



**NATURA IMPACT STATEMENT**

**PROVISION OF INFORMATION FOR AN APPROPRIATE ASSESSMENT  
OF ADAPTATIONS TO AN EXISTING ERAS-ECO  
WASTE RECOVERY / TRANSFER AND SLUDGE DRYING FACILITY  
AT FOXHOLE, YOUGHAL, CO. CORK**

**PREPARED IN ACCORDANCE WITH REGULATIONS 27 AND 33 OF THE HABITATS  
REGULATIONS, 1997 (S.I. NO. 94 OF 1997)**

**17<sup>TH</sup> NOVEMBER 2010**

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## 1. Introduction

The information in this report has been prepared by Scott Cawley Ltd., on behalf of the applicant, ERAS-ECO Ltd. It provides information on and assesses the potential for the proposed development to impact on any Natura 2000 sites<sup>1</sup> within its zone of influence.

The information in this report forms part of, and should be read in conjunction with the planning application documentation being submitted to Cork County Council in connection with the proposed development.

It is necessary that the proposal has regard to Article 6 of the European Commission Habitats Directive (EC/92/43) as transposed in Ireland by the European Communities (Natural Habitats) Regulations, 1997 (as amended); herein after referred to as the Habitats Regulations. Regulations 27 and 33 of the Habitats Regulations, provided below, are of particular relevance.

### **Regulation 27**

*(1) A local authority when duly considering an application for planning permission, or the Board when duly considering an appeal on a application for planning permission, in respect of a proposed development that is not directly connected with, or necessary to the management of, a European site but likely to have a significant effect thereon either individually or in combination with other developments, shall ensure that an appropriate assessment of the implications for the site in view of the site's conservation objectives is undertaken.*

*(2) An environmental impact assessment in respect of a proposed development prepared in accordance with a requirement of or under the Local Government (Planning and Development) Regulations, 1994 ( S.I. No. 86 of 1994 ), shall be an appropriate assessment for the purposes of paragraph (1).*

*(3) Notwithstanding section 26 of the Local Government (Planning and Development) Act, 1963 , and subject to paragraphs (4), (5) and (6) a local authority or the Board, as the case may be, shall, having regard to the conclusions of the assessment to which paragraph (1) relates, decide to grant permission for the proposed development only after having ascertained that it will not adversely affect the integrity of the European site concerned.*

*(4) In considering whether a development will adversely affect the integrity of the European site concerned, the local authority or the Board, as the case may be, shall have regard to the manner in which it is proposed to be carried out or to any conditions or restrictions subject to which they propose that the permission should be given.*

*(5) A local authority or the Board, as the case may be, may, notwithstanding a negative assessment and in the absence of alternative solutions, decide to grant planning permission for a proposed development where such development has to be carried out for imperative reasons of overriding public interest.*

*(6) ( a ) Subject to subparagraph (b), imperative reasons of overriding public interest shall include reasons of a social or economic nature:*

*( b ) If the site concerned hosts a priority natural habitat type of or priority species the only considerations of overriding public interest shall be—*

*(i) those relating to human health or public safety, or*

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<sup>1</sup> Natura 2000 sites are part of an EU-wide network of nature protection areas established under the EU Habitats Directive. The aim of the network is to assure the long-term survival of Europe's most valuable and threatened species and habitats. It is comprised of Special Areas of Conservation designated by member states under the Habitats Directive, and also incorporates Special Protection Areas designated under the EU Birds Directive.

(ii) the beneficial consequences of primary importance for the environment, or

(iii) further to an opinion from the Commission to other imperative reasons of overriding public interest.

(7) Where a local authority or the Board desire to obtain the opinion of the Commission as to whether reasons are to be considered imperative reasons of overriding public interest, they shall refer the matter to the Minister for the Environment and the Minister for the Environment shall communicate with the Commission on behalf of the local authority or the Board and by notice shall convey the Commission's opinion to the local authority or the Board, as the case may be.

(8) A decision shall not be made on the application or the appeal, as the case may be, by the local authority or the Board until the Commission's opinion has been communicated to them.

(9) For the purposes of the Board's objectives under subsection (2) of section 2 of the Local Government (Planning and Development) Act, 1992, to determine the appeal within a period of 4 months or such other period as may be prescribed under paragraph (b) of that subsection, there shall not be included the period beginning on the day the matter is referred by the Board to the Minister for the Environment under that paragraph and ending on the day of receipt by the Board of notice by the Minister for the Environment of an opinion by the Commission on the matter.

(10) Notwithstanding subsection (4) of section 26 of the Local Government (Planning and Development) Act, 1963, the appropriate period referred to in that subsection shall not, in a case in which a request is made to the Minister for the Environment under paragraph (7), include the period beginning on the day the matter is referred by the local authority to the Minister for the Environment under that paragraph and ending on the day of receipt by the local authority concerned of notice by the Minister for the Environment of an opinion by the Commission on the matter.

(11) Where immediately before the making of these Regulations a planning authority or the Board, as the case may be, have granted permission in respect of a development within a European site and such development is considered by the Minister to have a significant adverse effect on the ecological features of the site that Minister may request the local authority or the Board to review the permission in accordance with the provisions of this Regulation and the local authority or the Board shall affirm, modify or revoke such permission depending on the results of the review.

### **Regulation 33:**

Where in accordance with Regulations 27 (5), 28 (5), 29 (4), 30 (5), 31 (5) or 32 (5) an operation or activity is agreed to, notwithstanding a negative assessment of the implications for a European site, the Minister shall ensure that the necessary compensatory measures are taken to ensure that the overall coherence of Natura 2000 is protected

It is the responsibility of the competent authority, in this instance Cork County Council, to make a decision as to whether or not the proposed development should be approved, taking into consideration any potential impact upon any Natura 2000 site within its zone of influence.

## **2. Methodology**

This Natura Impact Statement (NIS) has been prepared with regard to the following guidance documents where relevant:

- *Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities* (Department of Environment, Heritage and Local Government, Rev Feb 2010);
- Circular NPW 1/10 & PSSP 2/10 *Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities*. (Department of Environment, Heritage and Local Government, March 2010);
- *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* (European Commission Environment Directorate-General, 2001); hereinafter referred to as the “EC Article 6 Guidance Document”. The guidance within this document provides a non-mandatory methodology for carrying out assessments required under Article 6(3) and (4) of the Habitats Directive;
- *Managing Natura 2000 sites: The Provisions of Article 6 of the Habitat’s Directive 92/43/EEC* (EC Environment Directorate-General, 2000); hereinafter referred to as “MN2000”; and
- *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 European Commission, January 2007.

#### Desktop Data / Information Sources:

- Online data available on Natura 2000 sites as held by the National Parks and Wildlife Service (NPWS) from [www.npws.ie](http://www.npws.ie).
- Information on water quality in the area available from [www.epa.ie](http://www.epa.ie)
- Information on the South Western River Basin District from [www.wfdireland.ie](http://www.wfdireland.ie)
- Information on soils, geology and hydrogeology in the area available from [www.gsi.ie](http://www.gsi.ie)
- Information on the location, nature and design of the proposed development supplied by the applicant’s design team.

#### Other Key Information Sources:

- *ERAS ECO Ltd. Existing and Proposed Activities*. Pre-planning Submission by Tom Phillips & Associates
- *Environmental Impact Assessment* of the Youghal Waste Treatment and Transfer Facility, (SWS Environmental Services, 2004)
- *Environmental Impact Assessment* of adaptations to the existing (ERAS-ECO Ltd Waste Treatment and Transfer Facility, 2010); including an Ecological Impact Assessment (Scott Cawley Ltd, 2010)
- *Water Quality Study in Youghal Harbour*. A report for SWS Energy Service by Aquafact International Services Ltd (2005)
- *Model Study of Youghal Harbour*. A report for SWS Energy Service by Aquafact International Services Ltd (2008)
- *Status of EU Protected Habitats in Ireland*. (National Parks & Wildlife Service, 2008);
- *South Western River Basin Management Plan 2009-2015*
- *Youghal Development Plan 2009-2015*. Including Vol III: Strategic Environmental Assessment and Vol IV: Appropriate Assessment. Youghal Town Council

A site survey was undertaken in August 2010 for the preparation of the *Ecological Impact Assessment* (Scott Cawley 2010), and a baseline description of the study site is described therein. That report should be read in conjunction with this Natura Impact Statement.

## Stage One- Screening

The above guidance documents set out a staged process for carrying out Appropriate Assessment, the first of which is referred to as *screening*. This stage aims to determine whether the proposed development has any potential to cause any impacts upon any Natura 2000 sites, acting either alone or in combination with other plans and projects.

If the screening exercise cannot prove that there is no likely impact upon the SAC (applying the precautionary principle<sup>2</sup> where there is a lack of scientific certainty) then the process should proceed to subsequent stages of Appropriate Assessment. However, even if the screening exercise makes a finding of no significant impacts, and therefore concludes that further stages of the Appropriate Assessment process are not required, these findings must be clearly documented in a Screening Statement for Appropriate Assessment in order to provide transparency of decision-making, and to ensure the application of the 'precautionary principle'.

Screening for Appropriate Assessment involves the following:

1. Determining whether a project or plan is directly connected with or necessary to the conservation management of any Natura 2000 sites<sup>3</sup>;
2. Describing the details of the project / plan proposals and other cumulative plans or projects that may affect any Natura 2000 sites;
3. Describing the characteristics of relevant Natura 2000 sites and identifying the potential for effects on any Natura 2000 sites undertaken on the basis of available information as a desk study or field survey or primary research as necessary; and
4. Assessing the significance of any likely effects on any Natura 2000 sites.

### 2.1 Consultation

A data request form was submitted to the National Parks and Wildlife Service (NPWS) and any relevant information received has been used in the preparation of this report with information received included where relevant.

During the preparation of this report, the following agencies/individuals were also consulted

- Local District Conservation Officer of the NPWS, both informally by telephone and formally by letter through the Development Applications Unit; and
- Birdwatch Ireland (data request only not formal consultation).

The NPWS District Conservation Officer suggested that an appropriate assessment of the proposed development might be required in accordance with Article 6(3) of the Habitats Directive.

### 2.2 Summary of Screening Conclusions

The screening stage concluded that in accordance with the precautionary principle it would not be possible to rule out likely significant impacts upon the Blackwater River cSAC and Blackwater Estuary SPA. This decision was arrived at primarily as a result of the following potentially significant impacts:

- Discharge of treated wastewater (from the waste treatment processes) into the Blackwater Estuary; and

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<sup>2</sup> One of the primary foundations of the precautionary principle, and globally accepted definitions, results from the work of the Rio Declaration. Principle #15 declaration notes "*In order to protect the environment, the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.*"

<sup>3</sup> In this instance the proposed development is not directly connected with or necessary to the conservation management of any Natura 2000 sites.

- Run-off of sediment and / or pollutants into the Blackwater Estuary during both construction and operation of the proposed development.
- Noise that may arise during the construction and operation of the proposed development

It is stated within the EC Article 6 Guidance Document that “where, without any detailed assessment at the *screening stage*, it can be assumed (because of the size or scale of the project or the characteristics of the Natura 2000 site) that significant effects are likely, it will be sufficient to move directly to the appropriate assessment (Stage Two) rather than complete the screening assessments explained below.”

Applying the precautionary principle, it was determined that due to the range of potentially significant impacts upon Natura 2000 sites, it was not possible to rule out significant impacts upon the sites; and therefore the assessment proceeded directly to Stage Two: Appropriate Assessment.

The outcome of screening the proposed development was that a likelihood of significant negative effects on any Natura 2000 sites could not be objectively ruled out. Therefore it was determined that the assessment should proceed to the next stage: Stage Two – Appropriate Assessment.

### 3. Stage Two: Provision of information for an Appropriate Assessment

According to MN2000, paragraph 4.6(3)

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

Within this stage of the summary assessment, the potential impact of the proposed development on the integrity of the relevant Natura 2000 sites is examined with respect to the conservation objectives of these Natura 2000 sites and to their general structure and function.

Stage two entails five steps as follows:-

- |             |   |
|-------------|---|
| Step one:   | Information required  |
| Step two:   | Impact prediction   |
| Step three: | Conservation objectives                                       |
| Step four:  | Mitigation measures   |
| Step five:  | Outcomes (this stage is completed by the competent authority) |

#### 3.1 Step 1: Information required

Somewhat analogous to the initial stages of an Environmental Impact Assessment, Step 1 serves to gather information about the conservation objectives of the site, an understanding of the biological processes that underlie those conservation objectives, a description of the proposal, and any aspects of this proposal which could affect the conservation objectives.

In order to determine the information required for this assessment it is necessary to identify the conservation objectives of the site and to relate them to those aspects of the proposed development which could affect those objectives. The EC Article 6 Guidance document (EC 2001) suggests that these may be obtained from the SAC/SPA site description and any site management plans which may exist.

Tables 1 to 4 below provide a summary of the information gathered in order to progress this stage of the assessment.

There are currently no Conservation Management Plans available for the relevant Natura 2000 sites. However the NPWS have prepared draft conservation objectives which are summarised in Table 3 and shown in Appendix 1.

