Attachment B12

- Foreshore Licence

Enrolled in the Central Office of The High Court
the 13th day of August 1968
[illegible] Registrar

AGREEMENT) Made the twenty second day of July One Thousand
) Nine Hundred and Sixty-eight BETWEEN THE MINISTER FOR TRANSPORT AND POWER (hereinafter called "the Minister") of the One Part and CORK COUNTY COUNCIL (hereinafter called "the Licensees" which expression shall include their successors where the context so admits or requires) of the Other Part WHEREAS the Licensees have applied to the Minister to grant them permission to use and occupy that part of the foreshore below the line of low water of ordinary or medium tides at Glengarriff County Cork hereinafter described for the purpose of laying, maintaining and using a sewage outfall pipe AND WHEREAS the Minister has agreed to grant such permission subject as herein NOW THEREFORE THIS AGREEMENT WITNESSETH that the Minister in exercise of the powers vested in him by the Foreshore Act, 1933, hereby grants to the Licensees licence to use and occupy that part of the foreshore at Glengarriff County Cork as more particularly delineated and shown in red colour on the map annexed hereto for the purpose aforesaid AND IT IS HEREBY AGREED by and between the Minister and the Licensees as follows that is to say:-

1. This Licence shall remain in force for the term of Ninety-nine years from the date hereof

2. The Licensees shall at all times during the continuance of this Licence keep the said sewage outfall pipe in a good and proper state of repair and in proper condition to the satisfaction of the Minister and so as to ensure that it will not be injurious to navigation the adjacent lands or the public interest

3. The Licensees shall cause the said sewage outfall pipe to be marked by a sign to the satisfaction of the Minister to indicate the presence of the same at all stages of the tide.

4. The Licensees shall indemnify and keep indemnified the Minister and the State against all actions loss claims damages cost expenses and demands arising in any manner whatsoever in connection with the laying, user and maintenance of the said sewage outfall pipe or in the exercise of the permission hereby granted

5. In the case of the breach non-performance or non-observance by the Licensees of any of the covenants and conditions contained herein the Minister shall have power forthwith to terminate this Licence

6. Any notice to be given to the Licensees in pursuance of this Licence may be transmitted through the Post Office addressed to the Licensees

7. This Licence shall be enrolled by the Minister at the Licensees' expense in the Central Office of the High Court

IN WITNESS WHEREOF the Minister and the Licensees have caused their respective seals to be hereunto affixed the day and year first herein WRITTEN.

PRESENT when the Seal of Office of the Minister for Transport and Power was affixed and was authenticated by the signature of:-

M. A Hayes

Signature: M. J. Healy

Address: Dept of Transport and Power, Dublin.

Occupation: Civil Servant

A person authorised under Section 15(1) of the Ministers and Secretaries Act, 1924, to authenticate the Seal of the said Minister.

DAP

PRESENT when the Corporate Seal of the Licensees was affixed hereto:-

ASSISTANT COUNTY MANAGER

Pat Lombard

CHAIRMAN OR NOMINATED MEMBER.

BANTRY UNION & RURAL DISTRICT

CORK BEAR BANTRY SHEET CIV. 4.

NTEEN
UDDER

Parsonage
Trinity Church
Tank
Well
Spring
Mud
Sand
Boat Slip
Corriveillaun
Poulgorm
Carrigeen
Pot Island
Powers Rock
H.W.M.
B.M. 20·0
B.M. 39·2

Enrolled in the Central Office of the High Court
the 13th day of August 1968

Registrar

THE MINISTER FOR TRANSPORT AND POWER

TO

CORK COUNTY COUNCIL

384

LICENCE

8705.

CHIEF STATE SOLICITOR,
51, ST. STEPHEN'S GREEN, E.,
DUBLIN, 2.

Bompd.
Ltr
Ans.

Section E

Attachment E2

Supporting Information :

- Monitoring Programme

Attachment E.2 - Glengarriff Waste Water Discharge Licence Application – Monitoring and Sampling Points

Grab samples have been collected recently of the effluent from the primary discharge as well as receiving waters and the results are included in Attachments E.4 and F.1 of this application.

Upstream and downstream samples are not relevant in this case as the discharge is below low tide water level. Sampling of receiving waters was carried out east of the outfall point at the boat slip opposite the Eccles hotel.

There is no drinking water abstraction point downstream of the plant and therefore the Abstraction Directive is not applicable.

The recent sample analysis has been carried out by the Laboratory of Cork County Council which is accredited for a number of analytical tests under the Irish National Accreditation Board (INAB) under the ISO 17025 international standard. It is currently accredited for the following parameters under that standard system:

- pH
- Biochemical Oxygen Demand
- Chemical Oxygen Demand
- Suspended Solids
- Ammonia
- Ortho Phosphate
- Total Phosphate
- Chloride
- Sulphate

It is proposed to sample the influent and effluent from treatment plants where accessible and receiving waters once a year in the future for the following parameters at the Cork County Council Laboratory in Skibbereen:

- pH
- Biochemical Oxygen Demand
- Chemical Oxygen Demand
- Suspended Solids
- Ammonia
- Ortho Phosphate
- Total Nitrogen

Attachment E4

Supporting Information :

- Sampling Data

Attachment E4 Glengarriff Inlet Table E4		
Sample Date	14/05/2009	
Sample	Influent	**Average**
Sample Code	GT660	
Flow M^3/Day	*	
pH	7.2	7.2
Temperature °C	*	*
Cond 20°C	376	376
SS mg/L	188	188
NH_3 mg/L	19.1	19.1
BOD mg/L	116	116
COD mg/L	419	419
TN mg/L	37.1	37.1
Nitrite mg/L	<0.10	<0.10
Nitrate mg/L	<0.50	<0.50
TP mg/L	3.95	3.95
O-PO4-P mg/L	2.67	2.67
SO4 mg/L	<30	<30
Phenols µg/L	<0.10	<0.10
Atrazine µg/L	<0.01	<0.01
Dichloromethane µg/L	<1	<1
Simazine µg/L	<0.01	<0.01
Toluene µg/L	<0.28	<0.28
Tributyltin µg/L	*	*
Xylenes µg/L	<1	<1
Arsenic µg/L	<0.96	<0.96
Chromium ug/L	<20	<20
Copper ug/L	60	60
Cyanide µg/L	<5	<5
Fluoride µg/L	<100	<100
Lead ug/L	<20	<20
Nickel ug/L	<20	<20
Zinc ug/L	66	66
Boron ug/L	<20	<20
Cadmium ug/L	<20	<20
Mercury µg/L	<0.2	<0.2
Selenium µg/L	3.6	3.6
Barium ug/L	24	24

Attachment E4 Glengarriff Discharge Outlet Table E4

Sample Date	30/10/2008	13/11/2008	14/05/2009			
Sample	Effluent	Effluent	Effluent	Average	Kg/Day	Kg/year
Sample Code	GS1184	GS1201	GT661			
Flow M^3/Day	*	*	*	*		
pH	*	*	7	7		
Temperature °C	*	*	*	*		
Cond 20°C	*	*	520	520		
SS mg/L	60	12	51	41		
NH_3 mg/L	*	*	29.7	29.7		
BOD mg/L	214	14	144	124		
COD mg/L	427	80	329	278.6667		
TN mg/L	*	*	51	51		
Nitrite mg/L	*	*	<0.10	<0.10		
Nitrate mg/L	*	*	<0.50	<0.50		
TP mg/L	*	*	5.67	5.67		
O-PO4-P mg/L	*	*	3.54	3.54		
SO4 mg/L	*	*	<30	<30		
Phenols µg/L	*	*	<0.10	<0.10		
Atrazine µg/L	*	*	<0.01	<0.01		
Dichloromethane	*	*	<1	<1		
Simazine µg/L	*	*	<0.01	<0.01		
Toluene µg/L	*	*	<0.28	<0.28		
Tributyltin µg/L	*	*				
Xylenes µg/L	*	*	<1	<1		
Arsenic µg/L	*	*	<0.96	<0.96		
Chromium ug/L	*	*	<20	<20		
Copper ug/L	*	*	32	32		
Cyanide µg/L	*	*	<5	<5		
Fluoride µg/L	*	*	<100	<100		
Lead ug/L	*	*	<20	<20		
Nickel ug/L	*	*	<20	<20		
Zinc ug/L	*	*	36	36		
Boron ug/L	*	*	<20	<20		
Cadmium ug/L	*	*	<20	<20		
Mercury µg/L	*	*	<0.2	<0.2		
Selenium µg/L	*	*	1.8	1.8		
Barium ug/L	*	*	<20	<20		

Attachment E4 Glengarriff Ambient Table E4

Sample Date	14/05/2009		
Sample	Coastal waters	Comments	Average
Sample Code	GT662		
Flow M^3/Day	*		
pH	8.1		8.1
Temperature °C	*		*
Cond 20°C	33100		33100
SS mg/L	6		6
NH_3 mg/L	0.4"		0.4"
BOD mg/L	2		2
COD mg/L	21		21
TN mg/L	0.67		0.67
Nitrite mg/L	<0.10		<0.10
Nitrate mg/L	<0.50		<0.50
TP mg/L	<0.05		<0.05
O-PO4-P mg/L	<0.05		<0.05
SO4 mg/L	NO RESULT**		NO RESULT**
Phenols µg/L	<0.10		<0.10
Atrazine µg/L	<0.01		<0.01
Dichloromethane µg/L	<1		<1
Simazine µg/L	<0.01		<0.01
Toluene µg/L	<0.28		<0.28
Tributyltin µg/L	*		*
Xylenes µg/L	<1		<1
Arsenic µg/L	1.6		1.6
Chromium ug/L	<20		<20
Copper ug/L	<20		<20
Cyanide µg/L	<5		<5
Fluoride µg/L	481	" saline interfrence	481
Lead ug/L	<20		<20
Nickel ug/L	<20		<20
Zinc ug/L	<20		<20
Boron ug/L	2673.7		2673.7
Cadmium ug/L	<20		<20
Mercury µg/L	<0.2		<0.2
Selenium µg/L	934.7		934.7
Barium ug/L	<20		<20

	NO RESULT**	INTERFERENCE DUE TO SALINITY IN TEST
	" saline interfrence	

Section F

Attachment F1

Supporting Information :

- Attachment F1 – Appropriate Assessment Report on Glengarriff Harbour and Woodland SAC, Co. Cork in accordance with Article 6 of EU Habitats Directive 92/43/EEC

Cork County Council

Glengarriff Sewerage Scheme

Appropriate Assessment Report

Glengarriff Harbour and Woodland SAC, Co Cork

in accordance with

Article 6 of EU Habitats Directive 92/43/EEC

April 2009

Rev B

TOBIN CONSULTING ENGINEERS

Mr. Noel O'Keeffe,
County Engineer,
Cork County Council,
County Hall,
Cork

TOBIN
Patrick J. Tobin & Co. Ltd.

APPROPRIATE ASSESSMENT REPORT

PROJECT:

Glengarriff Sewerage Scheme

Appropriate Assessment Report

Glengarriff Harbour and Woodland SAC, Co Cork.

CLIENT:

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Cork County Council,
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DOCUMENT AMENDMENT RECORD

Client: **Cork County Council**

Project: **Glengarriff Sewerage Scheme**

Title: **Appropriate Assessment Report**

PROJECT NUMBER: 5348				DOCUMENT REF: 5348 TR 01 AA Rev B			
B	Amended as per client's comments	RM	22/04/09	BG	25/04/09	BD	30/04/09
A	Draft	RM	27/03/09	BG	30/03/09	BD	31/03/09
Revision	**Description & Rationale**	**Originated**	**Date**	**Reviewed**	**Date**	**Authorised**	**Date**
TOBIN Consulting Engineers							

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Appendix 1: NPWS Site Synopsis: Glengarriff Harbour and Woodland cSAC

Appendix 2: Marine Study Glengarriff Harbour

Appendix 3: Marine Mammal Study Glengarriff Harbour

Appendix 4: Consultation Response from South Western Regional Fisheries Board

1 EXECUTIVE SUMMARY

TOBIN Consulting Engineers in association with Dixon Brosnan Consultants Ltd and Dr Michelle Cronin have now completed the “Stage 1 - Screening” and “Stage 2 - Appropriate Assessment” which examine the likely impacts that the proposed Glengarriff Sewerage Scheme will have on the Glengarriff Harbour and Woodland Candidate Special Area of Conservation (cSAC).

The aim of this appropriate assessment report is to describe

- Stage 1 Screening Stage: Determine if there is the potential for the project to impact key selection features of the SAC
- Stage 2 Appropriate Assessment Stage: Describe the Project and key features which may potentially impact selection features of the SAC
- If avoidance is unavoidable provide mitigation recommendations which aim to avoid significant negative impacts to key selection features of the cSAC described.

The existing Glengarriff Sewerage Scheme consists of a collection system with two pumping stations, which discharge sewage to a septic tank located on Council owned lands between Glengarriff and the harbour. Effluent from the septic tank is discharged via a short outfall to Glengarriff Harbour. The proposed scheme includes laying sewers and foul sewage rising mains, upgrading of the existing pumping stations and the construction of a new wastewater treatment plant (adjacent to the existing septic tank) and treated effluent outfall to serve Glengarriff and its surrounding areas.

Impacts to terrestrial habitats such as oak woodland within the SAC will be avoided and the site for the proposed wastewater treatment plant will predominantly be located in amenity grassland habitat of **low ecological value**.

The proposed works may potentially impact harbour seal (*Phoca vitulina*) through disturbance during the construction phase. Mitigation will be implemented to minimise possible disturbance sources to harbour seal (key selection feature) in the harbour.

As part of the proposed scheme, it isproposed to fill approximately 500m^2 of marine rocky habitat east of the proposed wastewater treatment plant site, to compensate for the loss of public space caused by the construction of the proposed WwTW. Following construction of the treatment plant this area will be landscaped to blend in with the remainder of the Council owned lands.

The impacts of the proposed works and potential impacts during construction and operation of these works on sensitive receptors which form key selection features of the cSAC’s described, have been investigated and appropriate mitigation to minimise/ avoid impacts are described.

The tidal dispersion study in association with recommendations from the marine mammal assessment will provide details for a recommended location for the effluent outflow. This design action and other appropriate actions during the construction phase should meet criteria for minimising disturbance impacts to harbour seal specifically and impacts generally to other possible sensitive marine receptors.
The primary aim of the sewerage scheme will be to improve the treated effleunt quality compared to the current situation whereby sewage receives limited treatment in an existing septic tank. Once the proposed scheme is in operation it will improve water quality in Glengarriff Harbour and potentially indirectly improve conditions for receptors such as sea trout and salmon in river habitats draining Glengarriff woodlands.

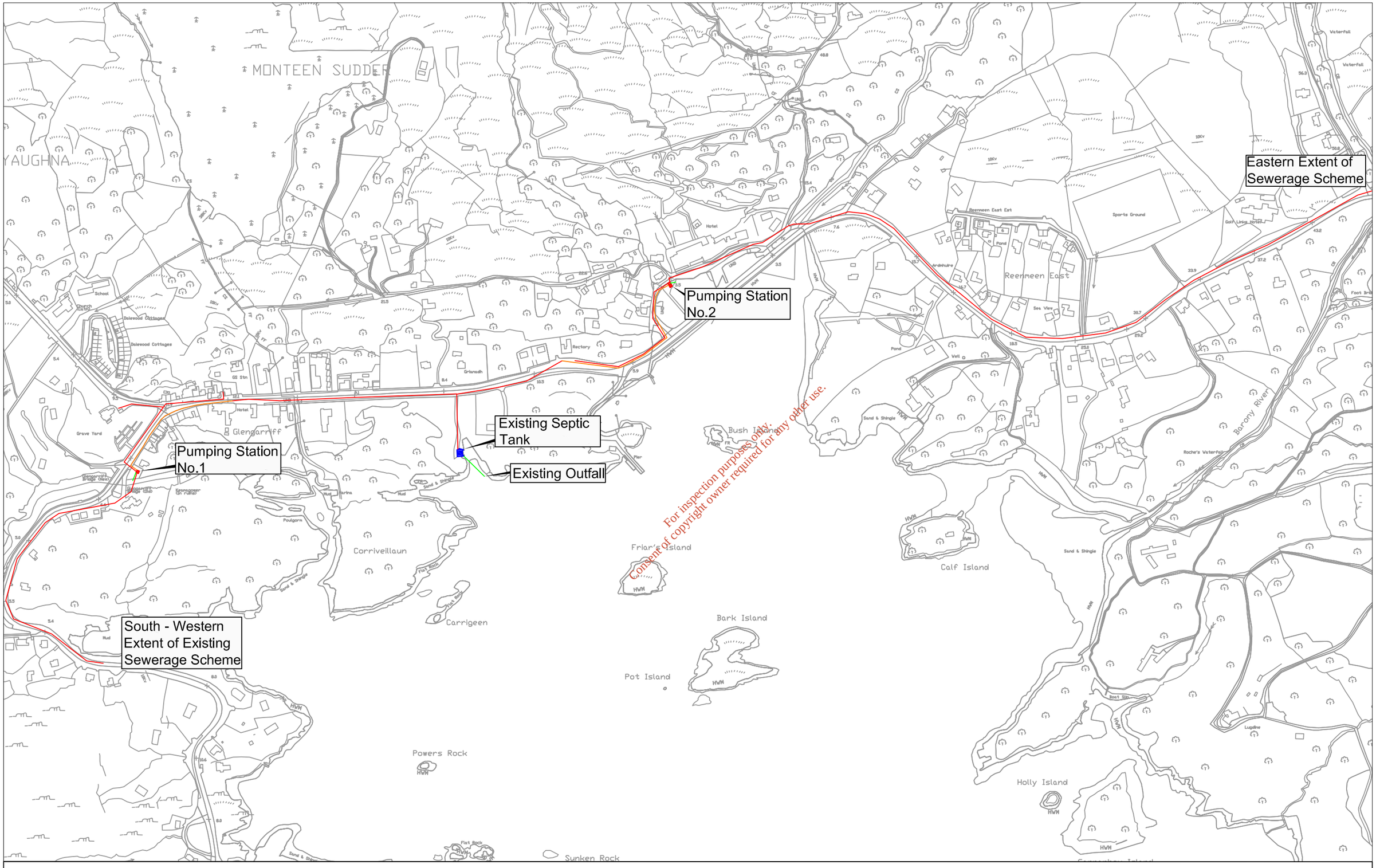
2 INTRODUCTION

TOBIN Consulting Engineers were commissioned by Cork County Council to carry out an appropriate assessment of impacts to Glengarriff Harbour and Woodland Special Areas for Conservation (cSAC). This assessment is a requirement to demonstrate that the proposed sewerage scheme will not impact on key sensitive receptors /selection features of this European designated SAC site. A year round colony of common seal in the harbour area is the key selection feature which may potentially be impacted. As part of the process all selection features of the cSAC are considered and impacts and mitigation measures (if required) are presented
The proposed scheme includes laying sewers and four sewage rising mains, upgrading of the existing pumping stations and the construction of a new wastewater treatment plant and treated effluent outfall to serve Glengarriff and its surrounding areas.

An ecological survey and assessment was carried out for lands and marine habitats required for the proposed sewage treatment plant and outfall pipe.
A review of available reports including key ecological receptors which may potentially be impacted was carried out. Appropriate mitigation of potential impacts is described which aims to avoid impacts to SAC's during construction and operation of the scheme and hence allow authorisation to be granted following the Appropriate Assessment stage of the overall process (described in more detail below).

2.1 EXISTING SEWERAGE SCHEME

The existing Glengarriff Sewerage Scheme consists of a collection system, septic tank and short outfall to Glengarriff Harbour as shown overleaf in Figure 2.1. The collection system is served by two pumping stations, one adjacent to Glengarriff Bridge beside the Castletownbere Road and one at the tidal pond close to Eccles Hotel. Emergency overflows operate occasionally after periods of heavy rainfall to discharge excess sewage from these pumping stations to the adjacent water bodies. The septic tank provides only primary treatment of the collected sewage, prior to discharge to the harbour, at the location shown.



4316 - Figure 2.1 Existing Glengarriff Sewerage Scheme

2.2 PROPOSED SEWERAGE SCHEME

Works proposed will include:

- Upgrading and extending the existing sewer network
- Upgrading the existing rising mains
- Upgrading of the existing pumping stations and retention of the existing emergency overflows with additional screening, stormwater storage and alarm systems
- Construction of a new wastewater treatment plant adjacent to the existing septic tank. An indicative layout of the proposed treatment plant is shown overleaf in Figure 2.2. The indicative layout shows a plant consisting of inlet pumping, screens, inlet buffer tank, SBR treatment units, disinfection channel and sludge tank. The existing septic tank may be retained for use as a stormwater holding tank. The inlet to the east of the existing septic tank will be filled in with the rock excavated from the treatment plant site.
- A new outfall pipe will be constructed for the treated effluent. The existing outfall pipe will be abandoned. The potential outfall locations under consideration are at points A (and along the line passing through A), B, and C as shown in Figure 2.3.

