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## APPROPRIATE ASSESSMENT (SCREENING PHASE) AT AHAWILK, FEOHANAGH, CASTLEMAHON CO LIMERICK

Patrick O'Connell, Ahawilk, Feohanagh, Castlemahon  
Co Limerick

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# Patrick O'Connell, Ahawilk, Feohanagh, Castlemahon Co Limerick

## Appropriate Assessment (Screening Phase)

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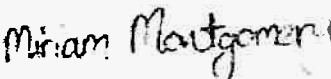
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Patrick O'Connell, Ahawilk, Feohanagh, Castlemahon Co  
Limerick

Appropriate Assessment Screening  
December 2016

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## 1.0 Introduction

This is an Appropriate Assessment Screening - in line with the requirements of Article 6(3) of the EU Habitats Directive (Directive 92/43/EEC).

This document represents Patrick O'Connell Appropriate Assessment (AA) Screening Report for a proposed development of the site at Ahawilk, Feohanagh, Castlemahon Co Limerick .

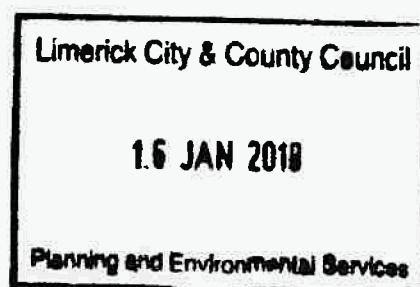
This report has been prepared in accordance with the requirements of Article 6(3) of the Habitats Directive (Directive 92/43/EEC). Council directive 92/43/EEC on the conservation of natural habitats and of wild flora and fauna – 'The Habitats Directive' was transposed into Irish law by the European Community (Natural Habitats) Regulations 1997 (S.I. No. 94/1997).

*Article 6 (3) of the 'Habitats' Directive 92/43/EEC states that;*

Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the sites conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, If appropriate, after having obtained the opinion of the general public.

*Article 6(4) states:*

'if, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of overriding public interest, including those of economic or social nature, the Member State shall take all compensatory measures necessary to



ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted. Where the site concerned hosts a priority natural habitat type and/or a priority species the only considerations which may be raised are those relating to human health or public safety, to beneficial consequences of primary importance for the environment or, further to an opinion from the Commission, to other imperative reasons of overriding public interest.

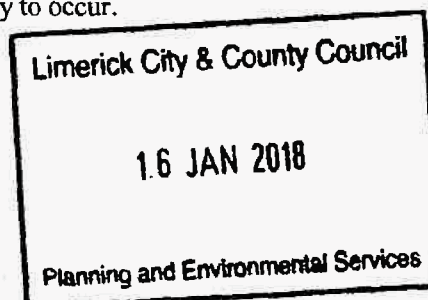
Article 6(3) therefore requires that an "appropriate assessment" be undertaken for any plan or project which is not necessary for the management of a Natura 2000 site and which has the potential to have an impact on the integrity of a Natura 2000 site i.e. a Special Area of Conservation (SAC) or a Special Protection Area for Birds (SPA), or on the conservation objectives of such a site.

In effect, the Commission's ruling requires a robust and thorough application by all consent authorities, including planning authorities, of the requirement to undertake an appropriate assessment of the ecological implications of any plan or project, or material variation of a plan or project, whether within or outside of a designated site, which may impact upon its stated conservation objectives.

The screening process has indicated that the proposed development does have the potential to affect the qualifying features of interest of one Natura 2000 sites, the Blackwater River SAC and a number of proposed NHA's.

However, on examination it is clear, that on the basis of scale, design and containment of the operation the proposed activities will not have an adverse effect on the integrity of the site or the qualifying features of the conservation objectives of the Natura 2000 sites.

Therefore significant impacts are not likely to occur.



## 1.1 Background

The AAS forms part of a planning application to Limerick County Council on behalf of Patrick O'Connell, Ahawilk, Feohanagh, Castlemahon Co Limerick seeking planning permission for the extension of poultry business and the construction of two additional poultry house, soiled water tank and associated site works at Ahawilk, Feohanagh, Castlemahon Co Limerick .

The existing poultry business capacity will increase to 40,000 birds from 112,000 and the proposed poultry houses will have the capacity of 36,000 birds. The proposed site capacity will now be 112,000 for the production of chicken for human consumption in welfare friendly system. Total site capacity upon completion of the proposed development will be 112,000 birds from 40,000 birds. The proposed house and extended poultry house are to be constructed in accordance with, and to comply with, S.I. No. 14 of 2008 EUROPEAN COMMUNITIES (WELFARE OF FARMED ANIMALS) REGULATIONS 2008.

## 1.2 Survey Methods

The site was surveyed on the 11<sup>th</sup> of November 2016. The survey on the 11<sup>th</sup> commenced at 11:00 hrs and finished at 14:00 hrs weather conditions were mild and dry but cloudy.

The aim of the survey was to evaluate the ecological status of the site. This involved studying the types of habitats, flora and fauna present so as to determine the ecological diversity of this area. The site and surrounding area was walked with species and habitats recorded.

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The survey method involved the following.

1. The site was walked and photographed with observations recorded.
2. The species of flora, fauna including avian species encountered were recorded.
3. Habitats were checked for evidence of mammals.
4. The diversity of habitats present was recorded.
5. Habitats were classified in accordance to the standard recommended by The Heritage Council (Fossitt 2000).

### **1.3 Survey Limitations**

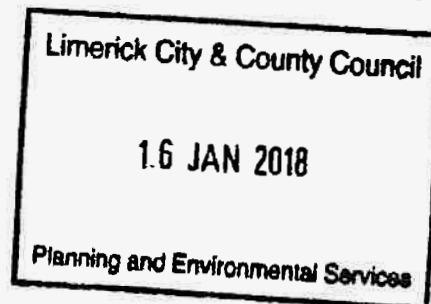
Every effort has been made to provide an accurate assessment of the situation pertaining to the site at Ahawilk, Feohanagh, Castlemahon Co Limerick

### **1.4 Purpose and Structure of the Written Submission formatting**

This written submission addresses the impact of the proposed site and associated infrastructure at Ahawilk, Feohanagh, Castlemahon Co Limerick . The site is not within or adjacent to an SAC, SPA and pNHA.

#### **1.4.1 Qualifying Species and Conservation Objectives – Scope of Appropriate Assessment.**

The subject site itself is not designated under any Regional, National or European Environmental Designation. It does not therefore require assessment under the Wildlife (Amendment) Act 2000 (S.I. No. 38 of 2000) or the European Communities (Natural Habitats) Regulations, 1997 (S.I. No. 94 of 1997). However, the site is located 4.4 Kilometres East from Stack's to Mullaghareirk mountains, West Limerick Hills and Mount Eagle SPA (Site Code 004161), 6.8 km from the Lower River Shannon SAC and 7.6 km from the Blackwater River SAC and the Site Synopsis for the sites is included in Appendix 1.



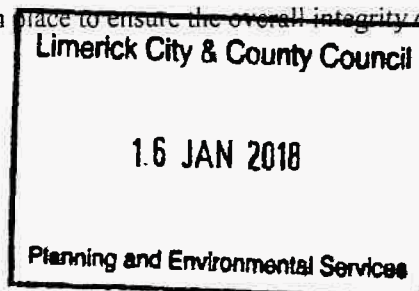
## 1.5 The Purpose of Appropriate Assessment

The Directive 92/43/EEC on the Conservation of Natural Habitats and Wild Flora and Fauna – the 'Habitats Directive' provides legal protection for habitats and species of European importance. Article 2 of the Habitats Directive requires the maintenance or restoration of habitats and species of interest to the EU in a favourable condition. The Directive was transposed into Irish law by the European Communities (Natural Habitats) Regulations, SI 94/1997.