<b>Table 1 Overview of the Proposed Development and its Receiving Environment</b>	
<p><b>Brief Description</b></p>	<p><b>Site</b></p> <p>The proposed development site is located to the north of Youghal town, adjacent to the Cork-Waterford border (Irish National Grid 209764, 079813). It currently operates as a waste treatment and transfer facility, and contains a number of industrial buildings, administrative storage areas and other components including a wastewater treatment plant. The majority of the site is composed of buildings and artificial surfaces, with small areas of amenity grassland, flower beds and gravel. The boundary along the road frontage is composed of a high stone wall and security gates. Other boundaries are marked by a chain-link fence and a line of young trees.</p> <p>Stormwater from roofs and non-waste storage hardstanding areas is currently passed through silt/ oil interceptors and collected in a stormwater retention tank. It is then discharged into the Blackwater Estuary to the north of the site via a pH controlled non-return valve.</p> <p>Wastewater resulting from the sludge-drying process is treated on-site in a substantial wastewater treatment plant, and discharged directly into the Blackwater Estuary. This is subject to a waste licence and EPA discharge limits. Domestic foul effluent is initially treated by means of a Puraflo© system and discharged through the same system.</p> <p>The zone of influence of the proposed development extends beyond the boundaries of the proposed development site primarily due to the proposal to discharge waste waters immediately to the north of the site into the Blackwater estuary.</p>
<p><b>Features in the Surrounding Environment</b></p>	<p>The proposed development site is located in a low-density industrial area to the north of Youghal town, on the western bank of the Blackwater estuary. It is located on a polder (land that was formerly reclaimed from the estuary) known as the Youghal Mudlands. A large council landfill is located immediately to the east, and some clusters of industrial / commercial buildings are located approximately 200m to the northwest and 300m to the west. The land to the south contains fields of grassland / wasteland that have established on the surface of the reclaimed land.</p> <p>The underlying geology of the area is Waulsortian limestone (massive unbedded lime-mudstone), but the surface soils have been built up as part of the polderisation process, and therefore the surface vegetation is unlikely to have any association with the bedrock or subsoils. The soils are likely to be alluvial / estuarine in nature.</p> <p>The main channel of the Blackwater Estuary is located approximately 200m to the east of the proposed development site. The Tourig River joins the Blackwater Estuary to the north of the proposed development site, and an area of mudflat at the junction is located approximately 10m to the north of the site. Treated wastewater from the development is discharged into the estuary at this location.</p> <p>Information obtained from the South Western River Basin Management Plan 2009 revealed that the majority of the Blackwater river and estuary is of 'moderate' ecological status, while some of the upstream tributaries are of 'good' or 'high' status. The plan noted that the lower Blackwater Estuary was eutrophic between 2001 and 2009, and elsewhere the Blackwater Estuary is listed as one of the most seriously eutrophic rivers in the south of Ireland. It is suspected that the nutrient loads from upstream catchments are a significant contributing factor, particularly diffuse sources of phosphorous and nitrogen. The Womanagh and Blackwater Estuary Water Management Unit Action Plans provide details on point-</p>

**Table 1 Overview of the Proposed Development and its Receiving Environment**

	<p>source and diffuse pollution sources in each area. In particular, the Youghal WWTP is highlighted as a significant point-source of pollution due to inadequate treatment.</p>
<p><b>Description of the Proposed Development</b></p>	<p>The existing site currently operates continuously (24hrs for 365 days) as a Waste Recovery / Transfer and Sludge Drying Facility, and contains a number of industrial buildings, administrative storage areas and other components including an on-site wastewater treatment plant. The main activity involves the drying of non-hazardous pharmaceutical sludge.</p> <p>The development will consist the upgrading of the existing Waste Recovery / Transfer and Sludge Drying Facility to an Integrated Waste Management Facility, utilising the existing four buildings and associated services, as follows:</p> <ul style="list-style-type: none"> <li>• The handling of sludge within existing buildings which also includes <i>inter alia</i> the upgrading of the existing sludge drying process through the introduction of new Aqua Critox technology.</li> <li>• The facilitation of an onsite holding area / storage of solvents in dedicated bays while sample testing of hazardous waste materials are being undertaken prior to dispatching for treatment on-site or off-site.</li> <li>• The introduction of a new anaerobic digestion process through the erection/construction of two digesters and combined heat and power unit.</li> </ul> <p>All new processes will take place inside existing structures or in new buildings upon existing hard surfaces. Two Anaerobic Digester tanks and other associated plant will be located on existing hard surfaces.</p> <p>The new processes will result in an increase in the volume of material that can be treated, and a consequent change in the outputs of solid waste and wastewater. Wastewater will be treated on-site and discharged into the Blackwater Estuary. Following the completion of the municipal WWTP at Youghal, all treated wastewater from the proposed development will be discharged into a municipal sewer and will receive further treatment in the municipal plant.</p>



**Table 2 Identification of Natura 2000 Sites and their Relevance to the Proposed Development. Natura 2000 sites are considered relevant where a source-pathway-receptor link<sup>4</sup> exists between the proposed development and the Natura 2000 site. Relevant Natura 2000 sites have been highlighted in grey rows in this table.**

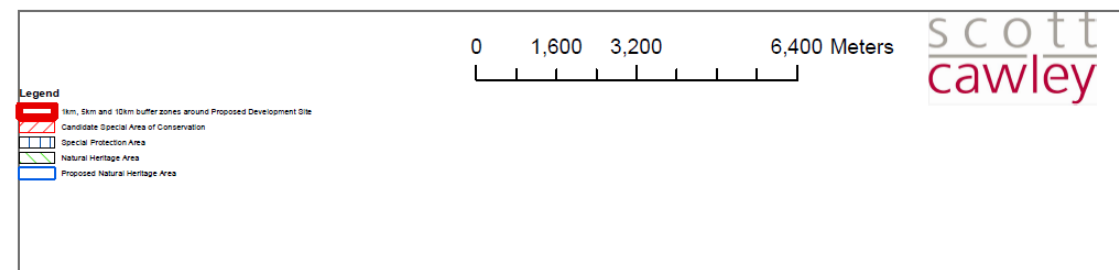
Site name and code	Designation	Distance from Proposed Development	Reasons for designation	Do any potential source-pathway-receptor links exist between the proposed development and the Natura 2000 site?
Blackwater River (Cork/Waterford)	cSAC (002170)	0	Estuaries, mudflats saltmarsh, shingle, river vegetation, alluvial forests, Oak woodlands, Yew woodlands, Salmon, Sea Lamprey, Brook Lamprey, River Lamprey, Otter, Freshwater Pearl Mussel, White-clawed Crayfish	Yes - Discharge of treated surface water run off and wastewater to the Natura 2000 site which could affect water quality that the habitats and species for which the site is designated for rely upon.  Lighting, landscaping and noise may also result in the disturbance of fauna (particularly birds) within the designated sites.
Blackwater Estuary SPA	SPA (004028)	0	Black-tailed Godwit and eight species of national importance	Yes - same as for above.
Ballymacoda (Clonpriest And Pillmore)	cSAC,	6.8	Estuaries, mudflats, saltmarsh	No – no hydraulic or other link between the source (proposed development) and the receptor (species and habitats for which the

<sup>4</sup> In ecological and environmental impact assessment, for an impact to occur there must be a risk enabled by having a 'source' (e.g. construction works at a proposed development site), a 'receptor' (e.g. a SAC or other ecologically sensitive feature), and a pathway between the source and the receptor (i.e. a watercourse which connects the proposed development site to the SAC). The risk of the impact does not automatically mean it will occur or that it will be significant. However, identification of the risk does mean that there is a possibility of ecological or environmental damage occurring, with the level and significance of the impact depending upon the nature, level of exposure and the characteristics of the receptor.

**Table 2 Identification of Natura 2000 Sites and their Relevance to the Proposed Development. Natura 2000 sites are considered relevant where a source-pathway-receptor link4 exists between the proposed development and the Natura 2000 site. Relevant Natura 2000 sites have been highlighted in grey rows in this table.**

				SAC is designated)
Ballymacoda Bay	SPA (004023)	5.5	>20,000 waterfowl, Black-tailed Godwit and fifteen species of national importance	No - same as for above
Ardmore Head	cSAC (002123)	10.5	Vegetated sea cliffs, dry heath	No - same as for above
Helvick Head to Ballyquin SPA	SPA (004192)	11.5	Chough, Peregrine and three species of national importance	No - same as for above

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**Table 3 Qualifying Interests and Conservation Management Objectives of Relevant Natura 2000 Sites**

candidate Special Areas of Conservation			
Site Code	Site Name	Qualifying Interests	Conservation Management Objectives
2170	Blackwater River (Cork/Waterford) cSAC	<p><u>Habitats Directive Annex I habitats for which the sites is designated:</u></p> <ul style="list-style-type: none"> <li>• Estuaries</li> <li>• Mudflats and sandflats not covered by seawater at low tide</li> <li>• <i>Salicornia</i> and other annuals colonizing mud and sand</li> <li>• Atlantic salt meadows (<i>Glauco-Puccinellietalia maritimae</i>)</li> <li>• Mediterranean salt meadows (<i>Juncetalia maritimi</i>)</li> <li>• Water courses of plain to montane levels with the <i>Ranunculion fluitantis</i> and <i>Callitriche-Batrachion</i> vegetation</li> <li>• Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>)</li> <li>• Perennial vegetation of stony banks</li> <li>• Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in British Isles</li> <li>• <i>Taxus baccata</i> woods of the British Isles</li> </ul> <p><u>Habitats Directive Annex II species for which the sites is designated:</u></p> <ul style="list-style-type: none"> <li>• Sea Lamprey <i>Petromyzon marinus</i></li> <li>• Brook Lamprey <i>Lampetra planeri</i></li> </ul>	<p><u>Main Conservation Objectives for the cSAC:</u></p> <ul style="list-style-type: none"> <li>• Objective 1 - To maintain the Annex I habitats for which the cSAC has been selected at favourable conservation status: Estuaries; Mudflats and sandflats not covered by seawater at low tide; Perennial vegetation of stony banks; <i>Salicornia</i> and other annuals colonising mud and sand; Atlantic salt meadows; Mediterranean salt meadows; Water courses of plain to montane levels; Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i>; Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles; <i>Taxus baccata</i> woods of the British Isles.</li> <li>• Objective 2 - To maintain the Annex II species for which the cSAC has been selected at favourable conservation status: <i>Trichomanes speciosum</i>; <i>Margaritifera margaritifera</i>; <i>Austroptamobius pallipes</i>; <i>Petromyzon marinus</i>; <i>Lampetra planeri</i>; <i>Lampetra fluviatilis</i>; <i>Alosa fallax</i>; <i>Salmo salar</i>; <i>Lutra lutra</i>.</li> <li>• Objective 3 - To maintain the extent, species richness and biodiversity of the entire site.</li> <li>• Objective 4 - To establish effective liaison and co-operation with landowners, legal users and relevant authorities.</li> </ul>

**Table 3 Qualifying Interests and Conservation Management Objectives of Relevant Natura 2000 Sites**

Special Protection Areas			
Site Code	Site Name	Qualifying Interests	Conservation Management Objectives
		<ul style="list-style-type: none"> <li>• River Lamprey <i>Lampetra fluviatilis</i></li> <li>• Twaite Shad <i>Alosa fallax</i></li> <li>• Atlantic Salmon <i>Salmo salar</i></li> <li>• Allis Shad <i>Alosa alosa</i></li> <li>• European Otter <i>Lutra lutra</i></li> <li>• Freshwater Pearl-mussel <i>Margaritifera margaritifera</i></li> <li>• White-clawed Crayfish <i>Austropotamobius pallipes</i></li> <li>• Killarney Fern <i>Trichomanes speciosum</i></li> </ul>	
4028	Blackwater Estuary SPA	<p>The site is selected for:</p> <ul style="list-style-type: none"> <li>• Black-tailed Godwit (Internationally important populations)</li> <li>• Curlew (nationally important populations)</li> </ul> <p>Additional Special Conservation Interests:</p> <ul style="list-style-type: none"> <li>• Wigeon</li> <li>• Golden Plover</li> <li>• Lapwing</li> <li>• Dunlin</li> <li>• Bar-tailed Godwit</li> <li>• Redshank</li> <li>• Wetland &amp; Waterbirds</li> </ul>	<p><u>Main conservation objective for the SPA:</u></p> <p>To maintain the special conservation interests for this SPA at favourable conservation status:</p> <ul style="list-style-type: none"> <li>• Black-tailed Godwit</li> <li>• Curlew</li> <li>• Wigeon</li> <li>• Golden Plover</li> <li>• Lapwing</li> <li>• Dunlin</li> <li>• Bar-tailed Godwit</li> <li>• Redshank</li> <li>• Wetland &amp; Waterbirds.</li> </ul>