Main Street

Gate

Existing Rock Outcrop and Earth Mound

Proposed Pedestrian Entrance to Playground

Existing Pathway

Public Lands Ownership Boundary

EXISTING PLAYGROUND

Proposed Pedestrian Access

Existing Gravity Sewer

Pedestrian Gate

Buffer Zone Between Playground and Treatment Plant

Control House

Screens

Gate

Inlet Buffer Tank

Emergency Overflow

Outfall Chamber

Splitter Chamber

Rising Main to Screens from Inlet Pumping Station

O/F

Proposed Connection to Existing Sewer

Proposed SBR Tank 1

Proposed SBR Tank 2

Storm Water Tank

Inlet Pumping Station

Existing Trees to be Retained

Furture SBR Tank 3

Future SBR Tank 4

Existing Septic Tank to be Abandoned

Sludge Tank

Disinfection Chamber

Odour Scrubber

Sludge Removal Pipe

Diverted Path

Existing Inlet to be Filled

Artistic Feature

Indicative Direction of Existing Pedestrian Path

Proposed Retaining Wall

Existing Outfall (to be abandoned)

Proposed New Outfall

LWM

shingle

LEGEND

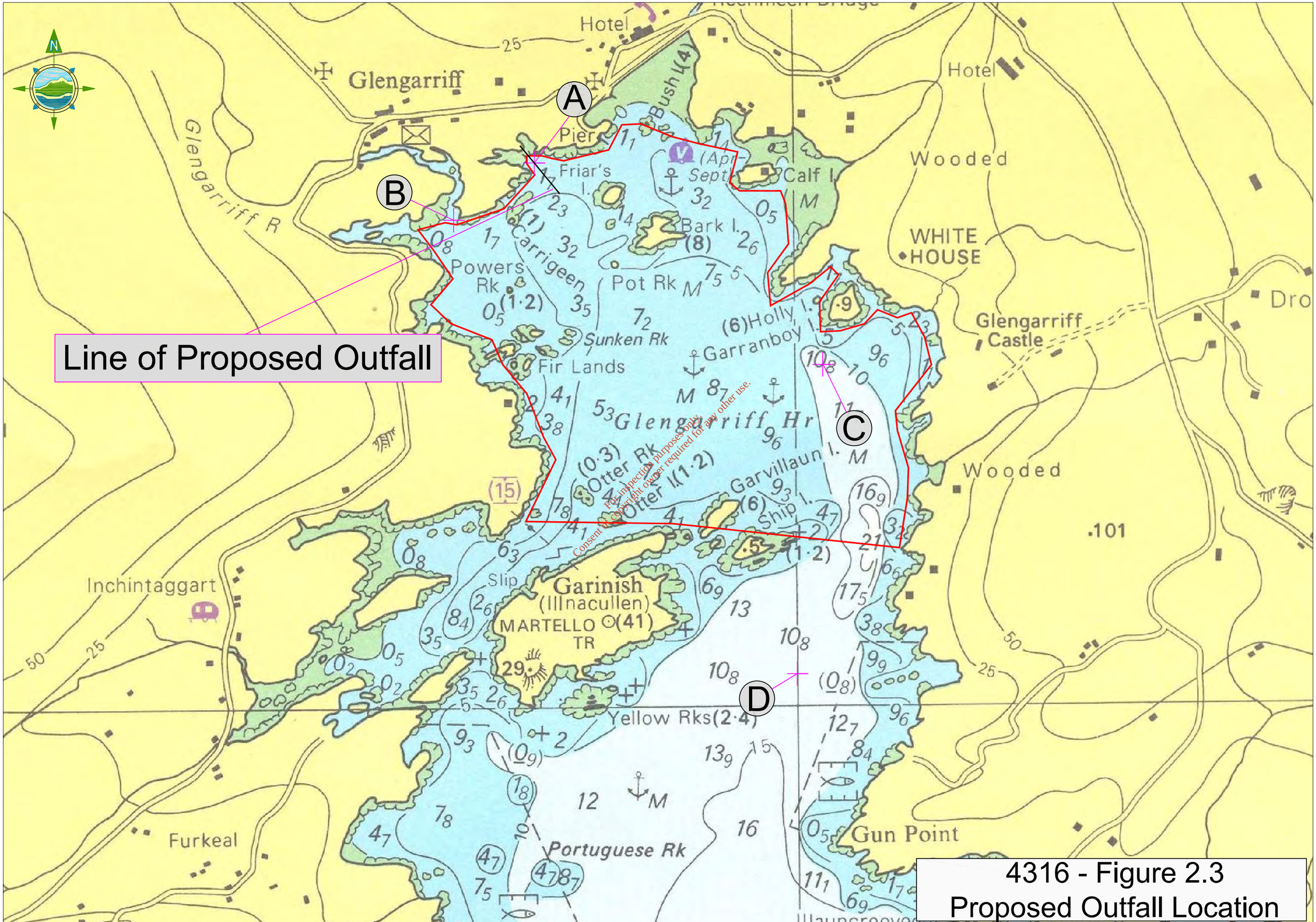
- Site Boundary
- Proposed Foul Sewer/Outfall
- Rising Main
- Sludge Removal Pipe
- Existing Foul Sewer/Outfall
- Section of Existing Sewer to be decommissioned
- Proposed Re-alignment of the Route Pedestrian Path
- Existing Path
- Proposed Road
- Existing Inlet
- Proposed New Entrance to Playground
- Buffer Zone
- Grassed Area
- Picnic Table

NOTES

1. FIGURED DIMENSIONS ONLY TO BE TAKEN FROM THIS DRAWING
2. ALL DRAWINGS TO BE CHECKED BY THE CONTRACTOR ON SITE
3. ENGINEER TO BE INFORMED BY THE CONTRACTOR OF ANY DISCREPANCIES BEFORE ANY WORK COMMENCES
4. ALL LEVELS SHOWN RELATE TO ORDNANCE SURVEY DATUM AT MALIN HEAD

Tank	Volume	Plan Dimensions	Top of Road/Tank
Each SBR 1,250p.e	425 m³	10m x 8.5m	98.0 m
Inlet Buffer Tank	125 m³	Ø = 8m,	98.0 m
Sludge Holding Tank	125 m³	Ø = 8m	98.0 m
Control House	n/a	10m x 8m	99.5 m

4316 - Figure 2.2 - Indicative Layout of Proposed WWTP



4316 - Figure 2.3
Proposed Outfall Location

3 APPROPRIATE ASSESSMENT

3.1 LEGISLATIVE CONTEXT

Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora - '*The Habitats Directive'*, has been transposed into Irish law by The European Community (Natural Habitats) Regulations 1997 (S.I. No. 94/1997). The 1997 Regulations were updated in 1998 by The European Communities (Natural Habitats) (Amendment) Regulations 1998 (S.I. No. 233/1998) to include Council Directive 97/62/EC which served to update Council Directive 92/43/EEC, adapting it to technical and scientific progress made in the intervening years.

The 1997 Regulations were again updated in 2005, by The European Communities (Natural Habitats) (Amendment) Regulations 2005 (S.I. No. 378/2005). This amendment served to consolidate the main nature conservation legislation enacted in Ireland, meaning The Wildlife Act 1976, The Wildlife (Amendment) Act 2000, The European Communities (Natural Habitats) Regulations 1997, The European Communities (Natural Habitats) (Amendment) Regulations 1998, and to draw direct reference upon Council Directive 79/409/EC on the conservation of wild birds – '*The Birds Directive'*. The Birds Directive seeks to protect birds of special importance by the designation of Special Protection Areas (SPAs) whereas the Habitats Directive does the same for habitats and other species groups with Special Areas of Conservation (SACs). It lists certain rare habitats (Annex I) and species (Annex II) whose conservation is of community interest. It is the responsibility of each member state to designate SPAs and SACs, both of which will form part of Natura 2000, a network of protected areas throughout the European Community.

Article 6, paragraphs 3 and 4 of the Habitats Directive describes the restrictions placed on any development which may potentially impact a EU designated SAC site and states that: 6(3) *Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site's conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.*

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

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

3.2 GUIDANCE

This Appropriate Assessment has been carried out using the following guidance:

- Managing Natura 2000 Sites: the provisions of Article 6 of the 'Habitats' Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg (EC 2000);

- Assessment of Plans and Projects Significantly Affecting Natura 2000 Sites: Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC, Office for Official Publications of the European Communities, Luxembourg (EC 2001);

- . Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission. Office for Official Publications of the European Communities, Luxembourg (EC 2007).

Based on these documents, the assessment procedure as detailed in the guidelines is a four stage approach consisting of the following stages which are summarised in Figure 3.1.

Stage One: Screening / Test of Significance - the process which identifies the likely impacts upon a Natura 2000 site of a project or plan, either alone or in combination with other projects or plans, and considers whether these impacts are likely to be significant;

Stage Two: Appropriate Assessment - the consideration of the impact of the project or plan on the integrity of the Natura 2000 site, either alone or in combination with other projects or plans, with respect to the site's structure and function and its conservation objectives. Additionally, where there are adverse impacts, an assessment of the potential mitigation of those impacts; all as detailed in Figure 2

Stage Three: Assessment of Alternative Solutions – the process which examines alternative ways of achieving the objectives of the project or plan that avoid adverse impacts on the integrity of the Natura 2000 site; and

Stage Four: Assessment Where Adverse Impacts Remain - an assessment of compensatory measures where, in the light of an assessment of Imperative Reasons of Overriding Public Interest (IROPI), it is deemed that the project or plan should proceed.

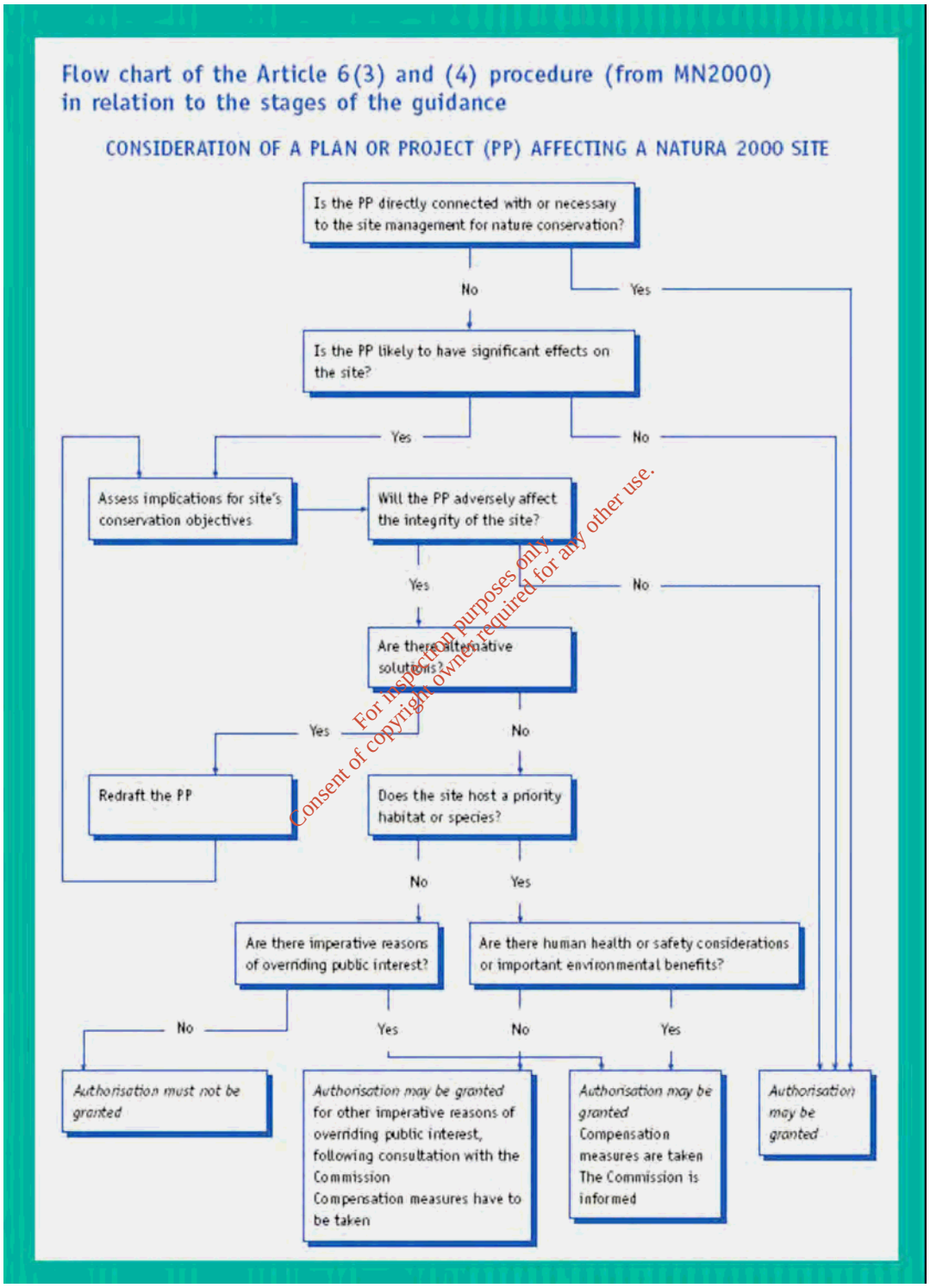


Figure 3.1: Flowchart Outlining the Appropriate Assessment Process (Extracted from Assessment of Plans and Projects – EC 2001).

3.3 ADDITIONAL REFERENCE MATERIAL

Additional material was also reviewed including:

The Cork County Development Plan (2003)[1] : While Cork County Council does not have any specific policies relating to the described SAC sites, policies relating to the natural environment in general, and cSACs in particular, are as follows:

"ENV 2-1: It is a general objective to seek the conservation and wise management of areas of natural environmental value.

ENV 2-2: It is an objective generally to seek the conservation and protection of features of natural interest such as woodlands, hedgerows, wetlands, unspoilt uplands and known habitats.

Additionally, the County Council also aims to apply the precautionary principle to developments in environmentally sensitive areas and to work with landowners, NPWS and other stakeholders to contribute to the effective management of sites of nature conservation value (ENV 2-10 and 2-11).

ENV 2-4: It is a particular objective to protect plant, animal species and habitats which have been identified by the Habitats Directive, Birds Directive, Wildlife Act (1976) and the Flora Protection Order (S.I. No. 94 of 1999).

ENV 2-5: It is an objective to maintain the conservation value of all Natural Heritage Areas proposed for designation by Duchas the Heritage Service [now NPWS], *either before or during the lifetime of this plan.*

ENV 2-6:It is an objective to maintain the conservation value of those sites identified by Duchas the Heritage Service [now NPWS] *as candidate Special Areas of Conservation as well as any other sites that may be so designated during the lifetime of this plan*".

The planning enquiry system of Cork County Council[2] was also checked for details of any projects in the area which may potentially impact the SAC site.

[1] Cork County Development Plan (2003). Available at http://www.corkcoco.ie/co/pdf/57003030.pdf

[2] http://www.corkcoco.ie/co/web/Cork%20County%20Council/Departments/Planning

3.4 SCREENING PHASE

3.4.1 Introduction

This stage of the process identifies the likely impacts upon a Natura 2000 site of a project or plan, either alone or in combination with other projects or plans, and considers whether these impacts are likely to be significant;

The screening phase was progressed in the following stages.

3.4.2 Describe the project, either alone or in combination with other projects or plans

The proposed project is described in Section 2.1.

3.4.3 Cumulative Impacts

No other project is currently under way which may significantly impact this SAC site. New housing developments were noted in Glengarriff village on lands outside the SAC. The aim of this sewerage scheme will be to improve existing wastewater treatment and allow for potential further developments to take place in Glengarriff in future.

3.4.4 Consultation

National Parks and Wildlife Service (NPWS) were consulted on site on December 15th 2008. During consultation the potential impacts from the proposed sewerage scheme on harbour seal, which is a key selection feature of the Glengarriff harbour and woodland Special Areas for Conservation (cSAC), were highlighted. It was agreed at the meeting that an appropriate assessment for the sewerage scheme was required.

The NPWS Local Ranger and Designations Department were again consulted (February 2009) regarding selection features of the SAC and key issues for consideration.

In addition South Western Regional Fisheries Board (SWRFB) were consulted and a response received on 14th November 2008, (see Appendix 4). In this letter existing water quality issues associated with the current effluent discharge were highlighted as impacting the Glengarriff River and estuary (known as the tidal pond). Recommendations were provided by SWRFB for the elimination of this water quality issues including outfall location, treatment recommendations, pumping station upgrading and best practises to avoid pollution during construction.

3.4.5 Site Identification and selection criteria

Conservation sites in the vicinity of the proposed sewerage scheme include

- Glengarriff Harbour and Woodland cSAC: site code 00090.
- Caha Mountains cSAC, site code: 000093.
- Derrclogher cSAC; site code 001873

This proposed sewerage scheme will have no measurable impacts on Caha Mountains and Derrclogher cSAC's and these SAC sites are not considered further.
This proposed sewerage scheme may potentially impact sensitive receptors in the Glengarriff Harbour and Woodland Special Areas for Conservation (cSAC).
A full description of this SAC site is detailed in Appendix 1. Maps of the SAC are contained in Figures 3.2 and 3.3. Conservation objectives and key selection features for the SAC site as provided by NPWS are detailed below.

HABITATS: ***Old Sessile Oak woods with Ilex and Blechnum in the British Isles***
Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)

Other habitats including sheltered rocky shore are not key selection features for the SAC site though they do add to the biodiversity of the site, (see objective 3 (draft) conservation plan, section 3.4.6).

FAUNA: ***Common Seals (Phoca vitulina).***
Otter (Lutra lutra)
Lesser Horseshoe Bat (Rhinolophus hipposideros)
Kerry Slug (Geomalacus maculosus)

Common seal are the key marine selection feature of the SAC site and are discussed in detail in the Marine and Common seal study, Appendix 3.

FLORA

Protected FLORA (PROTECTION) ORDER, 1980 S.I. No. 338/1980

No specific protected flora have been highlighted for the site however the following have been recorded in the general area and may potentially exist on the site

Killarney fern (Trichomanes speciosum)
Lanceolate Spleenwort (Asplenium obovatum)
Marsh clubmoss (Lycopodeilla inundata)
Sea kale (*Crambe maritime*)
Drooping ladies tresses (*Spiranthes romanzoffiana*)

Irish Saint Johns wort (*Hypericum canadense*)

Narrow leaved hellobrine (*Cephalanthera longifolia*)

Rare Flora and Fungi

Smooth Brome (*Bromus racemosus*)

Rare Myxomycete fungus namely *Echinostelium colliculosum, Cribraria tenella, Arcyria affinis, Stemonitis nigrescens, Symphytocarpus impexus, Fuligo muscorum, Diderma deplanatum* and *D. lucidum*.

Glengarriff woodland is listed as an Irish SAC site of international importance for bryophytes (NHA database).

3.4.6 Conservation Objectives harbour and woodland Special Areas for Conservation (cSAC)

Key draft Conservation objectives for the Glengarriff Harbour and Woodland SAC must be observed where potential impacts may occur to this designated site.

Objective 1:	To maintain the Annex I habitats for which the cSAC has been selected at favourable conservation status: *namely* Old sessile oak woods with *Ilex* and *Blechnum* in British Isles; Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae).
Objective 2:	To maintain the Annex II species for which the cSAC has been selected at favourable conservation status: *namely Geomalacus maculosus; Rhinolophus hipposideros; Lutra lutra; Phoca vitulina.*
Objective 3:	To maintain the extent, species richness and biodiversity of the entire SAC site.
Objective 4:	To establish effective liaison and co-operation with landowners, legal users and relevant authorities.

Table 3.1 Key Draft Conservation objectives

European and national legislation places a collective obligation on Ireland and its citizens to maintain at favourable conservation status areas designated as candidate Special Areas of Conservation. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these SAC sites.

According to the EU Habitats Directive, favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, is stable or increasing,

- the ecological factors that are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and

• the conservation status of its typical species is favourable as defined below.

The favourable conservation status of a species is achieved when:

• population data on the species concerned indicate that it is maintaining itself,

• the natural range of the species is neither being reduced or likely to be reduced for the foreseeable future, and

• there is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

3.4.7 Identification of Potential Impacts

Potential impacts of the proposed Glengarriff Sewerage Scheme which may impact selection features of the SAC and hence conservation objectives include:

- Water pollution during the construction phase which may indirectly impact sensitive aquatic receptors in Glengarriff Harbour
- Noise disturbance during the construction phase of the project particularly the proposed infill operation may impact the sensitive receptors common seal and otter.
- Disturbance caused by excavation of the proposed works site and rock blasting may impact the sensitive intertidal/ subtidal marine receptors and protected mammals including common seal and otter.
- Loss of haul out areas if the area for infilling is used regularly by common seal (sensitive receptors common seal)
- Operational water quality issues if an inappropriate outfall location is selected (sensitive marine receptors)
- Potential positive impacts to marine ecology through upgrading of the wastewater treatment facilities (sensitive marine receptors)
- Loss of habitat within the footprint of the works site including marine habitats within the SAC and adjacent lands required for the new wastewater treatment plant site which may potentially be used by species in the SAC (indirect impact)
- Construction works crossing the Glengarriff River and other streams discharging to Glengarriff Harbour
- Improvement of water quality in Glengarriff Harbour

3.4.8 Assessment of Significance

Following a review of the potential works and discussion with NPWS it has been concluded that the potential exists for significant negative impacts on the common seal population, a key selection feature of the Glengarriff Harbour and Woodland SAC, from the proposed sewerage scheme. Other key selection features described in section 3.4.5 also need to be considered regarding mitigation measures which aims to avoid/ minimise potential short to long term impacts. Therefore the prevention principle to *"avoid, in special areas of conservation, the deterioration of natural habitats" (Article 6(2))* still applies.

Guidance (Assessment of Plans and Projects significantly affecting Natura 2000 Sites) on the application of Article 6 (3) indicates that where the potential for significant negative impacts still exists, the assessment process must now proceed to Stage 2 –Appropriate Assessment. At Stage 2 the potential impacts are discussed in a more comprehensive manner and detailed mitigation measures are provided which aim to minimise/ avoid risks to sensitive receptors.

Figure 3.2 Map of Glengarriff Harbour and Woodlands SAC (Site Code 00090) Scale 1/25000

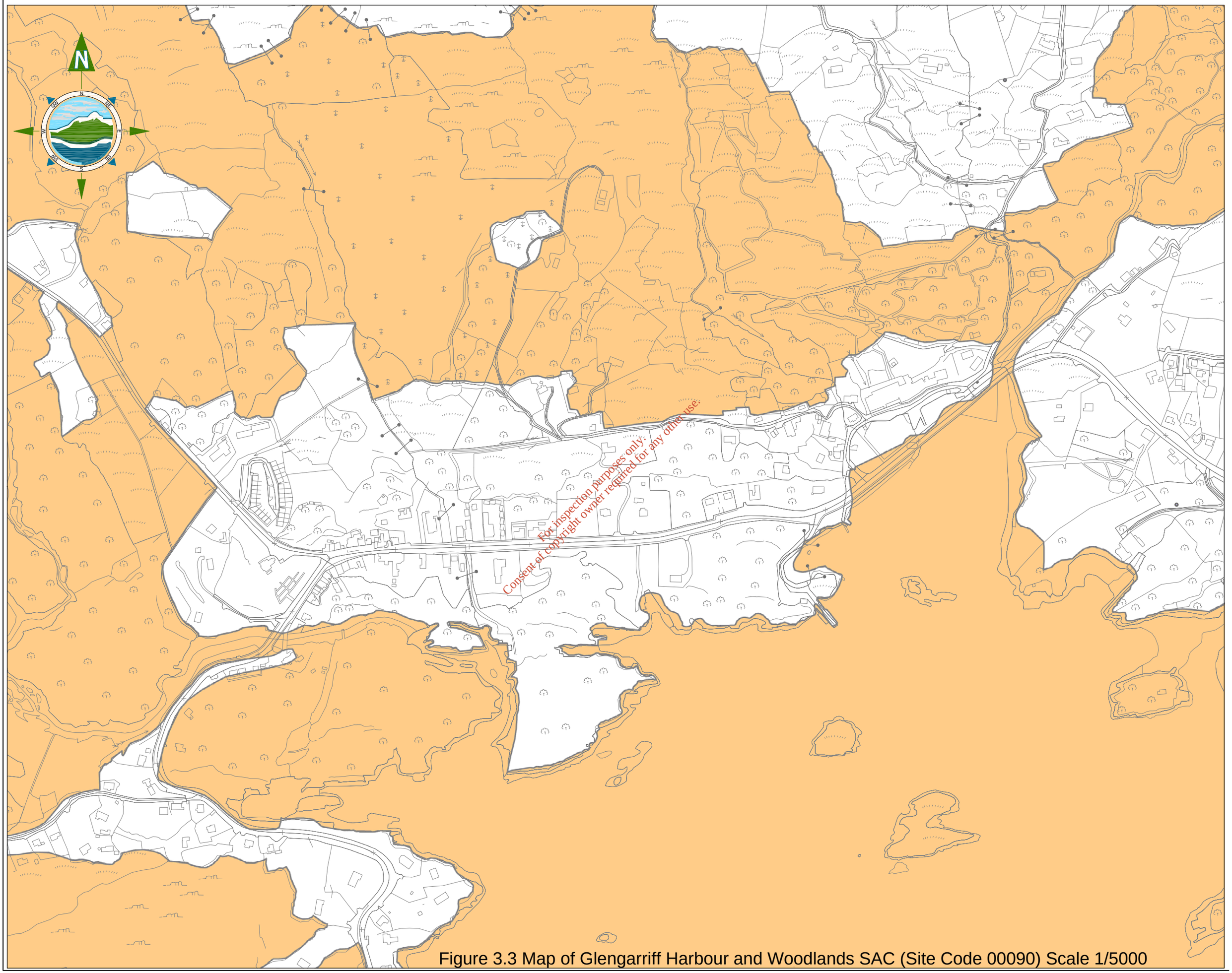


Figure 3.3 Map of Glengarriff Harbour and Woodlands SAC (Site Code 00090) Scale 1/5000

3.5 STAGE 2: APPROPRIATE ASSESSMENT PHASE

3.5.1 Introduction

This stage of the assessment process considers the impacts (whether they are direct, indirect, short term, long term, constructional, operational or cumulative in conjunction with other plans or projects) that the proposed sewerage scheme will have on the integrity of Glengarriff Harbour and Woodland cSAC with respect to the conservation objectives of the site and to its structure and function. EC guidance (Managing Natura 2000 Sites) states that the integrity of a site involves its ecological functions and the decision as to whether it is adversely affected should focus on and be limited to the site's conservation objectives (EC 2000).

This stage of the Appropriate Assessment consists of four main steps, namely;

1. Step One – Information required, where the conservation objectives of the site are reviewed and the aspects of the proposed plan or project which affect these conservation objectives are identified.

2. Step Two – Impact Prediction, where the likely impacts of a project or plan are examined. These include direct/indirect, short/long term, construction/operational/decommissioning, isolated, interactive and cumulative effects.

3. Step Three – Conservation Objectives, where the effects of a project or plan are assessed as to whether they have an adverse effect on the integrity of the SAC site as defined by its conservation objectives.

4. Step Four – Mitigation Measures, where the level of mitigation (top of mitigation hierarchy) is assessed against the adverse effects that the project or plan is likely to cause.

3.5.2 APPROPRIATE ASSESSMENT STEP ONE – INFORMATION REQUIRED

3.5.2.1 Description of Natura 2000 Site Affected

The Glengarriff Sewerage Scheme may potentially impact sensitive receptors in the Glengarriff Harbour and Woodland Special Areas for Conservation (cSAC). A full description of Glengarriff Harbour and Woodland Special Areas for Conservation (cSAC) (site code 00090) is detailed in Appendix 1.