Articles 6(3) and 6(4) of the Habitats Directive require an Appropriate Assessment of plans to prevent significant adverse effects on European sites, also known as SAC or Natura 2000 sites. In this particular case the purpose of Appropriate Assessment is to assess the potential impacts of a land-use plan on the conservation objectives of European sites. The assessment must determine whether the plan would have significant adverse effects upon the integrity of each site in terms of its nature conservation objectives. The integrity of the site has been defined as "the coherence of the site's ecological structure and function, across its whole area, or the habitats, complex of habitats and/or populations of species for which the site is or will be classified". Where negative effects are identified other options should be thoroughly examined to avoid any potential damaging effects prior to implementing the plan.

The Natura 2000 network is a European network of ecologically important sites (SPAs and SACs) that have been designated for protection under either the Habitats Directive (Council Directive 92/43/EEC) or the Birds Directive (Council Directive 79/409/EEC). The statutory agency responsible for these designated areas is the National Parks & Wildlife Service of the Department of Environment, Heritage and Local Government.

Plans or proposals can only be permitted after having ascertained that there will be no significant adverse effect on the integrity of the site in question. Components within a plan, such as objectives or proposals, can be adjusted or removed to avoid significant adverse impacts prior to implementation. The plan may also proceed if sufficient mitigation or compensation measures are in place to ensure the overall integrity of the site.



## 1.6 Overview of Appropriate Assessment Process

This Screening Statement for Appropriate Assessment has been prepared with regard to the following guidance documents where relevant:

- 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)
- Managing Natura 2000 Sites: The Provisions of Article 6 of the Habitats Directive 92/43/EEC (EC Environment Directorate General, 2000)
- Appropriate Assessment under Article 6 of the Habitats Directive: Guidance for Planning Authorities Circular NPW 1/10 & PSSP 2/10
- Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities. (Department of Environment, Heritage and Local Government, 2010 revision)
- Guidelines for Good Practice Appropriate Assessment of Plans under Article 6(3) Habitats Directive (International Workshop on Assessment of Plans under the Habitats Directive, 2011)
- Guidance Document on Article 6(4) of the Habitats Directive 92/43/EEC. Clarification of the Concepts of Alternative Solutions, Imperative Reasons of Over-riding Public Interest, Compensatory Measures, Overall Coherence. Opinion of the European Commission (European Commission, January 2007)

There are four stages in an Appropriate Assessment as outlined in the European Commission Guidance Document (2001), summarised below:

### **Stage 1: Screening**

The first step to establishing if an appropriate assessment is required is referred to as 'screening' and its purpose is to determine on the basis of a preliminary assessment and objective criteria if the plan or project, alone or in combination with other plans or

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projects, could have a significant effect on a Natura 2000 site in view of the sites conservation objectives. The process identifies any likely impacts upon a Natura 2000 Site, either alone or in combination with other projects or plans, and considers whether these impacts are likely to be significant.

***Stage 2: Appropriate Assessment***

This step considers the impact of the project or plan on the integrity of the Natura 2000 Site, either alone or in combination with other plans or projects, to the site's structure and function and its conservation objectives. Additionally, where there are deemed to be adverse impacts, an assessment of the potential mitigation of those impacts is considered.

***Stage 3: Alternative Solutions***

This stage examines alternative means of achieving the objectives of the project or plan that aim to avoid adverse impacts on the integrity of the Natura 2000 site.

***Stage 4: Imperative Reasons of Overriding Public Interest***

This stage is the main derogation process outlined in Article 6(4) which examines whether there are imperative reasons of overriding public interest (IROPI) for allowing a plan or project which will have adverse effects on the integrity of a Natura 2000 site to proceed.

This report covers Stage 1 of Appropriate Assessment -Screening.

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## 2.0 Brief Description of the Project

The location of the proposed Patrick O'Connell Poultry Business is at Monlenla approximately 4.5 km to the south of Newcastle West. The site has currently 2 poultry houses, a dry litter store, fuel store and the entrance onto a minor road, which runs along the northern boundary.

It is proposed that proposed poultry houses will be to the south of the existing poultry houses.

The proposed site will have 7 batches of broiler per year with a 6 to 7-week housing period. The site will generate 1800 tonnes of litter requiring disposal into the mushroom industry.

The poultry will be processed in one of the three poultry processors in Cavan, Mayo or Cork. The dry old chickens may come from the local hatchery or other hatchery in Waterford, Cavan, Monaghan or Mayo. The wash water from the cleaning out of the poultry houses will be land spread on lands owned by Patrick O'Connell.

The site has been used for poultry rearing for over 20 years, the current proposals are design to improve the operation of the site and plan for the next 20 years. The site is not within or adjacent to any SAC, SPA, PNHA, etc. but the site has the Stack's to Mullaghareirk mountains, West Limerick Hills and Mount Eagle SPA is 4.5 kilometres away and a PNHA's within 10 kilometres.

## 2.1

### Consultation

Montgomery EHS consulted with the National Parks and Wildlife Service (hereafter NPWS) regarding the designated sites near the proposed Patrick O'Connell proposed expansion of the poultry rearing operation.

## 2.2 European sites that may be affected

One SPA and number pNHA are located within a 10-km radius, which may potentially be affected by the existing development has been identified namely the:

**Table 1. Distance to Designated Conservation Sites**

| Designated Conservation Site  | Distance (km) |
|---|---------------|
| Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA | 4.5           |
| Lower River Shannon SAC   | 6.8           |
| Lough Gay Bog NHA   | 6.2           |
| Blackwater River SAC  | 7.6           |

The NPWS database was accessed for information on rare species and designated conservation sites such as pNHA, SAC, SPA, etc. The proposed development site not within an area of Conservation (SAC) or any other designated conservation sites illustrates the location of conservation sites within a 10 kilometre radius of the site. A brief description of each of the designated conservation sites within this radius is presented below and full site synopses are provided in Appendix 2 (Designated Conservation Sites – Site Synopses). The distance from the proposed development site to the designated conservation sites are detailed in Table 1.

There are no records of protected species from within the proposed development site.

There are no Natura 2000 sites located within or adjacent to the Patrick O'Connell proposed poultry farm expansion. The Natura 2000 sites located within 10km of the Patrick O'Connell poultry farm lands are listed in Table 1. Full site descriptions of these Natura 2000 sites are provided in Appendix 2. A summary of the main elements of interest for each of these sites follows:

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| Name  | Site Code | Key Features of the Site   |
|---|-----------|--|
| Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA | 4161      | Designated for the protection of the Hen Harrier, ( <i>Circus cyaneus</i> ) which is listed on Annex 1 of the Birds Directive (79/409/EEC). The pSPA includes conifer plantations, heath and bog and rough grassland. Intensively managed agricultural land, houses and farm buildings are generally excluded  |
| Lower River Shannon SAC   | 2165      | A very large site which stretches along the Shannon Estuary from Killaloe to Loop Head/Kerry Head. It includes the freshwater stretches of the Feale catchments as well as the Feale and Shannon estuaries. The site contains several habitats listed on Annex I of the EU Habitats Directive such as lagoons, alluvial woodlands and floating river vegetation. It also contains several species listed on Annex II of the same directive such as otters and freshwater pearl mussels. In addition, it contains several plant species which are listed in the Irish Red Data Book, several of which are also protected under the Flora(Protection) Order 1999, including Triangular Club Rush, Meadow Barley and Hairy Violet. Lough Gay Bog NHA is an upland blanket bog located 6 km west of Broadford in the townland of Glenduff, Co. Limerick. The site occurs on peat of over 2 m in depth and includes both areas of intact bog and cutover areas adjacent to Lough Gay.<br>The vegetation consists of Ling Heather ( <i>Calluna vulgaris</i> ), Hare's-tail cottongrass ( <i>Eriophorum vaginatum</i> ) and Bog Asphodel ( <i>Narthecium ossifragum</i> ) with Deergrass ( <i>Scirpus cespitosus</i> ) and lichens ( <i>Cladonia</i> spp.). There is a good cover of heather up to 25 cm high, as little domestic grazing occurs. The substrate is soft and wet underfoot with 50% cover of bog mosses ( <i>Sphagnum capillifolium</i> and <i>S</i> subnitens).<br>Lough Gay is a deep oligotrophic lake and is fringed with Bottle Sedge ( <i>Carex rostrata</i> ). Bilberry ( <i>Vaccinium myrtillus</i> ) occurs on flushed areas beside the lake.<br>The site supports the Irish Red Data Book species Red Grouse and Hen Harri |
| Lough Gay Bog   | 2454      |  |