<b>Table 4 Identification and Assessment of Likely Significant Impacts on Relevant Natura 2000 Sites</b>		
<b>Potential Source-Pathway-Receptor Linkage</b>	<b>Discussion of Potential Impacts</b>	<b>Likelihood of Impacts Occurring and their Significance</b>
<b>Blackwater River cSAC and Blackwater Estuary SPA</b>		
<p>The existing development discharges treated wastewater into the Blackwater River, and the proposed development will result in an increase of volume of the discharge.</p> <p>One of the proposed new processes for the facility would allow the testing of <u>hazardous</u> waste on site.</p> <p>An existing process involves the handling/management of sludge (treatment processes currently licensed under Waste Licence No.: W0211-01) and spreading of the waste on agricultural land.</p> <p>Noise during the construction or operation</p> <p>Introduction of Invasive species to the sites</p>	<p>All of the habitats and species in the estuarine section of the Blackwater river would be sensitive to water pollution. The estuary is currently described as eutrophic, and discharges of nutrient-loaded wastewater may cause water quality to deteriorate further, which could cause impacts upon habitats or aquatic fauna.</p> <p>For the testing of hazardous waste on site, tankers will carry the material into a bunded area of the site (see Chapter 7: Water), where the testing will take place. If any material would spill and escape the bunded area, it is possible that it could reach the cSAC / SPA.</p> <p>The handled/managed sludge (treatment processes currently licensed under Waste Licence No.: W0211-01) will be spread on agricultural land, either within the vicinity of Youghal or elsewhere in the country. In the absence of mitigation, some of this material may be spread near the Blackwater Estuary or its freshwater tributaries, and may affect water quality within the designated sites</p> <p>In the absence of mitigation, construction activities, vehicle movements or process machinery may cause disturbance of aquatic fauna in the cSAC and/or wintering waterfowl within the SPA.</p> <p>Proposed landscaping may include invasive non-native species that could spread into the designated sites and lead to significant impacts upon habitats or species.</p>	<p>In the absence of mitigation it was not possible to rule out likely significant negative effects on the cSAC during the operation of the proposed development.</p>

**Table 5 Information Checklist for the Appropriate Assessment**

Information about Project		
	Known or available <input checked="" type="checkbox"/> or <input checked="" type="checkbox"/>	Details
Full Characteristics of the project which may effect the Natura 2000 sites	<input checked="" type="checkbox"/>	See Tables 1 & 4
The total range or area the project will cover	<input checked="" type="checkbox"/>	See Table 1
Size and other specifications of the project	<input checked="" type="checkbox"/>	Full details of the development have been provided in the planning application documentation. See also Table 1.
The characteristics of the existing, proposed, or other approved projects which may cause interactive or cumulative impacts with the project being assessed and which may affect the Natura 2000 sites.	<input checked="" type="checkbox"/>	<p><b>Existing and proposed discharges along the Blackwater River / Estuary in the vicinity of the site.</b></p> <p>In the South Western River Basin Management Plan 2009-2015 the Blackwater River and Estuary is considered to be eutrophic and only of 'moderate' status. The Blackwater is a very large river which runs through a significant area of farmland, and the primarily cause of eutrophication is from diffuse agricultural sources.</p> <p>The existing Youghal Waste Water Treatment Plant currently discharges into the Estuary, and is listed as a significant point-source of pollution in the South Western River Basin Management Plan 2009-2015. The RBMP notes that according to the Environmental Protection Agency 2009 report on urban waste water discharges, Youghal was among the 28 agglomerations nationally requiring secondary treatment that did not have the required level of treatment in place and were non-compliant with the requirements of the Urban Waste Water Treatment Regulations.</p>

**Table 5 Information Checklist for the Appropriate Assessment**

		<p>A new Waste Water Treatment Plant is currently open to tender, and when complete it is expected to improve the quality of the wastewater discharged into the estuary. At the time of writing, the WWTP is currently in the early stage of tendering, and construction may commence in 2011 subject to funding being available. The new Waste Water Treatment Plant is likely to reduce the nutrient load of the point-source discharge in the estuary.</p> <p>A council landfill site is located adjacent to the proposed development site. No information on the discharge or treatment of leachate was available.</p> <p>The on-line Planning Enquiry Service of Cork County Council was inspected to determine whether any applications for planning permission had been submitted in the surrounding area. A number of applications have been approved for the area to the north and northwest of the ERAS-ECO site, mostly for warehouses and/or commercial buildings.</p> <p>Cumulative impacts of pollutants, nutrients or sediment from existing and proposed developments along the Blackwater River and Estuary are likely to cause impacts on water quality, which may affect protected habitats or species.</p>
The relationship between the project and the Natura 2000 sites	<input checked="" type="checkbox"/>	See Table 2 & 4.
The information requirements of the authorisation body.	<input checked="" type="checkbox"/>	<p>The District Conservation Officer of the National Parks and Wildlife Service was consulted formally via a letter from the Development Applications Unit and informally by telephone.</p> <p>A response was received from the Development Applications Unit, noting that the proposed development site was located adjacent to a cSAC and SPA, and that the EIA should consider impacts upon these designated sites.</p>
<b>Information about the Site</b>		
The reasons for the designation of the Natura 2000 site.	<input checked="" type="checkbox"/>	See Table 3 & Appendix 1



**Table 5 Information Checklist for the Appropriate Assessment**

<p>The conservation objectives of the Natura 2000 sites and the factors that contribute to their conservation value.</p>	<p>☑</p>	<p>See Table 3 &amp; Appendix 1 for conservation objectives. The factors that contribute to their value are detailed in Appendix 2.</p>
<p>The conservation status of the habitats (favourable or otherwise)</p>	<p>☑</p>	<p><b>SAC</b></p> <p>The status of the relevant Annex I habitats and Annex II species has been quoted from a report on <i>The Status of EU Protected Habitats and Species in Ireland</i> (NPWS 2008). This document was submitted to the European Commission as part of Ireland's duty to monitor the status of Annex I and Annex II species on a national basis (this also includes areas outside SACs). The report provides a summary of the threats to each habitat and gives an assessment on the conservation status according to a four categories. Based on these scores, each habitat or species is given a conservation status of Good (Favourable Status) or Poor / Bad (Unfavourable status). Discussion of the conservation status of each habitat has been included in Appendix 2 to this report. For ease of presentation a brief summary is presented here. Woodland habitats are excluded at this stage, as they are generally likely only to be found in terrestrial areas, and alluvial woodlands are unlikely to be in estuarine (brackish) parts of the river. All other habitats and species are included.</p> <p>Of the seven relevant Annex I habitats, one is considered to be of 'bad' conservation status, and four are considered to be of 'poor' status. Of ten Annex II species, three are of 'bad' status, three of 'poor' status, three of 'good' status, and one 'unknown'.</p> <p><u>Habitats Directive Annex I species</u></p> <ul style="list-style-type: none"> <li>• Estuaries - Poor</li> <li>• Mudflats and sandflats - Poor</li> <li>• <i>Salicornia</i> and other annuals colonizing mud and sand - Poor</li> <li>• Atlantic salt meadows - Poor</li> <li>• Mediterranean salt meadows - Poor</li> <li>• Perennial vegetation of stony banks - Poor</li> <li>• Water courses of plain to montane levels - Bad</li> </ul>

**Table 5 Information Checklist for the Appropriate Assessment**

		<p><u>Habitats Directive Annex II species</u></p> <ul style="list-style-type: none"> <li>• Sea Lamprey <i>Petromyzon marinus</i> - Poor</li> <li>• Brook Lamprey <i>Lampetra planeri</i> - Good</li> <li>• River Lamprey <i>Lampetra fluviatilis</i> - Good</li> <li>• Twaite Shad <i>Alosa fallax</i> - Bad</li> <li>• Atlantic Salmon <i>Salmo salar</i> - Bad</li> <li>• Allis Shad <i>Alosa alosa</i> - Unknown</li> <li>• European Otter <i>Lutra lutra</i> - Poor</li> <li>• Freshwater Pearl-mussel <i>Margaritifera margaritifera</i> - Bad</li> <li>• White-clawed Crayfish <i>Austropotamobius pallipes</i> - Poor</li> <li>• Killarney Fern <i>Trichomanes speciosum</i> - Good</li> </ul> <p><b>SPA</b></p> <p>The current conservation status of birds on an all-Ireland basis is provided in the list of <i>Birds of Conservation Concern in Ireland</i> (BOCCI; Lynas <i>et al.</i>, 2007). Red-list status indicates that a species has declined dramatically in population or range in recent years, has suffered large and widespread declines in breeding populations since 1800, or are of global conservation concern. Amber-list status indicates that a species has declined moderately in range or population in recent years, is a rare-breeder, has localised or internationally important breeding or wintering populations, or is of unfavourable conservation status in Europe</p> <p><u>Special Conservation Interests of the SPA</u></p> <ul style="list-style-type: none"> <li>• Black-tailed Godwit - Amber</li> <li>• Curlew - Red</li> <li>• Wigeon - Amber</li> <li>• Golden Plover - Red</li> <li>• Lapwing - Red</li> <li>• Dunlin - Amber</li> <li>• Bar-tailed Godwit - Amber</li> <li>• Redshank - Red</li> </ul>
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**Table 5 Information Checklist for the Appropriate Assessment**

		All of these species are of conservation concern in the Republic of Ireland, with four on the Red-list and four on the Amber-list.
The existing baseline condition of the Natura 2000 sites	<input checked="" type="checkbox"/>	The NPWS Natura Site synopses are included in Appendix 1.
The key attributes of any Annex I habitats or Annex II species in the Natura 2000 sites	<input checked="" type="checkbox"/>	<p><u>SAC</u></p> <p>All of the text for the SAC habitats and species has been quoted from a report on <i>The Status of EU Protected</i> and is appended as Appendix 2.</p> <p><u>SPA</u></p> <p>This site is major ornithological importance for wintering waterfowl, with 7 species occurring regularly in numbers of national importance and 2-3 species occurring within the site in numbers of international importance.</p> <p>All of these species are waterfowl which feed in the intertidal estuarine mudflat and saltmarsh habitats, use some other habitats nearby for roosting at high-tide. The importance of these habitats to the birds is as a wintering feeding resource, and not as a breeding habitat. However small numbers of some conservation objective SPA species are likely to breed within the SPA (e.g. Redshank).</p>

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### 3.2 Step Two: Impact Prediction

An analysis of impact assessment typically requires the identification of the type and magnitude of potential impacts; direct and indirect; short and long term; construction, operational and decommissioning effects; and isolated, interactive and cumulative effects. In this instance the assessment requires the identification of the construction and operation related impacts on the cSAC and SPA. These are described below in Table 6.

Note that the table describes impacts in the absence of mitigation. Table 7 describes the mitigation measures that avoid, reduce / minimise or remediate the significance of the potential impact.

All potential impacts would relate to discharges into Blackwater Estuary, and impacts to relevant habitats and fauna.

Based on the EC Article 6 Guidance Document (2001) and IEEM guidelines *Guidelines for Ecological Impact Assessment* (IEEM, 2006).) impacts are listed as significant using a combination of professional judgement and criteria or standards where available. If impacts have the potential to have a significant impact on the ecological integrity on the habitats and species for which the site is designated. As the Natura 2000 sites are of International importance, any significant adverse impacts would be significant at an 'International' level. However, where impacts are expected not to have a significant impact on the integrity of these habitats at an International level but are likely to have National or Local level impacts, this has been stated.

Duration is quantified as follows (EPA, 2002):

- Temporary: up to 1 year,
- Short-term: from 1-7 years,
- Medium-term: 7-15 years,
- Long-term: 15-60 years,
- Permanent: over 60 years

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**Table 6 Impact Prediction**

	Construction Phase		Operation Phase	
Parameter	Direct (isolated, interactive, cumulative, short-term, long-term)	Indirect (isolated, interactive, cumulative, short-term, long-term)	Direct (isolated, interactive, cumulative, short-term, long-term)	Indirect (isolated, interactive, cumulative, short-term, long-term)
Run-off of pollutants or sediment discharge into the cSAC/SPA and Abnormal activities (e.g. spillages during construction works, deliveries to site)	There is no overlap between the proposed development site and the cSAC, therefore no direct impacts could occur.	<p>The following text is included in Section 7.8.1 of Chapter 7: Water</p> <p><i>The existing site is completely overlain in hardstanding comprised of reinforced concrete. All construction work will take place on the existing hardstanding areas and there will be no exposure of the underlying soil. The site is completely kerbed and there will be no fugitive runoff from the site.</i></p> <p><i>All runoff from the site is currently directed to the stormwater attenuation tank and hydrocarbon interceptor prior to discharge from the site.</i></p> <p>If any large spillages of fuel or other pollutants occurred on-site it is possible that they may be washed into the surfacewater drainage system and discharged into the</p>	There is no overlap between the proposed development site and the cSAC or SPA, therefore no direct impacts could occur.	As described for the construction phase. Potential spillages could include fuel, chemicals, lime, hazardous waste and non-hazardous waste.