This site has been selected for the following:

HABITATS: ***Old Sessile Oak woods with Ilex and Blechnum in the British Isles***
Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)

Other habitats including sheltered rocky shore are not key selection features for the site though they do add to the biodiversity of the site, (see objective 3 (draft) conservation plan, section 3.4.6).

FAUNA: ***Common Seals (Phoca vitulina).***
Otter (Lutra lutra)
Lesser Horseshoe Bat (Rhinolophus hipposideros)
Kerry Slug (Geomalacus maculosus)

Common seal are the key marine selection feature of the site and are discussed in detail in the Marine and Common seal study, Appendix 3.

Protected FLORA (PROTECTION) ORDER, 1980 S.I. No. 338/1980
No specific protected flora have been highlighted for the site however the following have been recorded in the general area and may potentially exist on the site

Killarney fern (Trichomanes speciosum)
Lanceolate Spleenwort (Asplenium obovatum)
Marsh clubmoss (Lycopodeilla inundata)
Sea kale (*Crambe maritime*)
Drooping ladies tresses (*Spiranthes romanzoffiana*)
Irish Saint Johns wort (*Hypericum canadense*)
Narrow leaved hellobrine (*Cephalanthera longifolia*)

Rare Flora and Fungi
Smooth Brome grass (*Bromus racemosus*)
Rare Myxomycete fungus namely *Echinostelium colliculosum, Cribraria tenella, Arcyria affinis, Stemonitis nigrescens, Symphytocarpus impexus, Fuligo muscorum, Diderma deplanatum* and *D. lucidum*.

Glengarriff woodland is listed as an Irish SAC site of international importance for bryophytes (NHA database).

3.5.3 Conservation Objectives of Glengarriff harbour and woodland (cSAC)

Key draft Conservation objectives for the Glengarriff Harbour and Woodland SAC must be observed where potential impacts may occur to this designated site.

Objective 1:	To maintain the Annex I habitats for which the cSAC has been selected atfavourable conservation status: Old sessile oak woods with *Ilex* and *Blechnum* in British Isles; Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae).
Objective 2:	To maintain the Annex II species for which the cSAC has been selected at favourable conservation status: *Geomalacus maculosus; Rhinolophus hipposideros; Lutra lutra; Phoca vitulina.*
Objective 3:	To maintain the extent, species richness and biodiversity of the entire site.
Objective 4:	To establish effective liaison and co-operation with landowners, legal users andrelevant authorities.

Table 3.2 Key Draft Conservation objectives

European and national legislation places a collective obligation on Ireland and its citizens to maintain at favourable conservation status areas designated as candidate Special Areas of Conservation. The Government and its agencies are responsible for the implementation and enforcement of regulations that will ensure the ecological integrity of these sites.

According to the EU Habitats Directive, favourable conservation status of a habitat is achieved when:

- its natural range, and area it covers within that range, is stable or increasing, and
- the ecological factors that are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- the conservation status of its typical species is favourable as defined below.

The favourable conservation status of a species is achieved when:

- population data on the species concerned indicate that it is maintaining itself, and
- the natural range of the species is neither being reduced or likely to be reduced for the foreseeable future, and

There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

3.5.3.1 Description of Habitats and Wildlife in the Affected Area of the SAC

3.5.3.1.1 Introduction

An ecological survey was conducted to determine existing habitats and fauna which use or which may potentially use areas required for this sewerage scheme . Three main studies were implemented for this study. All three studies are summarised in this overall Appropriate Assessment report. The three studies are listed below:

1. Intertidal and Sub-tidal Marine Study

This was conducted by Dixon Brosnan Consultants with the key summary findings of the marine mammal study included in the text. This report is presented in full in Appendix 2

2. Marine Mammal study of Glengarriff Harbour

This study was conducted by Dr. Michelle Cronin. This report is presented in full in Appendix 3 of this Appropriate Assessment.

3. Terrestrial and otter Survey

A terrestrial and otter survey was conducted during February 2009 by Roger Macnaughton, Senior Ecologist with TOBIN Consulting Engineers. The findings are detailed in Section 3.5.3.1.3 of this report with a summary of key findings and recommendations from both marine studies.

3.5.3.1.2 Methodology

The methodology for the study implemented by TOBIN Consulting Engineers is described below. This ecological assessment comprised both a desktop study and field surveys.

Desk Study

The desk study comprised the following elements:

- Identification of all sites designated for nature conservation within 5km of the site,
- Consultation with the National Parks and Wildlife Service (NPWS)
- Review of draft relevant conservation plans
- Review of Ordnance Survey maps and aerial photography in order to determine broad habitats that occur within the survey area, and
- Review of relevant reports and literature.

Field Survey

Habitat:

A habitat survey and assessment was conducted within the proposed works area and surrounding habitats according to Fossitt (2000)[3]. Aerial photography assisted habitat delineation and interpretation. In addition consideration of relevant habitat which may potentially be used by protected species is provided. Species noted are described under each habitat.

Protected mammal:

A protected mammal survey was conducted for potential mammal and invertebrate sensitive receptors within the survey area focusing on the proposed works site and adjacent woodlands and marine shoreline. Otter (*Lutra lutra*) and harbour seal (*Phoca vitulina*) species were the focus of this survey. The likelihood of habitat importance for lesser horseshoe bat, cetaceans, badger, Irish hare, red squirrel and bats was also considered.

Protected flora, rare fungi and bryophytes

The survey was conducted outside the main botanic growing season. Habitats within the survey area were assessed as to their likelihood for protected flora, rare fungi and bryophytes; (see conservation site selection criteria section 3.5.2.1)

Invertebrates:

The Kerry slug *Geomalacus maculosus* is known to exist in this area. This species is protected under the Wildlife Act and a license is needed to interfere or kill any individuals of this species. It is also listed under Annex 2 of the EU Habitats Directive. An assessment was conducted by NPWS of habitat quality and a search implemented for Kerry slug on the SAC site, with reference to available information[4].

The marine portion of the cSAC, where the development will potentially impact, is not suitable for freshwater pearl mussel (*Margaritifera margaritifera*). A population of freshwater pearl mussel in the Glengarriff River upstream of the confluence with the Glengarriff Harbour will not be affected.

Birds:

A walkover survey and scans of the surrounding landscape were conducted to determine all bird species using the area particularly the Glengarriff harbour and woodlands area in the vicinity of the proposed works.

[3] Fossitt, J. (2000) A guide to habitats in Ireland. The Heritage Council, Kilkenny.
[4] http://www.npws.ie/en/media/Media,5189,en.pdf

3.5.3.1.3 Survey Findings

Desk Study Findings

Protected Flora:

A protected (Flora Protection Order, 1999) and rare flora survey for species which have been described for the same 10km grid square (V95) as the works site, was conducted. It should be noted as the survey was conducted outside the botanic growing season some species (flowering plants) would not have been detectable and therefore an assessment of the probability of their being present was made. An assessment was made of the following flora:

- Killarney Fern (*Trichomanes speciosum*), also listed under Annex II of the EU Habitats Directive. Occurs in splash zones of waterfalls generally in semi natural woodland. It was not detected during the survey and, given its rarity and the unsuitability of habitat, will not occur on the proposed WWTP site.
- Lanceolate spleenwort (*Asplenium obovatum*) occurs on rocks walls and hedge banks near sea. It was not detected during the survey and it is extremely unlikely to occur given its rarity and the relatively unsuitable habitat on site
- Sea kale (*Crambe maritime*) – shingle beaches. It was not detected during the survey will not occur given its rarity and the unsuitable habitat on the proposed WWTP site
- Drooping ladies tresses (*Spiranthes romanzoffiana*); habitat includes low nutrient wet marshy ground, wet meadows near water bodies and bogs. It was not detectable during the survey and is extremely unlikely to occur given its rarity and the relatively unsuitable habitat on the proposed WwTW site.
- Irish Saint Johns wort (*Hypericum canadense*) habitat is usually wet, open to semi-open situations; often in sandy soil: borders of lakeshores and wet meadows. It was not detectable during the survey and it is extremely unlikely to occur given its rarity and the unsuitability of habitat on the proposed WWTP site.
- Narrow leaved hellobrine (*Cephalanthera longifolia*). This dramatic appearing orchid species can occur in oak woodland on acid soils. It was not detectable during the survey and it is extremely unlikely to occur given its rarity and the relatively unsuitable habitat on the proposed WWTP site.

Invertebrates:

G. maculosus utilise native woodland and heathland habitats within the Glengarriff harbour and woodland cSAC. The area of woodland on the the proposed WWTP site was carefully checked and none were noted. Given the cryptic nature of this species it cannot be completely ruled out from rocky

outcrop with woodland on the proposed works site (outside SAC). It is highly unlikely to use amenity grassland habitat and will not use sheltered shore habitat within the works site.

Mammals and Birds:

Common seal: The rocky islets in the harbour support the largest colony of Common Seals (*Phoca vitulina*) in the south-west of Ireland (maximum count, including pups, 1989-94 = 226). These are present year round in the harbour close to the proposed works area. Further details are provided in Appendix 3.

Cetaceans

The Glengarriff Harbour area is utilised to a minor degree by Harbour porpoise. Further details on cetaceans is provided in Appendix 3

Otter

Otter utilise river and shoreline marine habitats in the Glengarriff Harbour area. Suitable habitat and undisturbed areas exist which may potentially allow this species to breed in the vicinity of the proposed works area.

Lesser Horseshoe Bat

The SAC is internationally important for this species with 228 counted in 3 building roost sites in 2002/ 2003

Field Survey Findings

Proposed Treatment Works Site

The site consists predominantly of a park with managed amenity grasslands and an existing septic tank planted with grass. In addition 2 rock outcrops with some semi natural vegetation are present, and an area of sheltered rocky shore marine intertidal habitat will be required, (see Plate 1).

The site of the proposed wastewater treatment plant is located predominantly outside the SAC. However, a section of shoreline within the SAC is required for infilling. In addition the outfall pipe will be located within the SAC. The pumping station sites are outside the SAC.

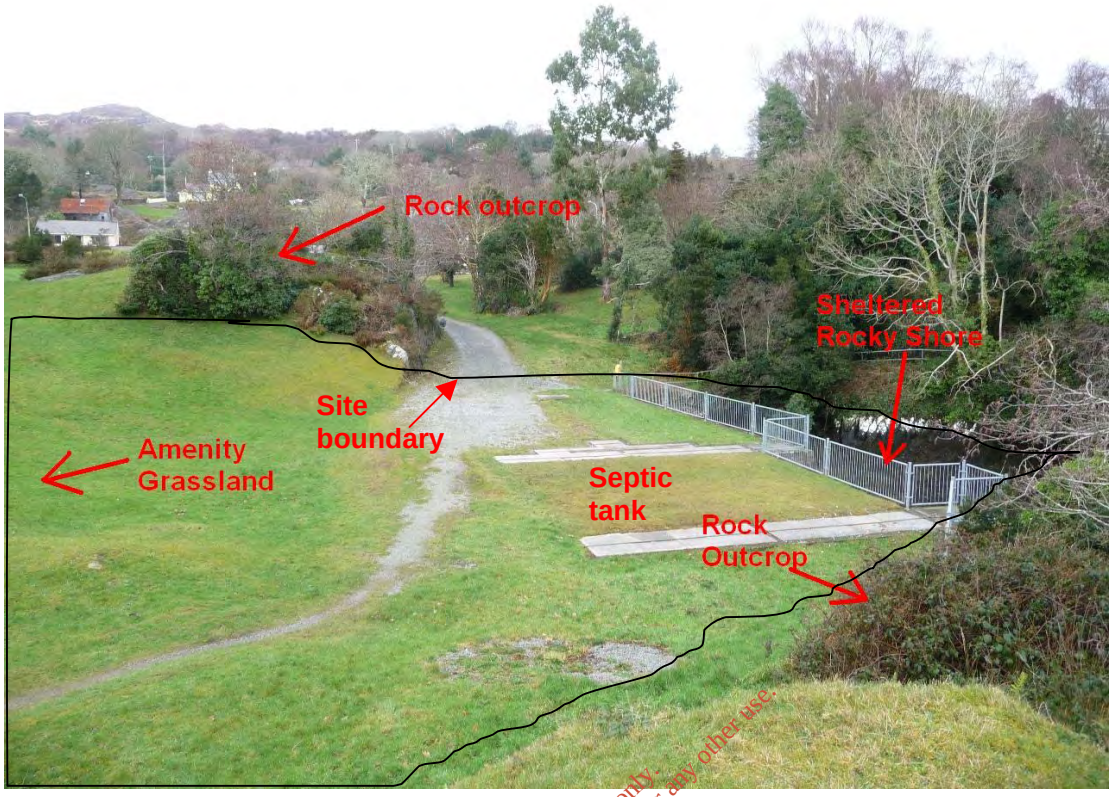


Plate 1: Overview of habitats on the proposed works site. An area of semi natural oak woodland with birch exists just off-site to the right of sheltered rocky shore habitat

Habitats can be summarised as follows:

Habitats existing on site (outside SAC) include:

- amenity grassland (improved) – GA2
- Rock outcrop with (mixed) broadleaved woodland (WD1)

Habitats existing onsite (within SAC) include:

- Sheltered Rocky Shore (LR3)
- Sea inlet and bays (MW2)

Sensitive habitat close to proposed works footprint

- Oak-Birch-Holly Woodland.

Amenity Grassland - onsite outside SAC

This is a managed park with a public footpath. These grasslands are highly modified and regularly cut. Species noted included creeping buttercup, grasses, daisy, sheep sorrel, soft rush and ribwort plantain. This habitat is considered to be of low ecological value and unlikely to have protected and rare flora present.

Plate 2: View of the proposed works site looking south. The majority of the proposed works area (wastewater treatment plant) exists within a park consisting of amenity grassland.

Rock outcrop with (mixed) broadleaved woodland (WD1) - onsite outside SAC

Two distinct areas of rock outcrop exist at the northern and southern boundaries of the proposed wastewater treatment plant site . These will largely be retained and will form a buffer zone between the works and a playground to the north and the marine habitats to the south. Vegetation is dominated by semi natural woodland and heath species with a number of exotics (non native species). Species noted include Alder trees, gorse, polypody fern, mosses (including *Polytrichum* spp.), ivy, holly, ling heather, bramble and woodbine. Non native species include dense *Rhododendron ponticum.* These outcrop areas retain biodiversity and are therefore are of local ecological value. Protected plant species highlighted were surveyed as far as possible and none were found. This habitat is unsuitable for protected flora detailed including *Trichomanes speciosum*, *Asplenium obovatum and Lycopodeilla inundata Crambe maritime, Spiranthes romanzoffiana Hypericum canadense.* It is possible that *Cephalanthera longifolia* may occur. The rare though unprotected grass *Bromus racemosus* is also not likely to occur. Rare myxomycete fungus may possibly occur but these were outside the scope of the survey and the rocky outcrop habitats will be largely retained as a precaution.

Plate 3: A minor area of rock outcrop dominated by semi natural woodland, heath and exotic vegetation at the north of the proposed works site will largely be retained as a buffer zone.

Sheltered Rocky Shore (LR3) – Onsite within SAC

This habitat located within the SAC consists of sheltered rocky shore with abundant brown algae (*Ascophyllum nodosum*, *Fucus vesiculosus, Fucus spiralis*) and fauna including barnacle species, Common mussel (*Mytilus edulis*), green algae (*Enteromorpha* sp), and upper zone lichens. An area of approximately 500m^2 will be impacted directly by infilling requirements.

Plate 4: Rocky shore habitat within the proposed works site footprint requiring infilling

Sea inlet and Bay (MW2): Onsite within SAC

The treated effluent pipe from the proposed wastewater treatment works will be located within the cSAC. An intertidal and subtidal ecological survey conducted by Dixon Brosnan Environmental Consultants provides further details, (see Appendix 2).

Oak-Birch-Holly Woodland

This habitat exists immediately adjacent to the proposed works area and is located within the SAC. Tree cover is dominated by sessile oak with birch and holly. Ground flora is dominated by bryophytes and fern species are common. This area is of high ecological value and the proposed works footprint and all site management activities during construction and operation of the plant will avoid this area.

Protected Fauna

A survey was conducted of the proposed works site and the outer harbour area. Species that were noted during the survey included sightings and signs of bird species, otter, harbour seal and cetaceans. A detailed assessment of Harbour seal usage of Glengarriff Harbour and recommendations with mitigation measures are included in Appendix 3.

Birds were noted outside the works area foraging and loafing in the harbour. Species included; gull species (herring, black headed and lesser black backed) and mallard duck. Coal tit, robin, blackbird, wren and blue tit were noted in woodlands around the proposed works site.

No signs of otter including breeding sites were noted though it is likely that otter forage along this shoreline in the vicinity of the proposed works.

No signs were noted that suggest the proposed works area is used for hauling out by Harbour seal as it is a relatively disturbed location utilised by walkers and dogs close to the village centre. Harbour seal were sighted in the outside harbour loafing on rocks, (see Appendix 3).

The proposed works site does not contain structures likely to be utilised by roosting lesser horseshoe bat and other bat species. Bat species generally will forage through this area especially along the edge of woodland habitats.

3.5.3.2 Existing Potential Issues

Current issues potentially impacting the integrity of the SAC site detailed in NPWS draft management plan and observed during the site visit include:

Invasive species

Rhododendron ponticum is a non native invasive species that prevents the natural regeneration of the woodland. This species has been removed from parts of the woodland. Exotic self-seeding conifers are also a management issue requiring ongoing control.

Forestry

Some commercial forestry still occurs within the SAC site. Since 1997, much of the coniferous forestry has been clear felled, the majority of which was planted in the 1950s and 60s. Most coniferous forestry is Coillte-owned, but some is in private ownership (e.g. Lickeen West). Within the Nature Reserve, the conifers are being felled as they reach commercial maturity. These will be replaced with native woodland, or allowed to regenerate naturally. Coillte-owned areas outside the Nature Reserve will also be felled on maturity and replaced with native species or allowed to regenerate naturally. These activities will likely benefit the SAC site.

Agriculture

The SAC and adjacent areas appear not to be substantially impacted by intensive agriculture. Cattle and sheep grazing occur on grassland and heath habitats, as well as within the woodlands. Diffuse pollution from agriculture sources is likely to be having a minor impact on water quality (potentially beneficial for mariculture through increasing plankton productivity), in the harbour.

Aquaculture

Glengarriff Harbour supports rope grown mussels. This industry has developed since the mid 1980s. Significant mussel farming activity takes place using rafts and buoys connected by ropes. The possibility exists for nutrient build up beneath these artificial structures which can cause anoxic conditions to benthic flora and fauna. This may be causing impacts to selection features of the subtidal and intertidal habitats within the cSAC though little baseline information is available. These impacts are likely to be negligible given that no artificial feeding is provided and mussels are a native planktivourous species. Ecological benefits have been highlighted in some studies for foraging birds as these structures attract fish.

Residential and infrastructure

Glengarriff village is located at the mouth of Glengarriff Harbour, surrounded by the cSAC. This is a major tourist centre in the locality with its complement of hotels, bed and breakfast establishments, pubs etc. The permanent population of the village is c. 470, expanding significantly in the Summer

months. Scattered dwellings also occur in the locality. A sizeable number of these are holiday homes, used mostly in the summer months.

The main Glengarriff to Bantry road runs east of the SAC site. The Glengarriff to Castletownbere road runs west of the SAC site, while the road to Kenmare heads north.

Effluent Discharge

Sewage arising in Glengarriff is discharged to the harbour from the existing septic tank on the proposed works site. This is leading to localised water quality issues in the Harbour and Glengarriff River, (see consultation with SWRFB, Appendix 4).

Fishing

Small-scale commercial fishing, mostly for crab, lobster and shrimp, occurs within the harbour.

Recreation

Tourist ferry boats visit Garnish Island with its ornamental gardens and observe Harbour seals, while yachting also occurs in the harbour. Apart from nature conservation, Glengarriff Woods Nature Reserve is managed by NPWS for amenity purposes. The Nature Reserve is a popular walking area with tourists and local people. There are carparks, picnic tables, walking trails of varying lengths and a gate lodge where information leaflets are available. Coillte also have an amenity area in the woods at Pooleen, with a carpark, picnic tables and a woodland trail.

Fishing is quite popular in the rivers within the cSAC site and also in Glengarriff Harbour. Horse-riding occurs on roads. The Beara Way (a long distance trail) passes through the cSAC. These activites do not appear to be impacting negatively on the SAC, though further study would be required to confirm this.

Seed collection

Seeds of broad-leaved trees (mostly acorns) are collected by private operators, mostly within the Nature Reserve. This occurs on a commercial basis with the seeds sold on to tree nurseries.

Some wooded gardens attached to private houses are included within the SAC site. Although these often have exotic tree species present, there are enough native tree species present to warrant inclusion within the cSAC site. The area of such land is relatively very small.

Industry

An oil terminal is located on Whiddy Island approximately 4 km from the mouth of Glengarriff Harbour. Oil is off-loaded at a single buoy mooring located between Whiddy Island and Glengarriff Harbour.

3.5.3.3 Information related to the existing septic tank and the performance of the existing treatment facilities

The Sea Fisheries Protection Authority monitors the quality of the shellfish flesh at a designated monitoring site (Latitude 51 43.63 N, Longitude 009 32.71W) in Glengarriff. The results of the monitoring are contained in the Table 3.3 below.

Shellfish Flesh Quality Results	
Date	**Faecal Coliforms per 100 mls flesh**
6-Mar-06	20
6-Feb-06	20
10-Apr-06	20
22-May-06	1300
19-Jun-06	20
31-Jul-06	700
10-Aug-06	20
4-Sep-06	16000
18-Sep-06	310
2-Oct-06	750
11-Dec-06	70
31-Jan-07	20
20-Mar-07	20
30-Apr-07	20
10-May-07	20
28-Jun-07	20
30-Jul-07	40
20-Sep-07	20
12-Oct-07	50
30-Oct-07	40
16-Nov-07	20
26-Nov-07	20
17-Dec-07	200
30-Jan-08	40
29-Feb-08	20
25-Mar-08	20
12-May-08	20
26-May-08	130
23-Jun-08	750
31-Jul-08	18000
8-Sep-08	1700
23-Sep-08	20
18-Nov-08	90
26-Nov-08	50

Table 3.3 Shellfish Flesh Quality Results

The septic tank provides primary treatment of the collected sewage, prior to discharge to the harbour. Test results from samples taken of the effluent discharged from the septic tank are contained in Table 3.4 below:

Treated Effluent Quality Results			
Date	BOD [mg/l]	SS [mg/l]	COD [mg/l]
30th October 2008	214	60	427
13th November 2008	14	12	80

Table 3.4 Treated Effluent Quality Results

The above samples were taken for the preparation of a wastewater discharge licence for the scheme. The BOD reading for October is typical of a settled wastewater. The reason for the low BOD reading for November is reported to be heavy rainfall in the period before the sample was taken, giving rise to surface water runoff entering the collection system.

3.5.3.4 Details of the Plan or Project affecting the Glengarriff Harbour and Woodland cSAC

There are four main elements to the proposed sewerage scheme. These are:

1. Construction and operation of the proposed wastewater treatment plant (predominantly included outside SAC) Concentrations of key potential pollutant elements of the treated effluent (mg/l) are BOD =25, Suspended solids = 35 and chemical oxygen demand =125. Levels will comply with Irish urban wastewater treatment regulations (2001).
2. Construction of the new outfall pipeline. Effluent disposal from the wastewater treatment plant (discharge to SAC) via the new outfall.
3. Upgrading and extending the existing sewers
4. Upgrading the existing pumping stations

Elements 1 and 2 are discussed in the following sections.

1. Construction and operation of the proposed wastewater treatment plant

As part of this upgrade a wastewater treatment plant will be constructed adjacent to the existing septic tank The indicative layout of the proposed plant is shown in Figure 2.2. The proposed route of the outfall pipe are shown in Figure 2.2.

2 Construction and operation of the new outfall pipe

A new treated effluent outfall pipe will extend into Glengarriff Harbour. This will be approximately 300mm in diameter.

The final location, length and point of discharge of the treated effluent has not been finalised yet. The location selected will depend on the results of an effluent dispersion study.

