anticipated that noise will impact on marine mammals such as seals, whales etc due to the following mitigation factors and measures:

- There will be no blasting or piling carried out as a result of the proposed works. Demolition works will be completed using rock breakers and excavators. Rock breaking will take place early in April 2013 when sightings of marine mammals are lower.
- Excavators will be mounted on land and therefore there will be no engine noise from associated barges or dredgers within the water column.
- Although piling and blasting will not be carried out, a Marine Mammal Observer (MMO) will be on site during the key construction phases.

The higher level of noise and vibration may impact upon otter in the area around the proposed works and there may be some disruption to otter movement during the day when construction takes place however as otters are most active at dusk or after dark (Forest Service 2009), therefore impact on otter will be highly unlikely.

During the site survey, there were no nesting sea birds in on the cliffs facing the existing piers although birds nest on the cliffs opposite the works. As with the otters there may be some slight disturbance to birds in the harbour area although species such as gulls are likely to be already habituated to existing activities on the pier.

Roaringwater Bay and Islands SAC

The overall impact of the proposal on the SAC would be expected to be negligible. No Annex I habitat fragmentation is expected to result from the proposal nor any adverse impact on overall ecosystem functioning or integrity of the SAC.

NOISE

No noise monitoring has been carried out in the area, however during a site visit to the island it was noted that the North Harbour area is characterised by typical noise arising from pier activities including intermittent operation of boat motors and people talking however as you move away from the piers the noise level is expected to be low, especially during the night time period, and is likely to be typical of a seashore rural area.

Potential noise impacts will arise during the construction phase of the development. As the proposal is for fundamental maintenance works, it is not anticipated that the operational phase will give rise to additional noise impact.

Noise levels arising from site development and construction have been estimated in accordance with BS5228:2009 *Code of Practice for Noise and Vibration Control on Construction and Open Sites: Part 1: Noise*.

It is anticipated that ambient noise levels at the nearest receptors including the Bird Observatory are likely to be elevated during the construction phase however they will not exceed recommended criteria for construction noise levels with mitigation. Mitigation measures are proposed and include both managerial and technical measures as recommended in BS5228:2009. Blasting and piling will not be carried out as part of the proposed improvement works. Therefore vibrational effects on nearby buildings are not anticipated.

With the implementation of mitigation measures proposed, it is considered that the construction noise impact will be minimised as much as possible. Overall

construction noise levels with mitigation represent a moderate to minor adverse temporary impact on existing ambient noise levels at the nearest receptor.

LANDSCAPE AND VISUAL

Cork County is divided into 16 'Landscape Types'. According to the Cork County Draft Landscape Strategy and Skibbereen Electoral Area Local Area Plan, Cape Clear Island is classed as Landscape Type 4 "*Rugged ridge peninsulas landscape*". The landscape value is rated as *Very High* - Scenic landscapes with highest natural and cultural quality. The landscape sensitivity is also rated as *Very High* - extra vulnerable landscapes likely to be fragile and susceptible to change. Overall this landscape type is deemed of *National Importance* in the Cork County Draft Landscape Strategy i.e. areas with conservation interest and of national importance.

The North Harbour lies in a deep depression at one of the lowest points of the Island with steep cliffs to the east and west and a steep hill to the south. There are a number of buildings of interest in the harbour area including the Bird Observatory which dates from the 1800's. The original structure of the piers has been obscured in places by later concrete application however stretches are visible particularly along the older pier to the east; - Sean Rua's pier. There are also some ruins within the harbour area including the site of an old graveyard and church ruins (Templekieran) to the east and a shrine (standing stone) called 'Gallaun-Kieran' is located to the south directly facing the Harbour.

The harbour area can be viewed from the top of the cliffs to the east and west but the view is quickly obscured by vegetation from the landward side as one moves away from the harbour on the roads leading away from it. The main viewers of the immediate area of the proposed works are the Observatory and existing shops and restaurant within the immediate vicinity of the harbour. The main view for tourists entering the harbour would be

from the approaches towards the beach and the Outer Harbour.

Despite the sensitivity of the wider landscape being classified as 'very high,' the proposed development works area in the harbour would be regarded as being of a much lower sensitivity as it is already a developed area in a low lying part of the island.

During the construction phase, there will be a temporary moderate negative localised visual impact to existing viewers in the harbour due to the presence of construction equipment and the presence of spoil stockpiles on the foreshore area in the Inner Basin beside the Observatory. Measures will be implemented to reduce the height of spoil heaps and leveling will occur as regularly as possible. Works will take place in an orderly fashion.

In the long term, the current proposals will not significantly alter the existing arrangement at the piers although a small area of existing low lying rocky coastline where the proposed slipway will be located will be altered from a natural to a more built landscape. Additionally the existing quay wall in the front of the Observatory will be permanently obscured from view due to the reclamation works. The wall is not of architectural significance and the reclamation area will be levelled and surfaced. Given the existence of existing harbour structures in the area, overall it is considered that both alterations represent a minor negative localised landscape impact in the medium term reverting to neutral in the long term.

CULTURAL HERITAGE – UNDERWATER ARCHAEOLOGY

Shoreline, seabed and marine geophysical surveys were conducted in 2002 by Boland Archaeological Services Ltd covering an area larger than the proposed works footprint and including the area of the proposed improvement works. The shoreline survey comprised a foreshore inspection at low tide, centred on the proposed development. The geophysical survey comprised of a seabed profile,

side-scan sonar and proton magnetometer survey of the proposed development area. The seabed survey comprised of a seabed inspection, investigation of geophysical anomalies and a metal detection survey. In the main, the surveys did not locate features or artefacts potential or otherwise, of archaeological importance. Nevertheless, the proposed development has the potential to disturb underwater archaeological resources if present due to the nature of the works.

Accordingly, the following mitigation measures have been developed in consultation with the UAU of the DAHG:

- The works and associated dredging around the Bull's Nose will be archaeologically monitored by a suitably qualified archaeologist with underwater/marine experience, including experience in marine dredging programmes.
- All removed dredged spoil will be spread in the reclamation area and metal detected for artefact bearing potential.
- The area around the proposed location of the slipway will be further archaeologically assessed by way of walk-over and intertidal survey in advance of works commencing there to ensure there is no potential archaeology located in that area. The assessment will be undertaken by a suitably qualified archaeologist.
- All archaeological works will be carried out under licence to the DAHG and an appropriate method statement will be submitted with the licence applications.

In addition the following recommendation will be implemented:

- The present Bull's Nose and Duffy's piers will be recorded by way of a drawn and/or

photographic survey, prior to the commencement of onsite works.

The implementation of the mitigation measures listed above will ensure that there will be no significant impact on features if present.

MATERIAL ASSETS

The material assets chapter of the EIR was assessed in terms of harbour and road infrastructure and services.

Transport Infrastructure

There will be temporary landtake from the harbour area where a construction compound will be situated however this will not restrict existing activities on the Breakwater Pier. Any necessary traffic diversions put in place along the harbour during the works will be temporary in nature but overall the works will generally be completed without disruption to existing activities.

In the long term there will be a significant positive impact as the Bull's Nose will be returned to use and a new slipway will be provided. Furthermore, the existing foreshore road will be widened opposite the Observatory which represents a positive long term impact.

Services

There will be no impact on water, foul or broadband services in the area. Overhead electricity lines will be avoided although any impact resulting in loss of electricity will be temporary in nature and will be planned in advance and communicated to local stakeholders. In advance of any works on site, a detailed Method Statement and Safety Plan will be drawn up and risks identified e.g. electrical, and measures taken to minimise or eliminate these risks.

EIR

The Department of Agriculture, Food and the Marine

**Proposed Harbour Improvement Works and Associated Dredging,
Cape Clear Island,
North Harbour,
Co. Cork**

October 2012

Environmental Impact Report

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1.0 Introduction

Malone O' Regan (MOR) were commissioned by the Department of Agriculture, Food and the Marine (DAFM) to prepare an Environmental Impact Report (EIR) in order to identify, assess and develop mitigation measures where necessary with regard to potential significant impacts arising from the proposed reconstruction of the Bull's Nose, installation of a new storm gate and strengthening works to Duffy's Pier at the North Harbour of Cape Clear Island, Co. Cork. The proposed works will also comprise of associated dredging and reclamation works and the construction of a new slipway.

The location of the proposed works is shown in on Figure 1.

This EIR has been prepared to support a planning application for the proposed works required under the Planning and Development Regulations, 2001 – 2011 and a foreshore license application required under the Foreshore Act, 1933 -2005 (amended).

The works proposed will form part of the foundation for future development at the North Harbour where the existing piers, in particular the Bull's Nose, are in a state of deterioration and therefore the proposals are considered the minimum necessary to maintain existing access for islanders and tourists alike.

The development will ensure that current prevailing health and safety requirements are implemented at the harbour. Furthermore, the proposed works are in line with National and European policies for protecting island and coastal communities.

1.1 Structure and Scope of the EIR

The structure of this EIR broadly follows the sequence described below.

- Introduction.
- A description of the proposed development.
- Need for the proposed development.
- Alternatives addressed.
- Assessment and mitigation of impacts of the proposal on the environment.
- Figures, plates and appendices containing copies of relevant specialist reports detailing studies undertaken.

A non-technical summary has also been prepared.

The EIR will address the following environmental aspects:

- Human Beings;
- Flora and Fauna;
- Noise;
- Cultural Heritage – Underwater Archaeology;
- Landscape and Visual, and,
- Material Assets.

Each of the environmental aspects will be addressed in individual chapters set out as follows:

- A brief **Introduction** to the Chapter;
- An outline of the **Methodology** employed in undertaking the specialist assessment;

- A description of the **Receiving Environment** relevant to the environmental topic under consideration;
- A description of the **Characteristics and Predicted Effects/Impacts of the Proposed Development** on the receiving environment;
- A description of the reductive or **Mitigation Measures and/ or Factors** that reduce or eliminate any significant adverse environmental impacts identified;
- A description of **Residual Impact** of the proposed development. Residual impacts are the remaining impacts that will occur after the proposed mitigation measures have taken effect;
- A description of **Interactions with other Environmental Attributes**;
- Details of any **Monitoring** required;
- Details of any **Reinstatement** required; and,
- **Difficulties Encountered** in undertaking the assessment.

1.2 EIR Methodology

The appraisal was undertaken with due cognisance of the following guidance documents:

1. *Advice notes on current practice in the preparation of Environmental Impact Statements*, EPA 2003
2. *Guidelines on the information to be contained in Environmental Impact Statements*, EPA 2002.
3. *Environmental Impact Assessment (EIA), Guidance for Consent Authorities regarding Sub-threshold Developments*, 2003.
4. *Revised Guidelines for the Management of Dredged Material*, OSPAR 2004.
5. *Foreshore Acts 1933 - 2005, General Guidance Notes*, 2008.

Additional relevant Guidance documents used in the preparation of this report are listed in the relevant chapters.

1.3 Non Statutory Consultation

In August, 2012 a Consultation letter was issued to a number of stakeholders. The letter invited the stakeholders to provide comment on the harbour improvement works and associated dredging. The letter was issued to the following consultees:

- Birdwatch Ireland (BWI);
- The Department of the Arts, Heritage and the Gaeltacht (DAHG);
- Irish Whale and Dolphin (IWDG);
- Sea Fisheries Protection Authority (SFPA);
- Fáilte Ireland;
- Environmental Protection Agency (EPA);
- Regional Fisheries Centre (BIM);
- Geological Survey of Ireland (GSI);
- Comhdháil Oileáin na hÉireann, (Small Islands Federation);
- Comharchumann Chléire Teoranta;
- Cape Clear Tourist Office;
- Cailín Óir Ferry & Cruise Service;
- Cape Clear Ferries;
- Cape Clear Fast Ferry, and,
- Cork County Council (CCC).

The Marine Institute (MI) was contacted earlier in May 2012 regarding the requirements for sediment analysis via email. Correspondence is included in Appendix A.

An information meeting was held in Coláiste Phobal Chléire on the 24th of August 2012 to outline the proposed works to the island community. Thirty-one people were in attendance in total. Twenty-six were local inhabitants.

As a result of the meeting, consultation also occurred directly with Conor O Drisceoil (a local fisherman) and the Irish Cruising Club (ICC).

Dr. Michelle Cronin of the Coastal Marine Research Centre (CMRC) in University College Cork (UCC) was consulted with regard to the activities of the harbour porpoise and grey seals in the area.

Copies of correspondence received from the consultees including letters, emails and details of telephone correspondence and meetings are included in Appendix A. A summary of information provided by the consultees and the main concerns and mitigation factors/measures identified are detailed in Table 1.1 overleaf.

1.4 Project Team

MOR undertook the preparation of this EIR in conjunction with the Aquatic Services Unit (ASU), UCC, who undertook the intertidal and benthic flora and fauna survey detailed in this EIR.

MOR's in-house team comprises of engineering, chemistry, ecology and acoustic specialists who were involved in the assessment of impacts and design of mitigation measures.

1.5 Desk-Based Studies

Development plans for the harbour have been on-going at least since the early noughties. As a result, detailed surveys in relation to sediment collection and analysis and underwater archaeological surveys of the harbour and foreshore area were previously commissioned by the DAFM. These reports form the basis of some of the desk-based studies detailed in this EIR. Additional field surveys have not been undertaken in regard to these areas in consultation with the DAHG and the MI although, the Underwater Archaeology Unit (UAU) of the DAHG plan to complete a foreshore walkover in October 2012.

Table 1.1 Summary Points from Correspondence Received

Consultee	Summary Points & Action Completed or Proposed
BWI	<ul style="list-style-type: none"> • A history and detailed description of the Cape Clear Bird Observatory was given. • The proposed works are seen as a positive development. • Concerns were raised about the works affecting the ability to trade and attract visitors to the observatory. <p>Action: A response letter was issued to Birdwatch on the 21st September 2012 outlining the duration of works, construction routes and detailing the measures to be implemented during the works to minimise nuisance and in particular noise disturbance. A meeting was also held in BWI's offices on the 9th October 2012. Further detail is provided in this EIR in the project description and the assessment of noise impacts.</p>
DAHG – UAU	<ul style="list-style-type: none"> • Archaeological monitoring of the works and associated dredging of piers is to be carried out by qualified person. • A walkover and intertidal survey of the proposed slipway location is to be carried out prior to works commencing. This may be undertaken by the UAU in October 2012 or, if this is not possible, by a suitably qualified archaeologist. • All archaeological works are to be carried out under licence and a method statement is to accompany any licence application made. <p>Action: The above mitigation measures have been included in Chapter 9.0 dealing with Cultural Heritage.</p>
DAHG – Nature Conservation	<ul style="list-style-type: none"> • The DAHG provided detail on the nearest candidate Special Area of Conservation (SAC); - Roaringwater Bay and Islands and outlined the need to comply with the requirements of the European Communities (Birds and Natural Habitats) Regulations (SI 477 of 2011). In this regard a bullet point list of items to be included for the purposes of appropriate assessment was set out including the need for

	<p>a full description of the project in terms of construction and operational methodology etc. For further detail refer to Appendix A.</p> <ul style="list-style-type: none"> • Baseline data to be provided that may be relevant to the assessment was also detailed including sedimentary environment. • In particular the DAHG set out the need to consider impacts on the Annex I habitats for which the SAC is listed such as large, shallow inlets and bays, reefs and submerged or partly submerged sea caves and also the assessment of potential impacts on Annex II species specifically harbour porpoise. • Furthermore, and separate to the appropriate assessment process, the impact on all cetaceans listed under Annex IV of the Habitats Directive must be assessed particularly with regard to the introduction of disturbing noise sources. <p>Action: A separate Screening Statement has been prepared. Chapter 6.0 of this document deals with the impacts on Annex IV cetaceans.</p>
Comhdháil Oileáin na hÉireann, (Small Islands Federation) (SIF) Telephone Correspondance with Mary Lavelle (5/9/2012)	<ul style="list-style-type: none"> • SIF noted that local fishermen have applied for funding from the SIF in the past for repairs works but they do not give out such grants. • Overall the SIF were positive that the works would be proceeding.
Dr. Simon Berrow, IWDG	<p>The IWDG provided the following comments/information via letter, email and telephone correspondence:</p> <ul style="list-style-type: none"> • The harbour porpoise is a qualifying interest of the Roaringwater Bay and Islands SAC. A dip in sightings occurs around March and April every year. • Cape Clear also has regular sightings of bottlenose dolphins, common dolphin, minke whale, fin and humpback whale. • Fin and humpback occur mainly in the autumn. • Other less common species recorded in the area include killer whales and Risso's dolphin. • A Marine Mammal Observer (MMO) would be required if rock blasting is to occur. <p>Action: The above information forms part of the desk-based study with regard to assessment of the impact on cetaceans. Rock-blasting will not be required as part of the construction phase.</p>

<p>John Farrelly (SFPA) via telephone (10/9/2012).</p>	<ul style="list-style-type: none"> • The SFPA provided detail on the fishing activities in the area and noted that the existing harbour is used by a small number of fishing vessels for potting (mainly crab and lobster). • The SFPA reiterated the need for appropriate assessment. <p>Action: A separate Screening Statement has been prepared.</p>
<p>EPA</p>	<ul style="list-style-type: none"> • The EPA provided information on the Dumping at Sea application process (refer to Appendix A) however it was concluded that a Dumping at Sea permit would not be required under the Dumping at Sea Act, 1996 and Amendments as the works will take place from the landward side. • An on-line Article 11 request for advice was made (a copy is contained in Appendix A) and thereafter the EPA advised that a Certificate of Registration under the Waste Management (Facility Permit and Registration) Regulations, 2007 may be required although it was advised that further consultation take place with CCC. <p>Action: Consultation with regard to waste authorisations is on-going with CCC.</p>
<p>BIM</p>	<p>BIM provided the following information:</p> <ul style="list-style-type: none"> • Confirmation that there are no licensed aquaculture sites in the immediate vicinity of the proposed works. • A description of fishing activities in the general area. • Construction and dredging activities may affect nearby aquaculture e.g. Sherkin Island, depending on prevailing currents therefore consideration should be given to the timing of aquaculture and fishing activities. Aquaculture and fishing sectors should be contacted as part of consultation process. • This is considered a positive venture by the BIM and they think it will bring positive benefits to the local economy if managed responsibly during planning, construction and operation. <p>Action: The potential impact of the dredging works and the generation of suspended solids has been considered in this EIR in Chapters 5 and 6. Overall however it should be noted that the MAJORITY</p>

	<p>material to be removed comprises rock, clay, gravels, stoney sand and sand with low levels of silt therefore it is not anticipated that high levels of suspended solids will be generated. Additionally, the dredge quantities are very small and therefore it is highly unlikely that there could be an off-site impact on aquaculture at Sherkin Island. The main local fisherman consulted provided further detail on spawning grounds for crab, lobster and shrimp which he noted is just to the seaward side of the approaches to the harbour. This will not be impacted on as a result of the nature, quantity and location of the material to be dredged and excavated.</p>
GSI	<p>The GSI noted the following:</p> <ul style="list-style-type: none"> • The GSI/INFOMAR does not currently have any bathymetric data on the area. • A bathymetric survey of the seabed may be of benefit to the proposed works and additionally may aid observations required based on the area being a designated SAC where the issue of reefs and caves are relevant. • The closest site of geological interest lies to the north east of the Northern Harbour but is unlikely to be affected by the proposed works. <p>Action: A bathymetric survey was undertaken as part of the engineering design. A detailed intertidal survey was also completed by ASU. The habitat at the proposed slipway development site is classified as a reef and the impact has been fully assessed in Chapter 6.0. and in the Screening Statement.</p>
Comharchumann Chléire Teoranta (operating the island Development Co-op and Tourist Office)	<p>Comharchumann Chléire Teoranta provided the following:</p> <ul style="list-style-type: none"> • A brief description of the north harbour and its importance to the island community. • An understanding of the temporary disturbance brought on by the works but the longterm benefits of the proposed works. • Visitor numbers to the island are provided. • The dangerous condition of the Bull's Nose pier has potentially damaged the island as the sailing community may consider that Cape Clear is not suitable for visiting. • Comharchumann Chléire Teoranta has experience in working with various agencies and offered their assistance in bringing the proposed works to completion. <p>Action: The above information forms part of the desk-based study with regard to assessment of</p>

	<i>impact on socio-economic factors.</i>
Marine Institute (MI)	<ul style="list-style-type: none"> The MI reviewed past sediment analysis reports and was satisfied that further sampling and analysis of these sediments would not be necessary for the proposed project based on a number of factors including the low volume of material to be removed, the predominant grain size (sand) and the low level of contamination and the intended beneficial use.
Dr. Michelle Cronin, Coastal and Marine Research Centre	<p>Dr. Michelle Cronin provided the following information:</p> <ul style="list-style-type: none"> The nearest grey seal breeding and moult sites to Cape Clear is at Calf Islands and Carthy's Island in Roaringwater Bay. Harbour seals also breed and moult in Roaringwater Bay – at Creveens, Aghillaun and Truchare. Based on Dr. Cronin's pers. comm. there are there no records of either species breeding or moulting at Cape Clear. It's likely that both species use the waters around Cape Clear for foraging, especially greys as they have a wider foraging range than harbour seals. <p><i>Action: The above information forms part of the desk-based study with regard to assessment of the impact on cetaceans.</i></p>
ICC	<p>The ICC provided the following information:</p> <ul style="list-style-type: none"> A brief history of the organisations history was given. A series of longer term designs and ideas were given to increase access of yachts to the harbour thus increasing tourism to the Island. <p><i>Action: A response was provided to the ICC outlining that the works proposed at present are for upgrading the existing piers to required standards although in the long term it is envisaged that further works could be carried out to further facilitate the leisure industry. The proposals will form part of the foundation works for future development.</i></p>

<p>Connor O'Drisceoil (via telephone 20/9/2012)</p>	<p>Mr. O' Drisceoil noted that the works are a very positive development for local fishing, although he raised concerns about the need to move existing fishing equipment and a fish holding pond. He also noted that there is a non-operational fish farm to the east of the North Harbour and it has not been in use for the past 2-3 years.</p> <p>Action: The proposed works as detailed in Chapter 3.0 will not impact on the location of existing equipment. However the live fish holding tank which is currently located between the Bull's Nose and Powder Point may need to be moved temporarily.</p>
<p>CCC</p>	<p>A pre-planning meeting was held with CCC in April 2012. CCC noted the need to address impacts on the SAC and in particular habitat loss and disturbance.</p> <p>Consultation is on-going regarding waste authorisation requirements.</p>

2.0 Need for the Proposed Development

There are two main harbours on Cape Clear Island although the North Harbour is the main access point and is also known as Trá Chiaráin. Refer to Plate 1 depicting an aerial view for location. The North Harbour on Cape Clear Island provides berthing facilities and shelter for vessels serving the community on Cape Clear and the main structures and areas include the following:

- Duffy's Pier, see Plate 2. This pier is generally used by ferries and yachts and is approximately 10 metres wide and 125 metres long. The original pier was extended in relatively recent times using sheet piles and a reinforced concrete deck.
- The Outer Breakwater Pier, see Plate 3 (also known as the Bull's Nose). This pier is approximately 6 metres wide and 75 metres long. The Bull's Nose is in a poor state of repair and has been declared unsafe for use. The poor state of repair of the Bull's Nose is a significant issue for the island; its condition has a negative impact on both fishing and sailing vessels and on the delivery of Ro-Ro services to the islands in certain weather conditions.
- The Outer Harbour, see Plate 4. This area is exposed to north easterly winds. The minimum width occurs at the Bull's Nose where it is 25 metres from the high cliffs on the eastern side of the harbour. The harbour then widens to approximately 100 metres at the beach. The beach is partially stoney and is the only sandy beach on the island.
- Basins. The 13.5 metre wide gap between the Outer Breakwater Pier and Duffy's Pier provides access to the Outer Basin, see Plate 5. The Inner Basin, as shown on Plate 6 is accessed from the Outer Basin through a 7.5 metre wide gap between the Boom Wall and Duffy's Pier. The Boom Wall sub divides the basin into the Outer and Inner Basin.