**Table 6 Impact Prediction**

	Construction Phase		Operation Phase	
Parameter	Direct (isolated, interactive, cumulative, short-term, long-term)	Indirect (isolated, interactive, cumulative, short-term, long-term)	Direct (isolated, interactive, cumulative, short-term, long-term)	Indirect (isolated, interactive, cumulative, short-term, long-term)
		Blackwater Estuary, or that they may seep into groundwater and reach the estuary. Depending on the scale of any potential pollution event, it is possible that it could lead to significant negative affects on aquatic fauna in the cSAC or birds in the SPA.		
Discharge of treated wastewater into the Blackwater Estuary	Not Applicable	Not Applicable	There is no overlap between the proposed development site and the cSAC, therefore no direct impacts could occur.	<p>Non-hazardous sludge will be treated and dried on-site, producing large volumes of waste water. This will be treated on-site in the existing waste water treatment plant and discharged directly into the cSAC / SPA.</p> <p>The following text is included in Section 7.8.2 of Chapter 7: Water</p> <p><i>It is proposed that there will be no amendments to the current emission limits as set by the Waste Licence. Based on specifications from the</i></p>

**Table 6 Impact Prediction**

	Construction Phase		Operation Phase	
Parameter	Direct (isolated, interactive, cumulative, short-term, long-term)	Indirect (isolated, interactive, cumulative, short-term, long-term)	Direct (isolated, interactive, cumulative, short-term, long-term)	Indirect (isolated, interactive, cumulative, short-term, long-term)
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**Table 6 Impact Prediction**

	Construction Phase		Operation Phase	
Parameter	Direct (isolated, interactive, cumulative, short-term, long-term)	Indirect (isolated, interactive, cumulative, short-term, long-term)	Direct (isolated, interactive, cumulative, short-term, long-term)	Indirect (isolated, interactive, cumulative, short-term, long-term)
				development will be connected to the plant. However as the upgrade has not been completed, it is not possible to predict when the connection will be made, and therefore the existing treatment process is likely to continue in the short to medium-term.
Landspreading of handled/managed sludge (treatment processes currently licensed under Waste Licence No.: W0211-01)	Not Applicable	Not Applicable	There is no overlap between the proposed development site and the cSAC, therefore no direct impacts could occur.	The procedure for landspreading of sludge has been developed by Ormonde Organics, and will be subject to nutrient management plans for relevant farms (based on nitrate content) and protective buffer zones around watercourses.  Further information can be found in <i>Landspreading Handled/Managed Sludge on Agricultural Landbanks</i> (Ormonde Organics 2010, unpublished). Handled/managed sludge may



**Table 6 Impact Prediction**

	Construction Phase		Operation Phase	
Parameter	Direct (isolated, interactive, cumulative, short-term, long-term)	Indirect (isolated, interactive, cumulative, short-term, long-term)	Direct (isolated, interactive, cumulative, short-term, long-term)	Indirect (isolated, interactive, cumulative, short-term, long-term)
				be spread near the banks of the Estuary, however as the material will effectively replace the use of other organic / inorganic fertilisers, it is expected that this process will not result in any additional impacts upon the Estuary
Traffic and Machinery Noise and Vibration impacts to waterfowl.	There is no overlap between the proposed development site and the cSAC, therefore no direct impacts could occur.	The following text is included in section 5.1 of Chapter 5: Proposed Development. <i>The proposed changes will involve changes to the site layout which will include the construction of AD digester tanks and the installation of an odour abatement system. The Aquacritox system will be housed inside the Sludge Drying building and will not require any alterations to the building, but above ground solvent waste storage and liquid oxygen storage tanks will be installed, along with a road</i>	There is no overlap between the proposed development site and the cSAC, therefore no direct impacts could occur.	Operational noise impacts are included in Chapter 11: Noise <i>The proposed changes will result in an increase in traffic from current levels. However as the facility is already authorised to accept 110,000 tonnes per annum, and this will not increase, tonnage is sought, the predicted traffic noise will not be greater than forecast in the previous EIS.</i>  However in the absence of mitigation it is possible that operational noise may result in some disturbance of winter waterfowl in the Foxhole region

**Table 6 Impact Prediction**

	Construction Phase		Operation Phase	
Parameter	Direct (isolated, interactive, cumulative, short-term, long-term)	Indirect (isolated, interactive, cumulative, short-term, long-term)	Direct (isolated, interactive, cumulative, short-term, long-term)	Indirect (isolated, interactive, cumulative, short-term, long-term)
		<p>tanker parking area. It is not proposed to alter the existing buildings or drainage arrangements.</p> <p>In the absence of mitigation it is possible that construction noise may result in some disturbance of winter waterfowl in the Foxhole region of the SPA. This may lead to short-term significant negative impacts at a Local level.</p>		of the SPA. This may lead to long-term significant negative impacts at a Local level.
Landscaping Impacts	There is no overlap between the proposed development site and the cSAC, therefore no direct impacts could occur.	<p>No landscaping planting is proposed directly as part of this application; however some additional screening may be required as noise-prevention mitigation.</p> <p>This will only include native Irish plants, and therefore there is no risk that invasive non-native species could be introduced to the cSAC/SPA.</p>	There is no overlap between the proposed development site and the cSAC, therefore no direct impacts could occur.	Landscape management of the site will not result in any additional disturbance to the site

### 3.3 Step Three: Conservation Objectives

Upon establishing the impacts that the proposed development will present, it is necessary to assess whether or not these impacts will adversely affect the integrity of the site as defined by the conservation objectives. Table 7 provides a summary of the effects of the predicted impacts of the project upon the conservation management objectives for the cSAC and impacts on the birds using the SPA. This table describes impacts in the absence of mitigation.

Table 8 describes the mitigation measures that avoid, reduce / minimise or remediate the significance of the potential impact.

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Table 7 Integrity of Site Checklist

Conservation Objectives		
<i>Does the project have the potential to:</i>	Yes or No	Details
cause delays in progress towards achieving the conservation objectives of the site?	Yes	In the absence of mitigation, accidental spillages of oils or other pollutants during construction could be carried into the cSAC / SPA and damage habitats, and could cause mortality of mammals and birds. The duration and extent of the impact is hard to predict as it is influenced by many abiotic factors such as dilution, particle size, turbulence and tidal currents.  The precautionary approach has been adopted and therefore it has been assumed that the estuary, mudflat and saltmarsh habitats could be affected in addition to species such as Otter, Atlantic Salmon, Lamprey species and all bird species could be affected.
interrupt progress towards achieving the conservation objectives of the site?	Yes	See above.
disrupt those factors that help to maintain the favourable conditions of the site?	Yes	See above.
interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the site?	Yes	See above.
cause changes to the vital defining aspects (e.g. nutrient balance) that determine how the site functions as a habitat or ecosystem?	Yes	See above.

Table 7 Integrity of Site Checklist

Conservation Objectives		
<i>Does the project have the potential to:</i>	Yes or No	Details
change the dynamics of the relationships (between, for example, soil and water or plants and animals) that define the structure and/or function of the site?	Yes	See above.
reduce the area of key habitats?	Yes	See above.
reduce the population of key species?	Yes	See above.
change the balance between key species?	Yes	See above.
reduce diversity of the site?	Yes	See above.
result in disturbance that could affect population size or density or the balance between key species?	Yes	See above.
result in fragmentation?	Yes	See above.
result in loss or reduction of key features (e.g. tree cover, tidal exposure, annual flooding, etc.)?	Yes	See above.

### 3.4 Step Four: Mitigation Measures

Upon establishing the impact that the proposed development will have upon the conservation objectives for the cSAC, wherever a potential impact is identified mitigation measures need to be proposed to counteract this impact.

Detailed mitigation measures have been proposed within the design of the development. These are summarised below in Table 8.

Many operational mitigation measures have been integrated into the design of the proposed development and as such are design rather than mitigation measures. For example the use of attenuation tanks, petrol and silt interceptors or the clear span construction of the bridge. Only those mitigation measures which are not already integrated into the design are discussed below.

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Table 8 Mitigation Measures

Proposed Mitigation Measures	How will the mitigation measures avoid and / or reduce adverse effects on the integrity of the cSAC?	How will the mitigation measures be implemented, when and by whom?	What is the degree of confidence in the likely success of the mitigation measures?	What proposed monitoring of the mitigation measures?
<b>Protection of waterbodies from pollutants during construction</b>				
<p>Contractors will have regard to the following best practice guidelines to ensure that waterbodies are adequately protected from construction work:</p> <ul style="list-style-type: none"> <li>• <i>Construction Industry Research and Information Association CIRIA C649: Control of water pollution from linear construction projects: Technical guidance</i> (Murnane et al. 2006)</li> <li>• <i>CIRIA C649: Control of water pollution from linear construction projects: Site guide</i> (Murnane et al. 2006)</li> <li>• <i>DMRB HD33/06: Surface and sub-surface drainage systems for highways. Design Manual for Roads and Bridges. Volume 4: 2, (2006).</i></li> </ul> <p>The following text is included in Section 7.8.1 of Chapter 7: Water. This refers to design and mitigation measures that will be incorporated during the construction process.</p> <p><i>The existing site is completely overlain in hardstanding comprised of reinforced</i></p>	<p>Minimise potential for adverse effects on cSAC and SPA habitats and species as a result of pollution during construction works.</p> <p>Key receptors are the estuary, mudflat, saltmarsh, Otter, Salmon, etc (SAC), and wintering waterfowl (SPA).</p>	<p>Required as part of contractor's responsibilities.</p>	<p>With correct implementation of the measures a confidence level of 95% is assigned.</p>	<p>None recommended. The regulatory bodies may require specific monitoring measures.</p>

Table 8 Mitigation Measures

Proposed Mitigation Measures	How will the mitigation measures avoid and / or reduce adverse effects on the integrity of the cSAC?	How will the mitigation measures be implemented, when and by whom?	What is the degree of confidence in the likely success of the mitigation measures?	What proposed monitoring of the mitigation measures?
<p><i>concrete. All construction work will take place on the existing hardstanding areas and there will be no exposure of the underlying soil. The site is completely kerbed and there will be no fugitive runoff from the site.</i></p> <p><i>All runoff from the site is currently directed to the stormwater attenuation tank and hydrocarbon interceptor prior to discharge from the site. During the construction phase additional inspections will be put in place to ensure the quality of the stormwater discharge is maintained as per the discharge limits. Visual inspections and measurements of unstable parameters such as pH and electrical conductivity will be undertaken regularly during wet periods.</i></p> <p><i>Any fuels or chemicals that are required during the construction phase will be placed over plastic spill trays, therefore preventing leakages into the stormwater system.</i></p>				

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Table 8 Mitigation Measures

Proposed Mitigation Measures	How will the mitigation measures avoid and / or reduce adverse effects on the integrity of the cSAC?	How will the mitigation measures be implemented, when and by whom?	What is the degree of confidence in the likely success of the mitigation measures?	What proposed monitoring of the mitigation measures?
<b>Protection of waterbodies (from pollutant spills or runoff) during operation</b>				
<p>Table 7.8.2 of Chapter 7: Water includes a number of design and mitigation measures that will prevent pollutants from reaching groundwater or the surfacewater drainage system during operation, including:</p> <ul style="list-style-type: none"> <li>• Reinforcement of the concreted area of the site to contain spillages within the bunded area</li> <li>• Construction of a 2m high concrete wall around the waste acceptance area. Access to the bunded area will be guarded by a 450mm concrete ramp which will also prevent runoff leaving the bunded area.</li> <li>• Use of steel piping between the collection chamber and discharge manhole to prevent corrosion</li> </ul> <p>Monitoring and maintenance measures:</p> <ul style="list-style-type: none"> <li>• Twice yearly inspections will be carried out by suitably qualified engineers to ensure the bunded area remains fit for purpose.</li> </ul>	<p>Avoid potential impacts to aquatic fauna within the cSAC or winter waterfowl within the SPA.</p>	<p>Required as part of ERAS-ECO's responsibilities.</p>	<p>With correct implementation of the measures a confidence level of 95% is assigned.</p>	<p>None recommended. The regulatory bodies may require specific monitoring measures.</p>

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Table 8 Mitigation Measures

Proposed Mitigation Measures	How will the mitigation measures avoid and / or reduce adverse effects on the integrity of the cSAC?	How will the mitigation measures be implemented, when and by whom?	What is the degree of confidence in the likely success of the mitigation measures?	What proposed monitoring of the mitigation measures?
<ul style="list-style-type: none"> <li>Maintenance of the TOC and butterfly valve should conform to their respective manufacturers' specifications.</li> <li>Regular monitoring of groundwater quality up-gradient and down-gradient of the hazardous waste operation</li> </ul>				
<b>Protection of waterbodies (from waste water discharge) during operation</b>				
<p>The existing on-site waste water treatment plant will continue to operate as part of the proposed development.</p> <p>The development is subject to a waste licence from the Environmental Protection Agency, which prescribes maximum permitted concentrations for various parameters. The parameters of the discharge will continue to be monitored by ERAS-ECO, in order to ensure compliance with EPA limits and to ensure that the discharge does not have impacts upon fauna in the designated sites.</p> <p>If the discharge is found to cause impacts upon the designated sites, ERAS-ECO will</p>	<p>Will allow monitoring of the quality of waste water discharge into the estuary. This may be used to avoid potential impacts to aquatic fauna within the cSAC or winter waterfowl within the SPA.</p>	<p>Required as part of ERAS-ECO's responsibilities.</p>	<p>With correct implementation of the measures a confidence level of 95% is assigned.</p>	<p>ERAS-ECO are required to monitor their discharge under the terms of their waste licence.</p>

Table 8 Mitigation Measures

Proposed Mitigation Measures	How will the mitigation measures avoid and / or reduce adverse effects on the integrity of the cSAC?	How will the mitigation measures be implemented, when and by whom?	What is the degree of confidence in the likely success of the mitigation measures?	What proposed monitoring of the mitigation measures?
be able to increase the quality of waste water treatment.				
<b>Measures to reduce faunal disturbance from noise during construction and operation.</b>				
The <i>Impact and Mitigation Measures</i> section of Chapter 11: Noise includes seven mitigation measures to reduce noise caused during operation, primarily from machinery movements.	Avoid potential impacts to aquatic fauna within the cSAC or winter waterfowl within the SPA.	Required as part of contractor's and ERAS-ECO's responsibilities.	With correct implementation of the measures a confidence level of 95% is assigned.	None recommended. The regulatory bodies may require specific monitoring measures.