Construction works may involve trench excavation using high pressure jetting of benthic sediments. There may also be a requirement for rock breaking particularly in the vicinity of the shore at the wastewater treatment plant site . No blasting or drilling will take place.

3.5.4 APPROPRIATE ASSESSMENT STEP TWO– IMPACT PREDICTION

3.5.4.1 Introduction

Predicting the likely impacts of a project or plan on a Natura 2000 site can be difficult, as the elements that make up the ecological structure and function of a Natura 2000 site are dynamic and not easily measured. The potential impacts and effects (short/long term, construction/operational) of the proposed Scheme are detailed below.

Direct Impacts

The potential direct impacts from this proposed sewerage scheme include:

- Short term disturbance to Harbour seals during construction of the treatment plant and outfall pipe. Disturbance may potentially be caused by noise (particularly underwater), and disturbance associated with laying the outfall pipe in the vicinity of seal haul outs/ breeding sites.
- Impacts to other protected fauna as a result of disturbance associated with the works area. No measurable potential impacts are likely to habitats and species detailed in section 3.5.2. However mitigation is detailed to avoid impacts to areas of high ecological value adjacent to the works area, (see mitigation measures stated in Section 3.5.5).
- Loss of approximately 500m^2 of non selection feature habitat within the SAC namely sheltered rocky shore. Ecological mitigation is proposed through post construction landscaping on the proposed works site to offset a minor loss of sheltered rocky shore habitat.
- Impacts to marine benthic intertidal and sub tidal ecology are likely to be minimal, based on the findings of the marine study.

Potential impacts and general mitigation are detailed further for each specific sensitive receptor overleaf in Table 1.

Indirect Impacts

Impacts on the environment, which are not a direct result of the project, are difficult to determine. No significant project is known in the area which may be currently impacting selection features described. Indirect impacts are therefore unlikely. The proposed sewerage scheme has the potential to have positive indirect impacts to sensitive aquatic receptors through improvement of water quality.

3.5.4.2 Predicted Impacts on the Qualifying Interests of Glengarriff Harbour and woodland SAC

Table 1: Potential Impact of the Proposed proposed sewerage scheme on the Qualifying Interests (Species) of the Glengarriff Harbour and woodland SAC

Habitat/ Species/: Selection Feature SAC	**Potential Impact**	**Mitigation**
Old Sessile Oak woods with Ilex and Blechnum in the British Isles	Located adjacent to the proposed works site. Impacts possible	Fence off habitat adjacent to works area. Avoid any infilling or storage of materials in this area. Avoid human and vehicular access and associated damage. Replanting around the perimeter of the infilled open recreational space area will be of native tree and shrub species of local provenance and will connect to existing woodland adjacent to the proposed works site
Alluvial forests with Alnus glutinosa and Fraxinus excelsior (Alno-Padion, Alnion incanae, Salicion albae)	No impacts likely	No specific mitigation proposed
Common Seals (Phoca vitulina) and other marine mammals	Direct disturbance impacts during Construction	See marine mammal study, Appendix 3. Noise levels associated with rock breaking (up to 95 decibels) at 10m may potentially disturb harbour seal. Mitigation measures detailed in Table 2 will be implemented.
Marine Ecology (General) Glengarriff Harbour	Indirect impacts to prey species if inappropriate outfall location selected	Effleunt dispersion study will determine the preffered outfall location
Otter (Lutra lutra)	Impacts unlikely; no breeding sites in the vicinity of the proposed works	Mitigation measures detailed in the marine mammal report will be implemented for this species also
Lesser Horseshoe Bat (Rhinolophus hipposideros) *Other Bat Species*	No roost sites in the vicinity of the works area. No significant forage area will be impacted. Potential exists for minor disturbance from excessive lighting	Minimise disturbance to woodland vegetation within the works footprint. During the construction and operational phase excessive lighting at night should be avoided where possible as it has been shown to deter some bat species from foraging. However, if lighting is to be used then it should be of Mercury vapour type lamps. This type of lamp has been shown to attract eight times the numbers of insects than their sodium alternatives. If sodium lamps have to be used then the high-pressure type should be installed rather than the low-pressure lamps as these have been shown to attract far greater insect numbers than-low pressure alternatives. This would help to counter short term loss of bat prey due to the removal of trees, shrubs etc. Lighting should be cowled to ensure that light does not spill out onto adjoining habitats and focuses on the works area only, when required. Cowled lights will ensure that lighting is directed onto the proposed works site only. The height of poles should also be restricted to reduce the possibility of light pollution onto adjoining habitats. The intensity/ brightness of lighting should be limited to minimum requirements for lighting for such developments as stated by health and safety guidelines.

Habitat/ Species/: Selection Feature SAC	**Potential Impact**	**Mitigation**
Kerry Slug (Geomalacus maculosus)	Loss of minor areas of woodland within the works footprint	None noted during survey. Avoid impacts to adjacent suitable habitat (oak woodland). Retain woodland areas on the proposed works site as far as possible. Following infilling works parts of the infilled open recreational space areas will be landscaped with native woodland which will connect to existing adjacent semi natural woodland. This will be a potential gain for this habitat.
Protected Flora	No protected flora was noted or is likely on the proposed works site.	These wooded outcrops on the proposed works site will be retained as far as possible. Avoid disturbance impacts to adjoining Old Sessile Oak woods with *Ilex* and *Blechnum* in the British Isles.
Other Rare Flora	None noted	Retain woodland areas on the proposed works site as far as possible. Avoid disturbance impacts to adjoining Old Sessile Oak woods with *Ilex* and *Blechnum* in the British Isles.
Birds	Loss of breeding sites in woodland. Minor temporary disturbance to gulls and black guillemot during pipelaying phase in the harbour	Any clearance of woodland on the site will take place only after confirmation by an experienced bird surveyor that none are breeding on the site. Otherwise scrub or tree removal should be undertaken outside of the bird nesting period which begins on March 1st and continues until August 31st as required under Irish Wildlife legislation.
Sheltered intertidal shore	Infilling will lead to direct permanent loss of 500m^2 of this non selection habitat	The infilled area will be landscaped entirely (outside proposed track) with semi natural vegetation. This will be open recreational space with boundary native tree planting (similar to adjacent native oakwood (sessile oak, birch and holly). Planted trees will be of local provenance and connect to the existing woodland.

3.5.5 APPROPRIATE ASSESSMENT STEP FOUR – SPECIFIC MITIGATION MEASURES

In the context of this report, mitigation measures must be clearly distinguished from compensatory measures. For the purposes of this report the term “mitigation measures” are considered to be: “those measures which aim to minimise, or even cancel, the negative impacts on a cSAC site that are likely to arise as a result of the implementation of a plan or project. These measures are an integral part of the specifications of a plan or project”. (Guidance document on Article 6(4) of the Habitats Directive 92/43/EEC, January 2007). “Compensatory measures” are “independent of the project (including any associated mitigation measures). They are intended to offset the negative effects of the plan or project so that the overall coherence of the Natura 2000 network is maintained” (Guidance document on Article 6(4) of the Habitats Directive 92/43/EEC, January 2007).

The following Table 2 overleaf details specific mitigation.

Table 2: Mitigation Measures to be adopted for the Glengarriff sewerage scheme (Construction and operation Mitigation Measures) for Glengarriff harbour and Woodland cSAC

	Mitigation measures to be introduced	**How will mitigation measure avoid impacts to Glengarriff Harbour and Woodland cSAC**	**How the mitigation measure will reduce the Adverse effects on the integrity of Glengarriff harbour and Woodland cSAC**	**How will these measures be implemented and by who**	**What is the likely degree of success of the mitigation measure.**	**When will the mitigation measure be implemented**	**How will the mitigation measure be monitored.**
1	Location of treated effluent outfall will be determined using an effluent dispersal study which ensures sufficient dispersion of treated effluent. Marine study does not indicate any sensitive marine flora/ fauna in Glengarriff Harbour. Pipe location and effluent outfall point will also take into account recommended locations detailed in the marine mammal report, Appendix 3	Rapid dispersion of treated effluent into a mixing zone which avoids measurable impacts to marine environment	Flora and fauna affected by nutrient enrichment associated the existing discharges will benefit from improved water quality in the harbour.	Location of treated effluent outfall will be determined using an effluent dispersal study commissioned by Cork County Council. This study is currently under way. Designers will use the study to determine the optimum discharge point.	High	Planning and Construction phase	NPWS will agree selected siting of pipe location and effluent outfall. During construction an ecologist will monitor harbour seals to confirm impacts not significant
2	Fence off wooded and other sensitive habitat adjacent to the working area of the proposed wastewater treatment plant. Avoid storage of soils and other materials within 5m of woodland areas	Avoid impacts to semi natural vegetation adjacent to the works area	Bat and bird habitats will be retained and disturbance will be associated with noise levels and vehicle exhaust fumes only	Measures will be detailed in Contract Documents	High	Construction Phase	Project Ecologist will check and inform NPWS
3	Construction practises will follow mitigation measures detailed in the marine mammal report, Appendix 3. These will include the construction of treated effluent pipe and other works in marine environment between November-February (inclusive)	Works will take place outside the seals breeding and molting periods.	Minimise disturbance to harbour seal and other marine mammals	Measures will be detailed in Contract Documents prepared by designers and agreed with Cork County Council	High	Construction of pipeline phase	Project Ecologist
4	Replant infilled area with grass and some native trees of local provenance	Replacement of native woodland habitat	This will aim to offset impacts associated with the infilling of sheltered	Measures will be detailed in Contract Documents prepared by	High	Project Construction Phase	Project Ecologist

	Mitigation measures to be introduced	How will mitigation measure avoid impacts to Glengarriff Harbour and Woodland cSAC	How the mitigation measure will reduce the Adverse effects on the integrity of Glengarriff harbour and Woodland cSAC	How will these measures be implemented and by who	What is the likely degree of success of the mitigation measure.	When will the mitigation measure be implemented	How will the mitigation measure be monitored.
			shore habitat (non selection feature) by long term addition of selection feature (oak woodland) and additional habitat for protected fauna.	designers and agreed with Cork County Council			
5	Avoid excessive outdoor lighting which has been shown to impact foraging bats. During operational phase avoid excessive usage of outdoor lighting.	Bats will be able to forage in the natural light	Minimise disturbance to bats	Measures will be detailed in Contract Documents	High	Project planning, Construction and operational Phases	Project Ecologist
6	Minimise removal of rock outcrop and woody vegetation on the treatment plant site. Vegetation should be removed outside breeding bird season (March 1st to August 31st) or checked and approved by a licensed bird surveyor if clearance is required during this period.	Bird habitat to be retained particularly during the breeding season.	Minimise disturbance to birds	Cork County Council	High	Construction phase	Project Ecologist
7	Control of chemical spillages through use of fully contained bunding	Protected flora and fauna in the harbour will not be exposed to chemical pollution	Minimise risk of spillage to adjacent marine receptors	Contract specifications	High	Construction and operation phase	Site Manager
8	Operational Noise Controls (Night and Daytime)	Reduction in disturbance to wildlife movements and activities	By limiting operational activities such as deliveries etc. to day time hours only	Contract specification will limit daytime noise to 55dBA and night time noise to 45dBA	High	Noise controls put in place during operation of the proposed works	By inclusion in specification and supervision by the Engineer and and quarterly recording of noise at the boundary of the proposed plant
	Best practise pollution control measures to be implemented Environmental management plan to		Minimise excessive release of suspended materials and pollutants	Contract specifications	High	Construction Phase	Site Manager

	Mitigation measures to be introduced	How will mitigation measure avoid impacts to Glengarriff Harbour and Woodland cSAC	How the mitigation measure will reduce the Adverse effects on the integrity of Glengarriff harbour and Woodland cSAC	How will these measures be implemented and by who	What is the likely degree of success of the mitigation measure.	When will the mitigation measure be implemented	How will the mitigation measure be monitored.
	be drawn up and implemented for all phases of construction.		to marine aquatic receptors				

4 OUTCOMES

Following the implementation of mitigation measures described in this Appropriate Assessment it is expected that the construction and operation of the proposed Glengarriff wastewater treatment plant will avoid negative impacts to key sensitive receptors (Harbour seal) and other qualifying features of the Glengarriff Harbour and Woodland cSAC. Positive impacts are likely to water quality in the harbour following this upgrade.

It is concluded therefore that there is no requirement for Stage 3 (*Assessment of Alternative Solutions*) and 4 (*Assessment Where Adverse Impacts Remain*), of the appropriate assessment.

5 RECOMMENDATIONS

It is recommended, following approval of this Appropriate Assessment that the mitigation measures listed herein are developed further with the National Parks and Wildlife Service and that finalised measures are detailed in the contract documents for the proposed scheme.

The contractors tendering for the proposed scheme will be required to provide a detailed method statement on how the integrity of the cSAC will be protected during the construction phase of the project, particularly Harbour seal. This will be approved by National Parks and Wildlife Service (NPWS) prior to any works taking place.

APPENDIX 1

SITE SYNOPSIS
SITE NAME: Glengarriff Harbour and Woodland cSAC
SITE CODE:000090

Appendix 1

SITE SYNOPSIS

SITE NAME: GLENGARRIFF HARBOUR AND WOODLAND

SITE CODE: 000090

Located to the south and north-west of Glengarriff Village in west Cork, this site consists of a glacial valley opening out into a sheltered bay with rocky islets. The valley contains Old Oak Woodland and Alluvial Forest, both habitats listed on Annex I of the EU Habitats Directive. The underlying rock of the area is Old Red Sandstone, with the soil varying from acid brown earths to alluvial brown earths and peat.

Glengarriff woodland consists of a sizeable area of broad-leaved semi-natural woodland comprised of Oak (*Quercus* sp.) and Holly (*Ilex aquifolium*), with much Downy Birch (*Betula pubescens*) and Rowan (*Sorbus aucuparia*). A little Yew (*Taxus baccata*) occurs and Strawberry Tree (*Arbutus unedo*) is scattered through the woods. The most frequent ground plants are Heather (*Calluna vulgaris*), Great Wood-rush (*Luzula sylvatica*), Bilberry (*Vaccinium myrtillus*) and ferns (*Pteridium aquilinum*, *Blechnum spicant* and *Dryopteris aemula*).

Wet woodland occurs along parts of the Canrooska and Glengarriff rivers. This is dominated by Willows (mainly *Salix cinerea* subsp. *oleifolia*) and Downy Birch, with Alder (*Alnus glutinosa*) also frequent. A rich herb layer is found, characterised by such species as Bugle (*Ajuga reptans*), False Brome (*Brachypodium sylvaticum*), Meadowsweet (*Filipendula ulmaria*) and Wood Sanicle (*Sanicula europaea*). The rivers flood regularly, depositing silt within the woodlands.

However, there is much small-scale variation in the habitat from heathy places with Heath Bedstraw (*Galium saxatile*), Star Sedge (*Carex echinata*) and Purple Moor-grass (*Molinia caerulea*), to rocks with Goldenrod (*Solidago virgaurea*), Navelwort (*Umbilicus rupestris*) or Filmy-fern (*Hymenophyllum* sp.). Common woodland herbs include Bugle (*Ajuga reptans*), Enchanter's-nightshade (*Circaea lutetiana*), Irish Spurge (*Euphorbia hyberna*), Common Cow-wheat (*Melampyrum pratense*) and Foxglove (*Digitalis purpurea*).

Although this is the site of an ancient woodland, it was once part of an estate and much of the Oak was planted around 1807-1810. Some exotic species were also introduced, such as Beech (*Fagus sylvatica*), Sycamore (*Acer pseudoplatanus*) and Rhododendron (*Rhododendron ponticum*). The last has invaded parts of the woodland posing a serious problem, however, it is being systematically removed. Other areas within the woodland have been planted with conifers including Sitka Spruce (*Picea sitchensis*), Scot's Pine (*Pinus sylvestris*) and Western Hemlock (*Tsuga heterophylla*).

In addition to the woodlands, the harbour is of great interest. This sheltered inlet of Bantry Bay, has a rocky shore vegetated with brown seaweeds (*Pelvetia caniculata*, *Fucus* spp. and *Ascophyllum nodosum*). The inlet also features rocky islets.

Adding to the diversity of the site is a wet meadow, adjacent to the woodlands, which supports species such as Ragged-robin (*Lychnis flos-cuculi*). Smooth Brome (*Bromus racemosus*), a very rare Red Data Book species of grass, occurs here within this habitat.

The site is notable for the presence in the woodlands of several rare species of Myxomycete fungus, namely *Echinostelium colliculosum, Cribraria tenella, Arcyria affinis, Stemonitis nigrescens, Symphytocarpus impexus, Fuligo muscorum, Diderma deplanatum* and *D. lucidum*.

Overall, the site supports a diversity of fauna. The rocky islets in the harbour support the largest colony of Common Seals (*Phoca vitulina*) in the south-west of Ireland (maximum count, including pups, 1989-94 = 226). This legally protected species is listed on Annex II of the EU Habitats Directive. Lesser Horseshoe Bats (*Rhinolophus hipposideros*), also an Annex II species, were formerly recorded in high numbers in Glengarriff Castle (e.g. 300+ recorded during summer 1985, 268 in winter 1989). However numbers decreased at the Castle from the late 1990's onwards. Since then, summer roosts within the SAC boundary have been found in three buildings. The highest combined counts for the three summer sites were taken in July 2002 with a total of 228 bats. Bats have also been confirmed hibernating in one of the buildings and have used two purpose-built hibernacula. A total of 114 hibernating bats were counted in winter 2002/2003. This site is of international importance for both summer roosting and hibernating Lesser Horseshoe Bats. Given the combination of winter, summer and foraging sites, the site is one of the most important for the species in the south-west. An important roost of approximately 100 Long-eared Bats (*Plecotus auritus*) is also present within the site. Both bat species are listed on Annex IV of the Habitats Directive. The woods, and the river flowing through it, are home to a range of other mammal species, including Otter, Stoat, Red Squirrel, Badger and Sika Deer. Bird life is also diverse, with species such as Sparrowhawk, Peregrine, Long-eared Owl, Woodcock, Heron, Jay, Dipper, Willow Warbler, Chiffchaff and Wood Pigeon.

Invertebrates, too, are well represented. Species found include the Kerry Slug (*Geomalacus maculosus*) a legally protected species, listed on Annex II of the EU Habitats Directive; damselflies, such as the Beautiful Demoiselle (*Calyopteryx virgo*, Order Zygoptera) and butterflies (Order Lepidoptera), such as Silver-washed Fritillary (*Argynnis paphia*), Green Hairstreak (*Callophrys rubi*), Purple Hairstreak (*Quercusia quercus*), Large Heath (*Coenonympha tullia*), Holly Blue (*Celastrina argiolus*) and Wood White (*Leptidea sinapis*). Freshwater Pearl Mussel (*Margaritifera margaritifera*) has been recorded from rivers in the site. Other invertebrates reflect the ancient nature of the woodland, for example, Ireland's only arboreal ant (*Lasius fulignosis,* Order Hymenoptera), a longhorn beetle (*Laptura aurilenta*, Order Coleoptera) and a hoverfly (*Microdon analis*, Order Diptera). Meanwhile, the association between woodland and bog provides the necessary requirements for species such as the Large Marsh Grasshopper (*Stethophyma grossum*, Order Orthoptera) and a Horse-fly (*Hybonutra mohlfeldi*, Order Diptera).

Most of the woodlands are a National Nature Reserve and as such are primarily managed for nature conservation and amenity purposes. However, some commercial forestry still occurs within the site. The harbour supports mariculture (rope grown mussels) and tourism (boats visiting Garinish Island) industries. Neither activity appears to have affected seal numbers, although increased disturbance may pose a threat. One of the main threats to the site, however, is housing developments within the woodland.

This site is of importance because it is the only sizeable area of old Oak woodland remaining in west Cork and is considered second only to Killarney as an example of Oceanic Sessile Oak/Holly woodlands. Furthermore, the site supports populations of four animal species listed on Annex II of the Habitats Directive - Common Seal, Lesser Horseshoe Bat, Freshwater Pearl Mussel and Kerry Slug.

6.8.2003

APPENDIX 2

Marine Study Glengarriff Harbour

DixonBrosnan

environmental consultants

Project	Assessment of the potential impacts of a proposed wastewater discharge to Glengarriff Harbour, Co. Cork
Client	Tobin Consulting engineers

Project ref	Report no	Client ref	Pages
09021	09021	-	

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Date	Rev	Status	Prepared by	
18/3/09		1st draft	Carl Dixon	
26/3/09		2nd draft	Carl Dixon	

v180907

1. Introduction

1.1 DixonBrosnan Environmental Consultants were commissioned by Tobin Consulting Engineers on behalf of Cork County Council to conduct a marine assessment of a site at Glengarriff, County Cork. Cork County Council are proposing to construct a new wastewater treatment plant which will discharge into Glengarriff Harbour.

1.2 This report describes and evaluates the intertidal and the sub-tidal habitats in the area which will be potentially affected by the scheme, including an inventory of the flora and fauna. The evaluation follows the structure and protocols detailed in *Advice notes on current practice in the preparation of Environmental Impact Statements* (EPA, 2003) and *Guidelines on the information to be contained in Environmental Impact Statements* (EPA 2002). This report takes into account the provisions outlined in the publication *Assessment of plans and projects significantly affecting Natura 2000 sites - Methodological guidance on the provisions of Article 6(3) and (4) of the Habitats Directive 92/43/EEC*

1.3 An assessment of the potential impacts on marine mammals (whales and seals) with proposed mitigation measures is also included and was carried by Michelle A. Cronin. BSc. MSc. Phd.

2. Methodology

1.1 The sub-tidal/intertidal survey was carried out on the 23rd February 2009. Sampling followed recommendations from review of Standard Operating Procedures of Cooper and Rees (2002). Sample positions were recorded using a GPS. Samples were collected using a 0.025m^2 standard grab sampler and samples S1 and S2 were taken by a diver using snorkelling equipment. Notes were taken by diver on the habitat where relevant. Samples were stored in sealed bags in cool conditions. Sediments were sieved (100g of sample was wet sieved using a stack of sieves) using hose pressure over a large container. Fine material was sorted in a shallow white tray under bright lights and fauna collected, quantified and identified. Infauna were fixed in 8% buffered formalin. Samples were classified by the Wentworth Scale (Wentworth, 1922). The benthic infauna were identified to family level using the key of Hayward and Ryland (1995).Identification of macroinvertebrates was carried out by a qualified marine biologist (Dr. Lynn Ballard Phd Marine Biology).

2.2 An assessment of the potential impacts on marine mammals (whales and seals) was carried out via a literature review and site survey by Michelle A. Cronin. BSc. MSc. Phd. The mammal survey was carried out on the 10th March using the following methodology:

- The waters in the harbour were surveyed from a 5.8m Rigid Inflatable Boat (RIB) using Leica 10 x 42 binoculars for all marine mammals at sea between 9.00 and 12.00 hr

- All known harbour haul-out sites were approached by RIB and numbers of seals at haul-out sites counted using Leica 10 x 42 binoculars and recorded on a Sony Dictaphone. Counts were initially obtained from a distance of approximately 200m from the haul-out site and at progressively closer ranges whilst preventing disturbance to the seals.

- The low water period was surveyed in order to maximise the likelihood of observing seals hauled out on rocks as numbers of harbour seals hauled out in the survey area peaks at low-tide (Cronin, 2007).

- Observations of marine mammals at sea are affected by prevailing sea conditions with a decline in sighting probability in Beaufort sea-states of three or higher. The conditions on March 10th were favourable for visual surveillance, sunny with a Beaufort sea-state of one to two and a light–moderate WNW breeze (12 knots).

3. Receiving environment

3.1 General landscape

Glengarriff covers an area of approximately 415 hectares at the north-eastern corner of Bantry Bay, on the South Western Coast of Ireland. The harbour is surrounded by a steep catchment area of around 8,000 ha.

Glengarriff harbour is included in the Special area of conservation (SAC 090) Glengarriff harbour and woodland.The sheltered harbour and rocky islets in the harbour support the largest colony of Common Seals (*Phoca vitulina*) in the south-west of Ireland (maximum count, including pups, 1989-94 = 226). The harbour area also supports the Annex II species otter which is common along the west Cork coast. This site is of importance because it is the only sizeable area of old Oak woodland remaining in west Cork and is considered second only to Killarney as an example of Oceanic Sessile Oak/Holly woodlands. Furthermore, the site supports populations of four animal species listed on Annex II of the Habitats Directive - Common Seal, Lesser Horseshoe Bat, Freshwater Pearl Mussel and Kerry Slug. A full site synopsis for this site is included in Appendix 1 of this report.