Plate 1 and Figure 2 illustrate the current harbour layout.

During windy conditions vessels can vacate the Outer Harbour and move to the Outer Basin. As conditions deteriorate vessels move into the Inner Basin. During very stormy spells stop logs can be inserted in slots between the Boom Wall and Duffy's Pier in order to close the Inner Basin.

Over the course of the past 10 years or so studies have been carried out by specialist companies such as Kirk, McClure Morton, Deltares and the Hydraulics and Maritime Research Centre (HMRC) attached to University College Cork (UCC). The purpose of the studies was to develop a harbour layout which could be developed over time and to study the nature of the waves which penetrate into the harbour.

The studies concluded that wave penetration into the harbour consists of a combination of sea, swell and longer waves. For moored vessels, swell waves were found to be the dominant cause of the 'draw' in the harbour. In considering the harbour layout options development of solutions without a storm gate were considered however this was not possible and therefore the long term proposal includes for a storm gate. A preferred layout for the harbour as shown on Figure 3 has been developed. DAFM has a long term objective to develop this harbour layout and any short to medium term works must be compatible with this layout.

In recent years the condition of the Bull's Nose has deteriorated as shown on Plate 7. Its condition is now very poor and there is a risk that it may collapse. Should the Bull's Nose collapse the Outer Harbour and the Basins would be exposed to severe storm waves which

could cause very serious damage to vessels in the harbour and to property all around the harbour.

DAFM therefore wish to reconstruct the Bull's Nose and Duffy's Piers and in so doing propose to incorporate a storm gate into the new structure. The reconstructed piers and storm gate will enable the Inner and Outer basin's to be closed thereby making them a safe haven for vessels.

The scheme also proposes a new slipway and reclamation area. The existing slip in the harbour is narrow and access to it is difficult. There is a slip at the south side of the island but the road infrastructure is very poor and unsuitable for heavy vehicles. A new slipway is required to facilitate construction traffic for the development and in the longer term will be of great benefit to the community.

The reclamation area will provide access to the new slipway from the landward side and also enable the existing narrow road to be widened to the front of the bird observatory for additional parking and/or possible seating area.

Overall the current proposals as illustrated on Figure 4 are compatible with the overall masterplan for the harbour referred to earlier and shown on Figure 3.

3.0 Alternatives

The main alternatives with respect to environmental issues considered in this report relate to the following:

- alternative dredge methods proposed;
- alternative recovery or disposal options and/or possible beneficial uses for the dredged spoil;
- alternative timing of works to minimise potential impact on cetaceans;
- alternative routing of construction traffic on the piers to address the concerns of consultees and to avoid or minimise impact in this regard, and,
- the Do Nothing alternative is also addressed.

3.1 Alternative Dredging Methods

There are a variety of dredgers and means by which to employ them depending on the specifics of a particular dredging project. The quantity and type of material to be dredged, disposal alternatives, availability of equipment or cost of mobilization and environmental considerations are a number of the factors which must be evaluated in determining the most appropriate selection of dredging plant equipment.

In this instance it was determined that landbased excavators mounted on the piers presented the optimum solution based on the location of the works, the proposed beneficial reuse of the material and the nature and small quantity of the material to be excavated. The mobilisation of larger dredgers would not be cost effective or necessary for a project of this magnitude. Furthermore, this type of methodology would not lead to a greater environmental impact compared to the other dredge methods mainly due to the particle size and chemical findings in relation to the nature of the material to be removed.

3.2 Alternative Uses of the Dredged Material

One of the major difficulties encountered in dredging operations is the disposal of the dredged material in a way which is environmentally and economically sound. Options include disposal at sea and on land as well as beneficial uses of dredged material which can be

classified into three broad categories: engineered uses, agricultural and product uses, and environmental enhancement. The characterisation of the material is an important factor in matching the material with the intended beneficial use.

The dredged material will form part of a mixture comprising of rock, rubble, stoney sand and very small quantities of sediment and while some of the material will be used to construct the new piers, the remainder will be used to reclaim an area of the foreshore opposite the Bird Observatory. This will provide benefits in terms of realigning the existing road and providing access to the new slipway. The proposal represents the most innovative option available in the case of the works proposed for the North Harbour and avoids the need for off-site disposal.

3.3 Alternative Timing of Works

The timing of works has been considered in the context of avoiding or minimising potential impact on cetaceans. Cetacean activity in the harbour is more pronounced in the summer months. Therefore it was determined that the major excavation works including rock breaking which could potentially impact on cetaceans in terms of noise disturbance or even fatalities, would commence in spring to avoid the summer months of higher activity. Springtime represents the best compromise with other factors such as health and safety requirements i.e. the works could not be completed during the winter due to potential dangerous conditions that could be present. Additionally however it should be noted that the works could not be completed during the winter period either as severe weather conditions would present insurmountable health and safety issues.

3.4 Alternative Routing of Works

The routing of the transport of dredged spoil and demolition material to the Inner Basin was considered in terms of minimising noise impact and disturbance in general on the Bird Conservatory. In this regard, the majority of dredged and excavated material will be transported from the Bull's Nose site along the Breakwater Pier to the northeast corner of the Inner Basin. A smaller portion will be transported from Duffy's Pier to the northwest corner of the Inner Basin. Every effort will be made to ensure that construction traffic will not pass along the front of the Observatory.

3.5 The 'Do Nothing' Alternative

If the improvement works, and associated dredging, do not go ahead then the Bull's Nose, which is already declared unsafe for use, will continue to fall into further disrepair. This would present significant health and safety issues, prohibit access to the other piers should it collapse and would therefore inflict social, economic and financial losses to local businesses and people living on the island.

4.0 Description of the Proposed Works

A full description of the proposed works in terms of construction and operational activities is presented in this section of the EIR.

4.1 Scope of Works

The proposed works will generally comprise of the following:

- Demolition of the existing Bull's Nose.
- Excavation and dredging works down to formation level.
- Construction/installation of a storm gate support structure incorporating a replacement structure for the demolished Bull's Nose and strengthening works to the outer end of Duffy's Pier.
- Provision of a Biparting storm gate and associated hydraulic rams and controls.
- Armour protection on the seaward side of the reconstructed Bull's Nose.
- Use of the excavated and dredged material to reclaim a section of the Inner Basin and create a new slipway.

4.2 Demolition and Site Clearance Works

The existing Bull's Nose comprises of concrete, stone, grout and rock. Underlying material comprises of a combination of clays, stone and rock.

The material will be broken out using excavations and rockbreakers to formation level of -5.5 mOD Malin Head approximately. The excavated material will be loaded onto trucks, transported along the Breakwater Pier and deposited at the northern end of the Inner Basin. Some of the excavated material will also be used to backfill and infill the new structures and as backing behind the armouring.

4.3 Dredging Works

The existing bed level varies from -1.7 mOD to -4.4 mOD Malin Head in the vicinity of the proposed works. The bed material comprises of sandy and stoney material underlain by rock. The area where dredging will take place is shown on Figure 4. Dredging will be to a maximum depth of 3m in places. In terms of chemical composition, five samples of material were collected from the Inner and Outer Basin close to Duffy's Pier in 2003. The samples were analysed for a number of parameters as detailed in the report contained in Appendix B. The results indicate that dredged material from the proposed works is not likely to cause a negative impact in the marine environment due to the analysis findings and the predominant grain size (sand). The total quantity of material, approx. 3,150m³ will be excavated or dredged using excavators and rock breakers mounted on Duffy's Pier and on the partly demolished Bull's Nose. The material will be loaded onto trucks and transported to the northern end of the Inner Basin where it will be used for reclamation works. Some of the excavated material (approximately 1,200m³) will also be used to backfill and infill the new structures and as backing behind the armouring.

4.4 Proposed Structures

4.4.1 Main Structure

The main structure will comprise of reinforced concrete. It will be constructed partly below low tide -1.410 mOD Malin Head and partly above it. Formation level will be approximately -5.5 mOD Malin Head and the top level at the Bull's Nose side will be +3.3 mOD Malin Head. The top of the structure at the Duffy's Pier side will match the level of Duffy's Pier which is approximately +2.4 mOD Malin Head. Divers will be required to prepare the formation, to

erect formwork, fix reinforcement and pour the concrete until the structure rises above low water level. The main parts of the structure at each side of the proposed gate will be of hollow construction. The voids will be filled with excavated or dredged material to counteract uplift forces.

The structure will be tied into the remaining section of the Outer Breakwater Pier and Duffy's Pier using reinforcement bars dowelled and grouted into these structures.

A storm wall will be constructed on the outer face of the reconstructed Bull's Nose. Details of the proposed structure are shown on Figures 4 and 5.

4.4.2 Storm Gate

The Storm Gate will be 12 metres wide and will have a top level of +3.6 mOD Malin Head. It will comprise of steel construction with a coating system suitable for the conditions prevailing at Cape Clear. The gate will be transported to the Island on a barge and erected by cranes. The gate will operate hydraulically. In the event of a systems failure the gate can be opened or closed using a tractor and a wire rope.

4.4.3 Armour Protection

The vertical wall of the reconstructed Bull's Nose will be exposed to large incoming waves. Armouring comprising of large rock and armour units such as Tetrapods or X-Blocks will be used to dissipate the wave energy. These units will be placed on a profiled embankment at the seaside of the reconstructed Bull's Nose. The embankment will comprise of some imported stone and selected material from the demolition, excavation and dredging works as shown on Figures 4 and 5.

4.4.4 Slipway

The existing slip in the harbour is narrow and access to it is very narrow. There is a slip at the south side of the island but the road infrastructure is very poor and unsuitable for heavy vehicles. A new slip is required to facilitate construction traffic for the development and longer term will be of great benefit to the community. The location of the proposed slip is shown on Figure. 4. It will be constructed by:

- Excavation predominantly in rock using rock breakers to formation level. Blasting will not be carried out.
- Filling with suitable excavated rock supplemented as necessary with imported stone to the formation level.
- Construction of a reinforced concrete slip at a gradient of 1 in 8 and an access ramp or similar construction onto the adjacent land.

4.4.5 Reclamation Area

The area at the northern end of the Inner Harbour varies in level from approximately -0.6 to +1.5 mOD Malin Head. Material excavated or dredged from the construction works will be deposited in this area in layers. Each layer will be compacted and the outer faced protected with a layer of course stone selected from the fill material. The area will be raised to the level of the surrounding areas and finished with a layer of stone and surfaced with double surface dressing. The estimated quantity of material to be depressed in the reclamation area is 1,950m³. Surface dressing will be applied on the realigned road beside the Bird Observatory.

4.5 Construction Programme, Site and Procedures

As noted above, the main construction activity will be carried out at the Bull's Nose, the north end of Duffy's Pier and at the proposed Slip location. The dredging and excavation works including the demolition of the existing Bull's Nose is likely to be carried out in April 2013 pending receipt of planning permission.

Material will be stock-piled in the reclamation area and will be partly used as described above in the new structures. Accordingly material will be taken from the stockpiled location and brought back to the Bull's Nose and the new slipway location for use in the new structures. After all of the material required to infill the structures has been removed from the stockpile, the remaining material will be evenly spread, levelled and finished in the reclamation area with a layer of crushed rock fill. Surface dressing will be applied on the realigned road. This phase of the work is likely to be completed in October 2013.

The construction programme is expected to extend from April through to the end of October 2013.

The main area of the construction site is shown on Figure 4. It is envisaged that the majority of trucks transporting stockpiled materials to and from the reclamation area will use the Breakwater Pier to the Bull's Nose. A smaller proportion of traffic (10 -20%) will occur along Duffy's Pier to the northwest corner of the reclamation area.

During the construction phase the method of working will comply with all relevant legislation and best practice in reducing the environmental impacts of the works. Although construction phase impacts are generally short-term and are localised in nature, the impacts will be reduced as far as practicable through compliance with the mitigation measures stated in this EIR and current construction industry guidelines (such as CIRIA C584 Coastal and Marine Environmental Site Guide, 2003) where applicable.

The relevant mitigation measures, methods statements, pollution contingency planning, guidance and best practice requirements will be formalised in an Environmental Operating Plan (EOP) which will be prepared in accordance with relevant Guidelines including "Guidelines for the Creation, Implementation and Maintenance of an EOP, 2007" published by the NRA as part of the overall mitigation strategy. The EOP will assist in preventing, managing and/or minimising significant environmental impacts during the construction phase.

To achieve this objective the EOP will:

- Incorporate all Environmental Commitments/Mitigation Measures/Procedures set out in the Contract documents which will include conditions of any Approval as may be granted and any further requirements of Statutory Bodies;
- Provide a method of documenting compliance with these Environmental Commitments/Mitigation Measures;
- List all relevant environmental legislative requirements and provide a method of documenting compliance with these requirements; and,
- State methods and procedures by which construction work will be managed to avoid, reduce or remedy potential adverse impacts on the environment.

4.6 Operational Phase

As set out in Section 2.0 of this document, the proposed works are fundamentally necessary to maintain existing services at the North Harbour and to ensure accessibility for existing islanders and the tourists that visit. Accordingly, it is not anticipated that the current proposed works will result in a change to existing practices at the harbour. Nevertheless, a contingency pollution plan will be drawn up particularly for operations at the new slipway which could potentially impact on the environment. The works may form part of the overall re-development of the harbour however this would be subject to future evaluation both in economic and environmental terms as part of future planning applications.

5.0 Human Beings – Socio Economic

5.1 Introduction

This chapter of the EIR identifies and presents an assessment of the potential impacts on human beings in terms of socio-economic considerations. The potential socio-economic impacts overlap to a certain extent with material assets therefore this chapter considers the potential impacts on the local settlement structure and local industries including tourism and fishing as well as the potential impact on local businesses including the ferry services and the Bird Observatory. The material assets chapter solely deals with impacts on the services and transport infrastructure while matters such as the potential noise and visual impact of the proposed development are dealt with in specialist chapters.

5.2 Assessment Methodology

In order to complete this chapter, a desk-based study and site visit to the North Harbour and immediate surrounds was carried out to characterise the receiving environment.

The following documents and information sources were reviewed as part of the study:

- Data available from the Central Statistics Office (CSO), including Census 2011.
- National Spatial Strategy for Ireland, 2002-2020.
- National Rural Development Programme 2007-2013
- Cork County Development Plan, 2009, 2nd Edition.
- Proposed Variation to the Cork County Development Plan 2009.
- Skibbereen Electoral Area, Local Area Plan 2011.
- www.oilean-chleire.ie
- Failte Ireland South West Regional Tourism Plan 2008-2010.
- Cork County Draft Landscape Strategy 2007
- West Cork Islands Integrated Development Strategy

Consultees also provided information relevant to the characterisation of the socio-economic receiving environment.

5.3 Receiving Environment

The North Harbour is the main access point for the people of Cape Clear and is of the utmost importance to the survival of the island community. The harbour is at the centre of the island economy as the base for tourism, fishing activities and all types of transport to and from the island, both passenger and cargo.

5.3.1 Population

The Skibbereen Electoral Area Local Area Plan (LAP, 2011) states that for Cape Clear Island the identification of a development boundary or the zoning of specific sites is not considered appropriate in an island context. The key consideration is the need to reverse population decline and increase the number of permanent residents living all year round on the island. The population of the Island has remained steady since the 2002 census as shown in Table 5.1. below. The island school has 14 children at present (11 attend school on the mainland) and the indications for the sustainability of the island community are very positive (source Comharchumann Chléire Teo).

Table 5.1 Population trends of Cape Clear Island 1996-2012

Year	1996	2002	2006	2011
Population	145	129	125	124

The LAP also notes that the development of the island needs to be promoted and it is important to balance the need for additional physical development with the sensitive environmental concerns, unique to the Islands.

5.3.2 Local Economy and Employment

Economic activity on Cape Clear Island includes fishing, tourism, beef goat, organic and fish farming and computer based services such as translation. The LAP notes that micro-enterprises and home-based businesses, particularly in the areas of language tuition and translation should be promoted and in the longer term, supporting facilities to allow progression to small businesses using shared facilities is to be supported.

Statistics from 2006 indicate that the islands experienced a lower unemployment rate than the national average figure. However, CSO statistics predate the current economic recession and it is possible that the unemployment rate on the islands has changed in the past four years as per the national trend. It is noted, however, that employment on the islands can tend to be mixed, with residents participating in different activities during relevant seasons for fishing, farming and tourism for example. Figures taken from the Census website (www.cso.ie) show that there are forty-two agricultural workers (holders) on the island. All the occupational groups for the Island are outlined in Table 5.2 below.

Table 5.2 Occupations groups for Cape Clear Island in 2011.

Occupation Category	Total
Managers, Directors and Senior Officials	8
Professional Occupations	9
Associate Professional and Technical Occupations	11
Administrative and Secretarial Occupations	3
Skilled Trades Occupations	17
Caring, Leisure and Other Service Occupations	5
Sales and Customer Service Occupations	2
Process, Plant and Machine Operatives	4
Elementary Occupations	1
Not Stated	1
Total	61

Fisheries

Fishing and aquaculture are prominent in general in Roaringwater Bay. Aquaculture comprises rope cultured mussels, scallop, oyster and seaweed. Fishing activities in the area of Roaringwater Bay comprise an intensive autumn pot fishery for shrimp. Lobster and crab are fished throughout the year. Crayfish and demersal fish are targeted with tangle nets and gill nets in the outer Bay. Scallops are fished in the upper part of the Bay in winter and spring. Demersal trawling occurs in the outer part of the Bay throughout the year and there is sporadic mid-water trawling for pelagic fish. Line fishing for Mackerel and Pollack is common in summer.

Immediate North Harbour Area

There are no aquaculture sites in the immediate vicinity of the North Harbour. The nearest sites are off Sherkin Island. A fish farm previously used for farming halibut, turbot, ragworm and abalone was located east of the North harbour near Cnocan Na mBairneach however this is not currently in operation.

Shrimp is fished between October to February in the area just north of the approaches to the harbour. Lobster and crab are also fished by the local fishermen and spawning grounds for lobster, crab and shrimp are likely to occur in the area just outside the outer harbour where these species are fished. A local fisherman, Conor O' Drisceoil also has a live holding tank located between Powder Point and the Bull's Nose. This contains live shellfish in the summer months.