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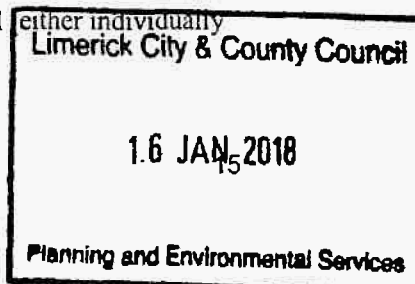
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|                      |      |  |
|----------------------|------|--|
| Blackwater River SAC | 2170 | <p>The River Blackwater is one of Ireland's largest rivers, extending some 160km from source to sea and draining in excess of 3,000km<sup>2</sup>. The river rises in the mountains of east Co. Kerry, traversing much of Co. Cork and west Co. Waterford, before entering the Celtic Sea at Youghal Bay, Co. Cork. The Upper Blackwater catchment occupies the northern parts of the Barony of Duhallow, in North Cork. The catchment consists of six sub-catchments, the Owenanare, the Dalua, the Glenlara, the Owenkeal, the Brogeen and the Allow. The River Blackwater and its tributaries are classed as Special Areas of Conservation (SAC) due to presence of many species and habitats of European importance. The River Allow and its tributaries are of particular importance as it provides habitat for a number of EU Habitats Directive Annex II listed species, the Freshwater Pearl Mussel (<i>Margaritifera margaritifera</i>), Salmon (<i>Salmo salar</i>) and Otter (<i>Lutra lutra</i>), and the EU Birds Directive Annex I listed species, the Kingfisher (<i>Alcedo atthis</i>). The River Allow rises on the eastern flanks of the Mullaghareirk Mountains, flowing in an easterly direction for twelve kilometres before turning south at Freemount, where it continues through the town of Kanturk. In Kanturk town the Brogeen and Dalua rivers meet the River Allow. The River Allow eventually empties into the River Blackwater some 5km south of the town near the village of Banteer. The Allow River is included in the Blackwater River SAC, which has been designated partly on the basis of the presence of pearl mussel</p> |
|----------------------|------|--|

### 2.3 Scoping of the study/Literature Review

The current document presents the results of the first of the four stages in the Appropriate Assessment process i.e. screening, to determine whether the proposed development at the Patrick O'Connell, Ahawilk, Feohanagh, Castlemahon Co Limerick is likely to have a negative impact on a Natura 2000 site.

The proposed development at Patrick O'Connell poultry farm was accordingly screened for Appropriate Assessment and the outcome of this process was that the proposed development has been formulated to ensure that uses, developments, and effects arising from permissions based upon the proposal



or in combination with other projects) shall not give rise to significant adverse impacts on the integrity of any Natura 2000 sites.

The current screening exercise was based on a desk-top study, drawing on information sources which included the following: NPWS on-line data for Natura 2000 sites; Ordnance Survey of Ireland mapping and aerial photography; geological, hydrological and soils data available from GSI; water quality data (EPA and SDCC); and other publicly available data.

There is a good depth of specific information regarding the SAC/SPA/pNHA/ but the site has had no ecological survey over the past 5 years. Appendix 3 is an outline of the relevant national and local plans and policies applicable to the proposed development on the site. There is also 'site synopsis' for the SPA, SAC and pNHA (see Appendix 1) and significant volume of published data on the distribution and status of protected species and, to a lesser extent, habitats in this area.

The Environmental Protection Agency (EPA) maintains a nationwide biological water monitoring programme and information is available for the area.

#### 2.4.1 NPWS Site Synopsis

Information regarding the sites is available through site synopsis reports. These are reproduced as appendices to this report. To date, a management plan has not been published for the SAC, SPA or pNHA's.

The Lower River Shannon is very large site stretches along the Shannon valley from Killaloe to Loop Head/ Kerry Head, some 120 km. The site thus encompasses the Shannon, Feale, Mulkear and Fergus Estuaries, the freshwater lower reaches of the River Shannon (between Killaloe and Limerick), the freshwater stretches of much of the Feale and Mulkear catchments and the marine area between Loop Head and Kerry Head.

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The site is selected for lagoons and alluvial wet woodlands, both habitats listed on Annex I of the E.U. Habitats Directive. The site is also selected for floating river vegetation, Molinia meadows, estuaries, tidal mudflats, Atlantic salt meadows, Mediterranean salt meadows, Salicornia mudflats, sand banks, perennial vegetation of stony banks, sea cliffs, reefs and large shallow inlets and bays 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 – Bottle-nosed Dolphin, Sea Lamprey, River Lamprey, Brook Lamprey, Freshwater Pearl Mussel, Atlantic Salmon and Otter.

There is a resident population of Bottle-nosed Dolphin in the Shannon Estuary. This is the only known resident population of this E.U. Habitats Directive Annex II species in Ireland. Otter, a species also listed on Annex II of this directive, is commonly found on the site.

As set out in the NPWS (2012) the key Conservation Objectives for this site are :

- To restore the favourable conservation condition of Freshwater Pearl Mussel
- To restore the favourable conservation condition of Sea Lamprey
- To maintain the favourable conservation condition of Brook Lamprey
- To maintain the favourable conservation condition of River Lamprey
- To restore the favourable conservation condition of Salmon
- To maintain the favourable conservation condition of Sandbanks which are slightly covered by sea water all the time
- To maintain the favourable conservation condition of Estuaries
- To maintain the favourable conservation condition of Mudflats and sandflats not covered by seawater at low tide
- To restore the favourable conservation condition of Coastal lagoons
- To maintain the favourable conservation condition of Large shallow inlets and bays
- To maintain the favourable conservation condition of Reefs



- To maintain the favourable conservation condition of Perennial vegetation of stony banks
- To maintain the favourable conservation condition of Vegetated sea cliffs
- To maintain the favourable conservation condition of Salicornia and other annuals colonizing mud and sand
- To restore the favourable conservation condition of Atlantic salt meadows (*Glauco Puccinellietalia maritimae*)
- To maintain the favourable conservation condition of Bottlenose Dolphin
- To restore the favourable conservation condition of Otter
- To restore the favourable conservation condition of Mediterranean salt meadows (*Juncetalia maritimi*)
- To maintain the favourable conservation condition of Water courses of plain to montane levels with the *Ranunculon fluitantis* and *Callitricho Batrachion* vegetation
- To maintain the favourable conservation condition of Molinia meadows on calcareous, peaty or clayey silt laden soils (*Molinion caeruleae*)
- To restore the favourable conservation condition of Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (*Alno Padion*, *Alnion incanae*, *Salicion albae*)

Stacks to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA was designated as recently as 2007, primarily for the protection of the Birds Directive Annex I species Hen Harrier, and it supports the largest concentration of this species in the country. The Annex I species Merlin and Short-eared Owl also occur as breeding species within the SPA. The SPA consists of upland bog, heath and grassland habitats on which these species depend during the breeding season.