The Glengarriff River discharges into Glengarriff harbour. It is approximately 7 miles long and drains an area of approximately 16 square miles. The underlying geology is old red sandstone. The river supports salmon and sea trout and supports a resident population of brown trout. The catchment consists of native woodland with large areas of upland moorland habitat. A draft net at the estuary is no longer in use. (O Reilly, 1998).

Glengarriff Harbour is a shellfish designated area under European Communities (Quality of Shellfish Waters) Regulations, 2006 (S.I. No. 268 of 2006). The Directive sets physical, chemical and microbiological water quality requirements that designated shellfish waters must either comply with ('mandatory' standards) or endeavour to meet ('guideline' standards). They range from heavy metals to salinity; faecal coliforms are regarded as one of the most significant parameters. The water quality improvement plan regulation 6 action programme for designated

sites under the European Communities (Quality of Shellfish waters) Regulations 2006 (S.I. no. 268 of 2006) by the Shellfish Waters Management Committee (SWMC), 2006 notes that the discharge from the septic tank is not impacting on water quality in designated areas due to the distance involved. The location of designated waters is shown in Appendix 2.

3.2 Previous surveys

A Biomar survey in 1993 (Picton, B.E.1998) covered one site in Glengarriff Harbour (E of Slip Island). It described the site as *"deeper channel at entrance to Glengarriff harbour with the chart shows steep sides to 20 m. Bottom of channel was mud plain with Nephrops norvegicus and large scattered Virgularia mirabilis. Rock slope was heavily silt-covered, with Ascidiella aspersa, Polymastia boletiformis, Antedon bifida and large clumps of Obelia dichotoma".*

As part of a survey of Maerl beds in Irish water in 2000 De Grave et al, 2000 carried out a limited survey in Glengarriff in an area 0.6 km x 0.4 km where a muddy deposit with occasional dead maërl pieces was known to exist. Water depths were 7 - 13m. Data showed a muddy seabed with no features. One sample was recovered containing mud but no maërl. Maerl would not be expected to occur within the inner harbour.

Neiland and McMahon (1999) collected samples from 18 different stations in and around Bantry Harbour, Glengarriff Harbour and along the north shore of Whiddy Island in Bantry Bay, for analysis for grain size, organic carbon and the presence of benthic infauna. Two of the locations (Bantry Harbour and Glengarriff Harbour) correspond with the location of large numbers of mussel longlines and indeed these areas are the centre of mussel farming industry in south-west Ireland. Both these areas are known to have relatively weak water currents being typically <10cm/sec. The third sampling location lay some distance between the two locations and away from any mussel farming activity.

The study identified Glengarriff Harbours as being a non-dispersive site where fine sedimentary material may accumulate. The authors found that the benthic community in Glengarriff Harbour also appeared to be at a transitory phase between normal and polluted conditions. This was reinforced by an absence of echinoderms from the study area. The dominance of polychaete worms and cirratulids in particular is indicative of high environmental stress.

The authors acknowledge previous research which links mussel cultivation to the production of large amounts of pseudo-faeces and faeces which effectively increases organic enrichment. This can lead to a decrease in the diversity of infaunal assemblages with the original macrofauna (especially echinoderms) being replaced by opportunistic polychaetes. The authors do not ascribe the dominance of polychaetes encountered in Bantry and Glengarriff Harbours entirely to the presence of the mussel farming industry. Polychaete dominance was noted not only in the vicinity of mussel longlines, but also at stations some distance from mussel longlines. Additional inputs of organic matter into Bantry Bay come from domestic, agricultural and industrial waste discharges as well as from mussel production. The relative importance of each of these sources of enrichment have however to date not been quantified.

There are four official fish landing sites in Bantry Bay including Glengarriff, included in the DoCMNR fisheries landing statistics. Castletownbere is the largest of these and is nationally significant, in particular for whitefish landings. There is no significant fishing carried out within the inner harbour although a number of species including scallops and crab are fished outside the shallow inner harbour areas. There are herring and plaice nursery areas within Bantry Bay (CMRC, 2000) but these are located a considerable distance from the inner harbour where the discharge will occur

The paper *Mapping and assessment of the seaweed resources (Ascophyllum nodosum, Laminaria spp.) off the west coast of Ireland* (Hesion, 1998) notes that the 7km of shoreline from Coolieragh to Glengarriff harbour has a very dense seaweed cover of both *Fucus* sp. and *Ascophyllum* sp. The estimated yield of *Ascophyllum* sp. was 250t per annum.

Tributyltin (TBT), an organotin, was used in the manufacture of antifouling paints during the 1970s. Organotins are very effective at preventing the settlement of fouling organisms on marine structures. However, they are also toxic to a range of animals and plants. It is now known that TBT can cause adverse affects such as poor growth and shell deformation and imposex (where females develop a penis) in molluscs. A ban was imposed in 1987 on the use of TBT paints on all vessels below 25m in length and on aquaculture installations. Concentrations of TBT have been found to be quite high in the Bantry Bay area, with concentrations highest in Castletownbere Harbour, Glengarriff Harbour, Leahill Terminal and Bantry Harbour. Within Castletownbere Harbour, TBT levels were found to be the most significant. Dogwhelks, *Nucella lapillus*, used as an indicator of TBT pollution, were absent from the inner Harbour. The four sites are perhaps the busiest as regards boat traffic within the area, with large numbers of pleasure craft, fishing vessels, merchant ships and oil tankers utilising the area. (CMRC, 2000)

4. Results DixonBrosnan Survey February 2009

Glengarriff harbour is a sheltered, south facing harbour located close to the eastern extremity of Bantry Bay. The inner harbour is particularly well sheltered due in part to the presence of a number of islands and rocky islets and is expected to have poor flushing characteristics. The largest of these is Garnish Island which is also an important tourist resource. Boat traffic moments from fishermen, tourists and recreational users of the bay are high particularly during the summer period.

The survey focused on the inner harbour where the impacts have the potential to be most significant. The shoreline is largely wooded to the upper shore with scattered dwellings. The N71 and associated ribbon development forms the northern boundary of the harbour.

The shoreline is extremely sheltered and this is reflected in a very narrow splash zone. The intertidal zone is dominated by a relatively narrow band of brown algae particularly *Ascophyllym nodosum* and fucoid species. Generally the shoreline is rocky without extensive rock pool habitat or sandy/cobble beaches. Common species noted in the intertidal zone include *Balanus semibalanoides, Littorina littorea, Patella vulgate, Actinia equine* and *Carcinus maenas*

The discharge from the Glengarriff river may reduce salinity during spate conditions and deposits a large amount of organic matter including woody material into the harbour There are no substantial aquaculture sites within the inner harbour but mussels are grown extensively in the wider Bantry Bay. The substrate in the inner harbour is dominated by fine mud with small areas of gravel/bedrock along the intertidal zone.

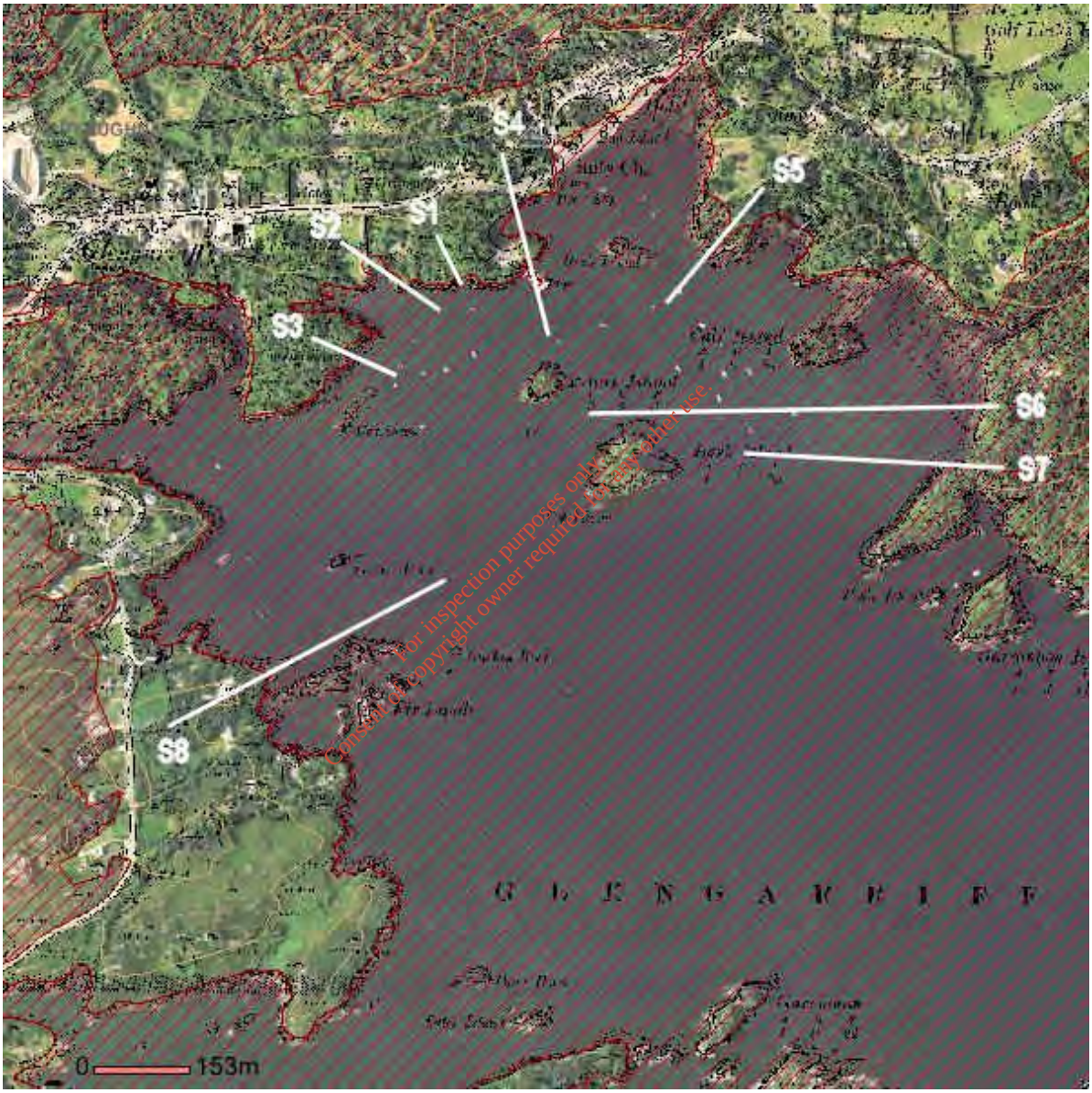

Fig 1 Survey locations DixonBrosnan Survey February 2009

Table 1. Survey results

Sample	GPS	Sample faunal content/Diver observation
S1	93445 56256	Coarse stone, broken shells, Stone in excess of 80mm down to pea gravel of 3 mm. Large amounts of broken shells including mussel, cockle and saddle oysters. Under the broken shell was fine high silt content mud which was anoxic with a strong smell of sulphur. No benthic infauna found. Fine anoxic mud.
S2	93431 56257	Benthic description from diver observation: Gravel, small stones and fine sand with broken shell. Pieces of organic matter including twigs, seaweed, leaves, limpet shells, pine needles, rhododendron leaves,. Under the gravel was fine high silt content mud which was anoxic with a strong smell of sulphur. Phylum Annelida, Class oligochaeta, Family Tubificidae.(Sludge worm) These medium sized sludge worms, live in muddy sea shore or estuarine sediments enriched by decaying organic matter. Phylum Annelida, Class Polychaeta, Family Nereidae.(Ragworm) *Nereids are errant polychaetes.* Phylum Crustacea, Malacostraca, Superorder Eucarida, Order Decapoda, Family Portunidae *Carcinus maenas.* (Common shore crab) Phylum Crustacea, Malacostraca, Superorder Eucarida, Order Decapoda, Family Portunidae *Necora Puber* (Green velvet swimming crab)
S3	93344 56132	Fine high silt content mud which was anoxic with a strong smell of sulphur. Organic debris including twigs, leaves. Phylum Annelida, Class Polychaeta, Family Nereidae. (ragworm*) Nereids are errant polychaetes.*
S4	93597 56187	Black fine high silt content mud which was anoxic with a strong smell of sulphur. Organic debris including twigs, leaves and small pieces of broken shell. Phylum Annelida, Class Polychaeta, Family Nereidae. Nereids are errant polychaetes
S5	93739 56250	Black fine high silt content mud which was anoxic with a strong smell of sulphur. Phylum Annelida, Class Polychaeta, Family Nereidae. *Nereids are errant polychaetes*
S6	93640 56064	Black fine high silt content mud which was anoxic with a strong smell of sulphur Phylum Crustacea, Malacostraca, Superorder Eucarida, Order Decapoda, Family Portunidae *Carcinus maenas.* (Common shore crab Phylum Annelida, Class Polychaeta, Family Nereidae. *Nereids are errant polychaetes.* Phylum Annelida, Class Polychaeta, Family Nephtyidae (cat worm). Fish, Class Osteichthyes, subclass Actinopterygii, infraclass Teleostie, Superorder Elopomorpha, Orger Anguilliformes, Anguilla Anguilla.(eel)
S7	93848 56064	Black fine high silt content mud which was anoxic with a strong smell of sulphur. Organic debris including twigs, leaves and small pieces of broken shell. Phylum Annelida, Class Polychaeta, Family Nereidae. Nereids are errant polychaetes
S8	93401 55790	Black fine high silt content mud which was anoxic with a strong smell of sulphur. Organic debris including twigs, leaves and small pieces of broken shell. Phylum Annelida, Class Polychaeta, Family Nereidae. Nereids are errant polychaetes. *Chelon labrosus* Thick lipped grey mullet observed.

5. Proposed Sewerage Scheme

It is proposed to construct a new wastewater treatment plant to replace the existing septic tank which currently receives the sewage arising in Glengarriff . The level of treatment is noted in Table 2 below. A dispersion study is being carried out to determine the optimum discharge location and standards with due regard to the recommendations from the marine and marine mammal study. Trench excavation for the discharge pipe will be by high pressure jetting of the mud seabed and some rock breaking by excavator and breaker may be required onshore. Blasting of rock will not be required. Development of the site and outfall pipe will impact on relatively small areas of intertidal and subtidal habitat. This will include some infilling of a intertidal area in proximity to the site. The treatment standards for treated wastewater will conform to those specified by the Urban Waste Water Directive and are noted below in Table 2. The exact discharge standards for phosphorus and nitrogen will be determined following completion of the dispersion study but will meet relevant EPA standards. Disinfection will be provided to comply with the EC Quality of Shellfish Regulations. Part of the site of the wastewater treatment plant and discharge pipe will lie within the boundary of Glengarriff Harbour and Woodland SAC.

Table 2. Expected Treatment standards

	Discharge concentration	Units
BOD	25	mg/l
Suspended solids	35	mg/l
COD	125	mg/l

6. Results

6.1 Results – benthic survey

The low amount of benthic infauna found in this study was also found in Neiland and McMahons survey of 1999. They labelled the inner harbour site g1 and recorded a low biodiversity. Increases in organic content of sediment have been correlated with low levels of suspension feeders and more opportunistic feeders (Pearson and Rosenburg, 1978). This correlates with the presence of opportunistic polychaetes and tubificid worms. These opportunistic polychaetes indicate environmentally stressed conditions. The source of the organic matter could be related to mussel farming, pollution from freshwater run off from a large catchment area or from marine sources. This habitat is categorised as Mud Shores LS4 under the Fossitt (2000) classification scheme. The habitat is classed as SS.SMu.SMuVS.NhomTubi *Nephtys hombergii* and *Tubificoides* spp. in variable salinity infralittoral soft mud under the JNCC habitat classification scheme. Overall no rare or uncommon species or assemblages of species were recorded within the inner harbour and the presence of such species is considered unlikely.

6.2 Results Cetaceans and seals

The report on cetaceans and seals is included in Appendix 3 of the main report and is summarised below. Due consideration was given to the 2007 NPWS publication) Code of Practice for the Protection of Marine Mammals during Acoustic Seafloor Surveys in Irish Waters

6.2.1 Cetaceans

A dedicated research study on the use of Bantry Bay by marine mammals during 2003–2005 identified six cetacean species using Bantry Bay. Species richness was highest in the outer bay at Mizen Head and Dursey Island, and lowest in the inner bay where only two cetacean species were recorded (Roycroft *et al.,* 2007). Based on this study, knowledge of the species' ecology and sighting records, cetacean species likely to use Glengarriff harbour include harbour porpoise (*Phocoena phocoena*), bottlenose dolphin (*Tursiops truncatus*), Risso's dolphin (*Grampus griseus*) and common dolphin (*Delphinus delphis*) (Evans, 1992, Berrow *et al*., 2001; Ingram *et al.*, 2001; Roycroft *et al.,* 2007). It is considered highly unlikely that any of the baleen whales that occur in southwest Ireland (e.g. minke whale, fin whale, humpback whale) would use the shallow waters of Glengarriff harbour.

6.2.2 Seals

Over one third of the national minimum population estimate of harbour seals use terrestrial haul-out sites in southwest Ireland (Cronin *et al.,* 2007). Most of the harbour seal haul-out sites in this region are located within Bantry Bay and the Kenmare River. Inner Bantry Bay (Glengarriff harbour) and the Kenmare River have been designated as SACs under the Habitats Directive with the harbour seal, listed as one of the qualifying interests for inner Bantry Bay.

Haul-out sites within Glengarriff harbour, including the inner harbour, Garinish Island and the rocks at Big Point in the outer harbour, are significant haul-out sites for the species within Bantry Bay. These sites are used as breeding sites (June-August) and high numbers of pups have been observed at these sites during dedicated marine mammal studies in the area since 2003 (Cronin, 2007). The sites are also used for moulting during July-September. Compared to other haul-out sites in Bantry Bay, haul-out sites within Glengarriff harbour are used year-round by harbour seals, possibly because of the shelter they afford to seals during adverse weather, however abundance changes during the year.

Grey seals are distributed throughout Irish coastal waters and commonly seen hauled out on more exposed shores than the harbour seal (Kiely, 1998). Bantry Bay is not an important area for grey seals and there are no known breeding or moulting haul-out aggregations of the species within the Bay. One or two grey seals occasionally haul out amongst groups of harbour seals near Garinish Island (Cronin, 2007) but mixed species haul-out groups are unusual.

A total of 97 harbour seals were observed hauled out at haul-out sites in Glengarriff harbour during the survey carried out in March 2009. An additional 9 seals were observed in the water. No cetaceans were observed during the 3 hour survey period.

7. Mitigation

7.1 Mitigation measures South Western Regional Fisheries Board

The South Western Regional Fisheries Board requested the following mitigation measures

- Proposals to introduce a new sewerage scheme for Glengarriff should include the elimination of discharges to the Glengarriff River and tidal pond by extending the outfall into the Harbour where effective dilution and dispersion characteristics are available.

- Dispersion studies should confirm the most suitable site and if necessary a lunar discharge regime should be included.

- To avoid impacts on aquaculture developments in the harbour, the use of UV treatment or micro filtration are the preferred options for bacteriological removal.

- Consideration should also be given to inclusion of Nitrate removal to prevent nutrient enrichment.

- With respect to potential overflows from pumping stations, the Board recommends the use of blockage/pump malfunction alarms, macerators, back-up pumps, stand-by generator etc. to minimise the duration and frequency of overflows.

- Pipeline and plant construction works should include good working practices to control emission of a polluting nature.

7.2 Mitigation measures cetaceans and seals

Because of the nature of the work proposed and the fact there will not be any blasting or drilling it is considered that the proposed pressure jetting, dredging and rock breaking will have little likelihood of impacting on marine mammals in the area at a population level. It is however recommended that vigilance should be maintained for any marine mammal approaching the area throughout operations as there will be potential effects of acoustic disturbance resulting from noise associated with the proposed works and increased boat activity associated with dredging and sewage outfall pipe laying. Seals are unlikely to approach during site works and thus significant delays are not expected to occur.

Considering the significance of Glengarriff harbour for the harbour seal at a national level and the conservation status of the species it is recommended that the proposed works are conducted during periods in the annual cycle when the animals will be less vulnerable to disturbance. This would occur outside of the sensitive breeding and moulting periods from June-September inclusive when numbers peak in the area. Numbers of seals using haul-out

sites in the area is lowest between November-February (inclusive) and this would be the optimal period to conduct the work to ensure potential disturbance and impact is kept to a minimal. Moreover if it is possible, work should be planned around low tide when the highest numbers of seals are ashore and therefore at lower risk to acoustic disturbance underwater.

Regarding outfall location options, options A or B would most likely cause least disturbance to the seals in the area as there is no haul-out of significant size in the immediate vicinity; options C and D are next preferable ones providing the work does not take place during the breeding/moulting periods as there is potential to cause significant disturbance at the sites on Ship Island, where the highest numbers of seals are found.

Furthermore during the winter months there will still be harbour seals using the haul-out sites and surrounding waters and possibly other marine mammals and therefore the following precautionary measures are therefore advised:

- Operations should cease temporarily if a seal or cetacean is observed swimming in close proximity (<50 m) to the area of industrial activity and work can be resumed once the animal(s) have moved away.
- Any approach by marine mammals into the immediate (<50 m) works area should be reported to the National Parks and Wildlife Service

7.3 General mitigation measures

The area of intertidal and sub tidal habitat to be affected by works should be kept to the minimum necessary to lay down the pipeline.

8. Residual impacts

The dispersion study has determined the most effective location to discharge treated wastewater and to ensure that sufficient dilution is available. Surveys did not detect any rare or uncommon species within the intertidal and sub-tidal zones. There will be an impacts on intertidal and sub-tidal habitats however this impact is not expected to be significant as it will affect only a small area of habitat. It is noted that the improved treatment efficiency provided by the new system will significantly reduce the amount of nutrients reaching the bay. Glengarriff supports important populations of harbour seals however if the appropriate mitigation measures are effectively implemented it is expected that the impact will be minor and localised in the short term and minimal in the longer term. Overall no significant impact on the SAC and in its qualifying interests are expected to occur.

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www.jncc.gov.uk/MarineHabitatClassification

SITE SYNOPSIS

SITE NAME: GLENGARRIFF HARBOUR AND WOODLAND

SITE CODE: 000090

Located to the south and north-west of Glengarriff Village in west Cork, this site consists of a glacial valley opening out into a sheltered bay with rocky islets. The valley contains Old Oak Woodland and Alluvial Forest, both habitats listed on Annex I of the EU Habitats Directive. The underlying rock of the area is Old Red Sandstone, with the soil varying from acid brown earths to alluvial brown earths and peat.

Glengarriff woodland consists of a sizeable area of broad-leaved semi-natural woodland comprised of Oak (*Quercus* sp.) and Holly (*Ilex aquifolium*), with much Downy Birch (*Betula pubescens*) and Rowan (*Sorbus aucuparia*). A little Yew (*Taxus baccata*) occurs and Strawberry Tree (*Arbutus unedo*) is scattered through the woods. The most frequent ground plants are Heather (*Calluna vulgaris*), Great Wood-rush (*Luzula sylvatica*), Bilberry (*Vaccinium myrtillus*) and ferns (*Pteridium aquilinum*, *Blechnum spicant* and *Dryopteris aemula*).

Wet woodland occurs along parts of the Canrooska and Glengarriff rivers. This is dominated by Willows (mainly *Salix cinerea* subsp. *oleifolia*) and Downy Birch, with Alder (*Alnus glutinosa*) also frequent. A rich herb layer is found, characterised by
such species as Bugle (*Ajuga reptans*), False Brome (*Brachypodium sylvaticum*), Meadowsweet (*Filipendula ulmaria*) and Wood Sanicle (*Sanicula europaea*). The rivers flood regularly, depositing silt within the woodlands.However, there is much small-scale variation in the habitat from heathy places with Heath Bedstraw (*Galium saxatile*), Star Sedge (*Carex echinata*) and Purple Moorgrass (*Molinia caerulea*), to rocks with Goldenrod (*Solidago virgaurea*), Navelwort (*Umbilicus rupestris*) or Filmy-fern (*Hymenophyllum* sp.). Common woodland herbs include Bugle (*Ajuga reptans*), Enchanter's-nightshade (*Circaea lutetiana*), Irish Spurge (*Euphorbia hyberna*), Common Cow-wheat (*Melampyrum pratense*) and Foxglove (*Digitalis purpurea*).
Although this is the site of an ancient woodland, it was once part of an estate and much of the Oak was planted around 1807-1810. Some exotic species were also introduced, such as Beech (*Fagus sylvatica*), Sycamore (*Acer pseudoplatanus*) and
Rhododendron (*Rhododendron ponticum*). The last has invaded parts of the woodland posing a serious problem, however, it is being systematically removed.Other areas within the woodland have been planted with conifers including Sitka
Spruce (*Picea sitchensis*), Scot's Pine (*Pinus sylvestris*) and Western Hemlock (*Tsuga heterophylla*).