Tourism

Tourism is considered to be the main economic growth area. Tourism figures had been increasing steadily over the last decade in particular, but have declined slightly in the last couple of years. This can be attributed in the main to the national economic decline. Yearly visitor numbers are around the 30,000 mark (source Comharchumann Chléire Teo) bringing with them a significant economic benefit to the island. The North Harbour is the access point for these visitors and is also the first part of the island seen by them when they arrive.

The two Irish Colleges, Coláiste Phobal Chleire and Coláiste Chiaráin bring in over 450 students every summer and many parents and other family members visit the island as a result. The Irish Colleges are a significant element of the island economy and social structure. Most visitors will travel from Baltimore on the main island ferry with others arriving on other vessels or coming from Schull on the summer service that is run from there.

There has been a substantial benefit to the island historically as a result of the number of boats stopping over at Cape Clear but the continuing deterioration of the North Harbour on the island has led to a serious reduction in the number of yachts and other leisure and pleasure craft visiting.

The tourist potential of Cape Clear Island focuses sharply on its Gaeltacht culture which is a key attraction for visitors to the island, thus contributing much to the economy of the island and is also important on a social level. The island has a variety of landscapes, panoramic views of the Atlantic and the flora and fauna of the island are special. Bird watching is a prime motive for visiting the island. The remoteness of the island is also an attraction.

It is a specific tourism objective of the LAP to have sustainable tourist related development based on the natural and cultural heritage of the island and its contribution to a balanced economy for the island will be encouraged.

5.3.4 Community Services, Amenities and Businesses

Community services and businesses located within approximately 300m of the proposed works include:

- BWI Bird Observatory;
- Co-op;
- Petrol Pump;
- Library;
- General Shop and restaurant;
- Tourist office;
- Bus stop;
- Craft shop; and,

-
- Public bar.

Examples of the existing services and businesses are shown on Plates 8 and 9. The beach on North Harbour shown in Figure 2 is the only beach on the island and is therefore very important for both locals and tourists alike.

The Cape Clear Bird Observatory, which is situated adjacent to the proposed reclamation area, was founded in 1959 and moved to the present building in the North Harbour in 1963. The observatory has always depended entirely on income from paying visitors and the occasional donation. The observatory continues to operate under management and ownership of BWI. A seasonal warden is employed, from March to November each year. Facilitators are contracted to run educational courses and bookings are handled through the administration staff in Bird Watch Ireland. All of this is provided from subscriptions of paying guests. The residential education courses are run through the season and extend from weekend duration to five days.

The Observatory is located within 10m of the reclamation area, approximately 75m from the proposed slipway and approximately 94m from the proposed works at the Bull's Nose Pier.

The Cape Clear Co-Op & Shop is to the west of the pier and located approximately 14m from the reclamation area, 106m from the proposed slipway and 113m from the proposed works at the Bull's Nose Pier.

The Restaurant/Shop & Tourist Information Office is located to the south east of the pier, approx. 141m from the proposed works at Duffy's Pier.

The nearest house is located to the south of the pier, approx. 200m away from the proposed works at Duffy's Pier.

Transport Service

The island is accessed via a 45-minute ferry ride from Baltimore. One ferry operates year-round, and additional summer ferries operate from Baltimore and Schull. There is a permanent crane on the ferry to take goods on and off the ferry at the piers. The island has its own rural transport bus service that meets people from the ferry as well as a helipad used for the emergency services.

5.4 Characteristics and Potential Impacts of the Proposed Works

5.4.1 Construction Phase

Fisheries

Aquaculture

Aquaculture sites can be impacted by dredging works due to the settlement of suspended solids and associated contaminants on the beds. However it is not anticipated that there will be any direct or indirect impact on aquaculture as a result of the proposed development for the following reasons:

- The nearest aquaculture sites in operation are off Sherkin Island to the northeast.
- The small quantity of material to be dredged and the general nature of the material as sand and stoney sand with low silt content will ensure that any suspended solids generated will be localised and will fall out of suspension quickly within the harbour area and within the dredge area itself.

- The low silt/organic content in the proposed dredge area and the results of testing (Refer to Appendix B) indicate that the material does not pose a risk to the environment. The lower level guidance values set in the Marine Institute's Guidelines for the Assessment of Dredge Material for Disposal in Irish Waters, 2006 were exceeded for lead, arsenic and nickel in 3 samples taken in 2003 however it is noted in the Guidelines that lower guidance values for metals represent high background levels and it is estimated that 5% of data from uncontaminated samples would exceed these values. The Guidelines note that there is insufficient background data in Irish waters for nickel and arsenic therefore the lower threshold set are interim values.

Lobster, Crab and Shrimp Fishing

The spawning grounds for lobster, crab and shrimp located beyond the approaches to the harbour are unlikely to be affected by suspended solids drift for the same reasons outlined above with regard to aquaculture.

It is not anticipated that existing stored fishing equipment to the east of the Bird Observatory will need to be moved as a result of the proposed development.

The live fish tank used to hold lobster, shrimp and crab present between Powder Point and the Bull's Nose may be potentially damaged by the proposed works if it remained in place therefore it may be moved as part of the proposed works.

The proposed works have the potential to restrict access to the piers by fishermen and may also potentially result in damage to vessels and operators from falling debris without mitigation measures as detailed in Section 5.5.

Tourism, Local Services and Businesses

There will be no direct impacts on dwellings and buildings however the Bird Observatory, and to a lesser extent other buildings, could be impacted indirectly by temporary construction noise and loss of amenity in general due to the proposed works. The impact of noise nuisance is dealt with in Chapter 7.0 and mitigation measures/factors regarding minimisation of general disturbance are listed in Section 5.5 below.

There may also be indirect disruption to local business during the construction phase, arising due to access restrictions to parts of the pier which may be necessary during certain times of construction such as delivery of construction materials etc. However, such impacts will be very short term and temporary in nature and mitigated insofar as possible. Mitigation measures in this regard are outlined in Section 5.5.

There are no expected impacts to ferry services due to the proposed works, as the ferry will still be able to dock at Duffy's Pier during the works although mitigation measures regarding health and safety requirements may apply at certain times.

The proposed construction phase is expected to provide a short term positive impact on employment in the local area through the generation of construction jobs. Local businesses and services may also expect to experience a small increase for the supply of goods and services due to demand from construction workers.

5.4.2 Operational Phase

The proposed works will remove the imminent risk of collapse of the Bull's Nose and the catastrophic effect that could have to islanders by blocking access to the North Harbour completely. Accordingly the proposed works are fundamentally necessary to ensure that island life is sustainable and that current fisheries and tourism businesses are supported.

The works are part of an overall plan for the development of the harbour to encourage growth in tourism and improve facilities for fishing and sailing vessels and on the delivery of the RoRo services to the islands in certain weather conditions.

The reclamation area will enable the road which currently runs adjacent to the front of the Bird Observatory Building to be relocated away from the building. Space will then be available for parking, landscaping or some seating in front of the Observatory which will be a benefit to the operation of the Observatory.

A concern was raised by BWI that the new slipway could potentially cause an increased risk of flooding of the Observatory as some of the existing rock will be removed at the proposed location for the new slipway. In this regard, it is noted that the groundlevels between the Observatory and the slipway are significantly higher than general levels throughout the harbour area and will remain so after the works are completed. Accordingly it is not anticipated that there will be an increased risk of flooding.

Overall it is considered that the proposed works represent a long term major significant positive impact in socio-economic terms.

5.5 Proposed Mitigation Measures and/or Factors

5.5.1 Construction Phase

Prior to works commencing, the live fish tank may be moved to if required.

During the construction phase, the Contractor for the Works will be required to prepare and submit detailed Method Statements and Safety Plans detailing how the works will be carried out to ensure that access is maintained to current users of the pier and local businesses and also to ensure that damage to vessels does not occur. In this regard, risks will be identified and measures taken to minimize or eliminate the risk of accidents or of damage to property. Furthermore, no boats will be permitted in close proximity to demolition works to prevent damage to the fishing vessels and operators.

With regard to the Bird Observatory, general nuisance will be minimised by ensuring that trucks moving to and from the Bull's Nose to the reclamation area will use the Breakwater Pier and will not use the road in front of the Observatory. Similarly construction traffic associated with the works at Duffy's Pier will remain on the pier route between Duffy's Pier and the northwestern corner of the reclamation area.

During the construction phase the following general mitigation measures will be put in place:

- The EOP will include measures for the provision of information to the public, communication and complaints procedures, maintenance of access, and traffic management procedures. This will serve to minimise potential impacts on existing commercial activities, tourism and residential areas.

-
- Local businesses and residents will be informed in advance of the date of commencement of construction works and will be provided with information on the intended construction programme where appropriate.
 - Access to businesses will be maintained at all times during the construction phase, and temporary footways and appropriate signage *etc.* will be put in place.
 - Only the sections of pier being improved will be closed off for the duration of the construction period to facilitate the works.

Mitigation measures associated with noise nuisance are detailed in Chapter 7.0.

5.6 Residual Impacts

Overall the proposed development will have a significant long term positive impact on the socio-economic status of the island and will have the immediate effect of improving health and safety at the harbour whilst also forming part of the overall harbour plan that will underpin the long term sustainability of the island.

5.7 Interaction and Inter-relationships with other Environmental Effects

Impacts on Human Beings will interact and/ or interrelate with:

- Noise: Abatement measures to reduce the impact of noise on nearby residents and businesses during the construction phase of this project are discussed in Chapter 7.0.
- Material Assets: The issue of the impact on services such as electricity and telecoms is addressed in Chapter 9.0 – Material Assets.
- Landscape and Visual – The potential impacts on the landscape and existing viewers is discussed in Chapter 8.0.
- Water: There will be no adverse impacts to users in terms of bathing water quality on potential users of the beach area.

5.8 Monitoring

Monitoring of the impacts during the construction phase will be undertaken where required as a result of implementation of the EOP for the works.

5.9 Reinstatement

Not applicable.

5.10 Difficulties Encountered in Compiling this Information

No difficulties were encountered.

6.0 Flora and Fauna

6.1 Introduction

This chapter of the EIR presents the results of an ecological impact assessment of the proposed works on both terrestrial and marine flora and fauna present in the study area.

The assessments presented in this chapter were prepared in conjunction with the Aquatic Services Unit, UCC who focused on assessment of the potential impact of the proposed works on the marine and intertidal habitats and flora and fauna present within the study area.

A standalone Stage I Screening for Appropriate Assessment has also been prepared in respect of the proposed works although relevant details are also included for in this chapter. Appendix C contains the report prepared by ASU.

6.2 Assessment Methodology

A number of methodologies were employed in completing this chapter of the EIR including detailed intertidal and sub-tidal surveys, desk-based studies, consultation and general site visits. Details are provided below.

6.2.1 Consultation

Consultations took place with a number of consultees including National Parks and Wildlife Services (NPWS), IWDG, MI, BWI and Dr. Michelle Cronin of CMRC in order to inform the ecological assessment. Written correspondence received is included in Appendix A and summarised in Table 1.1 in Chapter 1.0 of this report.

6.2.2 Guidance Documents

In addition to the Guidance Documents listed in Section 1.2 of this report, the following guidance documents were utilised in the impact assessment on ecology:

- Institute of Environmental Assessment, 1995. Guidelines for Baseline Ecological Assessment. E&FN Spon, London.
- Royal Society for the Protection of Birds (RSPB). (1995). Wildlife Impact: The Treatment of Nature Conservation in Environmental Assessment. The RSPB, Sandy, UK.
- Regini, K. (2000). Guidelines for Ecological Evaluation and Impact Assessment. In Practice, Bulletin of the Institute of Ecology and Environmental Management. No. 29: 1-7.
- European Commission Methodological Guidance on the provision of Article 6(3) and 6(4) of the 'Habitats' Directive 92/43/EEC (EC 2001) and the European Commission Guidance 'Managing Natura 2000 Sites'.

6.2.3 Desk Based Studies

Prior to conducting any site surveys a desk-based review of information sources was completed. Information contained on the websites of the NPWS, the National Biodiversity Data Centre (NBDC) and the IWDG was reviewed.

6.2.4 Site Surveys

Intertidal Hard Benthos Survey

A walkover survey was undertaken around Cape Clear's North Harbour to assess broad habitats types and dominant intertidal species, with particular emphasis on areas most likely to be affected by the proposed development. Fieldwork was carried out on September 16th 2012 during a spring tidal cycle. A formal transect was undertaken at the north west side of the Bull's Nose in an area ear-marked for infill with rock-armour (Transect start position: 95462E 21933N). The habitats encountered were classified as closely as possible under the Joint Nature Conservation Committee (JNCC) marine habitat classification system and the species encountered assessed in terms of possible rarity. Photographs were taken of key features and these are presented in the text and the approximate vantage points of each mapped in Appendix 1 of the full report contained in Appendix C.

Sub-tidal Soft Benthos Survey

Sub-tidal Grab Samples

Sub-tidal field sampling was undertaken on 17th September 2012. All sampling stations were positioned using a GPS (Trimble Geo-XM). Five grab samples were taken and a complete list of stations sampled is presented in Appendix C, Table 2.2.1 and displayed on a map (Appendix C, Figure 2.2.1). All sub-tidal grabs were collected by means of a 0.1m² stainless steel Van-Veen Grab for benthic faunal analysis. A small amount of sediment was retained for Particle Size Analysis and Loss on Ignition Analysis. The remainder was retained for biological assessment.

Subtidal Video Survey

Fieldwork was carried out on the 17th September, 2012. All sampling stations were positioned using a GPS (Trimble Geo-XM). A complete list of stations sampled is presented in Appendix C Table 2.3.1 and are displayed in Appendix C, Figure 2.3.1.

A total of 20 transects were sampled using a drop down video camera system. Data was recorded as MPEG4 format files, recorded directly to a portable DV recorder.

At each station:

- A single recording was taken at each location. The video camera was lowered to above the sediment surface, and video imagery was recorded onto a portable DV recorder in mpeg4 format.

Sample Processing

Granulometric Analysis

Granulometric analysis was carried out on oven dried sediment samples from each station. The sediment was passed through a series of nested brass test sieves with the aid of a mechanical shaker. The brass sieves chosen were 4mm, 2mm, 1mm, 500µm, 250µm, 125µm and 63µm. The sediments were then divided into three fractions: % Gravel (>2mm), % Sand (<2.0mm >63µm) and % Silt-Clay (<63µm). Further analysis of the sediment data was undertaken using the Gradistat package (Blott & Pye, 2001¹).

Organic Matter Analysis

Organic matter was estimated using the Loss on Ignition (LOI) method. One gram of dried sediment was ashed at 450°C for 6 hours and organic carbon was calculated as % sediment weight loss.

¹ Blott SJ and K Pye, 2001, GRADISTAT, Earth Surf Proc and Landforms 26: 1237-1248

Biological Sample Processing

On returning to the laboratory all faunal samples were sieved on a 0.5mm sieve within 24 hours of collection. Samples were preserved in 4% buffered formalin to which an organic dye (Rose-Bengal) had been added. All fauna were identified to the lowest taxonomic level possible using standard keys to north-west European fauna.

General Habitat Mapping and Mammal Surveys

A selection of ecological field surveys were carried out by the MOR's in-house ecologist on the 25th - 28th May 2012 inclusive and are described in further detail below.

Habitat Survey

Field surveys for terrestrial habitats, flora and birds were carried out on the 25th and 28th May 2012. A radius of c.50m from the existing Bull's Nose Pier was surveyed for terrestrial habitat and flora. Habitats were identified and classified according to Fossitt (2000)².

Bird Survey

A bird survey of the North harbour area was carried out on the 25th of May 2012. Birds in the area were recorded by sight and call, with the aid of binoculars where necessary. Bird species nomenclature follows Dempsey and O'Clery (2010)³. The nature and type of habitats present are also indicative of the bird species likely to be present at other times of the year.

During the survey, particular attention was given to the possible presence of habitats and/or species which are legally protected under Irish or European legislation (Wildlife Acts; EU Habitats Directive; EU Birds Directive), or listed on the Flora Protection Order (1999) or Red Data books^{4,5}. Plant nomenclature follows Parnell and Curtis (2012).⁶.

Terrestrial Mammal Survey

A terrestrial mammal surveys with emphasis on otter was done on the 28th May 2012. The presence of otter and other mammals are indicated principally by their signs, such as dwellings, feeding signs, or droppings using signs described by Brown *et al.* (1995)⁷. A thorough search for otter holts within C. 150m from existing pier locations was conducted. The nature and type of habitats present are also indicative of the species likely to be present; the habitats present were assessed in general accordance with techniques adopted for the Otter Survey of Ireland⁸. Habitats listed by Fossitt (2000)⁹ and by the Nature Conservancy Council¹⁰ were referred to during the assessment.

The survey also included a general search for habitats suitable for amphibians and reptiles. The National Biodiversity Data Centre (www.NBDC.ie) has no records submitted for bat

² Fossitt, J. (2000). *A Guide to Habitats in Ireland*. The Heritage Council, Kilkenny.

³ Dempsey, E & O'Clery, M. (2010) *The Complete Field Guide to Ireland's Birds*. Gill and MacMillan, Dublin.

⁴ Curtis, T.G.F. & McGough, H.N. 1988. *The Irish Red Data Book 1: Vascular Plants*. Stationery Office, Dublin.

⁵ Newton, S., Donaghy, A., Allen, D., Gibbons, D. (1999). *Birds of Conservation Concern in Ireland*. *Irish Birds* 6 (3): 333-344.

⁶ Parnell, J and Curtis, J. (2012). *Webb's, An Irish Flora*. Cork University Press.

⁷ Brown., R.W., Lawrence, M.J. and Pope J. (1995) *Animals Tracks, Trails and Signs*. Octopus Publishing Group, London.

⁸ Bailey, M. and Rochford J. (2006) Otter Survey of Ireland 2004/2005. *Irish Wildlife Manuals*, No. 23. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

⁹ Fossitt, J. (2000). *A Guide to Habitats in Ireland*. The Heritage Council, Kilkenny.

¹⁰ Nature Conservancy Council. (1990). *Handbook for Phase I Habitat Survey - a Technique for Environmental Audit*. Nature Conservancy Council, UK.

species or badgers on the Island. However Cork County Bat Group (www.corkcountybatgroup.ie) recorded 1 resident species and 2 vagrants on Cape Clear Island to date. Cape Clear has a very small population of bats as it is further away from the mainland than Islands like Sherkin Island making it more difficult to colonize, also there is a lack of trees due to exposure. For these reasons, and given the proposed nature of the works it was decided not to carry out a specific bat survey.

Marine Mammal Survey

A marine mammal survey was carried out over the two days, May 26th-27th 2012 at the North harbour. Three 1.5hr sittings took place at high vantage points on the west coast of the Island looking out to sea. None of the surveys yielded results as the weather was particularly windy making it hard to observe movement of cetaceans out at sea.

6.3 Receiving Environment

6.3.1 Designated Conservation Areas in the Vicinity of the Proposed Works

The study area falls within or on the boundary of the Roaringwater Bay and Island Special Area of Conservation (SAC Code: 0001010). The SAC is a large site of international importance with multi-habitat and multi-species interests. A summary of the qualifying habitats and species are shown in Tables 6.1 and 6.2 below.

Table 6.1 Roaringwater Bay and Islands Annex I Habitats of Directive 92/43/EEC (the Habitats Directive)

Qualifying Habitats	Code	Site Specific Conservation Objective
Large shallow inlets and bays	1160	Maintain favourable conservation condition
Reefs	1170	Maintain favourable conservation condition
Vegetated sea cliffs of the Atlantic and Baltic coasts	1230	Maintain favourable conservation condition
European dry heaths	4030	Maintain favourable conservation condition
Submerged or partly submerged sea caves	8330	Maintain favourable conservation condition

Table 6.2 Roaringwater Bay and Islands Annex II of Directive 92/43/EEC (the Habitats Directive)

Qualifying Species	Code	Site Specific Conservation Objective
<i>Phocoena phocoena</i> (Harbour porpoise)	1351	Maintain favourable conservation condition
<i>Lutra lutra</i> (Otter)	1355	Restore favourable conservation condition
<i>Halichoerus grypus</i> (Grey seal)	1364	Maintain favourable conservation condition

6.3.2 Intertidal Flora and Fauna

Section 3.1 of the report contained in Appendix C contains detailed descriptions of the intertidal habitat present in the Outer Harbour, Inner and Outer Basin, at the proposed slipway and at the Bull's Nose existing stone embankment. A summary evaluation is presented below.