The River Blackwater is one of Ireland's largest rivers, extending some 160km from source to sea and draining in excess of 3,000km<sup>2</sup>. The river rises in the mountains of east Co. Kerry, traversing much of Co. Cork and west Co. Waterford, before entering the Celtic Sea at Youghal Bay, Co. Cork. The Upper

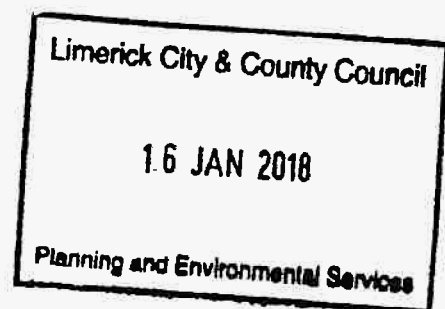
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Blackwater catchment occupies the northern parts of the Barony of Duhallow, in North Cork. The catchment consists of six sub-catchments, the Owenanare, the Dalua, the Glenlara, the Owenkeal, the Brogeen and the Allow. The River Blackwater and its tributaries are classed as Special Areas of Conservation (SAC) due to presence of many species and habitats of European importance. The River Allow and its tributaries are of particular importance as it provides habitat for a number of EU Habitats Directive Annex II listed species, the Freshwater Pearl Mussel (*Margaritifera margaritifera*), Salmon (*Salmo salar*) and Otter (*Lutra lutra*), and the EU Birds Directive Annex I listed species, the Kingfisher (*Alcedo atthis*). The River Allow rises on the eastern flanks of the Mullaghareirk Mountains, flowing in an easterly direction for twelve kilometres before turning south at Freemount, where it continues through the town of Kanturk. In Kanturk town the Brogeen and Dalua rivers meet the River Allow. The River Allow eventually empties into the River Blackwater some 5km south of the town near the village of Banteer. The Allow River is included in the Blackwater River SAC, which has been designated partly on the basis of the presence of pearl mussel

The site is not within or adjacent to any protected site as shown by Figures 1-8, see Appendix 2.





**Table 1 Conservation aspects of the Protected Site within 10 km of Munster Composting**

|  | Level of Protection   | Relevance | Likelihood of Potential Impacts |
|--|---|-----------|---------------------------------|
| Alluvial wet woodland (code: 91E0)                         | Habitats Directive Annex I priority                           | Yes       | None                            |
| Petrifying springs with tufa formation (code: 7220)        |   | No        | None                            |
| Atlantic salt meadows (code: 1330)                         | Habitats Directive Annex I                                    | Yes       | None                            |
| Mediterranean salt meadows (code: 1410)                    |   | Yes       | None                            |
| Old oak woodlands (code: 91A0)                             |   | Yes       | None                            |
| Eutrophic tall herbs (code: 6430)                          |   | No        | None                            |
| Floating river vegetation (code: 3260)                     |   | No        | None                            |
| Estuary (code: 1130)                                       |   | Yes       | None                            |
| Salicornia mudflats (code: 1310)                           |   | yes       | None                            |
| Dry heath (code: 4030)                                     |   | No        | None                            |
| Tidal mudflats (code: 1140)                                |   | Yes       | None                            |
| Sea Lamprey <i>Petromyzon marinus</i>                      | Habitats Directive Annex II                                   | Yes       | None                            |
| Brook Lamprey <i>Lampetra planeri</i>                      |   | Yes       | None                            |
| Semi-aquatic snail <i>Vertigo moulinsiana</i>              |   | No        | None                            |
| River Lamprey <i>Lampetra fluviatilis</i>                  | Habitats Directive Annex II, V                                | Yes       | None                            |
| Freshwater Pearl Mussel <i>Margaritifera margaritifera</i> |   | Yes       | None                            |
| Freshwater Crayfish <i>Austropotamobium pallipes</i>       |   | Yes       | None                            |
| Twaite Shad <i>Alosa fallax fallax</i>                     |   | Yes       | None                            |
| Atlantic Salmon <i>Salmo salar</i>                         | Habitats Directive Annex II, V                                | Yes       | None                            |
| Otter <i>Lutra lutra</i>                                   |   | Yes       | None                            |
| Killarney fern <i>Trichomanes speciosum</i>                | Habitats Directive Annex II, IV; Flora Protection Order, 1999 | Yes       | None                            |
| Daubenton's bat <i>Myotis daubentoni</i>                   | Habitats Directive Annex IV; Wildlife Act, 2000               | No        | None                            |

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|  | Level of Protection   | Relevance | Likelihood of Potential Impacts |
|--|---|-----------|---------------------------------|
| Irish hare <i>Lepus timidus hibernicus</i>                           | Habitats Directive Annex V; Wildlife Act, 2000              | Yes       | None                            |
| Common frog <i>Rana temporaria</i>                                   |   | Yes       | None                            |
| Greenland white-fronted goose<br><i>Anser albifrons flavirostris</i> |   | No        | None                            |
| Golden plover <i>Pluvialis apricaria</i>                             |   | No        | None                            |
| Whooper swan <i>Cygnus cygnus</i>                                    | Birds Directive Annex I; Wildlife Act 2000                  | No        | None                            |
| Kingfisher <i>Alcedo atthis</i>                                      |   | Yes       | None                            |
| Perigrine <i>Falco perigrinus</i>                                    |   | Yes       | None                            |
| Bewick's swan <i>Cygnus columbianus bewickii</i>                     |   | No        | None                            |
| Killarney fern <i>Trichomanes speciosum</i>                          | Habitats Directive Annex II, IV; Flora Protection Order, 99 | Yes       | None                            |

Relevance is interpreted as meaning the likely presence of the habitat/species in the study area and is taken from relevant literature sources. The likelihood of impact is based on the potential presence of habitats from site visit and aerial photography ([www.osi.ie](http://www.osi.ie) & [www.myplan.ie](http://www.myplan.ie)), showing the presence of suitable habitats for different species.



### 3.0 Baseline Data

#### 3.1 Methodology

A site visit was carried out on 11<sup>th</sup> of November 2016. The site was surveyed in accordance with the Heritage Council's draft Habitat Survey Guidelines (Heritage Council, 2002) and the 'Guidelines for Baseline Ecological Assessment' from the Institute of Environmental Assessment (IEA, 1995). Habitats were identified in accordance with Fossitt's 'Guide to Habitats in Ireland' (Fossitt, 2000). A species list for each habitat was compiled and target notes were made.

#### 3.2 Constraints

The survey took place in November 2016 which is late in the growing season. It was therefore reasonable to expect that some floral species will not be apparent or will be difficult to identify.

#### 3.3 Flora

##### 3.3.1 Buildings and Artificial Surfaces (BL3)

The site has some areas of Buildings and Artificial Surfaces are which is hard standing areas and Artificial Buildings and artificial surfaces are not of ecological importance.

##### 3.3.2 Improved Grassland GA1

Improved grassland is the predominant habitat on site found on most the site. Some small areas of improved grassland are dominated by perennial rye grass and dock species. Perennial rye grass is a species of improved pastures. This area of improved grassland was dominated with some broad-leaved dock.