In addition to the woodlands, the harbour is of great interest. This sheltered inlet of Bantry Bay, has a rocky shore vegetated with brown seaweeds (*Pelvetia caniculata*, *Fucus* spp. and *Ascophyllum nodosum*). The inlet also features rocky islets Adding to the diversity of the site is a wet meadow, adjacent to the woodlands, which supports species such as Ragged-robin (*Lychnis flos-cuculi*). Smooth Brome (*Bromus racemosus*), a very rare Red Data Book species of grass, occurs here within this

habitat.

The site is notable for the presence in the woodlands of several rare species of Myxomycete fungus, namely *Echinostelium colliculosum, Cribraria tenella, Arcyria affinis, Stemonitis nigrescens, Symphytocarpus impexus, Fuligo muscorum, Diderma deplanatum* and *D. lucidum*.

Overall, the site supports a diversity of fauna. The rocky islets in the harbour support the largest colony of Common Seals (*Phoca vitulina*) in the south-west of Ireland (maximum count, including pups, 1989-94 = 226). This legally protected species is listed on Annex II of the EU Habitats Directive. Lesser Horseshoe Bats (*Rhinolophus hipposideros*), also an Annex II species, were formerly recorded in high numbers in Glengarriff Castle (e.g. 300+ recorded during summer 1985, 268 in winter 1989).

However numbers decreased at the Castle from the late 1990's onwards. Since then, summer roosts within the SAC boundary have been found in three buildings. The highest combined counts for the three summer sites were taken in July 2002 with a total of 228 bats. Bats have also been confirmed hibernating in one of the buildings and have used two purpose-built hibernacula. A total of 114 hibernating bats were counted in winter 2002/2003. This site is of international importance for both summer roosting and hibernating Lesser Horseshoe Bats. Given the combination of winter, summer and foraging sites, the site is one of the most important for the species in the south-west. An important roost of approximately 100 Long-eared Bats (*Plecotus auritus*) is also present within the site. Both bat species are listed on Annex IV of the Habitats Directive. The woods, and the river flowing through it, are home to a range of other mammal species, including Otter, Stoat, Red Squirrel, Badger and Sika Deer. Bird life is also diverse, with species such as Sparrowhawk, Peregrine, Long-eared Owl, Woodcock, Heron, Jay, Dipper, Willow Warbler, Chiffchaff and Wood Pigeon.

Invertebrates, too, are well represented. Species found include the Kerry Slug (*Geomalacus maculosus*) a legally protected species, listed on Annex II of the EU Habitats Directive; damselflies, such as the Beautiful Demoiselle (*Calyopteryx virgo*, Order Zygoptera) and butterflies (Order Lepidoptera), such as Silver-washed Fritillary (*Argynnis paphia*), Green Hairstreak (*Callophrys rubi*), Purple Hairstreak (*Quercusia quercus*), Large Heath (*Coenonympha tullia*), Holly Blue (*Celastrina argiolus*) and Wood White (*Leptidea sinapis*). Freshwater Pearl Mussel (*Margaritifera margaritifera*) has been recorded from rivers in the site. Other invertebrates reflect the ancient nature of the woodland, for example, Ireland's only arboreal ant (*Lasius fulignosis,* Order Hymenoptera), a longhorn beetle (*Laptura aurilenta*, Order Coleoptera) and a hoverfly (*Microdon analis*, Order Diptera). Meanwhile, the association between woodland and bog provides the necessary requirements for species such as the Large Marsh Grasshopper (*Stethophyma grossum*, Order Orthoptera) and a Horse-fly (*Hybonutra mohlfeldi*, Order Diptera). Most of the woodlands are a National Nature Reserve and as such are primarily

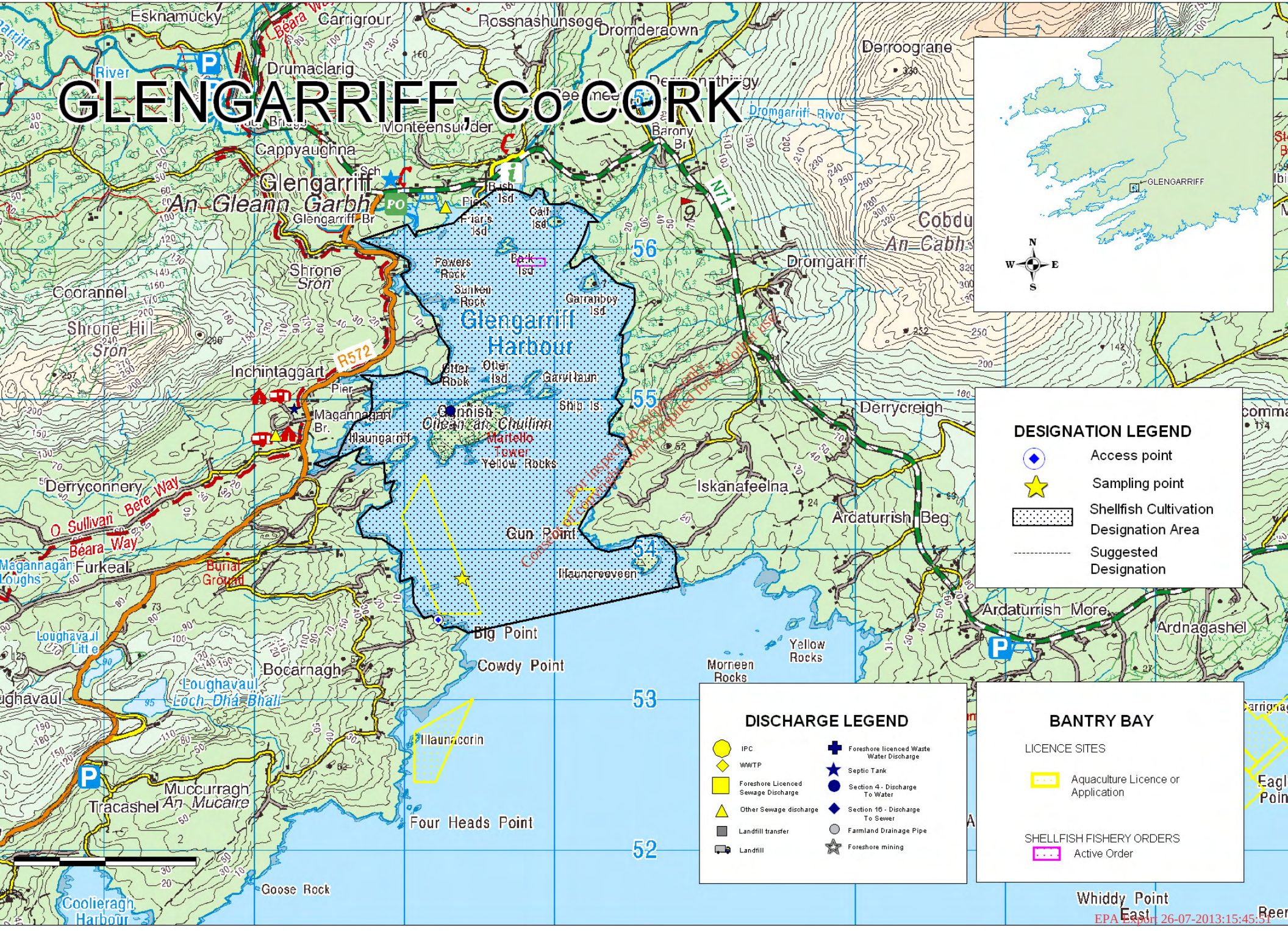
managed for nature conservation and amenity purposes. However, some commercial forestry still occurs within the site.

The harbour supports mariculture (rope grown mussels) and tourism (boats visiting Garinish Island) industries. Neither activity
appears to have affected seal numbers, although increased disturbance may pose a threat. One of the main threats to the site, however, is housing developments within the woodland.

This site is of importance because it is the only sizeable area of old Oak woodland remaining in west Cork and is considered second only to Killarney as an example of Oceanic Sessile Oak/Holly woodlands. Furthermore, the site supports populations of four animal species listed on Annex II of the Habitats Directive - Common Seal, Lesser Horseshoe Bat, Freshwater Pearl Mussel and Kerry Slug.

Appendix 2 Aquaculture sites

MAP 11.2B SHELLFISH DESIGNATION (S.I No 200 of 1994)
Second schedule



APPENDIX 3

Marine Mammal study Glengarriff Harbour

A report on the potential effects of proposed improvements to the sewerage scheme in Glengarriff harbour, Bantry Bay, Co. Cork on marine mammals.

March 2009

Michelle A. Cronin. BSc. MSc. Phd.

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1. Introduction

This report details the potential risks to marine mammals and recommendations for mitigation measures related to the proposed sewerage scheme works at Glengarriff Harbour Co. Cork. It is based on a site visit by the author, information from published and unpublished literature and communication with local relevant authorities. This report is based on information on proposed works which involves trench excavation by high pressure jetting of benthic sediments and possible rock breaking by rock breaker and excavator.

2. Legislation pertaining to marine mammals in Irish waters

Marine mammals are protected by national legislation and by a number of international regulations which the Republic of Ireland is signatory to. The main legislation that affords protection to marine mammals in Irish waters is the Wildlife Act (1976) amendment Act (2000), which prohibits willful interference to wild mammals and disturbance of resting and breeding sites.

All cetacean (whales, dolphins and porpoises) species occurring in European waters are now afforded protection under the EC Habitats Directive. All cetaceans are included in Annex IV of the Directive as species 'in need of strict protection' Additionally the harbour porpoise (*Phocoena phocoena*) and bottlenose dolphin (*Tursiops truncatus*) are designated Annex II species (those animals of community interest, whose conservation requires the designation of special areas of conservation). Ireland's two pinniped (seals) species the harbour seal (*Phoca vitulina*) and grey seal (*Halichoerus grypus*) are also designated Annex II species under the EC Habitats Directive requiring the designation of Special Areas of Conservation (SAC), to protect listed species and their habitat.

The Republic of Ireland is also signatory to conservation orientated agreements under the Bonn Convention on Migratory Species (1983), the OSPAR Convention for the Protection of the Marine Environment of the northeast Atlantic (1992) and the Berne Convention on Conservation of European Wildlife and Natural Habitats (1979).

In light of the legislation and conservation status of marine mammals, careful consideration must be given during all anthropogenic activity with potential effect on the species and their habitat. The National Parks & Wildlife Service of the DoEHLG have developed a code of practice for the protection of marine mammals from acoustic disturbance in Irish waters (NPWS, 2007)

3. Potential effects of the proposed work on marine mammals

The noise associated with pier development represents a source of acoustic degradation in the marine environment. The planned works will not involve rock blasting or breaking but will involve mud jetting, possible dredging and rock breaking. These will produce sounds with combined low and high frequency components (Goold, 1996), which may potentially affect both the low frequency-sensitive baleen whales and pinnipeds and high frequency-sensitive toothed cetaceans (odontocetes).

3.1. Rock breaking

Documentation of biological damage from high-level sound may be categorized as either direct injuries (lethal, sub-lethal or non-lethal) or indirect effects (changes in behavioural or distribution patterns). Considering the proposed works at Glengarriff there is no potential for direct injuries to marine mammals that could be caused by e.g. blasting. However there is potential impact from underwater noise resulting from rock breaking. The physiological effect of exposure to loud underwater noise can include temporary or permanent shifts in hearing thresholds, which degrade an animal's ability to forage and carry out other activities that depend on auditory acuity such as communication, navigation and mating. Playback experiments of drilling sounds in the presence of cetaceans have shown avoidance reactions and reduction of calling rates by various baleen whale species (Richardson *et al*., 1995).

Studies on the responses of marine mammals to anthropogenic noise have identified the following factors as influencing the degree of response given by animals: (i) source intensity levels, (ii) degree of background noise, (iii) distance to source, (iv) species involved, (v) behavioural state and season, (vi) prior degree of exposure and (vii) age, sex and time of day (Anguilar *et al*., 2004). The peak pressure, duration and the frequency spectrum of anthropogenic sound are important factors relating to potential biological impacts. Several studies have examined the direct and indirect impacts of underwater noise on marine mammals and in general have indicated that source levels of 180-200dB P-P re 1 µPa are sufficient to induce behavioural effects on marine mammals within a few kilometres of the sound source (Gausland, 2000).

Phocid seals are more sensitive than small odontocetes to noise of low frequency and are therefore potentially more susceptible to disturbance from low frequency anthropogenic noise (Thompson *et al.,* 1998). Both species, the harbour seal and grey seal will be susceptible to disturbance from underwater anthropogenic noise when at sea.

In summary potential effects of rock breaking on marine mammals include:

- Chronic hearing damage from short/medium range exposure.

- Disturbance or displacement as a result of noise.
- Long term effects resulting from habitat degradation.
- Short term effects of sediment disturbance.

Rock breaking is unlikely to affect either species of seal at the population level, however considering the proximity of several harbour seal haul-out sites to the proposed work area (see section 4), there is the potential for the above detrimental effects on individuals and strict mitigation measures therefore are recommended (see section 6). Rock breaking is unlikely to have an adverse impact on cetaceans at the population level. However, transient cetaceans temporarily using the area will potentially be exposed to the noise and precautionary measures are therefore recommended (see section 6).

3.2. Pressure jetting/Dredging

Benthic dredging activity can result in significant damage to the biological environment. Dredging will alter characteristics of benthic habitats with subsequent effects on prey distribution and abundance and impact on marine predators. However, the severity of impact on marine mammals will be determined by the extent of dredging activity.

In addition to the physical act of sediment removal, pressure jetting and dredging activities will result in potential disturbance to marine mammals through increases in vessel activity and increases in local ambient marine noise levels. Furthermore, the suspension of disturbed particles in the water column can potentially affect water quality.

In summary potential effects of *dredging* on marine mammals include:

- Chronic hearing damage or disturbance/displacement as a result of noise.
- Consumption of contaminated prey items resulting from contaminants entering the food chain (where contaminated substrates are disturbed).
- Displacement resulting from impacts on available prey.

Dredging and pressure jetting is unlikely to affect marine mammals in the area at the population level, however considering the proximity of several harbour seal haul-out sites to the proposed work area, there is the potential for the above detrimental effects on individuals and strict mitigation measures therefore are recommended (see

section 6). Grey seals and transient cetaceans temporarily using the area will potentially be exposed to the noise and activities and precautionary measures are therefore recommended (see section 6).

4. Marine Mammals in the area

It is necessary to determine what marine mammals use the area and surrounding waters in order to estimate the likely significance of any impacts resulting from the proposed development.

4.1. Cetaceans

A dedicated research study on the use of Bantry Bay by marine mammals during 2003–2005 identified six cetacean species using Bantry Bay. Species richness was highest in the outer bay at Mizen Head and Dursey Island, and lowest in the inner bay where only two cetacean species were recorded (Roycroft *et al.,* 2007). Based on this study, knowledge of the species' ecology and sighting records, cetacean species likely to use Glengarriff harbour include harbour porpoise (*Phocoena phocoena*), bottlenose dolphin (*Tursiops truncatus*), Risso's dolphin (*Grampus griseus*) and common dolphin (*Delphinus delphis*) (Evans, 1992, Berrow *et al*., 2001; Ingram *et al.*, 2001; Roycroft *et al.,* 2007). It is considered highly unlikely that any of the baleen whales that occur in southwest Ireland (e.g. minke whale, fin whale, humpback whale) would use the shallow waters of Glengarriff harbour.

4.1.1. Harbour Porpoise

Sightings of Europe's smallest cetacean species, the harbour porpoise, have been relatively common off southern coasts of Ireland and in the Irish Sea (Northridge *et al*., 1995; Hammond *et al*., 1995; Pollack *et al*., 1997; O' Cadhla *et al.,* 2004). Reports of harbour porpoise are also common on the west and southwest coasts (Berrow *et al.,* 2001; Roycroft *et al.,* 2007; Englund, unpublished data). The small size of harbour porpoise and their erratic surfacing behaviour make them difficult to detect. Information relating to the movements of this species around coastal areas is very limited but this species has been observed between Whiddy Island and Glengarriff harbour by the author on numerous occasions and is likely to visit Glengarriff harbour. Harbour porpoise are very sensitive to vessel noise and activity and are unlikely to approach areas of high activity and are therefore considered not likely to be impacted by the proposed works. However mitigation measures outlined in section 6 will minimize potential impacts of the proposed works if there is occasional use of the harbour by this species.

4.1.4. Bottlenose Dolphin

A coastal species of cetacean commonly sighted in western Irish waters (Evans, 1992, Pollock *et al.,* 1997) bottlenose dolphins are numerous on the south and west coasts (Ingram and Rogan, 2003; Ingram *et al*., 2003) and have been observed using Bantry Bay, in particular the area around Dursey Sound (Roycroft *et al*., 2007).

The nearest known concentrations of bottlenose dolphins to Bantry Bay are the resident communities in the waters of the outer Shannon estuary (Ingram, 2000; Ingram and Rogan, 2003) Bottlenose dolphins are a wide-ranging species and individuals commonly travel between coastal regions especially during the summer months (Ingram *et al*., 2003). Bottlenose dolphins may be attracted to vessel activity, making them potentially vulnerable to physical harm from industrial activities. It is considered unlikely that the proposed works will impact upon bottlenose dolphins in the area as they do not frequent the waters of the harbour, however mitigation measures outlined in section 6 will minimize potential impacts of the proposed works if there is occasional use of the harbour by this species.

4.1.5. Common Dolphin

Although a mainly oceanic species, common dolphins have been frequently observed in large schools around the coasts of Ireland (Pollock *et al.,* 1997; Gordon *et al*., 2000) and it is the most commonly stranded cetacean around the Irish coast (Berrow & Rogan, 1997). Common dolphins were the species recorded most frequently and in relatively high numbers in Bantry Bay during 2003-2005 and many of the groups sighted were foraging (Roycroft *et al.,* 2007). The study suggested that Bantry Bay represents an important habitat for the species both as a foraging and a nursery ground. Common dolphins are the most abundant cetacean species encountered in Irish shelf and offshore waters (Pollack *et al.,* 1997; O Cadhla *et al*., 2004). Common dolphins are attracted to vessels and are easily sighted and identified. It is considered unlikely that the proposed works will impact significantly upon common dolphins in the area as they do not appear to frequent the waters of Glengarriff harbour, but considering the importance of Bantry Bay for the species there is the possibility that they will occur in the harbour occasionally and mitigation measures outlined in section 6 will minimize potential impacts of the proposed works if so.

4.1.6. Risso's Dolphin

In Ireland Risso's dophin have generally been recorded close to the coast with highest numbers of sightings between August and February (Pollack *et al*., 1997; 2000). Risso's dolphins were recorded in relatively high numbers in waters off southwest Ireland by Pollack *et al.* (1997) and Hammond *et al.* (2002) indicating that this region may be an important local concentration of the species. Risso's dolphins were recoded during the months of September and October in Bantry Bay during 2003-2005 study but never in inner Bantry Bay (Roycroft *et al*., 2007) Risso's dolphins will not usually approach vessels but are readily recognised by their distinctive colouration patterns and large size. It is considered unlikely that the proposed works will impact upon this species as they do not frequent the waters of the harbour, however mitigation measures outlined in section 6 will minimize potential impacts of the proposed works if there is occasional use of the harbour by this species.

4.2 Pinnipeds

4.2.1. Harbour seal

Harbour seals (also known as "common seals") have established themselves at terrestrial colonies (or haul-outs) along all coastlines of Ireland, which they leave when foraging or moving between areas, for example, and to which they return to rest ashore, rear young, engage in social activity, etc. These haul-out groups of harbour seals have tended historically to be found among inshore bays and islands, coves and estuaries (Lockley, 1966; Summers *et al.,* 1980), particularly around the hours of lowest tide.

Over one third of the national minimum population estimate of harbour seals use terrestrial haul-out sites in southwest Ireland (Cronin *et al.,* 2007). Most of the harbour seal haul-out sites in this region are located within Bantry Bay and the Kenmare River. Inner Bantry Bay (Glengarriff harbour) and the Kenmare River have been designated as SACs under the Habitats Directive with the harbour seal, listed as one of the qualifying interests for inner Bantry Bay.

Haul-out sites within Glengarriff harbour, including the inner harbour, Garinish Island and the rocks at Big Point in the outer harbour (Fig. 1), are significant haul-out sites for the species within Bantry Bay. These sites are used as breeding sites (June-August) and high numbers of pups have been observed at these sites during dedicated marine mammal studies in the area since 2003 (Cronin, 2007). The sites are also used for moulting during July-September. Compared to other haul-out sites in Bantry Bay, haul-out sites within Glengarriff harbour are used year-round by harbour seals, possibly because of the shelter they afford to seals during adverse weather, however abundance changes during the year. At Carrigskye (site 1) and Big Point rocks (site 4) a late summer peak in abundance occurs, probably explained by numbers increasing during annual moult (Fig 2a, b). Garinish Island (site 3) and rocky skerries in inner Glengarriff harbour (site 2) are used by seals throughout the year with a peak during June-September corresponding to breeding and moulting periods (Fig 2a, b).

Harbour seals are most vulnerable to disturbance at their terrestrial haul-out sites during breeding and moulting periods. These events occur between June and September in Ireland. In addition to the identified terrestrial sites, the surrounding waters are likely to be critical habitat for harbour seals, for feeding and/or for navigation to more offshore foraging areas. Results from a study by the author on the haul-out behaviour of harbour seals in southwest Ireland in recent years suggests that harbour seals spend up to 80% of their time at sea. Moreover it appears that they are local foragers, over half of the foraging trips were within 5km of the haul-out sites (Cronin, 2007; Cronin *et al*., 2008). Similar behaviour patterns have been seen in studies of harbour seals in Scotland (Sharples, SMRU *pers comm*, Thompson & Miller, 1990). Unlike grey seals harbour seal adults continue to forage during the breeding season (Bonnes *et al.,* 1994). In addition the mating strategy is based on males diving and

calling at aquatic display sites (Van Parijs *et al.,* 1997, 2000, Hayes *et al*., 2004). Disturbance from anthropogenic noise during this period could therefore potentially affect mating success

Considering the relatively large population of harbour seals using terrestrial and aquatic habitat within Glengarriff Harbour they are considered the marine mammal species most at risk to potential detrimental impacts of the proposed rock breaking, pressure jetting and dredging. Mitigation measures outlined in section 6 will minimize potential impacts of the proposed works.

4.2.2. Grey seal

Grey seals are distributed throughout Irish coastal waters and commonly seen hauled out on more exposed shores than the harbour seal (Kiely, 1998). Bantry Bay is not an important area for grey seals and there are no known breeding or moulting haul-out aggregations of the species within the Bay. One or two grey seals occasionally haul out amongst groups of harbour seals near Garinish Island (Cronin, 2007) but mixed species haul-out groups are unusual. Apart from a small breeding colony on the Calf Islands in Roaringwater Bay, the nearest significant colony of grey seals to Glengarriff Harbour is on the Blasket Islands in Co. Kerry. A national census of the grey seal population in 2005 estimated between 648-833 grey seals use breeding sites in the Blasket Island Group (Ó Cadhla *et al.,* 2008). Large numbers of grey seals use the Blasket Islands for moulting (up to 1000 grey seals have been observed on the Great Blasket Island February 2008, 2009, (Cronin, *unpublished*)).

Grey seals are also most vulnerable at their terrestrial haul-out sites during breeding and moulting periods between September and March in Ireland. However as there are no known breeding or moulting colonies of grey seals in Glengarriff Harbour the proposed works will not have an impact on the grey seal population in SW Ireland. Grey seals have a wider offshore foraging distribution than harbour seals and as a result seals from large breeding colonies on the west coast may potentially use the waters in Bantry Bay for foraging and/or navigation and therefore individuals could potentially be affected by the proposed works. Mitigation measures outlined in section 6 will minimize potential impacts of the proposed works.