The sheltered Inner Basin has a low diversity of intertidal flora and fauna, typical of such habitats, while the outer basin, also quite sheltered, has a community dominated by shallow sub-tidal macroalgae of sheltered and current swept sites e.g. *Saccharina latissima*, and the invasive *Sargassum muticum*. Outside these areas, the back of the Bull's Nose and the rocky-outcrops to the north where the proposed slipway will be built, are typical of moderately sheltered to moderately exposed rocky shores with a greater diversity of typical species for such habitats. None of the species encountered is rare or listed for protection in the Roaringwater Bay and Islands SAC Conservation Objectives (Code 000101)

As noted above, the conservation objectives of the SAC list three Annex I aquatic habitat types, which are required to be maintained within favourable conservation status. Namely; *Large Shallow Bays and Inlets* (Habitat 1160), *Reefs* (Habitat 1170) and *Submerged or partially submerged marine caves* (Habitat 8330). Of these, the study area habitats would fall into the first two types, the third not being represented. *Large shallow inlets and bays* could only be said to be poorly represented by the North Harbour basins and Outer Harbour, by virtue of their small size and general sub-compartmentalisation. The category of *reefs* however is better represented by the habitats in the outer part of the study area in particular, i.e. the littoral rock associated with the area within the footprint of the proposed slipway and at the northern side of the Bull's Nose, where there is a continuous zonation of marine flora and associated fauna from the shallow subtidal into the littoral zone and where there is a typical representative diversity. It's important to point out that this habitat is virtually ubiquitous throughout the islands and mainland coastline which is heavily indented. Indeed the neighbouring inlet immediately to the north of the proposed slipway (Appendix C, Plate 1.1 A) has very similar conditions.

6.3.3 Sub-tidal Habitat Classification

Section 3.2 of the report contained in Appendix C details the results of sediment analysis in terms of physical and biological data from the grab samples taken.

In summary, results from the particle size assessment indicate the presence of two distinct biotopes. Infralittoral Muddy Sands (SS.ISa.IMuSa) which are present along the outer parts of North Harbour, including the approaches (interspersed with coarse sediments), to the east of the southern pier and between the southern pier and the Bull's Nose, and Infralittoral Sandy Muds (SS.IMu.ISaMu) which are present along the inner most parts of the North Harbour. This is reflected in the infaunal data collected at the site.

Video data was collected along 20 transects within the survey area. Each transect is described in detail in Section 3.3 of the report contained in Appendix C.

Overall, the benthos in North Harbour consists of a mosaic of habitats across the area. The outer harbour consists of coarser benthos; dominated by kelp forests along the margins of the entrance channel [IR.MIR.KR - Kelp and red seaweeds (moderate energy Infralittoral rock)] to Infralittoral coarse sands and gravels [SS.SCS.ICS]. The area to the east of the southern pier consists primarily of coarse sediments [SS.SCS.ICS] with occasional fine/muddy sands interspersed. The benthos immediately to the south of the Bull's Nose and west of the southern pier consists primarily of coarse gravels mixed with muddy sands (a mixed community of Infralittoral coarse sediments [SS.SCS.ICS] and Infralittoral muddy sands [SS.SSa.IMuSa]. This gives way to primarily Infralittoral sandy muds [SS.SSa.IMuSa] immediately within inner sections of the North Harbour.

6.3.4 Terrestrial Flora and Fauna and Marine Mammals

The following information on terrestrial flora and fauna and marine mammals was derived from desk-based studies and site survey.

The North Harbour encompasses the site of the existing piers and the proposed slipway and reclamation area. The following habitats are defined using Fossitt (2000). The existing piers and the sea walls are best classified as the built habitat 'sea walls, piers and jetties (CC1)', see Plate 10. The area of the existing piers is surrounded by 'buildings and artificial surfaces (BL3). Other affected areas are intertidal or subtidal and are as described in Sections 6.3.2 and 6.3.3 above.

The existing Bull's nose pier, foreshore wall and adjoining concrete pathway (CC1) are in poor condition, with subsidence and large cracks. Coastal plants have colonised niches in the broken surfaces in places, with scurvy grass (*Cochlearia officinalis*), red fescue (*Festuca rubra*) and buck's horn plantain (*Plantago coronopus*) and sea thrift (*Armeria maritima*). The pier joins on to the access road to the north (BL3). To the east of the harbour there is an old slipway and pier, see Plate 11. This area is more vegetated than the Bull's nose pier and contained orchids (*Dactylorhiza* sp.).

The sea cliffs to the east (Plate 12) of the proposed works and further north on the approaches to the harbour correspond to the Annex I habitat 'vegetated sea cliffs of the Atlantic and Baltic coasts.' On the ledges of the smaller cliffs to the north are vegetated ledges of a 'dry-humid acid grassland' (GS3), and 'dry siliceous heath (HH1)' mosaic, see Plate 13. Species found in this mosaic habitat are sea thrift (*Armeria maritima*), red fescue (*Festuca Rubra*), ling heather (*Calluna vulgaris*), western gorse (*Ulex galli*), sweet vernal grass (*Anthoxanthum odoratum*) bent grass (*Agrostis capillaris*) Sheeps sorrel (*Rumex acetosella*), buck's horn plantain (*Plantago coronopus*) and kidney vetch (*Athyllis vulneraria*).

The species found on the sides of the higher cliffs (CS1) to the east of the harbour were ivy (*Hedera helix*), western gorse (*Ulex galli*) and ling heather (*Calluna vulgaris*). The cliffs were topped with vegetation corresponding to dry siliceous heath (HH1), corresponding to the Annex I habitat 'European dry heaths' and consisted of mainly western gorse and ling heather.

To the west of the built ground area is an old graveyard and church ruin, see Plate 14. The habitat here is best described as 'dry meadows and grassy verges (GS2)'. Species included cock's-foot grass (*Dactylis glomerata*), Yorkshire fog (*Holcus lanatus*), false oat-grass (*Arrhenatherum elatius*), hogweed (*Heracleum sphondylium*), nettle (*Urtica dioica*), red clover (*Trifolium pratense*), white clover (*Trifolium repens*), creeping buttercup (*Ranunculus repens*) and plantains (*Plantago major* and *P. lanceolata*).

To the south-west of the harbour area beyond the built ground, the habitats are mainly a mosaic of 'dense bracken (HD1)' - that was beginning to become more established at the time of year surveyed. This was mixed with acid grassland (GS3). It is likely the bracken (*Pteridium aquilinum*) will dominate this habitat during the late summer-autumn period.

Directly south of the harbour is a large garden of a house. This grassland is classified as amenity grassland (GA2) and consists of bent spp (*Agrostis* spp), daisy (*Bellis perennis*), clovers (*Trifolium* spp.), Dandelion (*taraxacum* spp), and plantains (*Plantago* spp.)

In conclusion the principal terrestrial habitats within the potentially affected area include 'Piers' (CC1), Buildings and Artificial surfaces (BL3) and Dry-humid acid grassland (GS3).

Several species of rare flora which appear on the Flora Protection Order (1999) have been recorded for Cape Clear Island and are shown in Table 6.3.

Table 6.3 Rare Flora Species Recorded on Cape Clear Island (Table adapted from data derieved from the NPWS website accessed 23/05/2012 (www.NPWS.ie)).

Species Latin Name	Species Common Name
<i>Lotus subbiflorus</i>	Hairy birdsfoot trefoil
<i>Centaureum pulchellum</i>	Lesser centaury
<i>Asplenium obovatum</i> spp. <i>lanceolatum</i>	Lanceolate spleenwort
<i>Misopates orontium</i>	Lesser snapdragon

No protected flora species were noted as present in the survey area at the time of the survey although Hairy Birdsfoot Trefoil was noted 350m west of the North Harbour on a roadside and orchids (*Dactylorhiza* sp.) were observed growing at the old pier at the east of the site.

Birds

Records downloaded from the NBDC website gave the following bird list (Table 6.4) for Cape Clear Island and its surrounding waters.

Table 6.4 Bird species list for Cape Clear Island. Records taken from the NBDC website accessed 18/09/2012 ([www NBDC.ie](http://www.NBDC.ie)).

Latin Species Name	Common Species Name	Species Counts
<i>Acrocephalus schoenobaenus</i>	Sedge Warbler	1
<i>Alauda arvensis</i>	Sky Lark	2
<i>Alca torda</i>	Razorbill	3
<i>Anas platyrhynchos</i>	Mallard	1
<i>Anthus petrosus</i>	Rock Pipit	2
<i>Anthus pratensis</i>	Meadow Pipit	2
<i>Carduelis cannabina</i>	Common Linnet	2
<i>Carduelis chloris</i>	European Greenfinch	2
<i>Cephus grylle</i>	Black Guillemot	4
<i>Columba livia</i>	Rock Pigeon	2
<i>Columba palumbus</i>	Common Wood Pigeon	2
<i>Corvus corax</i>	Common Raven	2
<i>Corvus cornix</i>	Hooded Crow	2
<i>Corvus monedula</i>	Eurasian Jackdaw	2
<i>Cuculus canorus</i>	Common Cuckoo	2
<i>Cyanistes caeruleus</i>	Blue Tit	2
<i>Delichon urbicum</i>	House Martin	2
<i>Emberiza citrinella</i>	Yellowhammer	1
<i>Emberiza schoeniclus</i>	Reed Bunting	2
<i>Erithacus rubecula</i>	European Robin	2
<i>Falco tinnunculus</i>	Common Kestrel	2
<i>Fulmarus glacialis</i>	Northern Fulmar	6
<i>Gallinago gallinago</i>	Common Snipe	2
<i>Gallinula chloropus</i>	Common Moorhen	1
<i>Haematopus ostralegus</i>	Eurasian Oystercatcher	2
<i>Hirundo rustica</i>	Barn Swallow	2
<i>Larus argentatus</i>	Herring Gull	9
<i>Larus fuscus</i>	Lesser Black-backed Gull	3
<i>Larus marinus</i>	Great Black-backed Gull	5
<i>Larus ridibundus</i>	Black-headed Gull	1
<i>Morus bassanus</i>	Northern Gannet	4
<i>Motacilla alba</i>	White Wagtail	2
<i>Oenanthe oenanthe</i>	Northern Wheatear	2
<i>Parus major</i>	Great Tit	2
<i>Passer domesticus</i>	House Sparrow	2

<i>Phalacrocorax aristotelis</i>	European Shag	2
<i>Phylloscopus collybita</i>	Common Chiffchaff	1
<i>Phylloscopus trochilus</i>	Willow Warbler	2
<i>Pica pica</i>	Black-billed Magpie	2
<i>Prunella modularis</i>	Hedge Accentor	2
<i>Puffinus puffinus</i>	Manx Shearwater	4
<i>Pyrrhocorax pyrrhocorax</i>	Red-billed Chough	2
<i>Rallus aquaticus</i>	Water Rail	2
<i>Rissa tridactyla</i>	Black-legged Kittiwake	3
<i>Saxicola torquata</i>	Stonechat	2
<i>Sturnus vulgaris</i>	Common Starling	2
<i>Sylvia communis</i>	Common Whitethroat	2
<i>Troglodytes troglodytes</i>	Winter Wren	2
<i>Turdus merula</i>	Common Blackbird	2
<i>Turdus philomelos</i>	Song Thrush	2
<i>Uria aalge</i>	Common Guillemot	14

Birds

The general bird species recorded around the island on the 26th May 2012 are shown in Table 6.5. Shown also are the species that were specifically at the North Harbour.

Table 6.5 Bird species recorded on the 26th May 2012 on Cape Clear Island and the North Harbour.

Latin Species Name	Common Species Name	General Observation	At the North Harbour
<i>Columba palumbus</i>	Common Wood Pigeon	1	1
<i>Corvus cornix</i>	Hooded Crow	1	1
<i>Corvus monedula</i>	Eurasian Jackdaw	1	1
<i>Larus argentatus</i>	Herring Gull	1	1
<i>Passer domesticus</i>	House Sparrow	1	1
<i>Sturnus vulgaris</i>	Common Starling	1	1
<i>Turdus merula</i>	Common Blackbird	1	1
<i>Alca torda</i>	Razorbill	1	
<i>Circus aeruginosus</i>	Marsh harrier	1	
<i>Delichon urbicum</i>	House Martin	1	
<i>Erithacus rubecula</i>	European Robin	1	
<i>Fringilla coelebs</i>	Chaffinch	1	
<i>Fulmarus glacialis</i>	Northern Fulmar	1	
<i>Haematopus ostralegus</i>	Eurasian Oystercatcher	1	
<i>Hirundo rustica</i>	Barn Swallow	1	
<i>Larus fuscus</i>	Lesser Black-backed Gull	1	
<i>Morus bassanus</i>	Northern Gannet	1	
<i>Motacilla alba</i>	Pied Wagtail	1	
<i>Phalacrocorax aristotelis</i>	European Shag	1	
<i>Puffinus puffinus</i>	Manx Shearwater	1	

<i>Pyrhacorax pyrrhacorax</i>	Red-billed Chough	1	
<i>Turdus philomelos</i>	Song Thrush	1	

During the site survey, rocky outcrops to the north of the Bull's nose pier were used for resting herring gulls (*Larus argentatus*). BWI noted that the high cliffs to the north of the proposed works are used by nesting seabirds (pers. comm. Oran O' Sullivan).

Terrestrial Mammals including Otter

The otter has been recorded on Cape Clear¹¹ and the Otter Survey of Ireland 2004/2005.¹²

Signs of otters (*Lutra lutra*) were found around at the Bull's nose pier and at the location of the proposed slipway. These included fresh spraints located along the sea wall, see Plate 15. No holts were found during the survey. There was no visual evidence of otter activity at the existing Bull's nose and Duffy's pier locations during the site visit in 2012 although they are likely to pass through the area.

Rabbits were sighted on the Island on several occasions. The island also has a population of feral cats which were observed. Foxes and badgers are not present on the Island.¹³

Marine Mammals

The waters around the North Harbour are part of the Roaringwater Bay and Islands SAC which is designated for two marine mammal species; - the grey seal and the harbour porpoise. Harbour porpoise, basking shark and other marine mammals have been sighted around the Island and these are tabulated in Table 6.6 overleaf, which is adapted from the counts available from the IWDG website (www.IWDG.ie). This baseline data dates back to 1989. Additional records for Green Turtle (1), Loggerhead Turtle (1) and 127 additional Leatherback Turtle records were found on the NBDC website (www.NBDC.ie). Sightings of basking sharks are becoming more common with 10 of the 21 sightings recorded during 2010. Of these 9 occurred in May and June. Sighting for 2011 and 2012 were much lower, just one each year during the month of May.

Correspondence with the IWDG indicated that harbour porpoise sightings reduce during March and April.

Using data obtained from the IWDG website the following graphs were compiled to show the time of year for the most frequent sightings and abundance of the three most common species, harbour porpoise, minke whale and common dolphin, for each month using all data collected spanning 1970 and 2012 for common dolphin and 1989 and 2012 for harbour porpoise and minke whale, see Table 6.6 overleaf.

As can be ascertained from the graphs, on average the most sightings of harbour porpoise occur from June to September and their abundance peaks in July/August. According to the data, the period when the lowest number of sightings and abundances occurred is October to March.

¹¹ Sharrock, J.T.R. (2000) *The Natural History of Cape Clear Island*. Comharchumann Chléire Teo

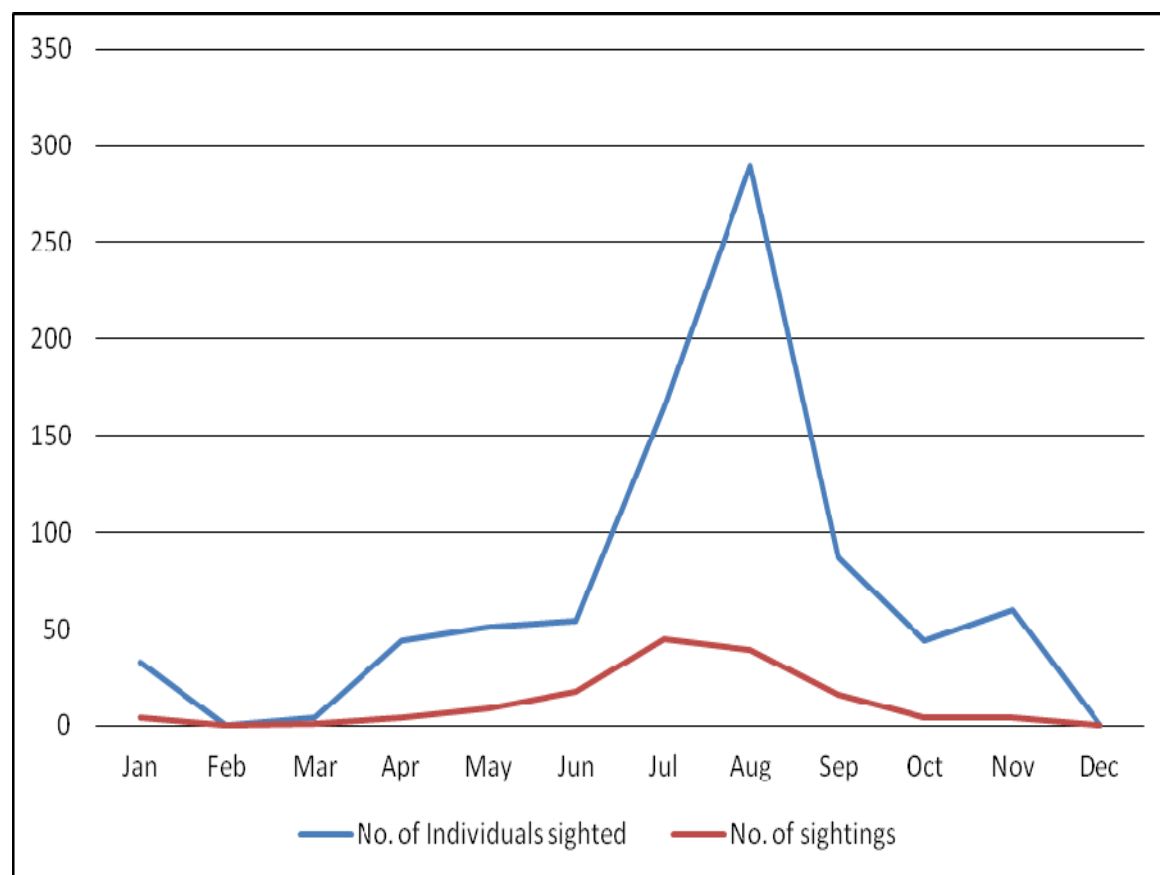
¹² Bailey, M. and Rochford J. (2006) Otter Survey of Ireland 2004/2005. Irish Wildlife Manuals, No. 23. National Parks and Wildlife Service, Department of Environment, Heritage and Local Government, Dublin, Ireland.

¹³ Sharrock, J.T.R. (2000) *The Natural History of Cape Clear Island*. Comharchumann Chléire Teo

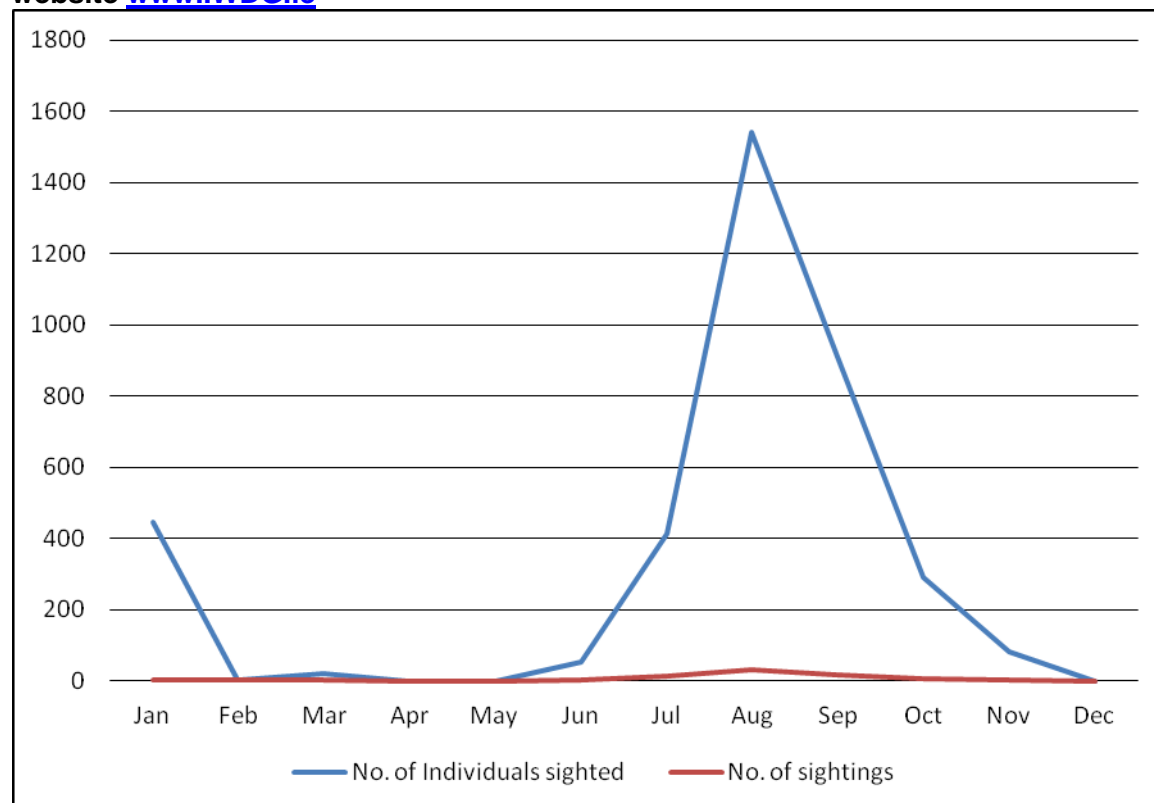
The most sightings of common dolphin occur in August and their abundance peaks in August/September. The lowest number of sightings and abundances using these data is December, February, April and May.