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### 3.5 Residual Impact

Table 9 lists the impacts to the integrity of the cSAC and SPA in relation to residual impacts, after correct implementation of mitigation measures.

**As there are no likely significant residual negative impacts, it is concluded that the proposed development will not have a significant negative effect on the integrity of the cSAC/ SPA.**

**Table 9 Integrity of Site in Relation to Residual Impacts**

Conservation Objectives		
<i>Does the project have the potential to:</i>	Yes or No	Details
cause delays in progress towards achieving the conservation objectives of the site?	No	No significant residual negative impacts
interrupt progress towards achieving the conservation objectives of the site?	No	No significant residual negative impacts
disrupt those factors that help to maintain the favourable conditions of the site?	No	No significant residual negative impacts
interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the site?	No	No significant residual negative impacts
cause changes to the vital defining aspects (e.g. nutrient balance) that determine how the site functions as a habitat or ecosystem?	No	No significant residual negative impacts
change the dynamics of the relationships (between, for example, soil and water or plants and animals) that define the structure and/or function of the site?	No	No significant residual negative impacts
interfere with predicted or expected natural changes to the site (such as water dynamics or chemical composition)?	No	No significant residual negative impacts
reduce the area of key habitats?	No	No significant residual negative impacts
reduce the population of key species?	No	No significant residual negative impacts
change the balance between key species?	No	No significant residual negative impacts

**Table 9 Integrity of Site in Relation to Residual Impacts**

<b>Conservation Objectives</b>		
<b><i>Does the project have the potential to:</i></b>	<b>Yes or No</b>	<b>Details</b>
reduce diversity of the site?	No	No significant residual negative impacts
result in disturbance that could affect population size or density or the balance between key species?	No	No significant residual negative impacts
result in fragmentation?	No	No significant residual negative impacts
result in loss or reduction of key features (e.g. tree cover, tidal exposure, annual flooding, etc.)?	No	No significant residual negative impacts

**4. Conclusions of Assessment Process**

Due to the proximity of the proposed development site to the Blackwater River cSAC and the Blackwater Estuary SPA and the discharge of treated wastewater into the cSAC/SPA it was not possible to rule out likely significant effects upon the Natura sites at the screening stage. Therefore a Natura Impact Statement was prepared. During this process construction stage pollution prevention mitigation measures were agreed with the applicant and will be binding on the contractor during the construction phase. Operational mitigation measures for pollution prevention and noise reduction which will be undertaken by ERAS-ECO Ltd.

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## APPENDICES:

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**APPENDIX 1  
NATURA SITE SYNOPSES AND  
DRAFT CONSERVATION OBJECTIVES**

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# 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.

**Objective 1:** To maintain the Annex I habitats for which the cSAC has been selected at favourable conservation status: Estuaries; Mudflats and sandflats not covered by seawater at low tide; Perennial vegetation of stony banks; *Salicornia* and other annuals colonising mud and sand; Atlantic salt meadows (*Glauco-Puccinellietalia maritima*); Mediterranean salt meadows (*Juncetalia maritimi*); Water courses of plain to montane levels with the *Ranunculion fluitantis* and *Callitriche-Batrachion* vegetation; Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno-Padion*, *Alion incanae*, *Salicion albae*); Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles; *Taxus baccata* woods of the British Isles.

**Objective 2:** To maintain the Annex II species for which the cSAC has been selected at favourable conservation status: *Trichomanes speciosum*; *Margaritifera margaritifera*; *Austropotamobius pallipes*; *Petromyzon marinus*; *Lampetra planeri*; *Lampetra fluviatilis*; *Alosa fallax*; *Salmo salar*; *Lutra lutra*.

**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 and relevant authorities.

## SITE SYNOPSIS

**SITE NAME: BLACKWATER RIVER (CORK/WATERFORD)**

**SITE CODE: 002170**

The River Blackwater is one of the largest rivers in Ireland, draining a major part of Co. Cork and five ranges of mountains. In times of heavy rainfall the levels can fluctuate widely by more than 12 feet on the gauge at Careysville. The peaty nature of the terrain in the upper reaches and of some of the tributaries gives the water a pronounced dark colour. The site consists of the freshwater stretches of the River Blackwater as far upstream as Ballydesmond, the tidal stretches as far as Youghal Harbour and many tributaries, the larger of which includes the Licky, Bride, Flesk, Chimneyfield, Finisk, Araglin, Awbeg (Buttevant), Clyda, Glen, Allow, Dalua, Brogeen, Rathcool, Finnow, Owentaraglin and Awnaskirtaun. The extent of the Blackwater and its tributaries in this site, flows through the counties of Kerry, Cork, Limerick, Tipperary and Waterford. Towns along, but not in the site, include Rathmore, Millstreet, Kanturk, Banteer, Mallow, Buttevant, Doneraile, Castletownroche, Fermoy, Ballyduff, Rathcormac, Tallow, Lismore, Cappoquin and Youghal.

The Blackwater rises in boggy land of east Kerry, where Namurian grits and shales build the low heather-covered plateaux. Near Kanturk the plateaux enclose a basin of productive Coal Measures. On leaving the Namurian rocks the Blackwater turns eastwards along the northern slopes of the Boggeraghs before entering the narrow limestone strike vale at Mallow. The valley deepens as first the Nagles Mountains and then the Knockmealdowns impinge upon it. Interesting geological features along this stretch of the Blackwater Valley include limestone cliffs and caves near the villages and small towns of Killavullen and Ballyhooly; the Killavullen caves contain fossil material from the end of the glacial period. The associated basic soils in this area support the growth of plant communities which are rare in Cork because in general the county's rocks are acidic. At Cappoquin the river suddenly turns south and cuts through high ridges of Old Red Sandstone. The Araglin valley is predominantly underlain by sandstone, with limestone occurring in the lower reaches near Fermoy.

The site is a candidate SAC selected for alluvial wet woodlands and Yew wood, both priority habitats listed on Annex I of the E.U. Habitats Directive. The site is also selected as a candidate SAC for floating river vegetation, estuaries, tidal mudflats, *Salicornia* mudflats, Atlantic salt meadows, Mediterranean salt meadows, perennial vegetation of stony banks and old Oak woodlands, all habitats listed on Annex I of the E.U. Habitats Directive. The site is also selected for the following species listed on Annex II of the same directive - Sea Lamprey, River Lamprey, Brook Lamprey, Freshwater Pearl Mussel, Crayfish, Twaite Shad, Atlantic Salmon, Otter and the plant, Killarney Fern.

Wet woodlands are found where river embankments, particularly on the River Bride, have broken down and where the channel edges in the steep-sided valley between Cappoquin and Youghal are subject to daily inundation. The river side of the embankments was often used for willow growing in the past (most recently at Cappoquin) so that the channel is lined by narrow woods of White and Almond-leaved Willow (*Salix alba* and *S. triandra*) with isolated Crack Willow (*S. fragilis*) and Osier (*S. viminalis*). Grey Willow (*S. cinerea*) spreads naturally into the sites and occasionally, as at Villierstown on the Blackwater and Sapperton on the Bride, forms woods with a distinctive mix of woodland and marsh plants, including Gypsywort (*Lycopus europaeus*), Guelder Rose (*Viburnum opulus*), Bittersweet (*Solanum dulcamara*) and various mosses and algae. These wet woodlands form one of the most extensive tracts of the wet woodland habitat in the country.

A small stand of Yew (*Taxus baccata*) woodland, a rare habitat in Ireland and the EU, occurs within the site. This is on a limestone ridge at Dromana, near Villierstown. While there are some patches of the wood with a canopy of Yew and some very old trees, the quality is generally poor due to the dominance of non-native and invasive species such as Sycamore, Beech and Douglas Fir (*Pseudotsuga menziesii*). However, the future prospect for this Yew wood is good as the site is proposed for restoration under a Coillte EU Life Programme. Owing to its rarity, Yew woodland is listed with priority status on Annex I of the EU Habitats Directive.

Marshes and reedbeds cover most of the flat areas beside the rivers and often occur in mosaic with the wet woodland. Common Reed (*Phragmites australis*) is ubiquitous and is harvested for thatching. There is also much Marsh Marigold (*Caltha palustris*) and, at the edges of the reeds, the Greater and Lesser Pond-sedge (*Carex riparia* and *C. acutiformis*). Hemlock Water-dropwort (*Oenanthe crocata*), Wild Angelica (*Angelica sylvestris*), Reed Canary-grass (*Phalaris arundinacea*), Meadowsweet (*Filipendula ulmaria*), Nettle (*Urtica dioica*), Purple Loosestrife (*Lythrum salicaria*), Marsh Valerian (*Valeriana officinalis*), Water Mint (*Mentha aquatica*) and Water Forget-me-not (*Myosotis scorpioides*).

At Banteer there are a number of hollows in the sediments of the floodplain where subsidence and subterranean drainage have created isolated wetlands, sunk below the level of the surrounding fields. The water rises and falls in these holes depending on the watertable and several different communities have developed on the acidic or neutral sediments. Many of the ponds are ringed about with Grey Willows, rooted in the mineral soils but sometimes collapsed into the water. Beneath the densest stands are woodland herbs like Yellow Pimpernel (*Lysimachia nemorum*) with locally abundant Starwort (*Callitriche stagnalis*) and Marsh Ragwort (*Senecio palustris*). One of the depressions has Silver Birch (*Betula pendula*), Ash (*Fraxinus excelsior*), Crab Apple (*Malus sylvestris*) and a little Oak (*Quercus robur*) in addition to the willows.

Floating river vegetation is found along much of the freshwater stretches within the site. The species list is quite extensive and includes Pond Water-crowfoot (*Ranunculus peltatus*), Water-crowfoot (*Ranunculus* spp.), Canadian Pondweed (*Elodea canadensis*), Broad-leaved Pondweed (*Potamogeton natans*), Pondweed (*Potamogeton* spp.), Water Milfoil (*Myriophyllum* spp.), Common Club-rush (*Scirpus*

*lacustris*), Water-starwort (*Callitriche* spp.), Lesser Water-parsnip (*Berula erecta*) particularly on the Awbeg, Water-cress (*Nasturtium officinale*), Hemlock Water-dropwort, Fine-leaved Water-dropwort (*O. aquatica*), Common Duckweed (*Lemna minor*), Yellow Water-lily (*Nuphar lutea*), Unbranched Bur-reed (*Sparganium emersum*) and the moss *Fontinalis antipyretica*.

The grassland adjacent to the rivers of the site is generally heavily improved, although liable to flooding in many places. However, fields of more species-rich wet grassland with species such as Yellow-flag (*Iris pseudacorus*), Meadow-sweet, Meadow Buttercup (*Ranunculus acris*) and rushes (*Juncus* spp.) occur occasionally. Extensive fields of wet grassland also occur at Annagh Bog on the Awbeg. These fields are dominated by Tufted Hair-grass (*Deschampsia cespitosa*) and rushes.

The Blackwater Valley has a number of dry woodlands; these have mostly been managed by the estates in which they occur, frequently with the introduction of Beech (*Fagus sylvatica*) and a few conifers, and sometimes of Rhododendron (*Rhododendron ponticum*) and Laurel. Oak woodland is well developed on sandstone about Ballinatrav, with the acid Oak woodland community of Holly (*Ilex aquifolium*), Bilberry (*Vaccinium myrtillus*), Greater Woodrush (*Luzula sylvatica*) and Buckler Ferns (*Dryopteris affinis*, *D. aemula*) occurring in one place. Irish Spurge (*Euphorbia hyberna*) continues eastwards on acid rocks from its headquarters to the west but there are many plants of richer soils, for example Wood Violet (*Viola reichenbachiana*), Goldilocks (*Ranunculus auricomus*), Broad-leaved Helleborine (*Epipactis helleborine*) and Red Campion (*Silene dioica*). Oak woodland is also found in Rincrew, Carrigane, Glendine, Newport and Dromana. The spread of Rhododendron is locally a problem, as is over-grazing. A few limestone rocks stand over the river in places showing traces of a less acidic woodland type with Ash, False Brome (*Brachypodium sylvaticum*) and Early-purple Orchid (*Orchis mascula*).

In the vicinity of Lismore, two deep valleys cut in Old Red Sandstone join to form the Owenashad River before flowing into the Blackwater at Lismore. These valleys retain something close to their original cover of Oak with Downy Birch (*Betula pubescens*), Holly and Hazel (*Corylus avellana*) also occurring. There has been much planting of Beech (as well as some of coniferous species) among the Oak on the shallower slopes and here both Rhododendron and Cherry Laurel (*Prunus laurocerasus*) have invaded the woodland.

The Oak wood community in the Lismore and Glenmore valleys is of the classical upland type, in which some Rowan (*Sorbus aucuparia*) and Downy Birch occur. Honeysuckle (*Lonicera periclymenum*) and Ivy (*Hedera helix*) cover many of the trees while Greater Woodrush, Bluebell (*Hyacinthoides non-scripta*), Wood Sorrel (*Oxalis acetosella*) and, locally, Bilberry dominate the ground flora. Ferns present on the site include Hard Fern (*Blechnum spicant*), Male Fern (*Dryopteris filix-mas*), Buckler Ferns (*D. dilatata*, *D. aemula*) and Lady Fern (*Athyrium filix-femina*). There are many mosses present and large species such as *Rhytidiadelphus* spp., *Polytrichum formosum*, *Mnium hornum* and *Dicranum* spp. are noticeable. The lichen flora is important and includes 'old forest' species which imply a continuity of woodland here since ancient times. Tree Lungwort (*Lobaria* spp.) is the most conspicuous and is widespread.