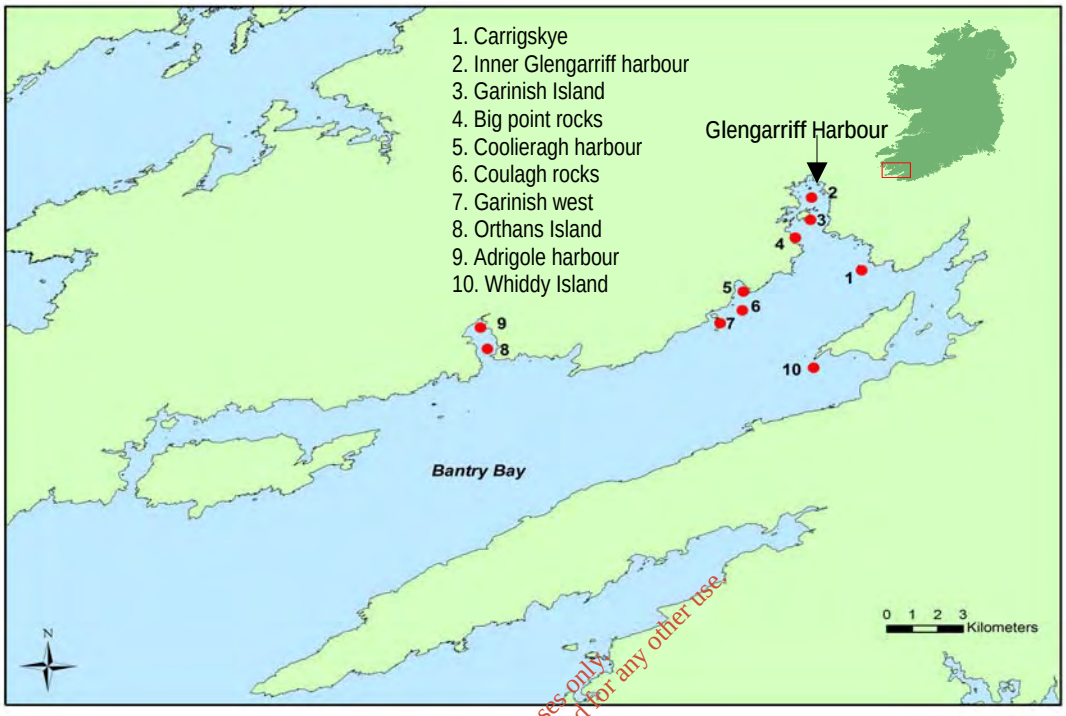
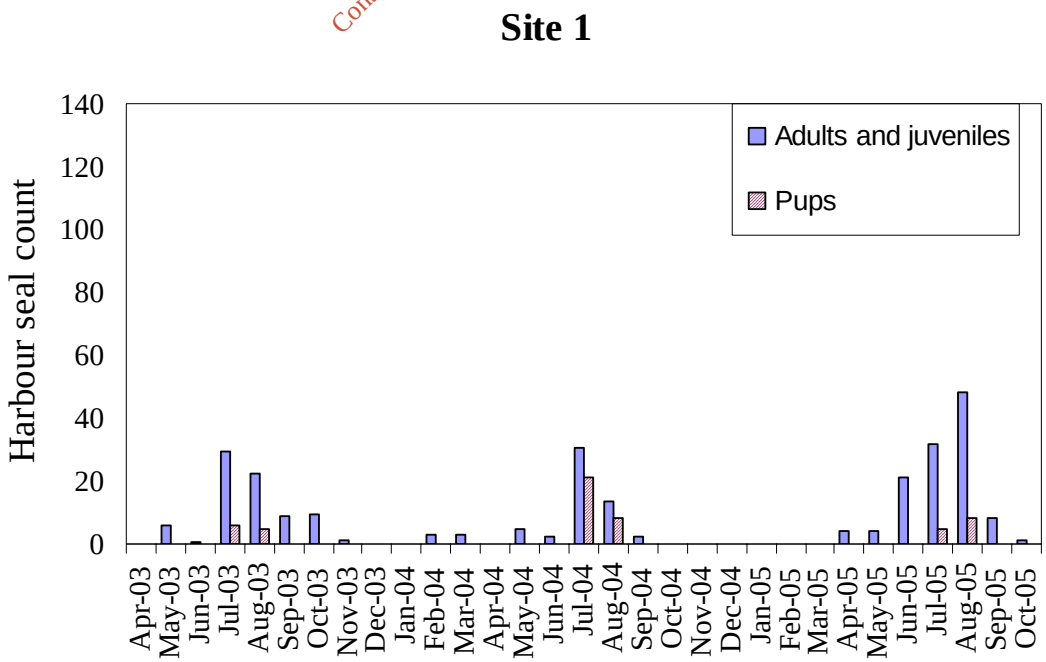


Fig. 1. Harbour seal haul-out sites in Bantry Bay, Co. Cork, Ireland



Site 2

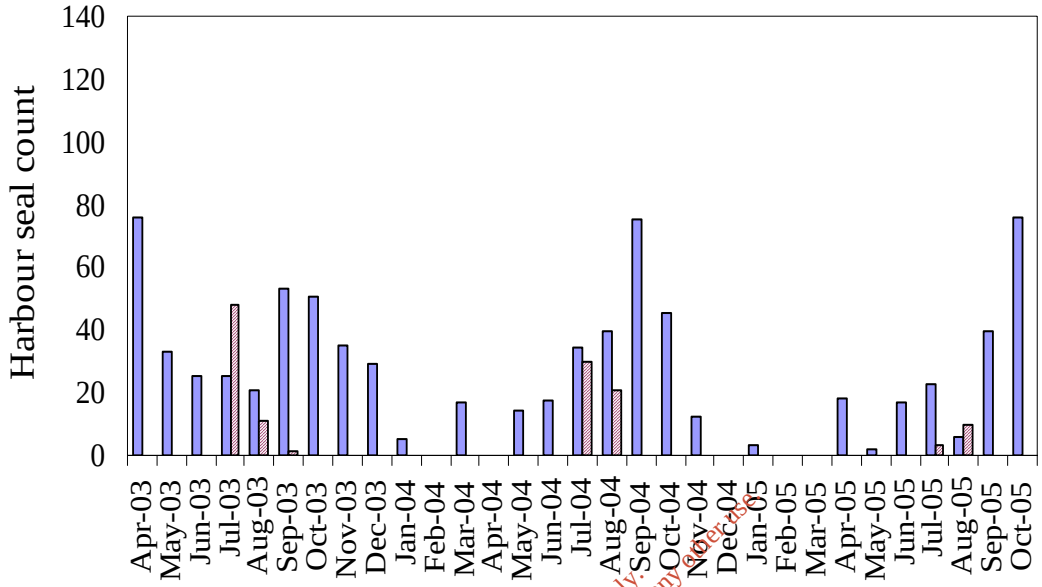
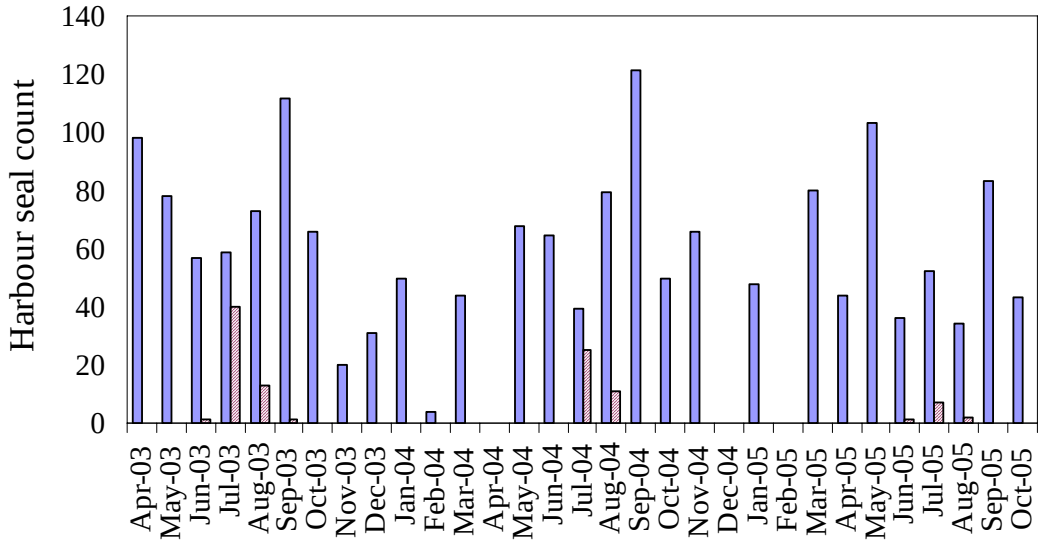


Fig 2a Maximum harbour seal counts at haul-out sites in the vicinity of Glengarriff Harbour, Bantry Bay, Co. Cork April 2003 to October 2005 (*= no count) *See Fig 1 for site names*

Site 3



Site 4

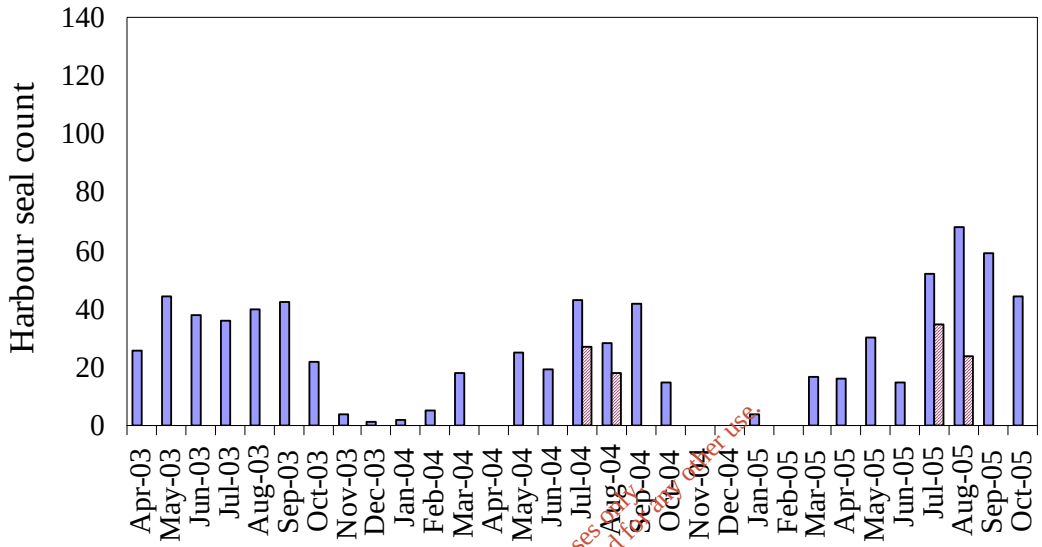


Fig 2b Maximum harbour seal counts at haul-out sites in the vicinity of Glengarriff Harbour, Bantry Bay, Co. Cork April 2003 to October 2005 (*= no count) *See Fig 1 for site names (Cronin, 2007)*

5. Site visit

A visit to Glengarriff Harbour was made by the author on March 10th 2009

5.1. Methods:

- The waters in the harbour were surveyed from a 5.8m Rigid Inflatable Boat (RIB) using Leica 10 x 42 binoculars for all marine mammals at sea between 9.00 and 12.00 hr

- All known harbour haul-out sites were approached by RIB and numbers of seals at haul-out sites counted using Leica 10 x 42 binoculars and recorded on a Sony Dictaphone. Counts were initially obtained from a distance of approximately 200m from the haul-out site and at progressively closer ranges whilst preventing disturbance to the seals.

- The low water period was surveyed in order to maximise the likelihood of observing seals hauled out on rocks as numbers of harbour seals hauled out in the survey area peaks at low-tide (Cronin, 2007).

- Observations of marine mammals at sea are affected by prevailing sea conditions with a decline in sighting probability in Beaufort sea-states of three or higher. The conditions on March 10th were favourable for visual surveillance, sunny with a Beaufort sea-state of one to two and a light–moderate WNW breeze (12 knots).

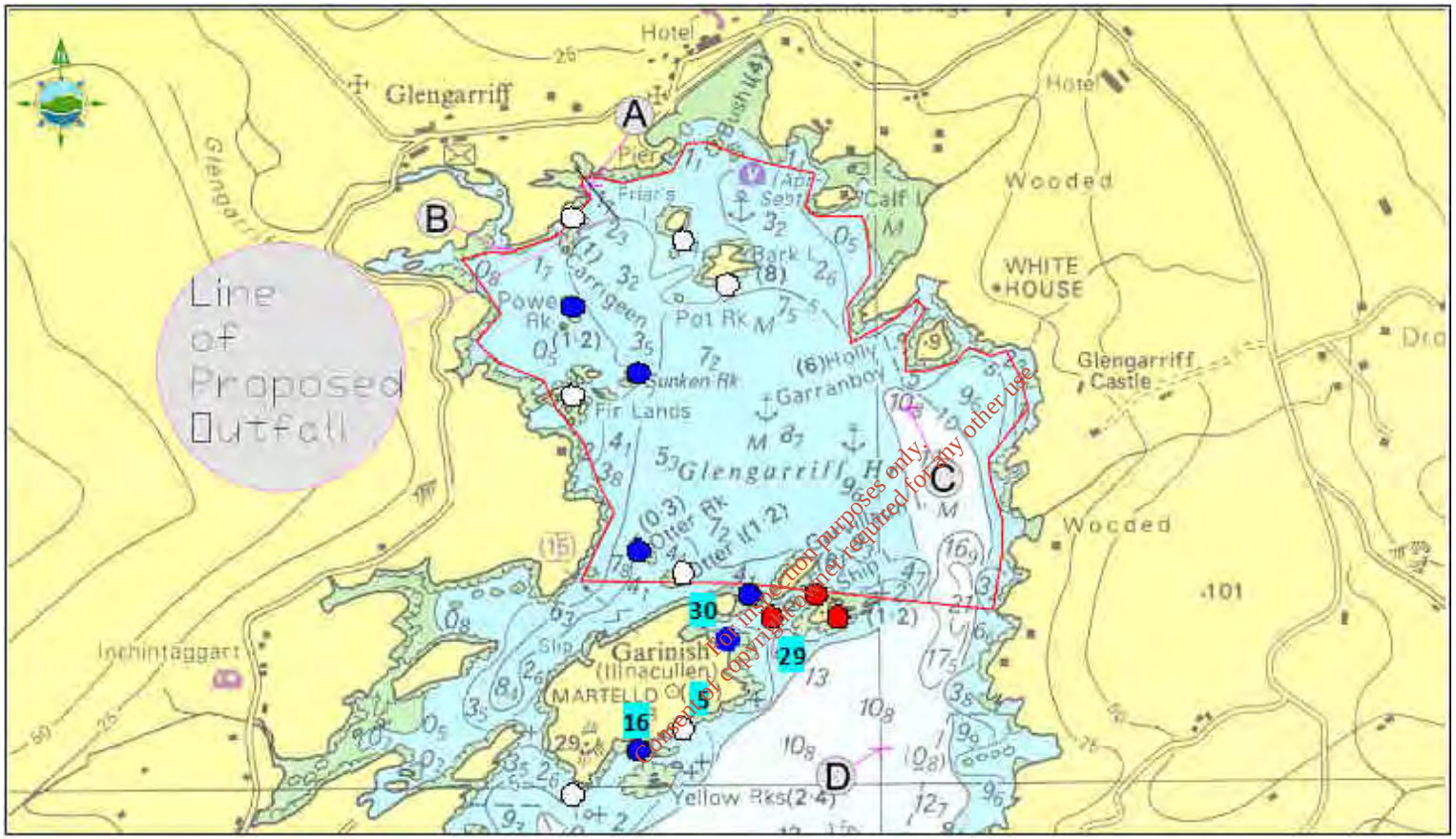
5.2. Results:

- A total of 97 harbour seals (Figs. 3 & 4) were observed hauled out at haul-out sites in Glengarriff harbour during the survey. An additional 9 seals were observed in the water. The locations of seals counted are shown in Fig. 5; apart from a count of 17 seals at rocks north of Big Point on the western shore of outer Glengarriff harbour as the extent of the map does not cover this area.

- No cetaceans were observed during the 3 hour survey period.

Fig. 3 Harbour seals hauled out at Ship Island, adjacent to Garinish Island in Glengarriff harbour, Co. Cork.

Fig. 4 Harbour seal female and pup in Glengarriff harbour, Co. Cork.



Haul-out site of high use Haul-out site of medium use Haul-out site of occasional use

Fig. 5. Map of proposed sewerage outfall in Glengarriff harbour. Harbour seal haul-out sites shown and level of usage colour coded. Counts of seals present at site during recent survey shown.

6. Mitigation Measures

Because of the nature of the work proposed and the fact there will not be any blasting or drilling it is considered that the proposed pressure jetting, dredging and rock breaking will have little likelihood of impacting on marine mammals in the area at a population level. It is however recommended that vigilance should be maintained for any marine mammal approaching the area throughout operations as there will be potential effects of acoustic disturbance resulting from noise associated with the proposed works and increased boat activity associated with dredging and sewerage outfall pipe laying.

Considering the significance of Glengarriff harbour for the harbour seal at a national level and the conservation status of the species it is recommended that the proposed works are conducted during periods in the annual cycle when the animals will be less vulnerable to disturbance. This would occur outside of the sensitive breeding and moulting periods from June-September inclusive when numbers peak in the area. Numbers of seals using haul-out sites in the area is lowest between November-February (inclusive) and this would be the optimal period to conduct the work to ensure potential disturbance and impact is kept to a minimal. Moreover if it is possible, work should be planned around low tide when the highest numbers of seals are ashore and therefore at lower risk to acoustic disturbance underwater.

Regarding outfall location options, options A or B would most likely cause least disturbance to the seals in the area as there is no haul-out of significant size in the immediate vicinity; options C and D are next preferable ones providing the work does not take place during the breeding/moulting periods as there is potential to cause significant disturbance at the sites on Ship Island, where the highest numbers of seals are found.

Furthermore during the winter months there will still be harbour seals using the haul-out sites and surrounding waters and possibly other marine mammals (see section 4) and therefore the following precautionary measures are therefore advised:

- Operations should cease temporarily if a seal or cetacean is observed swimming in close proximity (<50 m) to the area of industrial activity and work can be resumed once the animal(s) have moved away.
- Any approach by marine mammals into the immediate (<50 m) works area should be reported to the National Parks and Wildlife Service.

7. Conclusion

Provided the appropriate mitigation measures are effectively implemented it is expected that the impact will be minor and localised in the short term and minimal in the longer term.

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APPENDIX 4

Consultation Response South Western Regional Fisheries Board

ccc-wt-glengarriff WS08-2572

Mr Ben Gaffney,
Tobin Consulting Engineers
North Point House
New Mallow Road.
Co. Cork.

14 November 2008

RE: - Glengarriff Sewage Scheme.

Dear Mr Gaffney.

Thank you for notification of the above proposal.

Glengarriff Harbour due its topography is naturally constricted and therefore may have a low flushing capacity; it is also influenced by the prevailing onshore southerly winds. Several aquaculture sites are located close to the east and west shoreline within the outer reaches of the harbour and the Glengarriff River is a salmonid river.

Proposals to introduce a new sewerage scheme for Glengarriff should include the elimination of discharges to the Glengarriff River and tidal pond by extending the outfall into the Harbour where effective dilution and dispersion characteristics are available. Dispersion studies should confirm the most suitable site and if necessary a lunar discharge regime should be included.
To avoid impacts on aquaculture developments in the harbour, the use of UV treatment or micro filtration are the preferred options for bacteriological removal. Consideration should also be given to inclusion of Nitrate removal to prevent nutrient enrichment.
With respect to potential overflows from pumping stations, the Board recommends the use of blockage/pump malfunction alarms, macerators, back-up pumps, stand-by generator etc. to minimise the duration and frequency of overflows.

Pipeline and plant construction works should include good working practices to control emission of a polluting nature.

I would appreciate if you would notify the Board of any further developments in this matter.

Yours sincerely,

_____
Patricia O'Connor.
Senior Environmental Officer.

c.c. John Twomey, SWRFB

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Patrick J. Tobin & Co. Ltd.

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Section G

Attachment G1

Supporting Information :

- Recent Programme of Works

Cork County

Water Services Investment Programme 2007 - 2009

Schemes at Construction	W/S	Est. Cost
Cork North		
Mitchelstown Sewerage Scheme (Nutrient Removal)	S	221,000
Cork South		
Ballyvourney/ Ballymakeery Sewerage Scheme	S	3,049,000
Cobh/ Midleton/ Carrigtwohill Water Supply Scheme	W	10,135,000
Cork Lower Harbour Sewerage Scheme (Crosshaven SS) (G)	S	4,850,000
Cork Water Strategy Study (G)	W	941,000
Kinsale Sewerage Scheme	S	20,000,000
Midleton Sewerage Scheme (Infiltration Reduction) (G)	S	2,078,000
		41,274,000
Schemes to start 2007		
Cork North		
North Cork Grouped DBO Wastewater Treatment Plant (Buttevant, Doneraile & Kilbrin)	S	5,150,000
Cork West		
Skibbereen Sewerage Scheme	S	20,000,000
		25,150,000
Schemes to start 2008		
Cork North		
Mallow/ Ballyviniter Regional Water Supply Scheme (H)	W	8,632,000
Mallow Sewerage Scheme (H)	S	5,408,000
Cork South		
Ballincollig Sewerage Scheme (Nutrient Removal) (G)	S	948,000
Ballingeary Sewerage Scheme	S	1,296,000
Bandon Sewerage Scheme Stage 2	S	14,729,000
City Environs (CASP) Strategic Study (G)	S	153,000
Cloghroe Sewerage Scheme (Upgrade)	S	683,000
Coachford Water Supply Scheme	W	1,318,000
Garrettstown Sewerage Scheme	S	2,153,000
Inniscarra Water Treatment Plant Extension Phase 1	W	2,678,000
Little Island Sewerage Scheme (G)	S	2,200,000
Cork West		
Bantry Sewerage Scheme	S	7,148,000
Dunmanway Sewerage Scheme	S	2,153,000
Leap/ Baltimore Water Supply Scheme	W	6,365,000
Schull Water Supply Scheme	W	5,253,000
		61,137,000
Schemes to start 2009		
Cork North		
Banteer/Dromahane Regional Water Supply Scheme	W	1,576,000
Conna Regional Water Supply Scheme Extension	W	2,627,000
Cork NE Water Supply Scheme	W	4,326,000
Cork NW Regional Water Supply Scheme	W	6,046,000
Millstreet Wastewater Treatment Plant (Upgrade)	S	1,628,000
Cork South		
Ballincollig Sewerage Scheme (Upgrade) (G)	S	22,248,000
Cork Lower Harbour Sewerage Scheme (excl. Crosshaven SS)	S	73,542,000
Shannagarry/ Garryvoe/ Ballycotton Sewerage Scheme	S	3,780,000
Youghal Sewerage Scheme	S	14,420,000
Cork West		
Ballydehob Sewerage Scheme	S	683,000
Bantry Water Supply Scheme	W	14,935,000
Clonakilty Sewerage Scheme (Plant Capacity Increase)	S	3,677,000
Courtmacsherry/ Timoleague Sewerage Scheme	S	2,472,000
Dunmanway Regional Water Supply Scheme Stage 1	W	12,669,000
		164,629,000
Serviced Land Initiative		
Cork North		
Ballyclough Water Supply Scheme	W	139,000
Ballyhooley Improvement Scheme	W/S	139,000
Broghill-Rathgoggin Sewerage Scheme	S	406,000
Bweeng Water Supply Scheme	W	115,000
Churchtown Sewerage Scheme (incl. Water)	W/S	543,000
Clondulane Sewage Treatment Plant	S	417,000
Freemount Sewerage Scheme	S	150,000
Pike Road Sewerage Scheme (incl. Water)	W/S	2,080,000
Rathcormac Sewerage Scheme (incl. Water)	W/S	555,000
Spa Glen Sewerage Scheme	S	736,000
Uplands Fermoy Sewerage Scheme (incl. Water)	W/S	1,174,000
Watergrasshill Water Supply Scheme (incl. Sewerage) (G)	W/S	4,151,000
Cork South		
Ballincollig Sewerage Scheme (Barry's Rd Foul and Storm Drainage) (G)	S	1,164,000
Belgooley, Water Supply Scheme (incl. Sewerage)	W/S	2,913,000
Blarney Water Supply Scheme (Ext. to Station Rd) (G)	W	416,000
Carrigtwohill Sewerage Scheme (Treatment and Storm Drain) (G)	S	7,632,000
Castlematyr Wastewater Treatment Plant Extension	S	1,200,000
Crookstown Sewerage Scheme (incl. Water)	W/S	1,200,000
Dripsey Water Supply Scheme (incl. Sewerage)	W/S	1,112,000
Glounthane Sewerage Scheme (G)	S	1,576,000
Innishannon Sewerage Scheme	S	277,000
Innishannon Wastewater Treatment Plant	S	694,000
Kerrypike Sewerage Scheme	S	832,000
Kerrypike Water Supply Scheme	W	416,000
Killeagh Wastewater Treatment Plant Extension	S	1,200,000
Killeagh Water Supply Scheme (includes Sewerage)	W/S	485,000
Killeens Sewerage Scheme	S	420,000
Kilnagleary Sewerage Scheme	S	694,000
Midleton Wastewater Treatment Plant Extension	S	4,050,000

Cork County contd.