Table 1: Plant species present are as follows

| Common Name         | Scientific Name           |
|---------------------|---------------------------|
| Perennial rye grass | <i>Lolium perenne</i>     |
| Broad leaved dock   | <i>Rumex obtusifolius</i> |

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|                  |                           |
|------------------|---------------------------|
| Red Clover       | <i>Trifolium pratense</i> |
| White clover     | <i>Trifolium repens</i>   |
| Meadow Buttercup | <i>Ranunculus acris</i>   |
| Dandelion        | <i>Taraxacum agg.</i>     |
| Daisy            | <i>Bellis perennis</i>    |
| Soft rush        | <i>Juncus effusus</i>     |

### 3.3.3 Hedgerow WL1

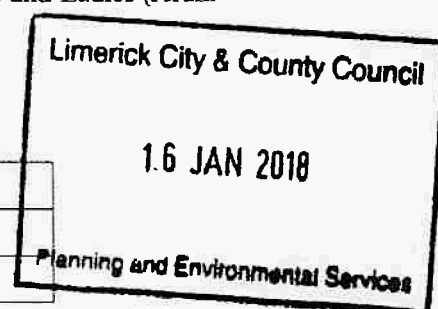
Roadside hedgerow comprised largely of low earthen bank with the dominating species being Hawthorn (*Crataegus monogynus*) and bramble. A section with a stonewall feature occurs lined with tree species such as Norway spruce, Field maple and Fuchsia.

Roadside hedgerows along southern and western site boundaries support primarily Bramble (*Rubus fruticosus*), Bracken (*Pteridium aquilinum*), Male Fern, Creeping Thistle (*Cirsium arvense*), Rosebay Willowherb (*Chamerion angustifolium*), Purple loosestrife (*Lythrum salicaria*), Common Cleavers (*Galium aparine*) and Honey suckle (*Lonicera periclymenum*) as climbers,. The trees occurring included Grey Willow (*Salix cinera*), Hawthorn (*Crataegus monogynus*), Ash (*Fraxinus excelsior*) Scots pine (*Pinus sylvestris* L.), and Sycamore (*Acer pseudoplatanus*)

Internal field boundaries within the site are scrub dominated with bracken, and bramble occurring with trees Hawthorn, Ash (*Fraxinus excelsior*), Rowan (*Sorbus aucuparia*) present. Foxglove (*Digitalis purpurea*) and Lords-and-Ladies (*Arum maculatum*) are also present as an understory.

**Table 2: Hedgerow plants**

| Common Name | Scientific Name              |
|-------------|------------------------------|
| Bramble     | <i>Rubus fruticosus agg.</i> |
| Hard fern   | <i>Blechnum spicant</i>      |





|                     |                            |
|---------------------|----------------------------|
| Broad Buckler fern  | <i>Dryopteris dilatata</i> |
| Bracken             | <i>Pteridium aquilinum</i> |
| Moss sp.            | <i>Sphagnum</i> sp.        |
| Perennial Rye grass | <i>Lolium perenne</i>      |
| Soft rush           | <i>Juncus effusus</i>      |
| Nettle              | <i>Urtica dioica</i>       |
| Clover sp.          | <i>Trifolium</i> sp.       |
| Creeping Buttercup  | <i>Ranunculus repens</i>   |
| Primrose            | <i>Primula vulgaris</i>    |
| Foxglove            | <i>Digitalis purpurea</i>  |

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### 3.4 Fauna

#### 3.4.1 Mammals

Since a dedicated fauna survey was not carried out, the presence of various species is deduced from the existence of suitable habitat and this is shown in Table 2. During the site visits no Badger (*Meles meles*) droppings were recorded. While the Badger is protected under the Wildlife (Amendment) Act, 2000 it is not mentioned in the Habitats Directive.

**Table 2** Mammals known from the Dublin and for which there is suitable habitat (Harris & Yalden, 2008).

|   | Level of Protection  | Habitat  |
|---|--|--|
| Otter <i>Lutra lutra</i>                            | Annex II & IV Habitats Directive; Wildlife (Amendment) Act, 2000 | Rivers and wetlands                              |
| Whiskered bat <i>Myotis mystacinus</i>              | Annex IV Habitats Directive; Wildlife (Amendment) Act, 2000      | Gardens, parks and riparian habitats             |
| Natterer's bat <i>Myotis nattereri</i>              |  | Woodland   |
| Leisler's bat <i>Nyctalus leisleri</i>              |  | Open areas roosting in attics                    |
| Brown long-eared bat <i>Plecotus auritus</i>        |  | Woodland   |
| Leisler's bat <i>Nyctalus leisleri</i>              |  | Woodlands and buildings                          |
| Common pipistrelle <i>Pipistrellus pipistrellus</i> |  | Farmland, woodland and urban areas               |
| Soprano pipistrelle <i>Pipistrellus pygmaeus</i>    |  | Woodlands and bridges associated with open water |
| Daubenton's bat <i>Myotis daubentonii</i>           |  |  |
| Irish hare <i>Lepus timidus hibernicus</i>          | Annex B Habitats Directive; Wildlife (Amendment) Act, 2000       | Wide range of habitats                           |
| Hedgehog <i>Erinaceus europaeus</i>                 | Wildlife (Amendment) Act, 2000                                   | Woodlands and hedgerows                          |
| Pygmy shrew <i>Sorex minutus</i>                    |  | Woodlands, heathland, and wetlands               |
| Red squirrel <i>Sciurus vulgaris</i>                |  | Woodlands  |
| Irish stoat <i>Mustela erminea hibernica</i>        |  | Wide range of habitats                           |
| Badger <i>Meles meles</i>                           |  | Farmland, woodland and urban areas               |

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### 3.4.2 Birds

Incidental recordings of birds were made and include many typical urban species and these are detailed in table 3. No dedicated bird survey was carried out and so this list is not exhaustive. Nearly all bird species and their nests are protected under the Wildlife (Amendment) Act, 2000.

**Table 3 – Incidental records of birds observed during the survey**

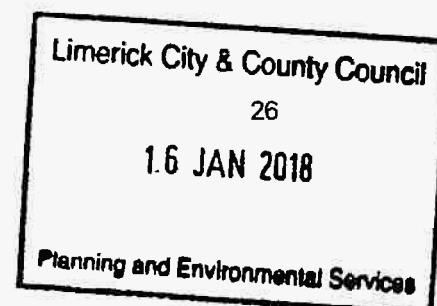
| Common name  | Scientific name                   | BOCCI |
|--------------|-----------------------------------|-------|
| Blackbird    | <i>Turdus merula</i>              | Green |
| Feral Pigeon | <i>Columba livia f. domestica</i> | Green |
| Hooded Crow  | <i>Corvus corone cornix</i>       | Green |
| Robin        | <i>Erithacus rubecula</i>         | Green |
| Rook         | <i>Corvus frugilegus</i>          | Green |

BOCCI: Birds of conservation concern Ireland

Conservation status is derived from Bird Watch Ireland's list of Birds of Conservation Concern in Ireland (Lynas et al., 2007) where green = low concern; amber = medium concern; and red = high concern.

### 3.4.3 Amphibians

Neither Common frog (*Rana temporaria*) nor Smooth newt (*Triturus vulgaris*) were recorded and unlikely that they could breed in the areas or in the surrounding area. Both are protected under the Wildlife (Amendment) Act, 2000 while the Common frog (*Rana temporaria*) is also protected under Annex V of the Habitats Directive.



## 4.0 Screening Matrix

### 4.1 Brief description of the project

The proposed site at Ahawilk, Feohanagh, Castlemahon Co Limerick consists of a fuel storage, 2 poultry houses and other agricultural shed including milking parlour. The site is zoned agricultural.