The most sightings of minke whale occur from July/August and their abundance peaks in July/August. The lowest number of sightings and abundances using these data is December to April.

Graph 1 Harbour Porpoise sightings and abundances (1989-2012). Data from IWDG website www.IWDG.ie



Graph 2 Common Dolphin sightings and abundances (1970-2012). Data from IWDG website www.IWDG.ie



Graph 3 Minke Whale sightings and abundances (1989-2012). Data from IWDG website www.IWDG.ie

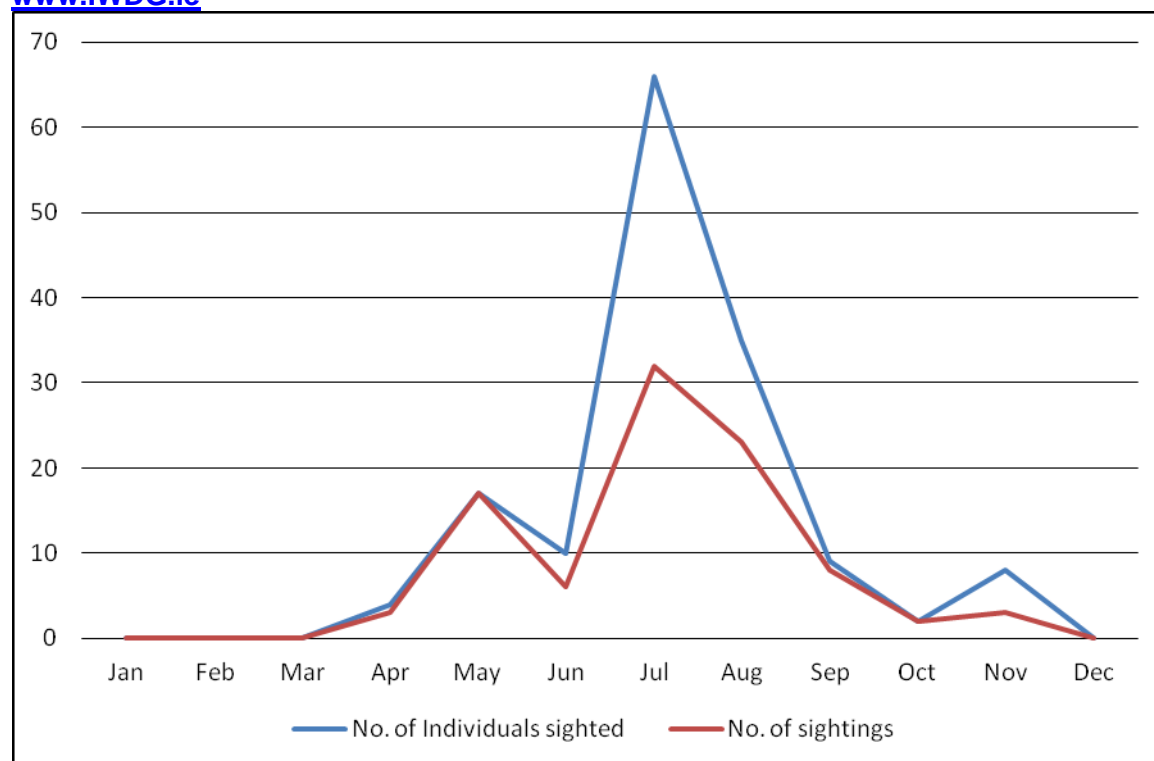


Table 6.6 Marine Mammal Counts spanning 1970-2012 observed off Cape Clear Island. Adapted from the IWDG website (accessed 18/9/2012 with last sighting inputted for the 8/9/2012)

To Species Level	No. of sightings
Harbour Porpoise	144
Minke Whale	94
Common Dolphin	79
Basking Shark	21
Risso's Dolphin	18
Fin whale	7
Killer Whale	6
Bottlenose Dolphin	5
Leatherback Turtle	4
Pilot Whale	3
Northern Bottlenose Whale	2
Humpback Whale	2
Atlantic White-Sided Dolphin	1
To Genera Level	
Dolphin Species	11
Dolphin Species (possibly Harbour Porpoise)	8
Whale Species	5
Common (or Striped Dolphin)	2
Distinct Dorsal	2
Patterned Dolphin Species	2
Medium whale Species	1
Turtle Species	2

According to email correspondence with Dr. Michelle Cronin (CMRC, UCC) the nearest grey seal breeding and moult sites to Cape Clear are at the Calf Islands and Carthys Island in Roaringwater Bay. Moult counts of 224 and 21 were recorded at each of these two sites respectively in 2007. Beyond this area there are significant haulouts of grey seals at Blasket Islands (over 1000 during moult and breeding population of about 800). Harbour seals also breed and moult in Roaringwater bay (Creveens, Aghillaun and Truchare) but there are smaller numbers than greys, less than 60 in total during moult.

There are no records of either species breeding or moulting at Cape Clear but it is likely that both species use the waters around Cape Clear for foraging, especially greys as they have a wider foraging range than harbour seals (which usually stay within 20km of haul out sites from tagging work done in the south west of Ireland).

During the site visit of the 25th May 2012, a sighting was made of a grey seal in the South harbour so it can be assumed seals will come into the north harbour also. Harbour porpoise was not observed in the North Harbour although they are likely to use the harbour on a casual basis (pers. comm. Simon Berrow). The cetacean survey of the island yielded poor results due to high winds making sightings of these large mammals extremely difficult to spot.

6.4 Characteristics and Potential Impacts of the Proposed Works

6.4.1 Habitat Loss and Habitat Alteration

Inner Basin Reclamation Area

The proposed reclamation area in the Inner Basin will result in the loss of a short portion of intertidal barren shingle and sheltered *Fucus vesiculosus* on mixed substrates habitats, as well as part of the intertidal sandy mud habitat present there. The overall area represents a loss of 1,137m² of the listed Annex I habitat *Large Shallow Inlets and Bays*. In the overall context of habitat loss and the SAC, this change will be negligible, negative and permanent, because of the small areas involved, and the low overall diversity of these habitats as well as their extensive occurrence elsewhere within the SAC (approximately 12,809ha). The impact will be offset in part by the inclusion of a rock-armour bund, which by its more stable nature will in time be colonised by a higher biomass of macroalgae (*F. spiralis*, *F. vesiculosus* and *Ascophyllum*), as well as all of the associated faunal elements present on the mixed sediments of the inner reclamation area.

Alterations to Entrance to Outer Basin and Associated Rock Armour

The alterations to the Bull's Nose and the head of Duffy's Pier will have a neutral impact in that the net change in habitat will be negligible or neutral and short-term. The addition of the armoured backing to the Bull's Nose will constitute a more significant change in that a greater alteration to habitat will entail. A significant portion of the footprint of the proposed defences are already constructed – comprising concrete (above) but in the main stone embankment, with natural rock toward the base and into the shallow subtidal. The placing of more hard substrate here (in the form of rock armour) will mean that essentially the same habitat type (i.e. intertidal rock and shallow sub-tidal) rock will be retained and so the same category of habitat i.e. reef will technically remain post construction. Nevertheless, it will take several years before the new structure develops a similar adhering floral and faunal composition to what's exists there at present, i.e. typical moderately sheltered to moderately exposed intertidal rock with fucoid seaweeds merging down into *Laminaria/Himanthalia* moderately exposed rocky sub-littoral fringe. However, it is unlikely that exactly the same community composition will result, given that the new materials will not be weathered and will lack much of the crevices and other irregularities of the current substrates, which have been in situ for many decades. Thus while the same general dominant species composition can be expected to develop in time, the full diversity may take many years to develop while the armouring becomes naturally weathered and pitted to aid attachment and provide additional microhabitats for a range of species which benefit from these surface irregularities and niches. In the overall context of the SAC, this impact would be considered negligible, negative and short to medium term.

New Slipway

The proposed new slipway will see a significant change to a portion of rocky intertidal and rocky shallow subtidal reef habitat lying immediately to the north of the Bull's Nose. The alterations will see the removal of the upper and middle shore area dominated by fucoid seaweeds including small rock pools, an exposed barnacle shore at the tip of the rocky outcrop and a fringing lower intertidal and shallow sub-littoral dominated by *Laminaria digitata*, *Himanthalia elongata*, and encrusting and free-growing red algae with associated barnacles, limpets and encrusting bryozoans. All of these habitats and communities are widespread within Cape Clear and the innumerable rocky inlets and outcrops around the other islands and the mainland area of the SAC. As a result, the loss of this habitat would be considered negligible, negative and permanent.

6.4.2 Dredging Impacts

When dredging in coastal waters, the main environmental effects are suspended sediments and increases in turbidity.

High suspended solids concentrations are harmful to ecological processes in the water column and may also affect ecological processes in intertidal areas. High turbidity can affect growth of phytoplankton and phytobenthos, functioning of fish gills, spawning processes, food uptake by and the growth of filter feeders, birds and fish that hunt by eyesight. Increased sedimentation near a dredge site can lead to burial of benthic organisms. The sensitivity of benthos for burial is dependent on the ability to grow or move upwards.

Increases in suspended sediments and turbidity levels from dredging may under certain conditions have adverse effects on marine animals and plants by reducing light penetration into the water column and by physical disturbance.

Dredging in the area of the Bull's Nose as shown on Figure 4 will result in a deepening of the seabed in the area and a localised increase in turbidity in the area during the dredging. The sediment, which has been tested in the past (refer to Appendix B), is not considered to pose a risk to the environment. Furthermore, the sediment is quite coarse comprising mainly sands and gravels. For these reasons, it is not expected that the dredging will result in any significant adverse impact. The water movements in the outer bay are such that a build-up of sediment that would have an adverse impact on intertidal or shallow sub-tidal rocky communities is unlikely to occur, with fines, instead dispersing widely in currents. Furthermore, the coarse nature of the sediment suggests that most sediment disturbed during dredging will re-settle rapidly within or immediately adjacent to the dredging footprint. After the dredging is complete, the deeper depths and slower currents may reduce the dominance of the invasive brown seaweed *Sargassum muticum*, in this immediate area, which currently is the main community just inside the entrance to the basin. Slight changes in the soft sediment benthic community are also likely to occur due to the greater depth and possibly a localised increase in fines within the footprint of the dredging. As a result, it would be expected that a greater number of polychaetes and bivalves would become dominant in the area. These impacts are considered to negligible and short-term.

6.4.3 Construction Phase

The actual construction of the project could potentially have several adverse impacts as follows:

- (i) Habitat loss or damage due to poor siting of site compound(s);
- (ii) Generation and washoff of suspended sediment during construction;
- (iii) Escapement of bulk liquid cement/concrete;
- (iv) Escapement of oil from storage or construction vehicles;
- (v) Disturbance of cetaceans due to underwater noise;
- (vi) General disturbance to birds and otters due to noise, increased activity etc, and,
- (vii) Introduction of Invasive Species.

Habitat loss or damage due to poor siting of site compound(s)

The proposed site of the construction compound is on hard-stand areas and degraded terrestrial habitats and does not impinge on the intertidal or sub-tidal habitats for which the SAC is designated and as such will not constitute a negative impact.

Generation and wash-off of suspended sediment during construction

The nature of the construction, i.e. dealing with coarse materials (rock-armour and stone) is unlikely to generate much in the way of solids, given that large earth-movements are not involved. Furthermore, fine materials such as dredge spoil will not be stored within the works compound. However, if sufficient amounts of solids were to wash out from the site, then aquatic filter-feeding organisms and plants might be at risk so that the matter must be addressed through mitigation. This impact is expected to be negligible and short-term.

Escapement of bulk liquid cement/concrete

Escapement of bulk liquid cement or concrete could constitute the most significant adverse impact during the construction phase. Thus escapement of cement during pouring or run-off from on batching onsite if required could result in large-scale wipe out of intertidal and sub-tidal plants and animals in and around the North Harbour due to the resultant increase in pH of the local seawater. The same could happen if form-work and shuttering was to give way during a cement pouring operation. These occurrences are not considered likely, but were they to occur would be significant, adverse and short-term. They can be prevented entirely by mitigation as detailed in Section 6.5.

Escapement of oil from storage or construction vehicles

Oil pollution is known to cause significant damage to intertidal and sub-tidal communities and loss of bulk stored oil or oil from construction vehicles is likely to have an adverse impact, the severity of which would depend on the volumes of oil involved. Minor leaks are likely to have negligible impacts, whereas, larger leaks and spills could have a significant negative short-term adverse impact. Mitigation measures can reduce these potential impacts to an absolute minimum and are outlined in section 6.5.

Noise Disturbance

Construction noise can impact on otters, birds and Annex IV cetaceans and can include disturbance, behavioural impacts (such as impact on breeding habits), stress and displacement from feeding grounds. Underwater noise generated from construction within the water column can travel much further distances than noise generated in air and therefore could reach off-site breeding grounds etc. However it is not anticipated that noise will impact on marine mammals such as seals, whales etc due to the following mitigation factors:

- There will be no blasting or piling carried out as a result of the proposed works. Demolition works will be completed using rock breakers and excavators. Rock breaking will take place early in April 2013 when sightings of marine mammals are lower.
- Excavators will be mounted on land and therefore there will be no engine noise from associated barges or dredgers within the water column.

The higher level of noise and vibration may impact upon otter in the area around the proposed works and there may be some disruption to otter movement during the day when construction takes place however as otters are most active at dusk or after dark (Forest Service 2009), therefore impact on otter will be highly unlikely.

During the site survey, there were no nesting sea birds in on the cliffs facing the existing piers although birds nest on the cliffs opposite the works (pers. comm. Oran O'Sullivan,

(BWI)). As with the otters there may be some slight disturbance to birds in the harbour area although species such as gulls are likely to be already habituated to existing activities on the pier.

Non-Native Invasive Species

Non-native invasive species are those that have been introduced, generally by human intervention, outside their natural range and whose establishment and spread can threaten native ecosystems. Non native species observed growing around the island included red valerian, giant rhubarb and Japanese knotweed.

Mitigation outlined in section 6.5 will be implemented to prevent introduction of invasive species during the construction phase.

6.4.4 Operational Phase

The proposed development is fundamentally required for maintaining the existing marine infrastructure on the island and is therefore not likely to result in a significant change to the current activities within the North Harbour except a shift of some local traffic to the new slipway, depending on the prevailing weather conditions. Given that this area is open and subject to good tidal exchange, there should be no build-up of trace contaminants or oil associated with vessel use, which might have a slight adverse impact on more sensitive floral or faunal elements. To some extent this will depend on whether the slipway will be used for loose cargo storage, fuel storage or boat maintenance activities, all of which could increase the potential for localised adverse impacts. Assuming that this will not be the case, the proposed slipway is unlikely to have any adverse impact during its day-to-day operation. Changes to the entrance to the Outer Basin are not expected to have any adverse impact.

6.5 Mitigation Measures

6.5.1 Habitat Loss

Mitigation for habitat loss is confined mainly to choosing materials to be used in the various rock armour installations i.e. in the Inner Basin reclamation area and the Bull's Nose outer defences, which would increase microhabitats for colonisation and increase the relative surface area for attachment and improve the likelihood of attachment. Smooth concrete walls are generally poor surfaces to colonise, whereas natural stone, especially weathered stone tends to be superior. It is important therefore to be able to incorporate natural stone, especially any weathered stone e.g. that which may be derived from the demolition of part of the Bull's Nose into the new rock armour defences which would increase the availability of microhabitats within the structure and accelerate the rate of recolonisation. There is a lack of large rocks (>400mm) which can be sourced on the island for the defences therefore tetrapods or X-Blox will be required although the use of the existing demolition material will be considered for the defence outer surfaces where possible. The opportunity for such intervention in the slipway construction would be less due to the vertical nature of the structure; however, incorporation of a roughened exterior on the perimeter walls of the slipway would promote a greater diversity of species using the structure for attachment.

6.5.2 Construction Phase Mitigation Measures

A Pollution Contingency Plan will form part of the EOP and will cover the following areas:

Reduction & Prevention of Suspended Solids and Contaminant Pollution

Appropriate mitigation measures to prevent water pollution during all the construction phases include referral to CIRIA (Construction Industry Research and Information Association) Publications. These include:

- C584 – Coastal and Marine Environmental Site Guide for protection of water quality and in turn aquatic life, during the construction phase of the works, and;
- C532 – Control of Water Pollution from Construction, Guidance for Consultants and Contractors.

In advance of any works taking place a Construction Method Statement will be drawn up. The Statement will include measures to provide for accidental spillages or seepages of pollutants, especially raw concrete. The contractor shall ensure that all personnel working on site are trained in pollution incident control response. The Contractor appointed will be required to outline how they will undertake the works in a way that minimises possible pollution of the marine environment.

Generation and wash-off of suspended sediment during construction

General good house-keeping within the construction compound will be essential. Stockpiles will be ringed to prevent wash-off to the marine environment during heavy rainfall. The compound will be laid out in such a way that it will minimise the wash-off of sediment to the marine environment. A mechanical sweeper will be permanently deployed on site to prevent the build out of solids and sediment within the site and this will be stored in skips for approved disposal.

Escapement of bulk liquid cement/concrete

If any batching is carried out then the plant will be situated well back from the edge of the water and be bunded to prevent run-off to the marine environment. The plant will be carefully maintained and monitored to ensure that any danger of pollution from the facility is eliminated. All bulk cement pouring operations will be carefully supervised at all times and all form work carefully checked for its structural integrity and seal prior to accepting bulk liquid cement/concrete.

Escapement of oil from storage or construction vehicles

All oil storage within the site compound will be in a single, bunded lock-up to contain any spills and prevent interference / vandalism. All plant will be properly maintained, checked for oil leaks and fitted with drip-trays.

Habitat loss or damage due to poor siting of site compound(s)

The construction compound will be fenced off in order to confine all activity and vehicle movements within its precincts thereby preventing any damage to neighbouring habitats.

Disturbance Noise

Measures will be taken to reduce the noise levels as much as practicable in accordance with BS5228:2:2009 – Code of Practice for Noise and Vibration Control on Construction Sites. Works will be limited to daylight hours.

Although piling and blasting will not be carried out, a Marine Mammal Observer (MMO) will be on site during the key construction phases.

Non-Native Invasive Species

Vehicles, machinery and any other equipment that may be used for the improvement works and may be in contact with the sea either directly or indirectly will be washed using high-pressure cleaning. After cleaning the vehicles, machinery and equipment will be visually inspected to ensure that all adherent material and debris has been removed.

Measures will be put in place to order to mitigate against the spread of alien invasive species and follow guidance from the International Council for the Exploration of the Sea. (2005) *Code of Practice on the Introductions and Transfers of Marine Organisms*.

6.5.3 Operational Phase

Although the proposed works are required to maintain existing access to Cape Clear and do not constitute new development, an Operational Pollution Contingency Plan will still be drawn up particularly with regard to the new slipway. This plan will cover the following general areas:

- Code of practice for the fisheries fleet deliveries and transport (ferry) harbour activities including best management practices in order to minimise the potential impact to water, sediment, harbour ecosystems and the potential to cause noise nuisance,
- Emergency Response Procedures including oil spillage and communication procedures, etc.,
- Waste management programme for wastes generated by the harbour users,
- Appropriate training for operators using the harbour, and,
- Compliance with the relevant legislation.

6.6 Residual Impacts

6.6.1 Habitat Loss

Inner Basin Reclamation Area

The loss of a portion of the sandy mud intertidal area in the Inner Basin will constitute a negligible adverse permanent impact in the context of the overall SAC. The provision of a rock-armour bund will partly off-set the loss of mixed sediment with brown seaweed which will be lost due to reclamation. This will constitute a negligible adverse permanent impact in the context of the overall SAC.

Dredging in the Bull's Nose Area

This will result in deeper (3m+) water and slacker currents at the entrance to the Outer Basin resulting in some localised changes to the benthic community at that point. These impacts are considered to be negligible to neutral and short-term.

Alterations to the Entrance Structures to the Inner Basin

These changes will be negligible to neutral and short-term.

New Armouring for the Bull's Nose

The residual impact will be negligible negative and short to medium-term.

New Slipway

Although the construction of the new slipway will result in the permanent removal of hard benthos from the area, the overall impact of the new slipway within the SAC would be considered negligible, negative and permanent.

6.6.2 Construction Phase

Adoption of the good housekeeping for the site compound as well as Best Engineering Practice as outlined in Mitigation Measures are adopted, there will be negligible short-term impacts from the proposed construction phase.

The mitigating factors inherently associated with the works and measures proposed such as a MMO will ensure that there is no significant impact on otters, birds or marine mammals.

6.6.3 Operation Phase

With the mitigation measures proposed including a Pollution Contingency Plan, negligible residual impact is anticipated.

6.6.4 Roaringwater Bay and Islands SAC

The overall impact of the proposal on the SAC would be expected to be negligible. No Annex I habitat fragmentation is expected to result from the proposal nor any adverse impact on overall ecosystem functioning or integrity of the SAC.