Water Services Investment Programme 2007 - 2009

	W/S	Est. Cost
Mogeely, Castlemartyr & Ladysbridge Water Supply Scheme	W	2,566,000
North Cobh Sewerage Scheme (G)	S	3,193,000
Riverstick Water Supply Scheme (incl. Sewerage)	W/S	525,000
Rochestown Water Supply Scheme	W	2,700,000
Saleen Sewerage Scheme	S	1,051,000
Youghal Water Supply Scheme	W	2,300,000
Cork West		
Castletownshend Sewerage Scheme	S	1,576,000
		50,797,000
Rural Towns & Villages Initiative		
Cork North		
Buttevant Sewerage Scheme (Collection System)	S	2,446,000
Doneraile Sewerage Scheme (Collection System)	S	1,738,000
Cork South		
Innishannon (Ballinadee/ Ballinspittle/ Garrettstown) Water Supply Scheme	W	6,726,000
Cork West		
Ballylicky Sewerage Scheme	S	2,153,000
Baltimore Sewerage Scheme	S	3,162,000
Castletownbere Sewerage Scheme	S	5,402,000
Schull Sewerage Scheme	S	3,523,000
		24,950,000
Schemes to Advance through Planning		
Cork North		
Mitchelstown North Galtees Water Supply Scheme	W	3,152,000
Mitchelstown Sewerage Scheme	S	3,000,000
Newmarket Sewerage Scheme	S	3,152,000

	W/S	Est. Cost
Cork South		
Carrigtwohill Sewerage Scheme (G)	S	20,000,000
Cork Sludge Management (G)	S	14,420,000
Cork Water Supply Scheme (Storage - Mount Emla, Ballincollig & Chetwind) (G)	W	8,500,000
Inniscarra Water Treatment Plant (Sludge Treatment)(G)	W	5,356,000
Macroom Sewerage Scheme	S	5,150,000
Minane Bridge Water Supply Scheme	W	1,421,000
Cork West		
Bantry Regional Water Supply Scheme (Distribution)	W	9,455,000
Cape Clear Water Supply Scheme	W	1,679,000
Castletownbere Regional Water Supply Scheme	W	8,405,000
Glengarriff Sewerage Scheme	S	2,500,000
Roscarberry/Owenahincha Sewerage Scheme	S	1,576,000
Skibbereen Regional Water Supply Scheme Stage 4	W	7,880,000
		95,646,000
Water Conservation Allocation		**12,206,000**
Asset Management Study		**300,000**
South Western River Basin District (WFD) Project[1]		**9,400,000**
Programme Total		**485,489,000**

[1] This project is being led by Cork County Council on behalf of other authorities in the River Basin District

(H) Refers to a Hub as designated in the National Spatial Strategy

(G) Refers to a Gateway as designated in the National Spatial Strategy

Attachment G3

Supporting Information :

- Recent Programme of Works & Approved funding

Attachment G3 – Glengarriff Wastewater Discharge Licence Application
Impact Mitigation

Glengarriff has been included in the most recent list of the National Water Services Investment Programme 2007-2009.

The proposed time frame for the upgrade to the Glengarriff WWTP is as follows -

- Construction start date Mar 2012
- Complete June 2013

Cork County

Water Services Investment Programme 2007 - 2009

Schemes at Construction	W/S	Est. Cost
Cork North		
Mitchelstown Sewerage Scheme (Nutrient Removal)	S	221,000
Cork South		
Ballyvourney/ Ballymakeery Sewerage Scheme	S	3,049,000
Cobh/ Midleton/ Carrigtwohill Water Supply Scheme	W	10,135,000
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Kinsale Sewerage Scheme	S	20,000,000
Midleton Sewerage Scheme (Infiltration Reduction) (G)	S	2,078,000
		41,274,000
Schemes to start 2007		
Cork North		
North Cork Grouped DBO Wastewater Treatment Plant (Buttevant, Doneraile & Kilbrin)	S	5,150,000
Cork West		
Skibbereen Sewerage Scheme	S	20,000,000
		25,150,000
Schemes to start 2008		
Cork North		
Mallow/ Ballyviniter Regional Water Supply Scheme (H)	W	8,632,000
Mallow Sewerage Scheme (H)	S	5,408,000
Cork South		
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Ballingeary Sewerage Scheme	S	1,296,000
Bandon Sewerage Scheme Stage 2	S	14,729,000
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Coachford Water Supply Scheme	W	1,318,000
Garrettstown Sewerage Scheme	S	2,153,000
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Little Island Sewerage Scheme (G)	S	2,200,000
Cork West		
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Schemes to start 2009		
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Conna Regional Water Supply Scheme Extension	W	2,627,000
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Cork South		
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Cork Lower Harbour Sewerage Scheme (excl. Crosshaven SS)	S	73,542,000
Shannagarry/ Garryvoe/ Ballycotton Sewerage Scheme	S	3,780,000
Youghal Sewerage Scheme	S	14,420,000
Cork West		
Ballydehob Sewerage Scheme	S	683,000
Bantry Water Supply Scheme	W	14,935,000
Clonakilty Sewerage Scheme (Plant Capacity Increase)	S	3,677,000
Courtmacsherry/ Timoleague Sewerage Scheme	S	2,472,000
Dunmanway Regional Water Supply Scheme Stage 1	W	12,669,000
		164,629,000
Serviced Land Initiative		
Cork North		
Ballyclough Water Supply Scheme	W	139,000
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Broghill-Rathgoggin Sewerage Scheme	S	406,000
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Freemount Sewerage Scheme	S	150,000
Pike Road Sewerage Scheme (incl. Water)	W/S	2,080,000
Rathcormac Sewerage Scheme (incl. Water)	W/S	555,000
Spa Glen Sewerage Scheme	S	736,000
Uplands Fermoy Sewerage Scheme (incl. Water)	W/S	1,174,000
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Cork South		
Ballincollig Sewerage Scheme (Barry's Rd Foul and Storm Drainage) (G)	S	1,164,000
Belgooley, Water Supply Scheme (incl. Sewerage)	W/S	2,913,000
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Cork County contd.

Water Services Investment Programme 2007 - 2009

	W/S	Est. Cost
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Cork West		
Castletownshend Sewerage Scheme	S	1,576,000
		50,797,000
Rural Towns & Villages Initiative		
Cork North		
Buttevant Sewerage Scheme (Collection System)	S	2,446,000
Doneraile Sewerage Scheme (Collection System)	S	1,738,000
Cork South		
Innishannon (Ballinadee/ Ballinspittle/ Garrettstown) Water Supply Scheme	W	6,726,000
Cork West		
Ballylicky Sewerage Scheme	S	2,153,000
Baltimore Sewerage Scheme	S	3,162,000
Castletownbere Sewerage Scheme	S	5,402,000
Schull Sewerage Scheme	S	3,523,000
		24,950,000
Schemes to Advance through Planning		
Cork North		
Mitchelstown North Galtees Water Supply Scheme	W	3,152,000
Mitchelstown Sewerage Scheme	S	3,000,000
Newmarket Sewerage Scheme	S	3,152,000

	W/S	Est. Cost
Cork South		
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Minane Bridge Water Supply Scheme	W	1,421,000
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Cape Clear Water Supply Scheme	W	1,679,000
Castletownbere Regional Water Supply Scheme	W	8,405,000
Glengarriff Sewerage Scheme	S	2,500,000
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Skibbereen Regional Water Supply Scheme Stage 4	W	7,880,000
		95,646,000
Water Conservation Allocation		**12,206,000**
Asset Management Study		**300,000**
South Western River Basin District (WFD) Project[1]		**9,400,000**
Programme Total		**485,489,000**

[1] This project is being led by Cork County Council on behalf of other authorities in the River Basin District

(H) Refers to a Hub as designated in the National Spatial Strategy

(G) Refers to a Gateway as designated in the National Spatial Strategy

Agglomeration details

Leading Local Authority	Cork County Council
Co-Applicants	
Agglomeration	Glengarriff
Population Equivalent	990
Level of Treatment	Primary
Treatment plant address	Glengarriff, Co. Cork
Grid Ref (12 digits, 6E, 6N)	093292 / 056304
EPA Reference No:	

Contact details

Contact Name:	Declan Groarke
Contact Address:	Water Services Section Cork County Council Western Division The Courthouse Skibbereen Co Cork
Contact Number:	028-21299
Contact Fax:	028-21995
Contact Email:	declan.groarke@corkcoco.ie

Table D.1(i)(a): EMISSIONS TO SURFACE/GROUND WATERS (Primary Discharge Point)

Discharge Point Code: SW-1

Local Authority Ref No:	SW01 GLEN	
Source of Emission:	Primary	
Location:	Glengarriff	
Grid Ref (12 digits, 6E, 6N)	093358 / 056263	
Name of Receiving waters:	Glengarriff Harbour	
Water Body:	Coastal Water Body	
River Basin District	South Western RBD	
Designation of Receiving Waters:	pNHA, SAC	
Flow Rate in Receiving Waters:	0	$m^3.sec^{-1}$ Dry Weather Flow
	0	$m^3.sec^{-1}$ 95% Weather Flow
Additional Comments (e.g. commentary on zero flow or other information deemed of value)	Coastal Discharge, therefore no DWF or 95%ile flows available	

Emission Details:

(i) Volume emitted			
Normal/day	247.5 m^3	Maximum/day	742.5 m^3
Maximum rate/hour	30.94 m^3	Period of emission (avg)	60 min/hr 24 hr/day 365 day/yr
Dry Weather Flow	0.017 m^3/sec		

Table D.1(i)(b): EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of The Emission (Primary Discharge Point)

Discharge Point Code: SW-1

Substance	As discharged			
	Unit of Measurement	Sampling Method	Max Daily Avg.	kg/day
pH	pH	Grab	= 9	
Temperature	°C	Grab	= 0	
Electrical Conductivity (@ 25°C)	µS/cm	Grab	= 0	
Suspended Solids	mg/l	Grab	= 250	61.88
Ammonia (as N)	mg/l	Grab	= 30	7.43
Biochemical Oxygen Demand	mg/l	Grab	= 214	52.97
Chemical Oxygen Demand	mg/l	Grab	= 460	113.85
Total Nitrogen (as N)	mg/l	Grab	= 57	14.11
Nitrite (as N)	mg/l	Grab	= 0	0
Nitrate (as N)	mg/l	Grab	= 0	0
Total Phosphorous (as P)	mg/l	Grab	= 12	2.97
OrthoPhosphate (as P)	mg/l	Grab	= 10	2.48
Sulphate (SO_4)	mg/l	Grab	= 0	0
Phenols (Sum)	µg/l	Grab	= 0	0

For Orthophosphate: this monitoring should be undertaken on a sample filtered on 0.45µm filter paper
For Phenols: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

Table D.1(i)(c): DANGEROUS SUBSTANCE EMISSIONS TO SURFACE/GROUND WATERS - Characteristics of The Emission (Primary Discharge Point)

Discharge Point Code: SW-1

Substance	As discharged			
	Unit of Measurement	Sampling Method	Max Daily Avg.	kg/day
Atrazine	µg/l	Grab	= 0	0
Dichloromethane	µg/l	Grab	= 0	0
Simazine	µg/l	Grab	= 0	0
Toluene	µg/l	Grab	= 0	0
Tributyltin	µg/l	Grab	= 0	0
Xylenes	µg/l	Grab	= 0	0
Arsenic	µg/l	Grab	= 0	0
Chromium	µg/l	Grab	= 0	0
Copper	µg/l	Grab	= 0	0
Cyanide	µg/l	Grab	= 0	0
Flouride	µg/l	Grab	= 0	0
Lead	µg/l	Grab	= 0	0
Nickel	µg/l	Grab	= 0	0
Zinc	µg/l	Grab	= 0	0
Boron	µg/l	Grab	= 0	0
Cadmium	µg/l	Grab	= 0	0
Mercury	µg/l	Grab	= 0	0
Selenium	µg/l	Grab	= 0	0
Barium	µg/l	Grab	= 0	0

For Orthophosphate: this monitoring should be undertaken on a sample filtered on 0.45µm filter paper
For Phenols: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

TABLE E.1(i): WASTE WATER FREQUENCY AND QUANTITY OF DISCHARGE – Primary and Secondary Discharge Points

Identification Code for Discharge point	Frequency of discharge (days/annum)	Quantity of Waste Water Discharged (m^3/annum)
SW-1	365	90337.5

TABLE E.1(ii): WASTE WATER FREQUENCY AND QUANTITY OF DISCHARGE – Storm Water Overflows

Identification Code for Discharge point	Frequency of discharge (days/annum)	Quantity of Waste Water Discharged (m^3/annum)	Complies with Definition of Storm Water Overflow

TABLE F.1(i)(a): SURFACE/GROUND WATER MONITORING

Primary Discharge Point

Discharge Point Code:	SW-1
MONITORING POINT CODE:	aSW-1a
Grid Ref (12 digits, 6E, 6N)	094400 / 054433

Parameter	Results (mg/l)				Sampling method	Limit of Quantitation	Analysis method / technique
	01/01/09	14/05/09					
pH		= 8.1			Grab	2	Electrochemical
Temperature	= 0				Grab	0.5	electrochemical
Electrical Conductivity (@ 25°C)		= 33100			Grab	0.5	Electrochemical
Suspended Solids		= 6			Grab	2.5	Gravimetric
Ammonia (as N)		= 0.4			Grab	0.02	Colorimetric
Biochemical Oxygen Demand		= 2			Grab	0.06	Electrochemical
Chemical Oxygen Demand		= 21			Grab	8	Digestion & Colorimetric
Dissolved Oxygen	= 0				Grab	0	ISE
Hardness (as $CaCO_3$)	= 0				Grab	0	titrimetric
Total Nitrogen (as N)		= 0.67			Grab	0.5	Digestion & Colorimetric
Nitrite (as N)		< 0.1			Grab	0.013	colorimetric
Nitrate (as N)		< 0.5			Grab	0.04	Colorimetric
Total Phosphorous (as P)		< 0.05			Grab	0.2	Digestion & Colorimetric
OrthoPhosphate (as P)		< 0.05			Grab	0.02	Colorimetric
Sulphate (SO_4)		= 0			Grab	30	Turbidimetric
Phenols (Sum)		< 0.1			Grab	0.1	GC-MS2

For Orthophosphate: this monitoring should be undertaken on a sample filtered on 0.45µm filter paper
For Phenols: USEPA Method 604, AWWA Standard Method 6240, or equivalent.

Additional Comments:	default value of 01/01/09 and 0 where results are not available. Ammonia result contains a saline interferance. No result for sulphate available.

TABLE F.1(i)(b): SURFACE/GROUND WATER MONITORING (Dangerous Substances)

Primary Discharge Point

Discharge Point Code:	SW-1
MONITORING POINT CODE:	aSW-1a
Grid Ref (12 digits, 6E, 6N)	094400 / 054433

Parameter	Results (µg/l)				Sampling method	Limit of Quantitation	Analysis method / technique
	14/05/09						
Atrazine	< 0.01				Grab	0.96	HPLC
Dichloromethane	< 1				Grab	1	GC-MS1
Simazine	< 0.01				Grab	0.01	HPLC
Toluene	< 0.28				Grab	0.02	GC-MS1
Tributyltin	= 0				Grab	0.02	GC-MS1
Xylenes	< 1				Grab	1	GC-MS1
Arsenic	= 1.6				Grab	0.96	ICP-MS
Chromium	< 20				Grab	20	ICP-OES
Copper	< 20				Grab	20	ICP-OES
Cyanide	< 5				Grab	5	Colorimetric
Flouride	= 481				Grab	100	ISE
Lead	< 20				Grab	20	ICP-OES
Nickel	< 20				Grab	20	ICP-OES
Zinc	< 20				Grab	20	ICP-OES
Boron	= 2673.7				Grab	20	ICP-OES
Cadmium	< 20				Grab	20	ICP-OES
Mercury	< 0.2				Grab	0.2	ICP-MS
Selenium	= 934.7				Grab	0.74	ICP-MS
Barium	< 20				Grab	20	ICP-OES

Additional Comments:	TBT 0.02ug/l as Sn Tributyltin result to follow at a later stage. Fluoride result contains a saline interference. Boron result contains a possible saline interferance.

Annex 2: Check List For Regulation 16 Compliance

Regulation 16 of the waste water discharge (Authorisation) Regulations 2007 (S.I. No. 684 of 2007) sets out the information which must, in all cases, accompany a discharge licence application. In order to ensure that the application fully complies with the legal requirements of regulation 16 of the 2007 Regulations, all applicants should complete the following.

In each case, refer to the attachment number(s), of your application which contains(s) the information requested in the appropiate sub-article.

Regulation 16(1) **In the case of an application for a waste water discharge licence, the application shall -**		**Attachment Number**	**Checked by Applicant**
(a)	give the name, address, telefax number (if any) and telephone number of the applicant (and, if different, of the operator of any treatment plant concerned) and the address to which correspondence relating to the application should be sent and, if the operator is a body corporate, the address of its registered office or principal office,		
(b)	give the name of the water services authority in whose functional area the relevant waste water discharge takes place or is to take place, if different from that of the applicant,		
(c)	give the location or postal address (including where appropriate, the name of the townland or townlands) and the National Grid reference of the location of the waste water treatment plant and/or the waste water discharge point or points to which the application relates,		
(d)	state the population equivalent of the agglomeration to which the application relates,		
(e)	specify the content and extent of the waste water discharge, the level of treatment provided, if any, and the flow and type of discharge,		
(f)	give details of the receiving water body, including its protected area status, if any, and details of any sensitive areas or protected areas or both in the vicinity of the discharge point or points likely to be affected by the discharge concerned, and for discharges to ground provide details of groundwater protection schemes in place for the receiving water body and all associated hydrogeological and geological assessments related to the receiving water environment in the vicinity of the discharge.		
(g)	identify monitoring and sampling points and indicate proposed arrangements for the monitoring of discharges and, if Regulation 17 does not apply, provide details of the likely environmental consequences of any such discharges,		
(h)	in the case of an existing waste water treatment plant, specify the sampling data pertaining to the discharge based on the samples taken in the 12 months preceding the making of the application,		
(i)	describe the existing or proposed measures, including emergency procedures, to prevent unintended waste water discharges and to minimise the impact on the environment of any such discharges,		
(j)	give particulars of the nearest downstream drinking water abstraction point or points to the discharge point or points,		
(k)	give details, and an assessment of the effects, of any existing or proposed emissions on the environment, including any environmental medium other than those into which the emissions are, or are to be made, and of proposed measures to prevent or eliminate or, where that is not practicable, to limit any pollution caused in such discharges,		
(l)	give detail of compliance with relevant monitoring requirements and treatment standards contained in any applicable Council Directives of Regulations,		
(m)	give details of any work necessary to meet relevant effluent discharge standards and a timeframe and schedule for such work.		
(n)	Any other information as may be stipulated by the Agency.		
Regulation 16(3) **Without prejudice to Regulation 16 (1) and (2), an application for a licence shall be accompanied by -**		**Attachment Number**	**Checked by Applicant**
(a)	a copy of the notice of intention to make an application given pursuant to Regulation 9,		
(b)	where appropriate, a copy of the notice given to a relevant water services authority under Regulation 13,		
(c)	Such other particulars, drawings, maps, reports and supporting documentation as are necessary to identify and describe, as appropriate -		
(c) (i)	the point or points, including storm water overflows, from which a discharge or discharges take place or are to take place, and		
(c) (ii)	the point or points at which monitoring and sampling are undertaken or are to be undertaken,		
(d)	such fee as is appropriate having regard to the provisions of Regulations 38 and 39.		

Regulation 16(4) An original application shall be accompanied by 2 copies of it and of all accompanying documents and particulars as required under Regulation 16(3) in hardcopy or in an electronic or other format as specified by the Agency.		Attachment Number	Checked by Applicant
1	An Original Application shall be accompanied by 2 copies of it and of all accompanying documents and particulars as required under regulation 16(3) in hardcopy or in electronic or other format as specified by the agancy.		
Regulation 16(5) **For the purpose of paragraph (4), all or part of the 2 copies of the said application and associated documents and particulars may, with the agreement of the Agency, be submitted in an electronic or other format specified by the Agency.**		**Attachment Number**	**Checked by Applicant**
1	Signed original.		
2	2 hardcopies of application provided or 2 CD versions of application (PDF files) provided.		
3	1 CD of geo-referenced digital files provided.		
Regulation 17 **Where a treatment plant associated with the relevant waste water works is or has been subject to the European Communities (Environmental Impact Assessment) Regulations 1989 to 2001, in addition to compliance with the requirements of Regulation 16, an application in respect of the relevant discharge shall be accompanied by a copy of an environmental impact statement and approval in accordance with the Act of 2000 in respect of the said development and may be submitted in an electronic or other format specified by the Agency**		**Attachment Number**	**Checked by Applicant**
1	EIA provided if applicable		
2	2 hardcopies of EIS provided if applicable.		
3	2 CD versions of EIS, as PDF files, provided.		
Regulation 24 **In the case of an application for a waste water discharge certificate of authorisation, the application shall –**		**Attachment Number**	**Checked by Applicant**
(a)	give the name, address, telefax number (if any) and telephone number of the applicant and the address to which correspondence relating to the application should be sent and, if the operator of the waste water works is a body corporate, the address of its registered office or principal office		
(b)	give the name of the water services authority in whose functional area the relevant waste water discharge takes place or is to take place, if different from that of the applicant,		
(c)	give the location or postal address (including where appropriate, the name of the townland or townlands) and the National Grid reference of the location of the discharge point or points to which the application relates,		
(d)	state the population equivalent of the agglomeration to which the application relates,		
(e)	in the case of an application for the review of a certificate, specify the reference number given to the relevant certificate in the register,		
(f)	specify the content and extent of the waste water discharge, the level of treatment provided and the flow and type of discharge,		
(g)	give details of the receiving water body, its protected area status, if any, and details of any sensitive areas or protected areas, or both, in the vicinity of the discharge point or points or likely to be affected by the discharge concerned,		
(h)	identify monitoring and sampling points and indicate proposed arrangements for the monitoring of discharges and of the likely environmental consequences of any such discharges,		
(i)	in the case of an existing discharge, specify the sampling data pertaining to the discharge based on the samples taken in the 12 months preceding the making of the application,		
(j)	describe the existing or proposed measures, including emergency procedures, to prevent unauthorised or unexpected waste water discharges and to minimise the impact on the environment of any such discharges,		
(k)	give particulars of the location of the nearest downstream drinking water abstraction point or points to the discharge point or points associated with the waste water works,		
(l)	give details of any designation under any Council Directive or Regulations that apply in relation to the receiving waters,		
(m)	give details of compliance with any applicable monitoring requirements and treatment standards,		
(n)	give details of any work necessary to meet relevant effluent discharge standards and a timeframe and schedule for such work,		
(o)	give any other information as may be stipulated by the Agency, and		
(p)	be accompanied by such fee as is appropriate having regard to the provisions of Regulations 38 and 39.		