The Araglin valley consists predominantly of broadleaved woodland. Oak and Beech are joined by Hazel, Wild Cherry (*Prunus avium*) and Goat Willow (*Salix caprea*). The ground flora is relatively rich with Pignut (*Conopodium majus*), Wild Garlic (*Allium ursinum*), Garlic Mustard (*Alliaria petiolata*) and Wild Strawberry (*Fragaria vesca*). The presence of Ivy Broomrape (*Orobanche hederæ*), a local species within Ireland, suggests that the woodland, along with its attendant Ivy is long established.

Along the lower reaches of the Awbeg River, the valley sides are generally cloaked with mixed deciduous woodland of estate origin. The dominant species is Beech, although a range of other species are also present, e.g. Sycamore (*Acer pseudoplatanus*), Ash and Horse-chestnut (*Aesculus hippocastanum*). In places the alien invasive species, Cherry Laurel, dominates the understorey. Parts of the woodlands are more semi-natural in composition, being dominated by Ash with Hawthorn (*Crataegus monogyna*) and Spindle (*Euonymus europæa*) also present. However, the most natural areas of woodland appear to be the wet areas dominated by Alder and willows (*Salix* spp.). The ground flora of the dry woodland areas features species such as Pignut, Wood Avens (*Geum urbanum*), Ivy and Soft Shield-fern (*Polystichum setiferum*), while the ground flora of the wet woodland areas contains characteristic species such as Remote Sedge (*Carex remota*) and Opposite-leaved Golden-saxifrage (*Chrysosplenium oppositifolium*).

In places along the upper Bride, scrubby, semi-natural deciduous woodland of Willow, Oak and Rowan occurs with abundant Great Woodrush in the ground flora.

The Bunaglanna River passes down a very steep valley, flowing in a north-south direction to meet the Bride River. It flows through blanket bog to heath and then scattered woodland. The higher levels of moisture here enable a vigorous moss and fern community to flourish, along with a well-developed epiphyte community on the tree trunks and branches.

At Banteer a type of wetland occurs near the railway line which offers a complete contrast to the others. Old turf banks are colonised by Royal Fern (*Osmunda regalis*) and Eared Willow (*Salix aurita*) and between them there is a sheet of Bottle Sedge (*Carex rostrata*), Marsh Cinquefoil (*Potentilla palustris*), Bogbean (*Menyanthes trifoliata*), Marsh St. John's-wort (*Hypericum elodes*) and the mosses *Sphagnum auriculatum* and *Aulacomnium palustre*. The cover is a scraw with characteristic species like Marsh Willowherb (*Epilobium palustre*) and Marsh Orchid (*Dactylorhiza incarnata*).

The soil high up the Lismore valleys and in rocky places is poor in nutrients but it becomes richer where streams enter and also along the valley bottoms. In such sites Wood Speedwell (*Veronica montana*), Wood Anemone (*Anemone nemorosa*), Enchanter's Nightshade (*Circaea lutetiana*), Barren Strawberry (*Potentilla sterilis*) and Shield Fern occur. There is some Wild Garlic, Three-nerved Sandwort (*Moehringia trinervia*) and Early-purple Orchid (*Orchis mascula*) locally, with Opposite-leaved Golden-saxifrage, Meadowsweet and Bugle in wet places. A Hazel stand at the base of the Glenakeeffe valley shows this community well.

The area has been subject to much tree felling in the recent past and re-sprouting stumps have given rise to areas of bushy Hazel, Holly, Rusty Willow (*Salix cinerea* subsp. *oleifolia*) and Downy Birch. The ground in the clearings is heathy with Heather (*Calluna vulgaris*), Slender St John's-wort (*Hypericum pulchrum*) and the occasional Broom (*Cytisus scoparius*) occurring.

The estuary and the other Habitats Directive Annex I habitats within it form a large component of the site. Very extensive areas of intertidal flats, comprised of substrates ranging from fine, silty mud to coarse sand with pebbles/stones are present. The main expanses occur at the southern end of the site with the best examples at Kinsalebeg in Co. Waterford and between Youghal and the main bridge north of it across the river in Co. Cork. Other areas occur along the tributaries of the Licky in east Co. Waterford and Glendine, Newport, Bride and Killahaly Rivers in Waterford west of the Blackwater and large tracts along the Tourig River in Co. Cork. There are narrow bands of intertidal flats along the main river as far north as Camphire Island. Patches of green algae (filamentous, *Ulva* species and *Enteromorpha* sp.) occur in places, while fucoid algae are common on the more stony flats even as high upstream as Glenassy or Coneen.

The area of saltmarsh within the site is small. The best examples occur at the mouths of the tributaries and in the townlands of Foxhole and Blackbog. Those found are generally characteristic of Atlantic salt meadows. The species list at Foxhole consists of Common Saltmarsh-grass (*Puccinellia maritima*), small amounts of Greater Sea-spurrey (*Spergularia media*), Glasswort (*Salicornia* sp.), Sea Arrowgrass (*Triglochin maritima*), Annual Sea-blite (*Suaeda maritima*) and Sea Purslane (*Halimione portulacoides*) - the latter a very recent coloniser - at the edges. Some Sea Aster (*Aster tripolium*) occurs, generally with Creeping Bent (*Agrostis stolonifera*). Sea Couch-grass (*Elymus pycnanthus*) and small isolated clumps of Sea Club-rush (*Scirpus maritimus*) are also seen. On the Tourig River additional saltmarsh species found include Lavender (*Limonium* spp.), Sea Thrift (*Armeria maritima*), Red Fescue (*Festuca rubra*), Common Scurvy-grass (*Cochlearia officinalis*) and Sea Plantain (*Plantago maritima*). Oraches (*Atriplex* spp.) are found on channel edges.

The shingle spit at Ferrypoint supports a good example of perennial vegetation of stony banks. The spit is composed of small stones and cobbles and has a well developed and diverse flora. At the lowest part, Sea Beet (*Beta vulgaris*), Curled Dock (*Rumex crispus*) and Yellow-horned Poppy (*Glaucium flavum*) occur with at a slightly higher level Sea Mayweed (*Tripleurospermum maritimum*), Cleavers (*Galium aparine*), Rock Samphire (*Crithmum maritimum*), Sandwort (*Honkenya peploides*), Spear-leaved Orache (*Atriplex prostrata*) and Babington's Orache (*A. glabriuscula*). Other species present include Sea Rocket (*Cakile maritima*), Herb Robert (*Geranium robertianum*), Red Fescue (*Festuca rubra*) and Kidney Vetch (*Anthyllis vulneraria*). The top of the spit is more vegetated and includes lichens and bryophytes (including *Tortula ruraliformis* and *Rhytidiadelphus squarrosus*).

The site supports several Red Data Book plant species, i.e. Starved Wood Sedge (*Carex depauperata*), Killarney Fern (*Trichomanes speciosum*), Pennyroyal (*Mentha pulegium*), Bird's-nest Orchid (*Neottia nidus-avis*), Golden Dock (*Rumex maritimus*) and Bird Cherry (*Prunus padus*). The first three of these are also protected under the

Flora (Protection) Order 1999. The following plants, relatively rare nationally, are also found within the site: Toothwort (*Lathraea squamaria*) associated with woodlands on the Awbeg and Blackwater; Summer Snowflake (*Leucojum aestivum*) and Flowering Rush (*Butomus umbellatus*) on the Blackwater; Common Calamint (*Calamintha ascendens*), Red Campion (*Silene dioica*), Sand Leek (*Allium scorodoprasum*) and Wood Club-rush (*Scirpus sylvaticus*) on the Awbeg.

The site is also important for the presence of several Habitats Directive Annex II animal species, including Sea Lamprey (*Petromyzon marinus*), Brook Lamprey (*Lampetra planeri*), River Lamprey (*L. fluviatilis*), Twaite Shad (*Alosa fallax fallax*), Freshwater Pearl-mussel (*Margaritifera margaritifera*), Otter (*Lutra lutra*) and Salmon (*Salmo salar*). The Awbeg supports a population of White-clawed Crayfish (*Austropotamobius pallipes*). This threatened species has been recorded from a number of locations and its remains are also frequently found in Otter spraints, particularly in the lower reaches of the river. The freshwater stretches of the Blackwater and Bride Rivers are designated salmonid rivers.

The Blackwater is noted for its enormous run of salmon over the years. The river is characterised by mighty pools, lovely streams, glides and generally, a good push of water coming through except in very low water. Spring salmon fishing can be carried out as far upstream as Fermoy and is very highly regarded especially at Careysville. The Bride, main Blackwater upstream of Fermoy and some of the tributaries are more associated with grilse fishing.

The site supports many of the mammal species occurring in Ireland. Those which are listed in the Irish Red Data Book include Pine Marten, Badger and Irish Hare. The bat species Natterer's Bat, Daubenton's Bat, Whiskered Bat, Brown Long-eared Bat and Pipistrelle, are to be seen feeding along the river, roosting under the old bridges and in old buildings.

Common Frog, a Red Data Book species that is also legally protected (Wildlife Act, 1976), occurs throughout the site. The rare bush cricket, *Metrioptera roselii* (Orthoptera: Tettigoniidae), has been recorded in the reed/willow vegetation of the river embankment on the Lower Blackwater River. The Swan Mussel (*Anodonta cygnea*), a scarce species nationally, occurs at a few sites along the freshwater stretches of the Blackwater.

Several bird species listed on Annex I of the E.U. Birds Directive are found on the site. Some use it as a staging area, others are vagrants, while others use it more regularly. Internationally important numbers of Whooper Swan (average peak 174, 1994/95-95/96) and nationally important numbers Bewick's Swan (average peak 35, 1994/95-95/96) use the Blackwater Callows. Golden Plover occur in regionally important numbers on the Blackwater Estuary (average peak 885, 1984/85-86/87) and on the River Bride (absolute max. 2141, 1994/95). Staging Terns visit the site annually (Sandwich Tern (>300) and Arctic/Common Tern (>200), average peak 1974-1994). The site also supports populations of the following: Red Throated Diver, Great Northern Diver, Barnacle Goose, Ruff, Wood Sandpiper and Greenland White-fronted Goose. Three breeding territories for Peregrine Falcon are known along the Blackwater Valley. This, the Awbeg and the Bride River are also thought to support at

least 30 pairs of Kingfisher. Little Egret now breed at the site (12 pairs in 1997, 19 pairs in 1998) and this represents about 90% of the breeding population in Ireland.

The site holds important numbers of wintering waterfowl. Both the Blackwater Callows and the Blackwater Estuary Special Protection Areas (SPAs) hold internationally important numbers of Black-tailed Godwit (average peak 847, 1994/95-95/96 on the callows, average peak 845, 1974/75-93/94 in the estuary). The Blackwater Callows also hold Wigeon (average peak 2752), Teal (average peak 1316), Mallard (average peak 427), Shoveler (average peak 28), Lapwing (average peak 880), Curlew (average peak 416) and Black-headed Gull (average peak 396) (counts from 1994/95-95/96). Numbers of birds using the Blackwater Estuary, given as the mean of the highest monthly maxima over 20 years (1974-94), are Shelduck (137 +10 breeding pairs), Wigeon (780), Teal (280), Mallard (320 + 10 breeding pairs), Goldeneye (11-97), Oystercatcher (340), Ringed Plover (50 + 4 breeding pairs), Grey Plover (36), Lapwing (1680), Knot (150), Dunlin (2293), Snipe (272), Black-tailed Godwit (845), Bar-tailed Godwit (130), Curlew (920), Redshank (340), Turnstone (130), Black-headed Gull (4000) and Lesser Black-backed Gull (172). The greatest numbers (75%) of the wintering waterfowl of the estuary are located in the Kinsalebeg area on the east of the estuary in Co. Waterford. The remainder are concentrated along the Tourig Estuary on the Co. Cork side.

The river and river margins also support many Heron, non-breeding Cormorant and Mute Swan (average peak 53, 1994/95-95/96 in the Blackwater Callows). Heron occurs all along the Bride and Blackwater Rivers - 2 or 3 pairs at Dromana Rock; c. 25 pairs in the woodland opposite; 8 pairs at Ardsallagh Wood and c. 20 pairs at Rincrew Wood have been recorded. Some of these are quite large and significant heronries. Significant numbers of Cormorant are found north of the bridge at Youghal and there are some important roosts present at Ardsallagh Wood, downstream of Strancally Castle and at the mouth of the Newport River. Of note are the high numbers of wintering Pochard (e.g. 275 individuals in 1997) found at Ballyhay quarry on the Awbeg, the best site for Pochard in County Cork.

Other important species found within the site include Long-eared Owl, which occurs all along the Blackwater River, and Barn Owl, a Red Data Book species, which is found in some old buildings and in Castlehyde west of Fermoy. Reed Warbler, a scarce breeding species in Ireland, was found for the first time in the site in 1998 at two locations. It is not known whether or not this species breeds on the site, although it is known to nearby to the south of Youghal. Dipper occurs on the rivers.