### 4.2 Brief description of the Natura 2000 site

The site is not with or adjacent to any protected site, there is several protected sites within 10 kilometres of the site. A National Parks and Wildlife Service (NPWS) site synopsis for this site is given in Appendix 2 and the location is presented in Figure 4, 5 & 6

### 4.3 Assessment criteria

- Describe the individual elements of the project (either alone or in combination with other projects) likely to give rise to impacts on the Natura 2000 site.
  - The proposed development at Ahawilk, Feohanagh, Castlemahon Co Limerick will involve the upgrade of an existing poultry facility at the Ahawilk, Feohanagh, Castlemahon Co Limerick and will have no impact on the designated habitats.
- Describe any likely direct, indirect or secondary impacts of the project (either alone or in combination with other plans or projects) on the Natura 2000 site by:
  - size and scale:
    - (a) Direct impacts  
None
    - (b) Indirect  
None
    - (c) Secondary  
None
- Land-take;
  - Is 0.8 Hectares on existing improved grassland
- Distance from the Natura 2000 site or key features of the site;
  - The site is 4.5 kilometres from the nearest designated site.
- Resource requirements (water abstraction etc.);

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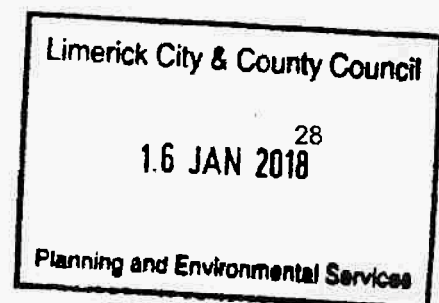
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- The site is supplied with mains water to supply water for bird welfare facilities, poultry house washing and fire protection purposes.
- Emissions (disposal to land, water or air);
  - The site will have minimal atmospheric emissions from site activities. The drainage from the front of the site will drain to an underground water tank. Roof water from the existing and proposed poultry houses will discharge to the surface water drainage system. Domestic effluent will not be generated and the domestic house on-site will be used for welfare facilities.
  - The emission from the poultry farm have been modelled using the SCAIL AGRICULTURE is an online screening tool that can be used in IED applications, EIAs or Appropriate Assessments in Ireland and the UK to estimate the effect of an agricultural emission (e.g. poultry shed) on a habitat (e.g. SAC). The from the SCAIL assessment results show the impact is low (see Appendix 4).
- Excavation requirements;
 

Excavation work for the two poultry houses will be approx. 0.8 Hectares as this is an upgrade project to the site with new poultry buildings are to be constructed.
- Transportation requirements;
  - All materials and resources for construction will be transported to site using the existing road network.
- Duration of construction, operation, decommissioning, etc.;
  - The clearing of the site and construction works will take place over several weeks.
- Other
  - None



#### 4.4 Describe any likely changes to the site arising as a result of:

- Reduction of habitat area:
  - Yes, the footprint of the facility will increase as the additional poultry houses are constructed
- Disturbance to key species;
  - None
- Habitat or species fragmentation;
  - None the area has poor species diversity.
- Reduction in species density;
  - None
- Changes in key indicators of conservation value (water quality etc.);
  - The site has a species poor with the only habitat is Improved Grassland (GA1). This area will be removed as part of the proposed development with no ecological impact as the species are of low ecological interest. In addition, the low profile retained buildings will have a low impact on the movement of birds on the area.
- Climate change.
  - None

#### 4.5 Describe any likely impacts on the Natura 2000 site in terms of:

- Interference with the key relationships that define the structure of the site;
  - The site is not within or adjacent to a SAC, therefore there will be no likely impact from the proposed development.
- Interference with key relationships that define the function of the site.
  - None

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## **5.0 Finding of no significant effects report matrix**

### **5.1 Name of project or plan**

Patrick O'Connell, Ahawilk, Feohanagh, Castlemahon Co Limerick

### **5.2 Name and Location of Natura 2000 sites**

- Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA (Site Code 004161)
- Lower River Shannon SAC (Site Code 002165)
- Blackwater River SAC (Site Code 002170)

See Figures 1 to 8, see Appendix 2

### **5.3 Description of the project or plan**

The proposed development will be the construction of two poultry houses, soil water tank and associated works.

### **5.4 Is this project directly connected with or necessary to the management of the sites (provide details)?**

The proposed development on the site includes objectives to protect, conserve and manage in a prudent and sustainable manner. The proposed development will have no impact on designated sites in the area.

### **5.5 Are there other projects that together with the project or plan being assessed could affect the sites (provide details)?**

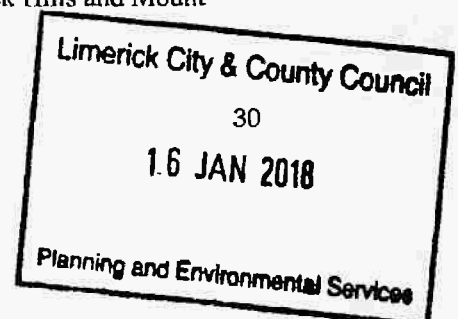
No

### **5.6 The assessment of significance of effects**

Describe how the project (alone or in combination) is likely to affect the SPA or SAC.

The proposed re-development of the site will have no impact on any SAC, SPA or pNHA.

There are no other designated biodiversity areas affected by the proposed development at Ahawilk, Feohanagh, Castlemahon Co Limerick that have a recognised European Union or International protection status. There are two SAC and one SPA with 10 kilometres of the site namely Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount



Eagle SPA, the Lower River Shannon SAC and the Blackwater River SAC which is located to the west, north and south of the site respectively.

#### **5.7 Explain why these effects are not considered significant.**

The current site and proposed construction of 2 poultry houses has been designed to anticipate and avoid the need for impacts that would be likely to adversely affect the integrity of any SAC, SPA or protected sites. The existing site is currently operational as the site since 1992 and every effort will be made to ensure compliance with relevant regulatory provisions for the prevention of pollution, nuisance or other environmental effects likely to significantly and adversely affect the integrity of any SAC or protected site.

#### **5.8 Data collected to carry out the assessment**

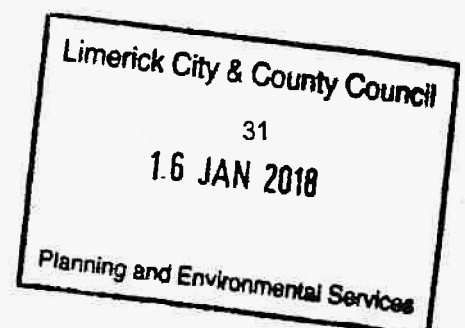
- Who carried out this assessment?
  - Trevor Montgomery & Miriam Montgomery of Montgomery EHS Ltd.
- Sources of data Documents supplied by:
  - The Planning Enquiry System of Limerick County & County Council, planning department was examined for planning applications on the proposed site and adjoining sites.
  - National Parks and Wildlife Service Website and Mapping system.
  - EPA Licensing databases

#### **5.9 Level of assessment completed**

Site Visit and desktop study.

##### **5.9.1 Where the full results of the assessment can be accessed and viewed?**

This screening report will be submitted to Limerick City & County Council as part of the waste permitting process.





## 6.0 Assessment of Conservation Value

- The subject site not part of any designation.
- No species listed under the Flora Protection Order 1999 occurred on site.
- No wild flora and fauna listed of special concern in the EU Habitats Directive (92/43/EEC) Annex II species list was observed.
- The site does not resemble an Annex I habitat of EU Habitats Directive (92/43/EEC).
- No species listed under the EU amendment Conservation of Wild Birds amending council Directive (79/409/EEC) were present.
- No species were observed that are listed in the Wildlife Act, 1976 and 2000.
- No red listed birds of conservation concern were recorded on site.

The site comprises primarily agricultural lands of improved grasslands, rough grassland with small portion of the land is small wooded area. Fields are bounded by internal hedgerows and roadside hedgerows.

The lands to the around the site are intensively managed for farming uses. The agricultural improved grasslands are species poor however diversity interest improves along internal field boundaries. The overall diversity of flora on site is low.

There exists potential for foraging and breeding in areas of hedgerows and forestry on site.

Mammals such as described in above are likely to occur in the area.

## 6.1 Evaluation Criteria

Habitats are evaluated according to Regini (2000) based on a number of criteria which include: size, diversity, naturalness, rarity, fragility, typicalness, potential value and intrinsic appeal as noted in Table 6.1, and ecological importance in Table 6.2.