6.7 Interactions and Inter-relationships with other Environmental Effects

Impacts on Ecology will interact and/ or interrelate with:

- Water: There are clear interactions between ecological receptors and surface water quality described above.

6.8 Monitoring

Monitoring during the construction works to ensure that there are no impacts on water quality or the areas outside of the affected areas will be carried out as part of the EOP.

An MMO will be appointed during construction works.

6.9 Reinstatement

The new surfaces will eventually be recolonised by benthic flora and fauna.

6.10 Difficulties Encountered in Compiling this Information

No difficulties were encountered.

7.0 Noise

7.1 Introduction

This chapter of the EIR describes the potential impacts of the proposed development on the existing ambient noise environment and the mitigation measures that may be employed to reduce/ eliminate the impact. The works are carried out for health and safety purposes in order to improve the existing pier and therefore no impact is envisaged during the operational phase. Accordingly, this chapter only assesses the construction phase.

7.2 Assessment Methodology

7.2.1 Impact Prediction

Construction Phase – Noise Prediction Modelling

For this assessment, prediction of construction noise has been conducted as described in BS 5228: Part 1: 2009, Noise and Vibration Control on Construction and Open Sites. According to this standard, it is difficult to provide detailed guidance on what noise levels will constitute a problem in a particular situation. However, a number of factors such as site location, existing ambient noise levels, duration of site operations, hours of work and attitude of the site operator are likely to affect considerations of acceptability of site noise.

Construction Phase – Noise Criteria

There is no published Irish guidance relating to the maximum permissible noise level that may be generated during the construction phase of a project. The NRA has published limits for road schemes however these may not be suitable for non-linear developments. BS 5228: Part 1: 2009 provides some guidance and states that an alternative and/or additional method to determine the significance of construction noise levels is to consider the change in the ambient noise level with the construction noise. The Guidance in Annex E3.2 of the standard sets out threshold values for assessment categories based on likely existing ambient noise levels. Accordingly, the following threshold values for construction noise are considered suitable for the nearest receptors:

- Day time (07:00hrs – 19:00hrs) and Saturdays (07:00hrs – 13:00hrs) = 65dB(A) $L_{eq, T}$;
- Night time (23:00hrs – 07:00hrs) = 45 dB(A) $L_{eq, T}$; and,
- Evenings and Weekends (19:00hrs – 23:00hrs weekdays; 13:00hrs – 23:00hrs Saturdays and 07:00hrs – 23:00hrs Sundays) = 55 dB(A) $L_{eq, T}$

Note 1: Threshold values to use when existing ambient noise levels (when rounded to the nearest 5dB) are less than the above values.

Note 2: A significant effect has deemed to occur if the total L_{Aeq} noise level, including construction noise, exceeds the threshold level.

Construction Vibration

Although there are no definitive standards for vibration control during construction projects in Ireland, guidelines derived by the National Roads Authority for road construction can indicate whether a particular construction activity will potentially affect nearby receptors. These values have been derived through consideration of the following standards:

- Building Research Establishment (BRE) Digest 353 (July 1990); *Damage to structures from ground-borne vibration*; and,

- British Standard BS 7385 (1993): *Evaluation and measurement for vibration in buildings, Part 2: Guide to damage levels from ground borne vibration.*

Table 7.1 Allowable Vibration Velocity (Peak Particle Velocity) at the Closest Part of any Sensitive Property to the Source of Vibration at Specified Frequencies

Less than 10Hz	10 to 50Hz	50 to 100Hz (and above)
8 mm/s	12.5 mm/s	20 mm/s

The values presented in Table 7.1 above apply to relatively modern buildings. For historic buildings, or sites of archaeological interest, the limit values in the BRE Digest and BS 7385 apply, which are as follows:

"For structures that are of great intrinsic value and are particularly sensitive to vibration, transient vibration should not exceed 3 mm/s at low frequencies. Allowable levels increase to 8 mm/s at 50Hz and 10mm/s at 100Hz and above.

7.3 Receiving Environment

No noise monitoring has been carried out in the area, however during a site visit to the island it was noted that the North Harbour area is characterised by typical noise arising from pier activities including intermittent operation of boat motors and people talking however as you move away from the piers the noise level is expected to be low, especially during the night time period, and is likely to be typical of a seashore rural area. Table 7.2 below describes the nearest receptors to the proposed development. Figure 7 shows the location of the proposed works and the nearest receptors.

Table 7.2 Description of Nearest Receptors

Monitoring Point	Description of Location
Receptor 1	The BWI Bird Observatory is located to the west of the pier. Receptor 1 is located within 10m from the proposed reclamation area, approx. 22m from the construction traffic route, 75m from the proposed slipway and 94m from the proposed works at the Bull's Nose.
Receptor 2	Cape Clear Co-op & Shop is located to the west of the Inner Basin and is approximately 14m from the reclamation area, 106m from the proposed slipway and 113m from the proposed works at the Bull's Nose and Duffy's Pier.
Receptor 3	The Restaurant/ Shop & Tourist Information Office is located beside the beach in the Outer Harbour to the south east of the proposed works. Receptor 3 is located approx 141m from the proposed works at Duffy's Pier.
Receptor 4	Nearest house to the south of the harbour, approx. 200m from the proposed works at Duffy's Pier.

7.4 Characteristics and Potential Impacts of the Proposed Works

The construction phase has the potential to impact on the existing ambient noise environment by elevating noise levels in the short term through the use of plant equipment in close proximity to noise sensitive receptors. Construction work can pose different problems of noise and vibration control compared with most other types of industrial activity because it

is mainly carried out in open spaces, is temporary in nature, may emanate from different activities and its intensity and character can vary greatly during different phases of construction.

The proposed works are described in detail in Chapter 4.0 of this report. In summary the main construction activity, will be carried out at the Bull's Nose, the north end of Duffy's Pier and at the Slip. Approximately 80 – 90% of the work will be on the Bull's Nose with the remainder at Duffy's Pier. The construction programme is expected to extend from April through to the end of October 2013, however much of the heavy rock breaking and most of the dredging and excavation works including the demolition of the existing Bull's Nose is likely to be carried out during a one month period - April 2013.

Material will be stock-piled in the reclamation area and will be partly used in the new structures. Accordingly, construction traffic from the Bull's Nose to the northeastern corner of the reclamation area will travel along the Breakwater Pier while construction traffic from Duffy's Pier will travel along the same pier to the northwestern corner of the reclamation area. All efforts will be taken to ensure that the construction traffic are confined to these routes.

After all of the material required to infill the structures has been removed from the stockpile, the remaining material will be evenly spread, levelled and finished in the reclamation area with a layer of crushed rock fill. Surface dressing will be applied on the realigned road. This phase of the work is likely to be completed in October 2013.

Table 7.3 overleaf details typical noise sources that may be in operation at different times during construction.

It should be noted that for the following reasons, predicting the construction noise impact of any proposed development is very difficult:

- Construction will be subject to a tendering process, therefore the prediction of construction noise can only be an outline of likely sources used;
- The sound power ratings used for each piece of equipment in the assessment, as taken from BS5228, may vary from the actual equipment used on site (Annex C of the Code of Practice outlines various noise levels for each type of equipment);
- It is not possible to outline for definite the type of equipment which will be in use, or the duration of time each piece of equipment will be in use; and,
- Noise emissions from construction vary in intensity and character but also in location and over time as noted above.

Notwithstanding the above, Table 7.3 outlines predicted construction noise levels at Receptor 1 for numerous construction activities that may take place and at the likely different distances to each activity. The noise predictions take account of any natural screening provided by the higher terrain to the east of Receptor 1 with regard to the slipway construction. It is conservatively estimated that a further 5dB reduction could occur due to natural screening of the slipway area from Receptor 1.

Construction noise within the site will attenuate with distance in accordance with the following equation:

Eqn 1: $20\log(R1/R2)$

Where R1 is the distance to the receptor (e.g. approx 22m from the traffic route to/from the reclamation area) and R2 is the distance at which the SPL is measured, i.e. 10m.

The predictions in Table 7.3 do not specify the time over which the noise source will be active i.e. the predictions are expressed as $L_{Aeq,t}$ as opposed to $L_{Aeq, 15mins}$ or 30mins or 1 hour as the case may be. So, if a dump truck ($L_{Aeq,t}$ is predicted to be 75 dB at Receptor 1 in Table 7.3) was active over 5mins in a 1 hr assessment period then the $L_{Aeq,1hr}$ would be 64 dB using the following equation:

Eqn 2: $L_{Aeq, 1hr} = 10 \log ((t1 \times 10^{L1/10} + t2 \times 10^{L2/10})/T)$

Where t1 is 5x60secs

t2 is 55 x 60 secs

L1 is 59dB

L2 is 49dB (measured ambient level)

T is 60x60secs

As outlined in Table 7.3 it is estimated that noise levels experienced at the Receptor 1 façade will range from 44dB to 78dB L_{AeqT} during site preparation and construction works with an average level of 69dB L_{AeqT} experienced overall without mitigation. This level therefore exceeds the criteria set out in Annex E3.2 BS 5228: Part 1: 2009 for construction noise. Construction works will result in temporarily elevated ambient noise levels at the nearest receptors. The predictions in Table 7.3 do not take account of mitigation measures which can be implemented during the construction phase as set out in Section 7.5. Accordingly construction noise is likely to be lower than that predicted in Table 7.3 and therefore below the recommended criteria.

Construction Vibration

Considering the distance between the main construction areas and the nearest sensitive receptors, and the fact that no blasting or piling activities will be required, it is not considered that the construction phase will result in vibrational impacts at the nearest receptors.

Table 7.3 Likely Noise Levels arising from the Construction Works Predicted at the Nearest Receptor (without mitigation)

Activity	Activity equivalent continuous sound pressure level $L_{Aeq,T}$ @10m	Predicted $L_{Aeq,t}$ @ Receptor 1 ^{1,2}
Dredging & Rock Breaker (at slipway) <i>Likely Equipment to be Used for Removal and Reinstatement of rock armour:</i>		
Long reach tracked excavator	78	55
Excavator mounted rock breaker (102kW; 23t)	85	62
Instatement of Rock Armour at Bull's Nose and Deposition of Material at Reclamation Area <i>Likely Equipment to be Used for Removal and Reinstatement of rock armour:</i>		
Long reach tracked excavator and crane	78	59
Tipper lorry/Placing of rock fill	85	78
Tracked loader	84	77
Tracked excavator and lorry	76	69
Dump Truck	82	75
Wheeled Excavator/ loader	76	69
Concrete Works (at slipway) <i>Likely Equipment to be Used:</i>		
Truck mixer (discharging)	67	44
Pumping concrete - truck mixer	81	58
Placing concrete and compaction – (combined truck mixer, tracked crane, poker vibrator)	86	63
Concrete pump 2.8 t / 180 mm diameter	78	55
Concrete pump 120 mm diameter	75	52
<i>Other Likely Noise Sources in Operation at different times:</i>		
Diesel Driven Generator	82	69
Compressor	81	68
Poker vibrators	78	65
Electric percussion drills	78	65
Hand-held petrol driven disc cutter	84	71
Site Fork Lift Trucks (idling)	77	64
Diesel Hoist	76	63
Dumper	82	69
Tracked Crane	86	73
Lorry	85	72
Installation of the Storm Gate <i>Likely Equipment to be Used: Craneage</i>		
Wheeled mobile telescopic crane	78	54
Mobile telescopic crane	82	58
Tracked mobile crane	75	51

Source: BS5228-1:2009: Code of Practice for Noise and Vibration Control on Construction and Open Sites: Part 1: Noise.

Note1: Predicted L_{Aeq} to Receptor 1 is estimated based on the following distances: 22m from the traffic route to/from the reclamation area, 75m from the proposed slipway, 94m from the proposed works at Bull's Nose, 113m to the proposed storm gate and 45m to the construction compound.

Note 2: It is envisaged that Receptor 1 will be partially screened from works at the slipway by the surrounding higher terrain adjacent to the east of the receptor. Therefore it is conservatively estimated that a further 5dB reduction will occur. This reduction has been taken into account for the predicted $L_{Aeq,T}$ at Receptor 1 with regard to slipway construction.

7.5 Proposed Mitigation Measures and/or Factors

It is difficult to devise alternative methods of construction however the general mitigation measures listed below will be implemented where necessary in order to ensure that the threshold values given in Annex E3.2 of the BS 5228: Part 1: 2009 are adhered to where possible. The EOP which will be developed for the construction phase will also contain objectives with regard to the requirements for noise monitoring and abatement during construction.

General:

- The duration of the construction phase and the need and use of noisy equipment on site will be reduced by the use of pre-built elements where possible.
- Barriers will be erected around particularly noisy pieces of equipment where necessary and acoustic attenuators, enclosures etc employed where required.
- Noisy/ vibratory plant and equipment will be sited as far away as possible from sensitive properties and vibration isolated support structures will be used where necessary.
- Where practicable non-audible warning systems will be utilised. All audible warning systems should be designed where practicable to reduce noise.
- The timing of construction will be agreed with the Local Authority in advance of construction commencing. In addition, the timing of use of certain pieces of equipment which have the potential to be particularly noisy will be considered and the operation of certain pieces of equipment will be managed by the Contractor.
- During the construction phase all equipment will comply with EC Directives relating to noise emissions from construction, plant and equipment used outdoors (Directive 2000/14/EC and Amending Directive 2005/88/EC transposed into Irish law as European Communities (Noise Emission of Equipment for Use Outdoors) Regulations, 2001 (S.I. 632/2001) and Amending Regulations 2006 (S.I. 241/2006). These include compressors, welding generators, excavators, cranes, loaders and dump trucks. All equipment should be CE¹⁴ marked.
- Annexes B and C of BS5228 - 1: 2009 Code of Practice for Noise and Vibration Control on Construction and Open Sites – Part 1: Noise provide details on the noise levels for different types of equipment and mitigation measures which can be employed. These mitigation measures can achieve a sound reduction of up to 5- 10 dB(A). Equipment with low noise levels will be specified where possible.
- During the construction phase any complaints received will be thoroughly investigated with suitable mitigation measures taken at the time.
- Noise control measures will be implemented to provide reductions in overall site noise levels. In addition, good practice will be implemented when handling materials, for example lowering rather than dropping materials.
- A site representative will be appointed for matters related to noise and vibration.
- Monitoring of typical levels of noise and vibration will be conducted in the event that complaints are received, which require this level of investigation.
- A lower speed limit will be enforced during the construction phase to further minimise noise nuisance as a result of construction traffic.

¹⁴ CE has no meaning as an abbreviation but it is thought that it is an acronym for Communauté Européenne.

7.6 Residual Impacts

7.6.1 Construction Phase

To summarise, it is difficult at this stage to accurately predict the noise levels likely to affect the nearest noise sensitive receptors during the construction phase given the tendering process, different equipment likely to be used and mitigation levels likely to be employed.

Even with the implementation of mitigation measures proposed, it is considered that the construction noise impact represent a moderate to minor adverse temporary impact on existing ambient noise levels at the nearest receptor.

7.7 Interaction and Inter-relationships with other Environmental Effects

Noise interacts with other environmental attributes as follows:

- Fauna: Noise emanating from construction activities may impact upon otter, grey seals and harbour porpoise and other cetaceans present in the area around the proposed improvement works. This is discussed further in Chapter 6.0 of this report.

7.8 Monitoring

Noise monitoring may be conducted during the construction phase as part of any complaints investigation procedure.

7.9 Reinstatement

Not applicable.

7.10 Difficulties Encountered in Compiling this Information

No difficulties were encountered when compiling this information.

8.0 Landscape and Visual

8.1 Introduction

This chapter addresses the landscape and visual impact of the proposed development works on the surrounding landscape and nearby viewers.

8.2 Assessment Methodology

A desk-based review of relevant documents was completed in order to characterise the existing landscape and this included the Skibbereen Electoral Area Local Area Plan (2011)¹⁵, West Cork Islands Integrated Development Strategy, (2010)¹⁶ and Draft Cork County Landscape Strategy (2007)¹⁷ were reviewed in relation to landscape character and context of Cape Clear Island.

A site visit was conducted in May 2012 by a member of the MOR team in order to identify existing landscape features of relevance and existing viewers.

In addition to the Guidance Documents listed in Section 1.2, the following guidance documents were utilised in the impact assessment for Landscape and Visual:

- Guidelines for Landscape and Visual Impact Assessment, 2002 (Landscape Institute / Institute of Environmental Management & Assessment); and
- Draft Landscape and Landscape Assessment Guidelines for Local Authorities, 2000 (Department of Environment, Heritage and Local Government).

8.3 Receiving Environment

8.3.1 Landscape Character and Context

Cork County is divided into 16 'Landscape Types'. According to the Cork County Draft Landscape Strategy and Skibbereen Electoral Area Local Area Plan, Cape Clear Island is classed as Landscape Type 4 "*Rugged ridge peninsulas landscape*". The landscape value is rated as *Very High* - Scenic landscapes with highest natural and cultural quality. The landscape sensitivity is also rated as *Very High* - extra vulnerable landscapes likely to be fragile and susceptible to change. Overall this landscape type is deemed of *National Importance* in the Cork County Draft Landscape Strategy i.e. areas with conservation interest and of national importance. This landscape type is located in the extreme southwestern corner of Ireland. Its predominant components include the rocky peninsulas of Mizen Head, the Beara Peninsula and Sheep's Head, separated by drowned valleys and relatively low-lying bays such as Bantry, Dunmanus and Roaringwater Bay.

The '*Rugged ridge and peninsulas*' landscape is 1 of 12 'Landscape Character Areas' (LCA). Cape Clear is contained within LCA 9 – 'Roaringwater Bay and Islands (Incised Patchwork and Wooded Estuary with Mudflats and Islands)'. Typically the rocky peninsulas comprise of a mix of moorland, some relatively fertile patches of farmland and woodland including some smaller patches of coniferous plantations on higher ground. While most of the islands follow this pattern of land type, woodlands and plantations are generally absent for Island landscapes including Cape Clear Island.

¹⁵ Cork County Council (2011) *Skibbereen Electoral Area Local Area Plan*. Cork County Planning Unit, Cork.

¹⁶ RPS (2010) *The West Cork Islands Integrated Development Strategy, Working Paper 1, Review of Strategic Role and Existing Circumstances of the Islands*. RPS Planning and Environment, Cork, Ireland.

¹⁷ Cork County Council (2007) draft Cork County Landscape Strategy. Cork County Council Planning Policy Unit.

The draft Cork County Landscape Strategy goes on to advise that the peninsular coastline found in southwest Cork is valued nationally for its scenic and natural quality. This quality includes rugged topography and a mix of peninsulas, bays, mountains, inlets, harbours and islands, such as the Fastnet Rock, Carbery Islands and Cape Clear Island. It is also noted that Cape Clear is a nationally important Gaeltacht area with associated linguistic, cultural and educational values.

8.3.2 Topography

The North Harbour lies in a deep depression at one of the lowest points of the Island with steep cliffs to the east and west and a steep hill to the south. In this regard the hills rise to approx. 80m above sea level (OSI map) just 250m from the harbor in a south, west and easterly direction. Refer to Plates 1 and 13.

8.3.3 Land Use, Existing Buildings and Artefacts of Interest

Cape Clear is used for a variety of farming activities although the harbour area is obviously characterised by marine infrastructure including the existing piers dating to the 1800's. There are a number of buildings in the harbour area including the Bird Observatory which dates from the 1800's. The original structure of the piers has been obscured in places by later concrete application however stretches are visible particularly along the older pier to the east; - Sean Rua's pier. There are also some ruins within the harbour area including the site of an old graveyard and church ruins (Templekieran) to the east (Plate 15) and a shrine (standing stone) called 'Gallaun-Kieran' is located to the south directly facing the Harbour.

8.3.4 Habitats

The habitats in the vicinity of the site are discussed in detail in Chapter 6.0 however the area is dominated by rocky seacliffs to the east and northwest on the approached to the harbour while a beach is located in the southern recess of the Outer Harbour. Refer to Plates 1 and 9.

8.3.5 Views

The harbour area can be viewed from the top of the cliffs to the east and west (Plate 10) but the view is quickly obscured by vegetation from the landward side as one moves away from the harbour on the roads leading away from it. The main viewers of the immediate area of the proposed works are the Observatory and existing shops and café within the immediate vicinity of the harbour. The main view for tourists entering the harbour would be from the approaches towards the beach and the Outer Harbour.

8.3.6 Landscape Character Evolutionary Track

The site has been on a stationary evolutionary track as it continues to function as a harbour, with small evolutionary changes in the surrounding landscape from agricultural uses to land abandonment and diversifying into other ways of life e.g. tourism.

It could be expected that the harbour will continue to evolve towards a larger marina in the future however the current proposed harbour improvement works are for health and safety reasons only.

8.3.9 Sensitivity of the Landscape

Despite the sensitivity of the wider landscape being classified as 'very high,' the proposed development works area in the harbour would be regarded as being of a much lower sensitivity as it is already a developed area in a low lying part of the island.

8.4 Characteristics and Potential Impacts of the Proposed Works

8.4.1 Construction phase

During the construction phase, there will be a temporary moderate negative localised visual impact to existing viewers in the harbour due to the presence of construction equipment and the present of spoil stockpiles on the foreshore area in the Inner Basin beside the Observatory.