Landuse at the site is mainly centred on agricultural activities. The banks of much of the site and the callows, which extend almost from Fermoy to Cappoquin, are dominated by improved grasslands which are drained and heavily fertilised. These areas are grazed and used for silage production. Slurry is spread over much of this area. Arable crops are grown. The spreading of slurry and fertiliser poses a threat to the water quality of this salmonid river and to the populations of Habitats Directive Annex II animal species within it. Many of the woodlands along the rivers belong to old estates and support many non-native species. Little active woodland management occurs. Fishing is a main tourist attraction along stretches of the Blackwater and its tributaries and there are a number of Angler Associations, some with a number of



beats. Fishing stands and styles have been erected in places. Both commercial and leisure fishing takes place on the rivers. Other recreational activities such as boating, golfing and walking are also popular. Water skiing is carried out at Villierstown. Parts of Doneraile Park and Anne's Grove are included in the site: both areas are primarily managed for amenity purposes. There is some hunting of game birds and Mink within the site. Ballyhay quarry is still actively quarried for sand and gravel. Several industrial developments, which discharge into the river, border the site.

The main threats to the site and current damaging activities include high inputs of nutrients into the river system from agricultural run-off and several sewage plants, dredging of the upper reaches of the Awbeg, overgrazing within the woodland areas, and invasion by non-native species, for example Cherry Laurel.

Overall, the River Blackwater is of considerable conservation significance for the occurrence of good examples of habitats and of populations of plant and animal species that are listed on Annexes I and II of the E.U. Habitats Directive respectively; furthermore it is of high conservation value for the populations of bird species that use it. Two Special Protection Areas, designated under the E.U. Birds Directive, are also located within the site - Blackwater Callows and Blackwater Estuary. Additionally, the importance of the site is enhanced by the presence of a suite of uncommon plant species.

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13.09.2006

## SITE SYNOPSIS

**SITE NAME: BLACKWATER ESTUARY SPA**

**SITE CODE: 004028**

The Blackwater Estuary SPA is a moderately-sized, sheltered south-facing estuary, which extends from Youghal New Bridge to the Ferry Point peninsula, close to where the river enters the sea. It comprises a section of the main channel of the River Blackwater. At low tide, intertidal flats are exposed on both sides of the channel. On the eastern side the intertidal channel is included as far as Kinsalebeg and Moord Cross Roads is included, while on the west side the site includes part of the estuary of the Tourig River as far as Rincrew Bridge.

The intertidal sediments are mostly muds or sandy muds reflecting the sheltered conditions of the estuary. Green algae (*Enteromorpha* spp. and *Ulva lactuca*) are frequent on the mudflats during summer, and Bladder Wrack (*Fucus vesiculosus*) occurs on the upper more stony shorelines. The sediments have a macrofauna typical of muddy sands, with polychaete worms such as Lugworm (*Arenicola marina*), Ragworm (*Hediste diversicolor*) and the marine bristle worm *Nephtys hombergii* being common. Bivalves are also well represented, especially Peppery Furrow-shell (*Scrobicularia plana*), but also Sand Gaper (*Mya arenaria*), Baltic Tellin (*Macoma balthica*) and Common Cockle (*Cerastoderma edule*). Among the brown seaweed on the shoreline, the Shore Crab (*Carcinus maenas*) and the Rough Periwinkle (*Littorina saxatilis*) are found. Salt marshes fringe the estuarine channels, especially in the sheltered creeks.

The Blackwater Estuary is of high ornithological importance for wintering waterfowl, providing good quality feeding areas for an excellent diversity of waterfowl species. At high tide, the birds roost along the shoreline and salt marsh fringe, especially in the Kinsalebeg area. Some birds may leave the site to roost in fields above the shoreline. The site supports an internationally important population of Black-tailed Godwit (934), and has a further eight species with nationally important populations (all figures are average peaks for the five winters 1995/96 to 1999/2000): Shelduck (151), Wigeon (1,232), Golden Plover (2,947), Lapwing (3,988), Dunlin (2,016), Curlew (1,194), Redshank (634) and Greenshank (30). A population of Bar-tailed Godwit (172) is very close to the threshold for national importance.

Other species which occur in significant numbers include Grey Heron (27), Teal (527), Mallard (148), Oystercatcher (508), Grey Plover (53), Knot (50) and Turnstone (56). The site also supports Brent Goose (19), Red-breasted Merganser (8), Shoveler (23), Ringed Plover (29) and Cormorant (60). The site is also notable for supporting large concentrations of gulls in autumn and winter, including Black-headed Gull (549), Common Gull (253), Lesser Black-backed Gull (602), Great Black-backed Gull (227) and Herring Gull (86).

Little Egret uses the site regularly during the year as there is a breeding colony upstream. The estuary provides an important feeding area for these birds (15, with a maximum of 26).

The Blackwater Estuary SPA is an internationally important wetland site on account of the population of Black-tailed Godwit it supports. It is also of high importance in a national context, with eight species having populations which exceed the thresholds for national importance. The occurrence of Little Egret, Golden Plover and Bar-tailed Godwit is of particular note as these species are listed on Annex I of the E.U. Birds Directive. The site has been well-studied, with detailed monthly counts extending back to 1974.

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## Proposed Special Conservation Interests for Blackwater Estuary SPA (4028)

### Site is selected for:

Black-tailed Godwit  
Curlew

### Additional Special Conservation Interests:

Wigeon  
Golden Plover  
Lapwing  
Dunlin  
Bar-tailed Godwit  
Redshank  
Wetland & Waterbirds

### Main conservation objective:

To maintain the special conservation interests for this SPA at favourable conservation status: Black-tailed Godwit, Curlew, Wigeon, Golden Plover, Lapwing, Dunlin, Bar-tailed Godwit, Redshank, Wetland & Waterbirds.

### 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.

**APPENDIX 2**  
**KEY ATTRIBUTES AND CURRENT CONSERVATION STATUS OF ANNEX I**  
**HABITATS / ANNEX II SPECIES IN THE RELEVANT NATURA 2000 SITES**  
**(TO BE READ WITH TABLE 5)**

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## Key Attributes and Current Conservation Status of Annex I habitats / Annex II Species in the Relevant Natura 2000 Sites

The following text is quoted from *The Status of EU Protected Habitats and Species in Ireland* (NPWS 2008) and should be read with the relevant section of Table 5. Habitats suffixed by a \* are Priority Annex I Habitats.

Woodland habitats are excluded at this stage, as they are generally likely only to be found in terrestrial areas, and alluvial woodlands are unlikely to be in estuarine (brackish) parts of the river. All other habitats and species are included.

### Estuaries (1130)

#### Key Attributes

Estuaries are downstream parts of a river valley, subject to the tide and extending from the limit of brackish waters. River estuaries are coastal inlets where, unlike 'large shallow inlets and bays' there is generally a substantial freshwater influence. The mixing of freshwater and sea water and the reduced current flows in the shelter of the estuary lead to deposition of fine sediments, often forming extensive intertidal sand and mudflats. Estuaries are located on all parts of the coastline. The largest is located in the mid-west (Shannon Estuary) and constitutes approximately 50% of the national resource.

#### The Conservation Status

Estuaries have been poorly sampled in the past and there is insufficient data to determine the present structure and function of the habitat across Ireland. While many estuaries are regarded as having favourable future prospects some larger estuaries are considered to face significant pressures. Impacts arising from aquaculture, fishing, coastal development and water pollution are considered the principal threats. Their overall conservation status is considered to be poor.

Range	Good
Area	Good
Structure and Function	Unknown
Future prospects	Poor
<b>Overall assessment of Conservation status</b>	<b>Poor</b>

### Mudflats & Sandflats not covered by seawater at low tide (1140)

#### Key Attributes

Intertidal mudflats and sandflats are submerged at high tide and exposed at low tide and are normally associated with inlets, estuaries or shallow bays. The physical structure of these intertidal flats ranges from mobile, coarse-sand beaches on wave exposed coasts to stable, fine-sediment mudflats in estuaries and other marine inlets. They support diverse communities of invertebrates such as the polychaete worms *Tubificoides* spp., *Capitella* spp., and *Malacoceros* spp.; molluscs such as *Abra alba* and mussel (*Mytilus edulis*), algae including *Ulva* spp. and *Enteromorpha* spp., and plants, principally eelgrass (*Zostera* spp.).

Mudflats are usually located in the most sheltered areas of the coast where large quantities of silt from rivers are deposited in estuaries. In sheltered areas, communities are typically dominated by polychaete worms and bivalve molluscs. Sandflats occur on open coast beaches and bays where wave action or strong tidal currents prevent the deposition of finer silt. On more exposed coasts the biodiversity may be lower and the communities dominated by crustaceans. The high biomass of invertebrates in tidal sediments often provides an important food source for waders and wildfowl.

#### The Conservation Status

Intertidal mudflats and sandflats can be part of a mosaic of habitats that occurs in estuaries and shallow inlets and bays. Expert judgement and the available biological information suggests that habitat structure and function is poor. The most serious threats arise from aquaculture, fishing, bait digging, removal of fauna, reclamation of land, coastal protection works and invasive species, particularly cord-grass (*Spartina* spp.). In addition, there is some concern at the potential impact that hard coastal defence structures may have, in combination with sea-level rise, for the long-term extent of this habitat. The overall conservation status of this habitat is assessed as poor.

Range	Good
Area	Good
Structure and Function	Poor
Future prospects	Poor
<b>Overall assessment of Conservation status</b>	<b>Poor</b>

### **Perennial Vegetation of Stony Banks (1220)**

#### **Key Attributes**

Perennial vegetation of stony banks is vegetation that is found above the high tide mark on beaches comprised of shingle (cobbles and pebbles). It is dominated by perennial species (i.e. plants that continue to grow from year to year). The habitat shows a widespread distribution along the Irish coastline with a more dispersed distribution along the coasts of County Cork and north County Mayo. County Donegal contains the highest concentration of records, followed by Galway. County Louth has the highest number of records along the east coast.

#### **The Conservation Status**

Shingle beaches are constantly changing and shingle features are rarely stable in the long term. The main impact on the habitat is the disruption of the sediment supply, owing to the interruption of coastal processes, caused by developments such as car parks and coastal defence structures such as rock armour and sea walls. The removal of gravel is still one of the most widespread and damaging activities directly affecting the habitat. Shingle vegetation is fragile and damage caused by trampling, horse riding, and vehicles can be significant. In view of the continuing pressures on this resource, the overall status of this habitat is considered to be poor.

Range	Good
Area	Poor
Structure and Function	Poor
Future prospects	Poor
<b>Overall assessment of Conservation status</b>	<b>Poor</b>

### **Salicornia and other annuals colonising mud and sand (1310)**

#### **Key Attributes**

Swards of glasswort (*Salicornia* spp.) are pioneer saltmarsh communities and may occur on muddy sediment seaward of established saltmarsh. They may also form patches isolated from other saltmarsh on mudflats within a suitable elevation range. Typical species include lax-flowered sea-lavender (*Limonium humile*), common saltmarsh-grass (*Puccinellia maritima*), greater sea-spurrey (*Spergularia media*), annual sea-blite (*Suaeda maritima*) and common cord-grass (*Spartina anglica*).

Patches of vegetation dominated by annual sea-blite are much less common or extensive. Short-lived patches of saltmarsh vegetation with sea pearlwort (*Sagina maritima*) are also much less extensive compared to swards of glasswort (*Salicornia* spp.), and are generally associated with the transition from saltmarsh to sand-dune that has been recorded in Ireland.

### The Conservation Status

The area of *Salicornia* flats may have contracted slightly in the past due to the infilling, reclamation and embankment of some former saltmarsh and intertidal areas for agricultural purposes at many sites around the country. Very few impacts or activities affect this habitat probably due to its inaccessible position in the lower zone of the saltmarsh. The main impact affecting this habitat is the spread of the invasive species common cord-grass (*Spartina anglica*). This habitat is short-lived in places, as it is so vulnerable to natural erosion and accretion cycles and storms. Overall the status of this habitat is considered to be poor.

Range	Good
Area	Poor
Structure and Function	Poor
Future prospects	Poor
<b>Overall assessment of Conservation status</b>	<b>Poor</b>

### Atlantic Salt Meadows (1330)

#### Key Attributes

Atlantic salt meadows generally occupy the widest part of the saltmarsh gradient. They also contain a distinctive topography with an intricate network of creeks and salt pans occurring on medium to large sized saltmarshes. Atlantic salt meadows contain several distinctive zones that are related to elevation and frequency of submergence. The lowest part along the tidal zone is generally dominated by the most halophytic (salt-tolerant) species including common saltmarsh-grass (*Puccinellia maritima*) and species more usually associated with *Salicornia* muds (1310). The mid-marsh zone is generally characterised by sea thrift (*Armeria maritima*), sea plantain (*Plantago maritima*) and sea aster (*Aster tripolium*), while sea purslane (*Atriplex portulacoides*) can dominate sites on the east and south coasts. This mid-zone vegetation generally grades into an herbaceous community in the upper marsh, dominated by red fescue (*Festuca rubra*), sea milkwort (*Glaux maritima*), saltmarsh rush (*Juncus gerardii*) and creeping bent (*Agrostis stolonifera*). This habitat is also important for wintering waders and wildfowl and other wildlife. Atlantic salt meadows display a wide geographical distribution in Ireland.