Table 6.1 Evaluation Criterion (Summarised by Treweek, 1999; after Ratcliffe 1977)

| Primary criteria | Criterion |  |
|------------------|-----------|--|
|                  | Size      | Including both area of vegetation types and population sizes for individual species.                 |
|                  | Diversity | Applied either as simple species richness or by giving different weightings according to 'interest'. |
|                  | Rarity    | Applied either to habitats or to species. The latter most commonly                                   |

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|                           |                  |   |
|---------------------------|------------------|---|
|                           |                  | tested by comparison with national or county population size or distribution by 10 km. squares.   |
|                           | Naturalness      | Habitats that are least intensively modified by humans are generally more highly regarded.  |
|                           | Typicalness      | A measure of how well the study area represents habitats or vegetation types on a wider scale.  |
|                           | Fragility        | Some habitats or species are especially vulnerable or sensitive to anthropogenic change. Those with restricted area or range are generally held to be more vulnerable.                  |
| <b>Secondary Criteria</b> | Recorded history | Can be useful in confirming that a site has been 'important' for some time. Sites with a long history of study may contribute significantly to our understanding of ecological process. |
|                           | Potential value  | Relates to the likelihood that appropriate management could restore or enhance an area's ecological interest.   |
|                           | Intrinsic appeal | Habitats or species with public appeal promote the cause of nature conservation. This criterion can also be interpreted to include estimates of public use, access, amenity value, etc. |

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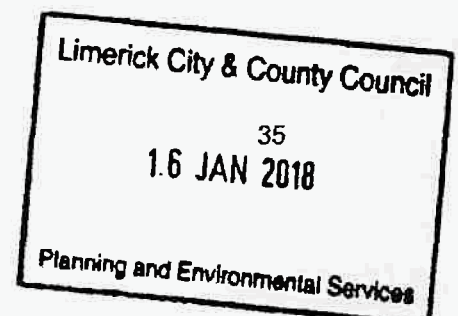
**Table 6.2 Evaluation of habitats (Regini, 2000)**

| Level of Value | Indication of Importance  |
|----------------|---|
| International  | Designated or proposed as SAC, SPA under EU Habitats or Birds Directives;<br>Sites designated under international conventions eg. Ramsar etc.   |
| National       | Proposed NHAs or sites containing habitats or populations of nationally important species such as Red Data Book species.  |
| High Local     | Sites containing semi-natural habitat types with high degrees of biodiversity and/or naturalness (eg. old semi-natural woodland); or significant populations of locally rare species; or supplying critical elements of their habitat requirements. |
| Moderate Local | Undesignated site or feature considered appreciably to enrich the habit resource within the context of the district; containing some semi-natural habitat or supporting viable breeding populations of locally important for wildlife.              |
| Low Local      | Site or feature considered appreciably to enrich the habitat resource within the context of a townland, eg. species – rich hedgerow.  |
| Negligible     | Low grade and widespread habitats.  |

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## 6.2 Review of Evaluation Criteria

| Primary Criteria   |   |
|--------------------|---|
| Size:              | The site largely comprises of existing buildings, agricultural lands with a small portion of land given to a treeline plantation.   |
| Diversity          | With respect to diversity the agricultural improved grasslands are species poor however diversity interest improves along field hedgerows and roadside hedgerows.   |
| Rarity             | No rare/protected species were recorded.  |
| Naturalness        | The land has been managed for agricultural purposes with remnants of the original flora species along hedgerows   |
| Typicalness        | The subject site is typical with regard to habitats and vegetation occurring in surrounding wider region.   |
| Fragility          | The site not part of any designation. The site has lands to the south, north which are similar to the proposed lands for the development. The site is species poor with low fragility.  |
| Secondary Criteria |   |
| Recorded History   | National Parks and Wildlife Service site synopsis   |
| Potential value    | The potential value with regard to flora is low due current agricultural activities and the existing buildings. There exists foraging and nesting potential for fauna on site.  |
| Intrinsic Appeal   | The site is of low appeal   |
| Level of value     | The conservation value of the existing buildings and agricultural lands on the site are <i>negligible</i> being widespread and low grade. Hedgerows along site boundaries are poor in diversity and of <i>low local value</i> . |





## 7.0 Characteristics of the Proposed Development

- The proposed development consists of the development of 2 additional poultry houses
- Underground electrical cabling and potable water is already laid adjacent to the road network where trenches will be excavated and backfilled with excavated material.

## 8.0 Potential Impacts

### 8.1 The "do nothing" scenario

The site will remain unoccupied and the surrounding agricultural practices would continue as the around the site. Animals would continue to graze and harvesting of grass for silage making. It is also possible that further areas could be given to tree plantations.

- **Potential Impacts of a continued baseline Environment**  
The habitat would continue as an intensively farmed area and possibly land could be given to forestry plantation or other forms of development.

### 8.2 The "do" scenario

The potential impacts of the expanded poultry operation including ancillary structures on site would be expected as follows:

#### **Potential Impacts of the Proposed Expanded Poultry facility on habitats Flora and Fauna**

- Direct Loss of habitat
  - As the existing poultry site is already constructed, the proposed poultry houses will result in the loss of species poor habitat. The principle habitat affected would have been agricultural improved grassland.
  - A permanent loss of habitat will occur across the site in the buildings foundations, drainage, set down areas and ancillary structures.
  - Site construction will be required to develop the site but is an expansion of the existing poultry farm. The removal of such habitat considering the low conservation value of habitats is of low significance.
  - Disturbance by construction works to adjoining areas such as set down areas may result in larger areas outside of the planned construction zone can be impacted upon resulting in unplanned larger loss of habitat. Mitigation with regard to the movement of soil substrate would require areas outside of the construction zone to remain undisturbed and soil removed to an appropriate location.

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- **Hydrological Changes**
  - The building of foundations and hardstanding areas over agricultural lands can impact on the hydrology of the land in areas adjacent to hardsurfaces.
  - The hydrology of the site has been changed by current landuse practices. No further changes will occur as a result of the development however is not likely to result in a further deterioration of the site.
- **Disturbance to Wildlife**
  - Disturbance will arise from the increased human activity on site during construction works and the use of the site for the proposed expanded poultry facility use.
  - An increase in human presence and traffic on site may result in avoidance of the area by mammals and birds during construction activity.
  - During the operational phase the presence/noise of human activity may deter birds and wildlife from using areas close to development.
  - Disturbance can lead to displacement and exclusion from areas of suitable habitat and effectively loss of habitat.
- **Displacement**

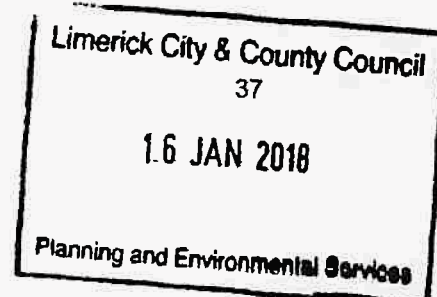
In the event of displacement, the scale of habitat loss together with the extent of availability and quality of other suitable habitats that can accommodate displaced birds and the conservation status of the birds will determine whether or not there has been an adverse impact.

It is possible that birds within the site may be displaced from a zone around the development. However, the effect of possible displacement is unlikely to have a significant impact on the overall population of any species as suitable habitat is surrounding habitat. As can be seen in Figures 3 and 6 of Appendix 1, the habitat in the surrounding area, appears similar to habitat found in the site. Following any displacement of wildlife their return and habituation is possible where they would co-exist with the development. If it is a case that birds are displaced it is unknown whether habituation will actually occur or not during the developments operational phase and /or for how long birds will avoid the area.