8.4.2 Operational Phase

In the long term the current proposals will not significantly alter the existing arrangement at the piers although a small area of existing low lying rocky coastline where the proposed slipway will be located will be altered from a natural to a more built landscape. Additionally the existing quay wall (refer to Plate 16) in the front of the Observatory will be permanently obscured from view due to the reclamation works. The wall is not of architectural significance and the reclamation area will be levelled and resurfaced. Given the existence of existing harbour structures in the area, overall it is considered that both alterations represent a minor negative localised landscape impact in the medium term reverting to neutral in the long term.

8.5 Proposed Mitigation Measures and/or Factors

During the construction phase every effort will be made to ensure that the works take place in an orderly manner to avoid unnecessary impact on existing amenity. For example spoil heaps in the reclamation area will be low level to reduce visual impact.

The design for the proposed harbour layout was done to retain as much of the existing pier features as possible while creating a safer harbour environment.

The proposed finishes proposed for the reclamation area have been selected to avoid a visually discordant impact. The material will be evenly spread, levelled and finished with a layer of crushed rock fill. Surface dressing will be applied to the realigned road. The reclamation will be available for parking, landscaping or seating to the front of the existing Bird Observatory.

8.6 Residual Impacts

In the longterm and following implementation of the mitigation measures, it is envisaged that the proposed works will have a neutral impact on the existing landscape and existing local viewers to the harbour area.

8.7 Interaction and Inter-relationships with other Environmental Effects

Impacts on landscape and visual will interact and/ or interrelate with:

- Flora and Fauna: Not applicable.
- Human Beings: The impacts on human beings in terms of visual amenity are described above.

8.8 Monitoring

Not applicable.

8.9 Reinstatement

Not applicable.

8.10 Difficulties Encountered in Compiling this Information

None encountered.

9.0 Cultural Heritage – Underwater Archaeology

9.1 Introduction

This chapter of the EIR addresses the potential impact of the proposed works on underwater archaeology. A detailed baseline study and report on the potential impacts of a larger proposal for the North Harbour was done by Boland Archaeological Services Ltd. in 2002 on behalf of the Department of Communications Marine and Natural Resources. This report forms the basis of the updated assessment presented in this EIR. The full report is contained in Appendix D although this chapter summarises the findings with regard to the area of the proposed works.

9.2 Assessment Methodology

In 2002, shoreline, seabed and marine geophysical surveys were conducted in the area of the proposed improvement works by Boland Archaeological Services Ltd. The areas covered in the survey include all of the areas where works are currently proposed. The shoreline survey comprised a foreshore inspection at low tide, centred on the proposed development at the time. The geophysical survey comprised a seabed profile, side-scan sonar and proton magnetometer survey of the proposed development area. The seabed survey comprised of a seabed inspection, investigation of geophysical anomalies and a metal detection survey. Figure 2.2.1 of the report contained in Appendix D illustrates the survey areas.

The foreshore/ intertidal survey of the north harbour was conducted at a period of low water and is separated into five areas, refer to Figure 2.2.2 contained in Appendix D:

- The Foreshore Road;
- The Outer Basin;
- The Inner Dock;
- The Outer Dock; and,
- The Approaches.

The surveys were conducted during calm sea conditions. The seabed survey was conducted by way of a visual inspection from the pier/ breakwater and foreshore and a diver based survey of the seabed was also undertaken.

9.3 Receiving Environment

9.3.1 Historical Context

In summary, a review of the historical detail in the report contained in Appendix D indicates that the inlet now known as the North Harbour has been utilised as a landing place from an early period. Further in this regard, it is noted that not far from the harbour are the ruins of St. Kieran's church; on the shore is an ancient stone with a cross rudely sculptured on it, and at a short distance a holy well.

With regard to the history of the existing pier structures, it is noted that in 1836 there was a quay on the eastern side of the embayment and 'rude' dock on the western side. A new pier was completed in December 1849 after Alexander Nimmo had proposed the extension of and improvement of the North Harbour and the Board of Works granted out of the fund accruing under the Act of the 5th Geo. IV. C. 64, the sum of £420 and Mr. Beecher, the estate owner, contributed £230 towards these improvements (Comharchumann Chléire Teoranta, pers. comm.). It is further recorded that the same pier had masonry repaired in 1883 (Comharchumann Chléire Teoranta, pers. comm.).

The second edition OS Map, revised in 1899 and published in 1902 (OS 6" Map, Sheet 153, 2nd Edn. 1899), clearly depicts the new linear quay structure, and the pre-existing quay or 'dock' as it was labelled in the first edition. The quay on the eastern side of the harbour is not depicted on the later second edition and may have fallen out of use.

9.3.2 Results of Surveys

The findings of the surveys completed in 2002 are summarised below.

The foreshore inspection noted:

- A number of monuments are located on or close to the foreshore.
- The original foreshore has been impacted by the construction of a foreshore road.
- The quays and piers of the harbour were constructed from the 1800's onwards

The seabed survey noted:

- The seabed within the area of the harbour is comprised of gravels overlain in areas by a silty sand and that it has the ability to retain archaeology.
- The seabed within the area of the harbour is impacted by the forces of heavy sea swells.
- No features or artefacts of archaeological importance were located by the seabed survey.

The geophysical survey noted:

- Water depths extended from -2m within the harbour to over -30m in the outer approaches.
- The approaches to the harbour are magnetically clean and the harbour area has a very high magnetic signature due to the volume of metal contained within the piers and breakwater.
- No strong 'bulls-eye' anomalies were recorded in the area (which normally indicates the presence of ferrous material and possibly cultural material).

9.4 Characteristics and Potential Impacts of the Proposed Works

The proposed development has the potential to disturb underwater archaeological resources if present due to the nature of the works comprising:

- Demolition and reconstruction of sections of the existing piers;
- Dredging of the seabed within the harbour;
- Disturbance of the seabed due to the construction of the proposed slipway, and,
- Reclamation works in the upper foreshore.

9.5 Mitigation Measures and/or Factors

The following mitigation measures have been developed in consultation with the UAU of the DAHG:

- The works and associated dredging around the Bull's Nose will be archaeologically monitored by a suitably qualified archaeologist with underwater/marine experience, including experience in marine dredging programmes.
- All removed dredged spoil will be spread in the reclamation area and metal detected for artefact bearing potential.
- The area around the proposed location of the slipway will be further archaeologically assessed by way of walk-over and intertidal survey in advance of works commencing

there to ensure there is no potential archaeology located in that area. The assessment will be undertaken by a suitably qualified archaeologist.

- All archaeological works will be carried out under licence to the DAHG and an appropriate method statement will be submitted with the licence applications.

In addition the following recommendation from the report contained in Appendix D will be implemented:

- The present Bull's Nose and Duffy's piers will be recorded by way of a drawn and/or photographic survey, prior to the commencement of on site works.

9.6 Residual Impacts

No features of archaeological importance were located by the surveys undertaken to date in the areas of potential impact. This does not completely preclude the presence of archaeological material however the implementation of the mitigation measures listed above will ensure that there will be no significant impact on features if present.

9.7 Interaction and Inter-relationships with other Environmental Effects

- Landscape and Visual: Although not considered as a feature of architectural heritage significance, the potential visual impact of the reclamation works on the existing quay wall is discussed in Chapter 8.0.

9.8 Monitoring

Procedures for the archaeological monitoring of the proposed dredging operations will be put in place as requested by the DAHG. Refer to the mitigation measures detailed above.

9.9 Reinstatement

Not applicable.

9.10 Difficulties Encountered in Compiling this Information

None encountered.

10.0 Material Assets

10.1 Introduction

This chapter of the EIR provides a description and assessment of the potential impact of the proposed works on services provided to Cape Clear and transport infrastructure. Previously, Chapter 5.0 dealt with the socio-economic impacts of the proposed works on local business and industry which to a certain extent overlaps with Material Assets.

10.2 Assessment Methodology

In order to assess the impact on services, consultation was carried out with the main service providers to the island where applicable.

A review of desk-based information from the sources listed in Chapter 5.0 was conducted with regard to characterising the transport infrastructure.

10.3 Receiving Environment

Transport Infrastructure

As already mentioned in Chapter 2.0 there are four main piers at the island. The main access point is known as North Harbour (Trá Chiaráin). Within the North Harbour, there are three piers; Duffy's pier (generally used by ferries and yachts), the dock (which is used by fishing boats and ferry service mainly during winter) and the outer pier (the Bull's Nose), which is in a poor state of repair and has been declared unsafe for use. It is a specific tourism objective of the Skibbereen Electoral Area Local Area Plan (2011) to have review plans for options on repairing and improving the Bull's Nose Pier (Objective No. U-01). Objective U-08 states there should be "*continued investment in harbour infrastructure both on the island and at mainland access points at Balimore and Schull.*"

Cape Clear has a total of 10 km of mostly tarred roads with some steep sections east of the harbours. Provision of proper passing bays at regular intervals would greatly improve the efficiency of the road network. Significant road widening works were carried out in recent years to improve road access between the North and South harbours.

Services

The various agencies were contacted regarding services present that may be potentially impacted on.

ESB

Electricity connection is from the mainland via an undersea cable and the island operates an independent diesel powered generator for use during power cuts. A network upgrade has started. We understand that the undersea cable is not within the North Harbour area where the proposed works will take place. There are however visible overhead ESB poles for lighting located along the piers and an overhead line located close to the proposed slipway site.

Phone and Internet Providers

Broadband is available via a satellite dish, with a couple of providers in the area, telephone is also via satellite. Mobile phone coverage on the island is inconsistent.

Vodafone, Eircom, UPC and BT Ireland have confirmed there are no services located in the vicinity of the proposed works.

Public Water Mains Supply

Water is supplied from 5/6 bored wells with the water pumped to tanks on high ground in the Island. There are no public watermains located in the vicinity of the proposed improvement works.

Waste Water Treatment

There is no waste water treatment plant for the island. Waste water is treated on an individual basis by septic tanks or wastewater treatment plants.

10.4 Characteristics and Potential Impacts of the Proposed Works

Transport Infrastructure

There will be temporary landtake from the harbour area where a construction compound will be situated however this will not restrict existing activities on the Breakwater Pier. Any necessary traffic diversions put in place along the harbour during the works will be temporary in nature although overall the works will be completed without disruption to existing activities.

In the long term there will be a significant positive impact as the Bull's Nose will be returned to use and a new slipway will be provided. Furthermore, the existing foreshore road will be realigned opposite the Observatory which represents a positive long term impact.

Services

There will be no impact on water, foul or broadband services in the area. Overhead electricity lines will be avoided although any impact resulting in loss of electricity will be temporary in nature and will be planned in advance and communicated to local stakeholders. In advance of any works on site, a detailed Method Statement and Safety Plan will be drawn up and risks identified e.g. electrical, and measures taken to minimize or eliminate these risks.

10.5 Proposed Mitigation Measures and/or Factors

An EOP will be developed for the proposed works as detailed earlier in this report. As noted above detailed Method Statements and a Safety Plan will also be drawn up to minimise or eliminate risks associated with the works.

10.6 Residual Impacts

It is considered that the overall impact of the proposed works on the existing transport infrastructure and services will be minor during the construction phase provided the mitigation measures detailed are implemented. In the long term the proposed development will have a major significant positive impact.

10.7 Interaction and Inter-relationships with other Environmental Effects

- Human Beings – As noted earlier, the assessment of socio-economic impacts overlaps with the assessment of impacts on material assets. Accordingly further detail is provided in Chapter 5.0.

10.8 Monitoring

Not applicable.

10.9 Reinstatement

Not applicable.

10.10 Difficulties Encountered in Compiling this Information

None encountered.

PLATES



Plate 1 Existing Cape Clear's North Harbour- Aerial Photo.



Plate 2 Duffy's Pier.



Plate 3 Outer Breakwater Pier (Bull's Nose Pier).



Plate 4 Outer harbour area.



Plate 5 Outer Basin area.



Plate 6 Inner Basin.



Plate 7 Deterioration of the Bull's Nose Pier.



Plate 8 Co-op in foreground and Bird Observatory in background.



Plate 9 Disused slipway shown in foreground with building with café and general shop shown in mid foreground. One of the two public houses shown in the background.



Plate 10 The survey area indicating 'Sea walls, piers and jetties'.



Plate 11 Old slipway currently covered in green algal species.



Plate 12 'Rocky sea cliffs'.



Plate 13 Example of Dry-humid acid grassland growing in the area of the proposed slipway.



Plate 14 'Dry meadow and grassy verges' that surround the ruins of a old church and graveyard.



Plate 15 Remains of an old otter spraint along the wall of the Bull's Nose Pier.



Plate 16 Proposed reclamation area.

FIGURES

CLEAR ISLAND *Cléire*



0 500 1000m

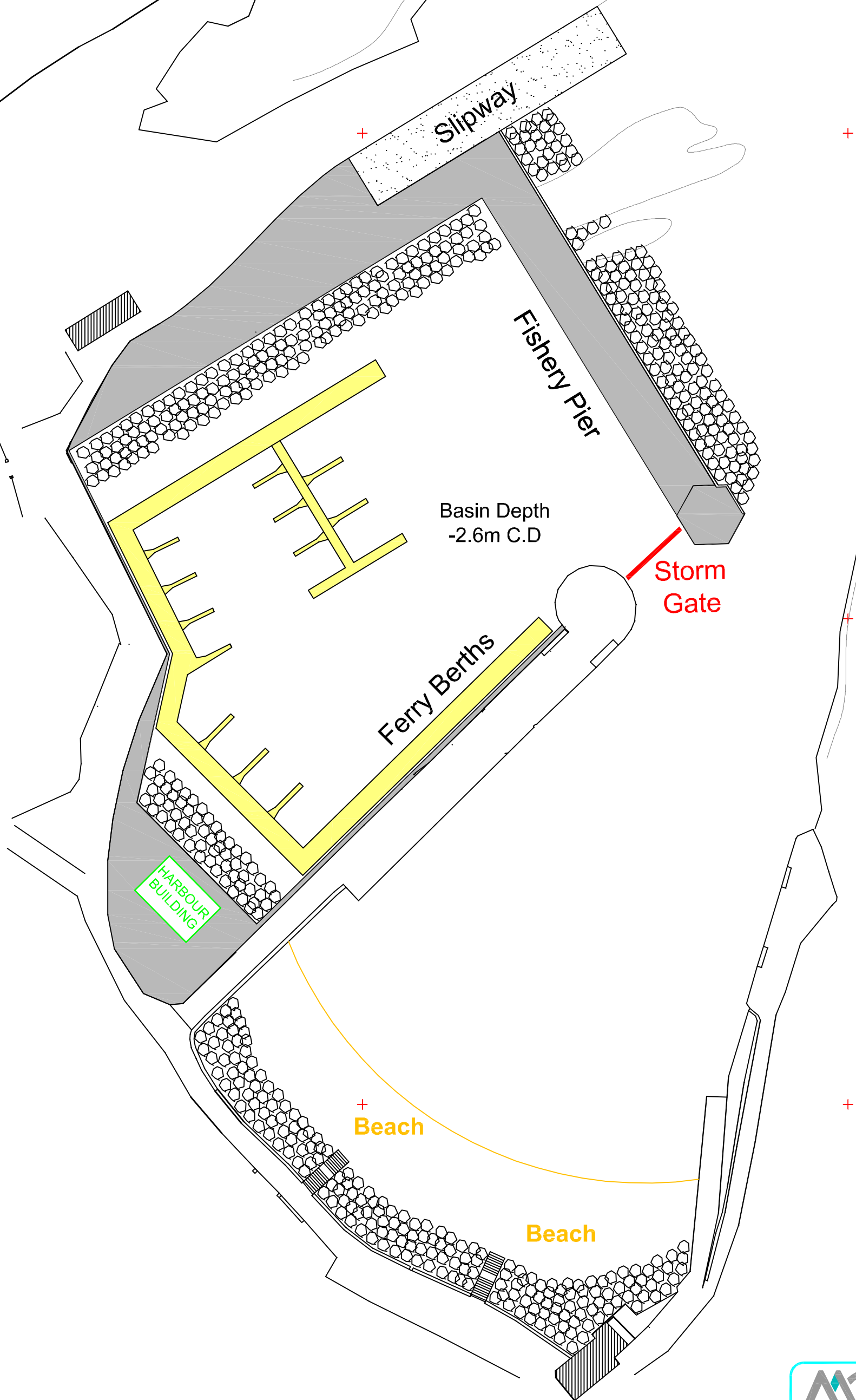
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2B Richview Office Park,
Clonskeagh
DUBLIN 14
Tel: +353 1 2602655
Fax: +353 1 2602660
Email: enviro@morce.ie




Client Dept of Agriculture, Fisheries and Food			Drawing			
Job Environmental Impact Report			Site Location			
Cape Clear Northern Harbour Improvement Works & Associated Dredging						
Job Number E0900	Drawing Number Figure 1	Status Final	Sheet Size A4	Scale as shown	Date Oct '12	Drawn JA

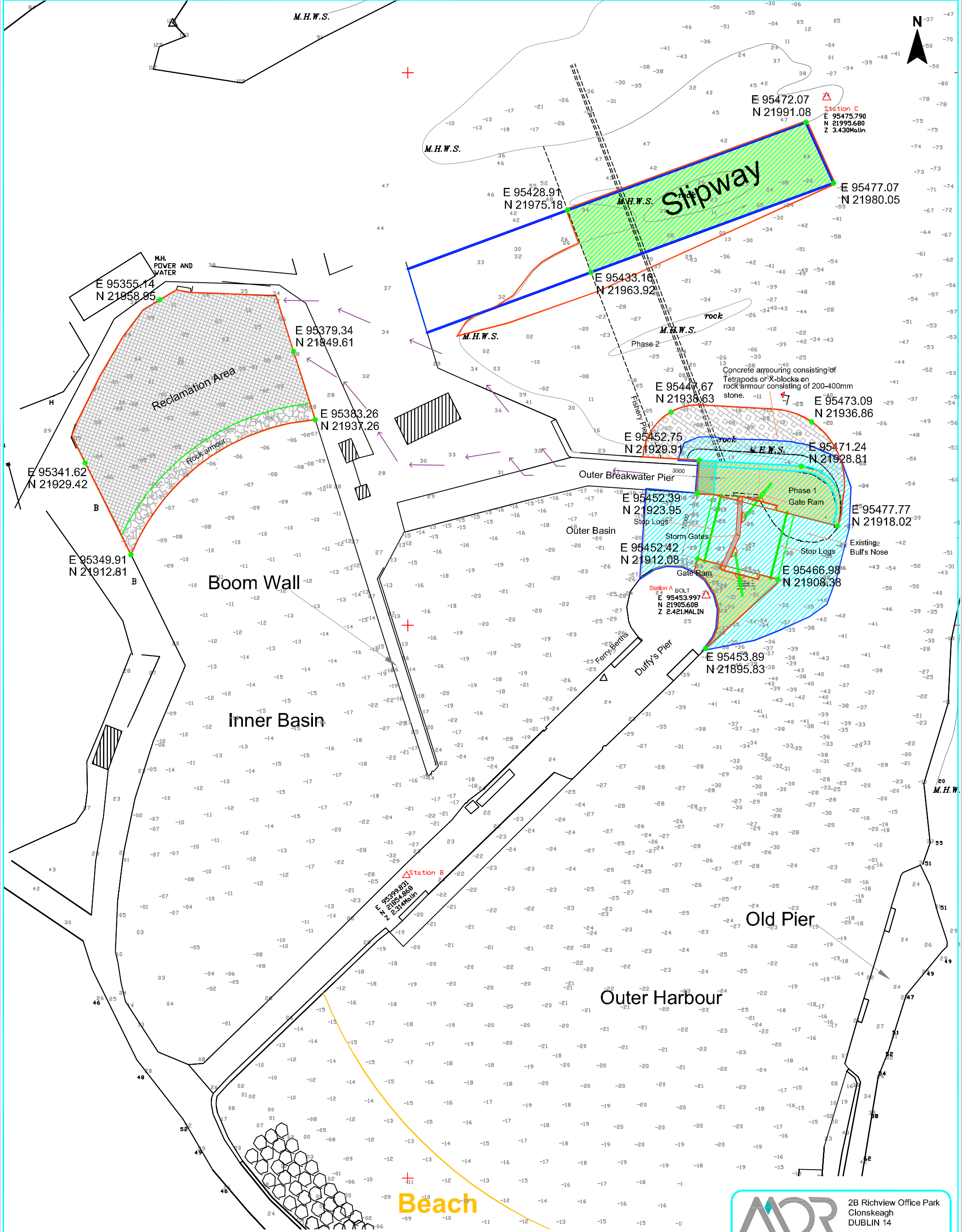


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2B Richview Office Park
Clonskeagh
DUBLIN 14
Tel: +353 1 260 2655
Fax: +353 1 260 2660
Email: enviro@moroe.ie

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Job Environmental Impact Report Cape Clear Northern Harbour Improvement Works & Associated Dredging		Drawing Number E0900	Status Final	Sht. Size A3	Scale as shown	Date Oct '12
		Drawn JA				