### The Conservation Status

The most common impacts in the current assessment period were over-grazing by sheep or cattle, and erosion. Common cordgrass (*Spartina anglica*) is also present on many Irish saltmarshes and is considered an invasive species. There have been some minor losses of habitat during the current assessment period due to infilling and reclamation. As a result of these recorded losses and the continuing pressures from grazing and *Spartina* invasion, the overall conservation status assessment for Atlantic Salt Meadow habitat is poor.

Range	Good
Area	Poor
Structure and Function	Poor
Future prospects	Poor
<b>Overall assessment of Conservation status</b>	<b>Poor</b>



### **Mediterranean Salt Meadows (1410)**

#### **Key Attributes**

Despite the name, Mediterranean salt meadows are considered to occur in Ireland. They generally occupy the upper zone of saltmarshes and usually occur adjacent to the boundary with terrestrial habitats. They are widespread on the Irish coastline, although they are not as common as Atlantic salt meadows (1330). This habitat is distinguished from Atlantic salt meadows by the presence of tall rushes such as sea rush (*Juncus maritimus*) and/or sharp rush (*J. acutus*), along with a range of species typically found in Atlantic salt meadows (1330). These include sea aster (*Aster tripolium*), sea purslane (*A. portulacoides*), sea-milkwort (*Glaux maritima*), saltmarsh rush (*Juncus gerardii*), parsley water-dropwort (*Oenanthe lachenalii*), sea plantain (*Plantago maritima*) and common saltmarsh-grass (*Puccinellia maritima*).

#### **The Conservation Status**

The most common impact recorded during the current assessment period was over-grazing by cattle or sheep. Owing to a small number of recorded losses caused by infilling and reclamation, and the on-going impacts of overgrazing, the overall conservation status for Mediterranean Salt Meadow habitat is poor.

Range	Good
Area	Good
Structure and Function	Poor
Future prospects	Poor
<b>Overall assessment of Conservation status</b>	<b>Poor</b>

### **Water Courses of plain to montane levels with the Ranunculion fluitantis and Callitricho-Batrachion vegetation (3260)**

#### **Key Attributes**

Floating river vegetation occurs in virtually every Irish river and watercourse. Typical plant species include various water-crowfoot species (*Ranunculus* spp.), water-milfoil (*Myriophyllum* spp.), water-starwort (*Callitriche* spp.), horned pondweed (*Zannichellia palustris*), pondweeds (*Potamogeton* spp.) and water moss (*Fontinalis antipyretica*).

#### **The Conservation Status**

There is little evidence of a significant decline in the primary pressures of eutrophication, overgrazing, excessive fertilisation, afforestation and the introduction of invasive alien species. Almost two thirds of the rivers assessed by the Environmental Protection Agency (EPA) are at risk of failing to meet their environmental objectives. The conservation status of this habitat is therefore considered to be bad.

Range	Good
Area	Good
Structure and Function	Bad
Future prospects	Bad
<b>Overall assessment of Conservation status</b>	<b>Bad</b>

## **Habitats Directive Annex II species**

### **Sea Lamprey *Petromyzon marinus* (1095)**

#### **Key Attributes**

Sea lampreys spend their adult life in marine and estuarine waters, living as external parasites on other fish species. They migrate up rivers to spawn in areas of clean gravels. Once they have spawned, they die. After hatching, the young larvae settle in areas of fine sediment in still water, where they burrow. They live as filter feeders and may remain in fine sediments for several years before transforming into adult fish. Sea lamprey, which can grow up to 1m in length, are widely distributed around the coast. However they tend to occur in low densities.

### The Conservation Status

On several rivers, weirs are known to block upstream migrating sea lampreys, thereby limiting the species to the lower stretches and restricting access to spawning beds. Channel maintenance, which removes the silt deposits and gravel shoals used by lampreys, is also a concern. Overall, the conservation status of the sea lamprey is considered to be poor.

Range	Poor
Area	Poor
Structure and Function	Poor
Future prospects	Poor
<b>Overall assessment of Conservation status</b>	<b>Poor</b>

### Brook Lamprey *Lampetra planeri* (1096) & River Lamprey *Lampetra fluviatilis* (1099)

#### Key Attributes

The river lamprey grows to 30cm and has a similar life history to the sea lamprey. The brook lamprey is the smallest of the three lampreys native to Ireland at 15 to 20cm. It is also the only one of the three which is non-parasitic and spends all its life in freshwater. Despite the difference in ecology, brook and river lamprey are very similar genetically and cannot be distinguished by visual means. As a result, for the purposes of this assessment, the brook and river lampreys have been treated together.

#### The Conservation Status

Records of adult lampreys are sparse, with most fieldwork aimed at juveniles. Recent field surveys point to a widespread distribution of juvenile river/brook lamprey, throughout the country. They tend to be patchily distributed within catchments, but can occur in high densities (100/m<sup>2</sup>) where habitat and flow regimes are suitable.

While recognising the difficulties distinguishing the smaller lamprey species in the field, it would appear that the brook lamprey is certainly widespread throughout the country and that the river lamprey is not as restricted by weirs as the sea lamprey. The current status and future prospects of these species appears to be good.

Range	Good
Area	Good
Structure and Function	Good
Future prospects	Good
<b>Overall assessment of Conservation status</b>	<b>Good</b>

### Allis Shad *Alosa alosa* (1102)

#### Key Attributes

Allis shad spend their adult life at sea or in the lower reaches of estuaries, ascending to freshwater to spawn in early summer. The spawning females shed their eggs into the water where they either drop into the gravelled bed or begin to drift downstream. Those eggs that fall into gravels hatch

after several days and then drift downstream. The young fish may remain in estuarine waters during their second year before finally going to sea where they mature.

### The Conservation Status

Recent records of allis shad are concentrated in the south-east with some records from the south-west and west coasts. As well as marine records, this species has also been identified from the Suir, Munster Blackwater and Barrow. Nonetheless, spawning of this species has yet to be confirmed from any Irish river.

The end of drift netting has removed one source of by-catch for this species. Improvement of fish passage in the big south coast rivers would further improve its prospects. As it is unclear to what extent allis shad rely on Irish coastal waters or estuaries for part of their life cycle, no definitive statement about the conservation status of this species can be made – it is considered unknown.

Range	Good
Area	Unknown
Structure and Function	Unknown
Future prospects	Unknown
<b>Overall assessment of Conservation status</b>	Unknown

### Twaite Shad *Alosa fallax* (1103)

#### Key Attributes

Twaite shad spend their adult life at sea or in the lower reaches of estuaries and normally spawn near the tidal limits. Unimpeded access from the sea through the estuarine and tidal areas to the spawning grounds is essential. Spawning grounds comprise deep pool areas and backwaters for adults to rest and gravelled areas where eggs are laid. Gravel must be clear of algal growths and the interstitial spaces in the gravels free of fine deposits. The most suitable rivers have substantial lengths of tidal channel or estuary downstream of the spawning areas to enable development of the juvenile stages prior to going to sea.

#### The Conservation Status

There are sporadic sightings of twaite shad from the west coast, but spawning activity has only been recorded in five large rivers in the south-east: the Barrow, Munster Blackwater, Suir, Nore and Slaney. Even in these rivers, population levels are thought to be low and no spawning has been recorded in recent years in the Slaney or Nore.

Further information is required on the ecology and habitat of this species, but restricted access to spawning grounds due to weirs is thought to be the main problem for the twaite shad. Without intervention, the future prospects of the twaite shad are considered poor and overall the conservation status of this species is bad.

Range	Good
Area	Bad
Structure and Function	Unknown
Future prospects	Poor
<b>Overall assessment of Conservation status</b>	Bad

### Atlantic Salmon *Salmo salar* (1106)

#### Key Attributes

The salmon breeds in freshwater, but spends much of its life at sea. The salmon population in Ireland has declined by 75% in recent decades and although salmon still occur in 148 Irish rivers only 43 of these have healthy populations. There are numerous factors which impact negatively on salmon, the most important of which are reduced marine survival (probably as a result of climate change), poor river water quality (resulting from factors such as inadequate sewage treatment, agricultural enrichment, acidification, erosion and siltation), forestry-related pressures and over-fishing. The current estimates suggest that less than 10% of the wild smolts that go to sea from Irish rivers are surviving.

### The Conservation Status

There are real concerns relating to factors causing mortality at sea such as diseases, parasites and marine pollution; however there is insufficient information on all factors at this stage. There have been some recent positive developments: the drift net fishery for salmon was closed in 2007 and water quality in Irish rivers and lakes in general is improving. However, the overall conservation status of salmon is still considered bad.

Range	Good
Area	Bad
Structure and Function	Poor
Future prospects	Poor
<b>Overall assessment of Conservation status</b>	<b>Bad</b>

### Freshwater Pearl-mussel *Margaritifera margaritifera* (1029)

#### Key Attributes

The freshwater pearl mussel lives in nutrient-poor, acid to neutral waters of rivers flowing over granite or sandstone rock, mainly in the western part of Ireland, but also in areas of the south and south east where geological conditions allow. The ecology of the species is particularly notable in that individuals can grow to very large sizes relative to other freshwater molluscs, building up thick calcareous shells, in rivers which have soft water with low levels of calcium. Their shell building is consequently very slow, and individuals in natural conditions live to over a hundred years of age.

Freshwater pearl mussels have a complex life cycle. They mature between seven and 15 years of age and can have a prolonged fertile period lasting into old age. The larvae (glochidia) initially attach to the gills of salmonid fish hosts which provide nourishment, before they become large enough for independent development in the river bed.

### The Conservation Status

Population structure and viability assessments for 23 populations have been completed. These included all of the largest populations and all of those known to have reproduced successfully since the 1970s. All populations failed the assessment due to very low levels of recruitment and recent kills resulting from suboptimal water quality levels, and the conclusion was that no population of the freshwater pearl mussel in the Republic of Ireland can be considered viable.

The principal threat to this species is poor substrate quality due to increased growth of algal and macrophyte vegetation as a result of severe nutrient enrichment, as well as physical siltation. Freshwater pearl mussel is listed as critically endangered in the Republic of Ireland in the most recent review of local IUCN threat status of Irish molluscs. Its overall conservation status is bad.

Range	Good
Area	Bad
Structure and Function	Bad
Future prospects	Bad

<b>Overall assessment of Conservation status</b>	Bad
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### **White-clawed Crayfish *Austropotamobius pallipes* (1092)**

#### **Key Attributes**

The white-clawed crayfish elsewhere in Europe is usually found in small streams at the headwaters of rivers but, in Ireland, it most commonly occurs in small and medium-sized lakes, large rivers, streams and drains, wherever there is sufficient lime. The species prefers relatively cool temperatures and adequate dissolved oxygen and lime, although it is capable of tolerating significant fluctuations. Juveniles live among submerged tree-roots, gravel or aquatic plants, while larger crayfish must have stones to hide under, or earthen banks in which to burrow. Females carrying eggs require undisturbed shelter over a prolonged winter-spring period.

#### **The Conservation Status**

Recent river surveys carried out by the EPA indicate a reduction in the range of white-clawed crayfish in the North midlands. One of the main threats to this species is the introduction of diseases transmitted by introduced American crayfish, which are now spreading across Europe but have not been reliably recorded in Ireland. The overall conservation status of the white-clawed crayfish in Ireland is poor, due to the reduction of range and the continuing pressures that it faces.

Range	Poor
Area	Poor
Structure and Function	Poor
Future prospects	Poor
<b>Overall assessment of Conservation status</b>	<b>Poor</b>

### **Killarney Fern *Trichomanes speciosum* (1421)**

#### **Key Attributes**

Killarney fern is a large filmy fern, of deeply shaded habitats such as dripping caves, crevices on cliffs, gullies by waterfalls, and occasionally on damp woodland floors. This slow growing fern has a typical two-stage life cycle; the second fern-like stage known as the sporophyte, and the first moss-like stage the gametophyte. These can live independently, with sporophytes having a more limited distribution than gametophytes, possibly due to collection during Victorian times.

#### **The Conservation Status**

Despite historical collection, the size of sporophyte populations has remained stable since the 1960s, and the discovery of gametophyte populations in the 1990s has increased the known range of the species. Specialised microhabitat requirements mean that modifications to a site's hydrology, through pollution or woodland clearance, remain a threat.

As the range and population size are stable, and the habitats where the species occurs are well protected, the future prospects and overall conservation status for this species are good.

Range	Good
Area	Good
Structure and Function	Good
Future prospects	Good
<b>Overall assessment of Conservation status</b>	<b>Good</b>

**Otter *Lutra lutra* (1355)**

**Key Attributes**

The Otter is widespread in Irish freshwater and coastal habitats. Its main prey includes sticklebacks, salmonids, frogs, crayfish and eels. While there has been some localised reduction in otter habitat quality, due mainly to water pollution and clearance of riparian vegetation, this has been balanced by the reduced occurrence of severe water pollution episodes and reduced river corridor disturbance.

**The Conservation Status**

The otter population in Ireland is estimated to be in the region of 10,000 to 20,000 adults. Between the first national survey in 1980/81 and the most recent survey in 2004/05, a net population loss of 23.7% has been estimated, with the majority of this decline occurring in the first ten years. Many otters are killed on the roads each year; a smaller number are killed in fishing nets and lobster pots. Although the otter has remained widespread in Ireland, national surveys suggest that otter densities have declined since 1980 and consequently conservation status is considered poor.

Range	Good
Area	Poor
Structure and Function	Good
Future prospects	Good
<b>Overall assessment of Conservation status</b>	<b>Poor</b>

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