Legend

- Dredging and excavation works
- Extent of deposition works
- Extent Excavation /Dredging Works
- Proposed Construction Traffic Route from Bull's Nose to Reclamation Area (c. 80-90% of Traffic)

0m 10m 20m

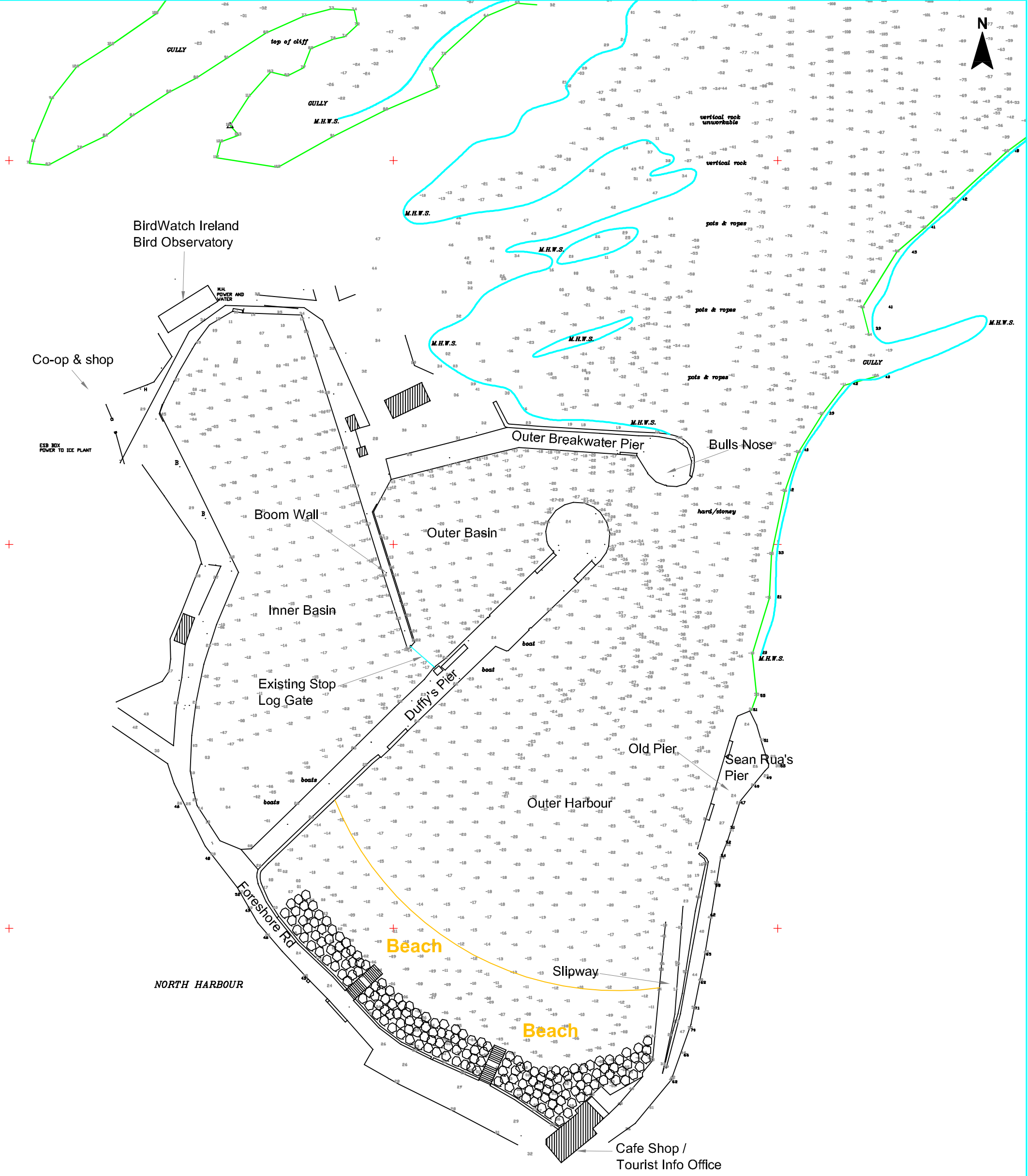
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MALONE O'REGAN
ENVIRONMENTAL SERVICES LTD

2B Richview Office Park
Clonskeagh
DUBLIN 14

Tel: +353 1 260 2655
Fax: +353 1 260 2660
Email: enviro@morco.ie

Client Department of Agriculture, Fisheries and Food An tAire Talmhaíochta, Iascaigh agus Bia		Drawing Proposed Works			
Job Environmental Impact Report Cape Clear Northern Harbour Improvement Works & Associated Dredging					
Job Number E0900	Drawing Number Figure 4	Status Final	Sht. Size A3	Scale as shown	Date Oct '12
					Drawn JA






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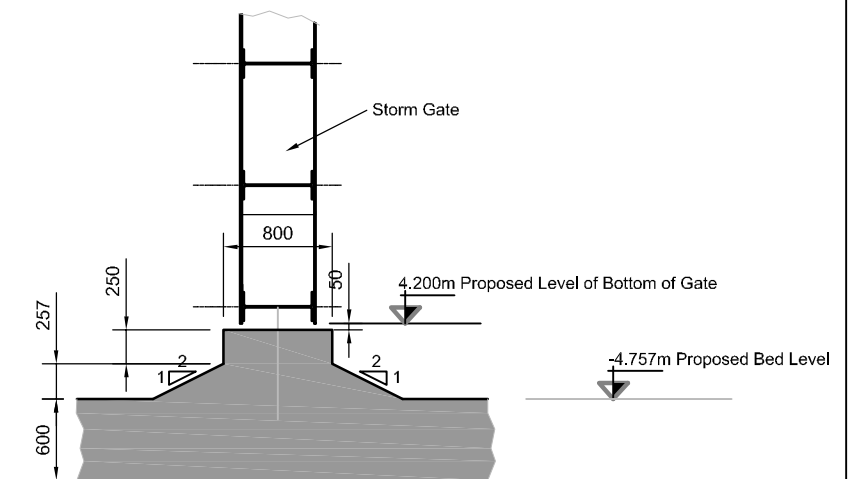
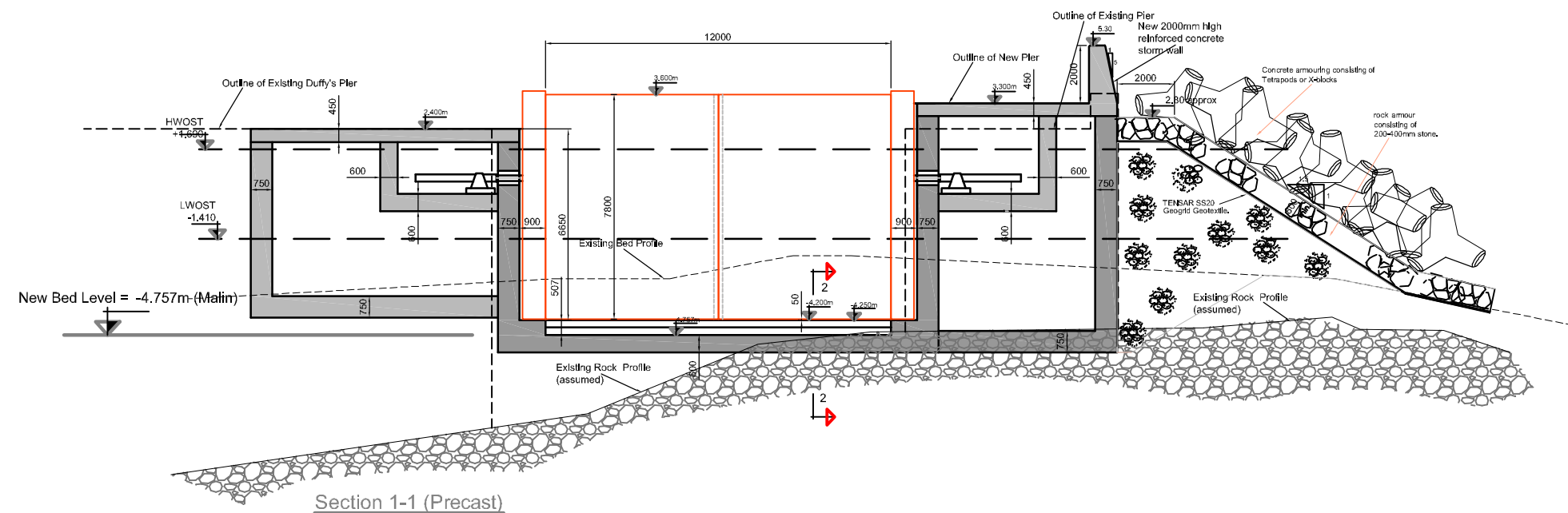
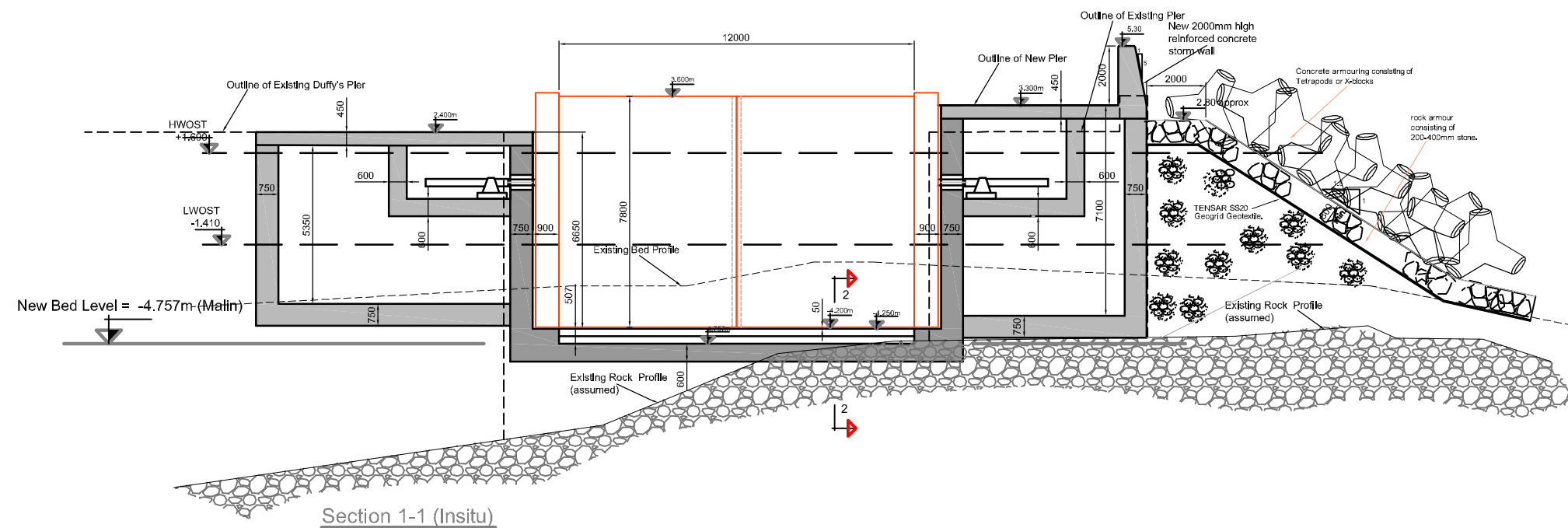
2B Richview Office Park
Clonskeagh
DUBLIN 14

Tel: +353 1 260 2655
Fax: +353 1 260 2660
Email: enviro@mor.ie

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Job Environmental Impact Report Cape Clear Northern Harbour Improvement Works & Associated Dredging					
Job Number E0900	Drawing Number Figure 2	Status Final	Sht. Size A3	Scale as shown	Date Oct '12
					Drawn JA

0m 20m 40m

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Clonskeagh,
DUBLIN 14.

Tel: +353 1 260 2655
Fax: +353 1 260 2660
Email: enviro@mor.ie

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Job Environmental Impact Report
Cape Clear Northern Harbour
Improvement Works & Associated
Dredging

Job Number
E0900

Drawing Number
Figure 5

Status
Final

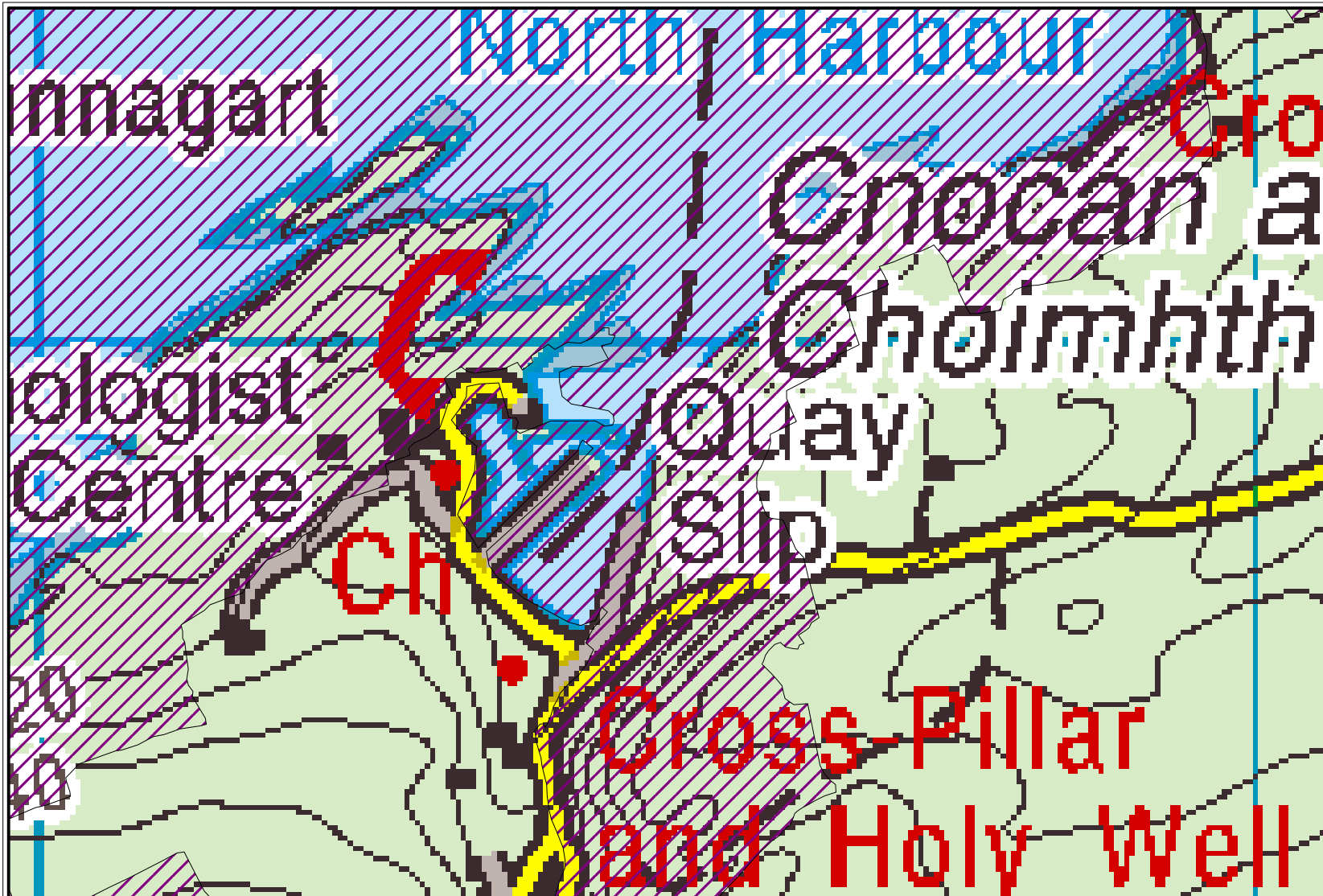
Sht. Size
A3

Scale
NTS

Date
Oct '12

Drawn
JA

Drawing Proposed Stormgate showing
Rock Armour Detail



Legend



Roaringwater Bay and Islands SAC



Department of
Agriculture, Fisheries and Food
An Roinn
Talmhaíochta, Iascaigh agus Bia

0 100 200m

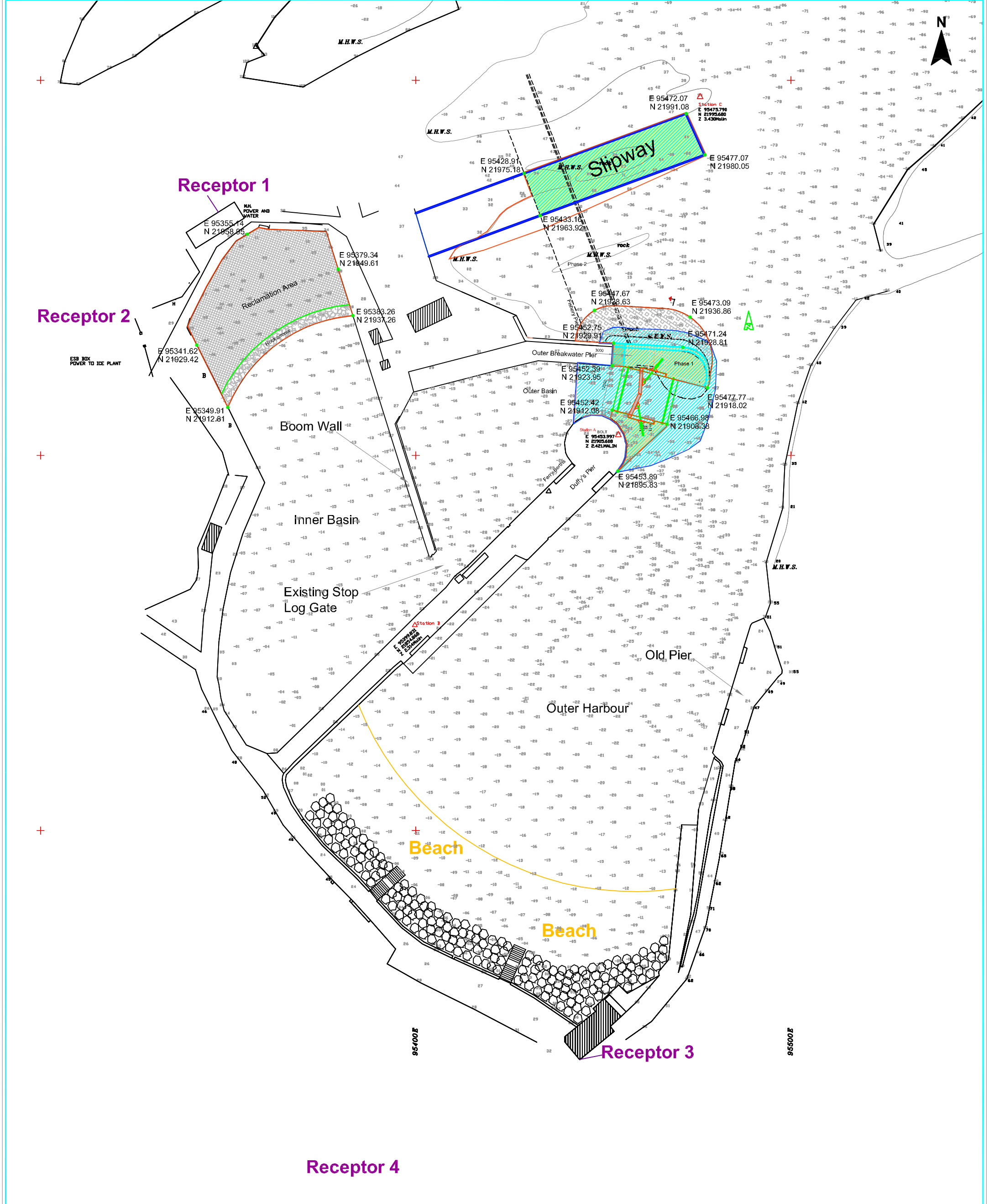
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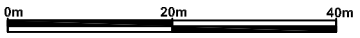
Tel: +353 1 2602655
Fax: +353 1 2602660
Email: enviro@mor.ie

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Job Environmental Impact Report			Designated Protected Areas			
Cape Clear Northern Harbour Improvement Works & Associated Dredging						
Job Number E0900	Drawing Number Figure 6	Status Final	Sheet Size A4	Scale as shown	Date Oct '12	Drawn JA



Legend

-  Dredging and excavation works
-  Extent of deposition works
-  Extent Excavation /Dredging Works



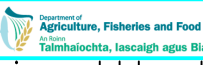
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MALONE O'REGAN
ENVIRONMENTAL SERVICES LTD

2B Richview Office Park
Clonskeagh
DUBLIN 14

Tel: +353 1 260 2655
Fax: +353 1 260 2660
Email: enviro@morco.ie

Client  Department of Agriculture, Fisheries and Food An tAire Talmhaíochta, Iascaigh agus Bia		Drawing Proposed Construction Works and Noise Sensitive Receptors			
Job Environmental Impact Report Cape Clear Northern Harbour Improvement Works & Associated Dredging		Job Number E0900	Drawing Number Figure 7	Status Final	Sht. Size A3
			Scale as shown	Date Oct '12	Drawn JA