The proposed development will have adverse impacts on the various mammal species which inhabit the site and surrounding areas. Some of the mammal species likely to continue in the area after the development is constructed.

#### **Barrier Effect**

A barrier effect is shown where birds avoid a development and fly around it. The potential impact on bird movements or exclusion from a barrier effect is low as the tree line is higher in places around the site. In addition, it is unlikely that a significant barrier effect will occur as the site is already constructed.



### **Cumulative Effect**

A cumulative effect due to the intensification of the developments can impact on wildlife movement. However currently in the area for the proposed expansion of the poultry operation is surrounded by agriculture land and the cumulative effect is negligible.

This proposed development in addition to the other developments in the area are unlikely to form a cumulative effect. But it could be expected that all activities within proximity of each other would impact on wildlife movement.

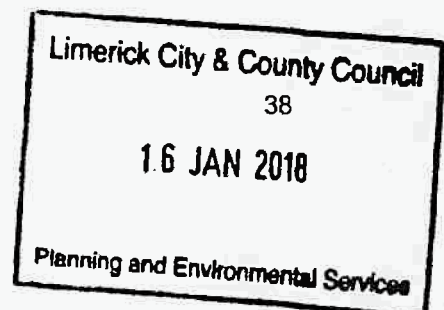
### **8.3 Discussion of the Significance of the Impact**

The development would involve a small permanent loss of habitat on site within the proposed expansion of the poultry operation in the installation of the 2 poultry houses and associated infrastructure. The areas affected will be agricultural improved grassland and the flora diversity in these areas is poor with such habitat represented in the surrounding lands.

Loss of habitat can also occur indirectly as a result of avoidance and displacement of wildlife during the construction of the development. Human activity, noise from machinery, traffic, increased human presence on site will result in disturbance to wildlife during construction. During operation disturbance will arise from the presence of employees and vehicle movements using the site. Avoidance may be temporary during construction with the operation of the expanded facility such avoidance depending on the success of habituation.

During construction disturbance is likely to result in birds avoiding the site. It is unlikely that birds will alter their movements through avoidance of the site as the extent of construction is low. Figure 3 and 6 of Appendix 2, illustrates through aerial photography the habitats that occur in the surrounding area which are likely to provide similar habitat to the subject site. Birds in the area will avoid or be displaced for the period of the construction phase on site. It could be considered that the removal of this habitat is temporary with possibilities of the birds returning to forage in the area once accustomed to the development. However during the operational phase an unknown time period would lapse before habituation occurs. Also It is unknown whether habituation will actually occur or not. If birds do not return the result is an indirect loss of habitat. It is possible that local birds once accustomed to the proposed expanded poultry facility may fly through a site.

In summary, the site is not within a designated area (SPA, SAC, NHA, etc). Disturbance to wildlife during construction and operation phases of the proposed development is mitigated by the fact that the construction area is small and the site is already constructed.





#### 8.4 Discussion of the Significance of the Impact on the SPA or SAC

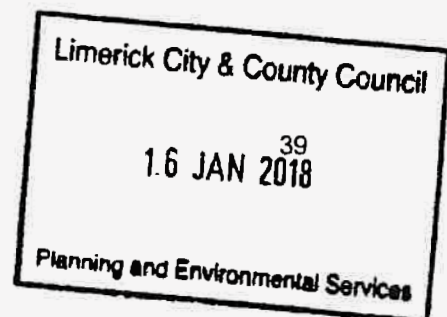
The stated objective of the proposed expended poultry operation is 'to provide a state of the art poultry growing operation.

The proposed development of the expanded poultry growing operation at Ahawilk, Fcohanagh, Castlemahon Co Limerick will not have an impact on the SAC or SPA.

The Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA, the Lower River Shannon SAC and the Blackwater River SAC is located to the west, north and south of the proposed poultry operation and the main importance of the site lies in the presence of several rare and threatened plant and animal species, and of a rare habitat.

The site has a low species diversity and has a low ecological significance and the loss of the improved grassland will have minimal impact.

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## 9.0 Mitigation Measures

1. The development and design are factors in the potential of disturbance/displacement/avoidance by birds/wildlife.
2. Every effort should be made to ensure that minimum disturbance occurs to wildlife.
3. Access routes to the site would need to ensure that the integrity of hedgerows along the route is maintained or upgraded as part of the development.
4. Avoidance of spoil heaps being placed on areas of habitat outside of the construction zone. The extent of the habitat loss will be kept to a minimum for completion of the works.
5. Best site practice measures will be adopted to reduce the risk of incursion in to adjacent sites, risk of pollution etc. which could result in impacts on flora and fauna during construction. Best practice measures are being taken to avoid pollution by oil or lubricants.
6. Every effort should be made to ensure that minimum disturbance occurs for sensitive habitats including waterbodies. Excavated material from proposed interceptor and firewater tanks will not be stored on unsuitable areas or near drains. Suitable disposal areas will be identified in advance (either on site or elsewhere).

## 10.0 Conclusion

The proposed changes and developments to the facility will have a low impact on low diversity habitats within the land ownership area. No terrestrial habitats of value will be affected and there will be no significant direct impact on the Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA, the Lower River Shannon SAC and the Blackwater River SAC.

Impacts on water quality are the primary concern for the Lower River Shannon and the Blackwater SAC however the wash water and contaminated surface water will be collected and land spread and not allowed to enter surface water. The existing well will determined any detrimental impact on groundwater quality. No waste will be stored on-site and litter waiting loading will be stored within the house and is only moved within the site in sealed containers; therefore, no nutrient enrichment of surface water will occur. This is predominantly a rural area largely

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dominated by one-off housing and in the absence of other major discharges no significant cumulative impacts on water quality are envisaged.

Overall there is no evidence to indicate that works will cause significant deterioration of the habitats of the qualifying species and species of special conservation interest or significant disturbance to these species thus ensuring the integrity of the site is maintained. On the basis that no potentially significant impacts have been identified by this screening report, a Stage 2 Natura Impact Statement is not considered necessary.

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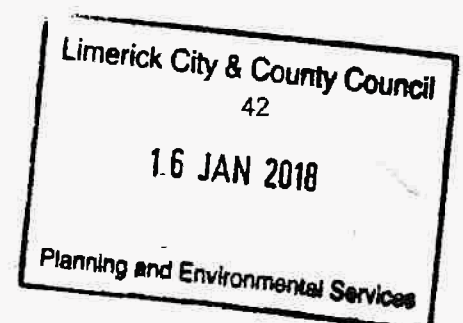
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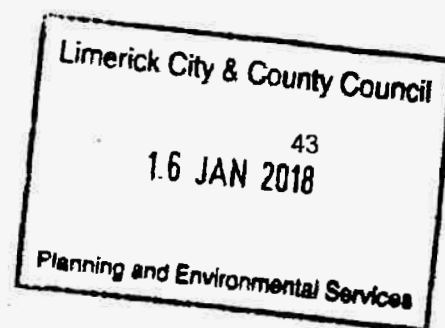
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Appendix 1  
Site Synopsis



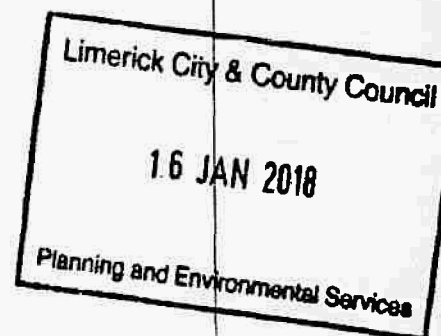
**Site Name: Lower River Shannon SAC**

**Site Code: 002165**

This very large site stretches along the Shannon valley from Killaloe in Co. Clare to Loop Head/ Kerry Head, a distance of some 120 km. The site thus encompasses the Shannon, Feale, Mulkear and Fergus estuaries, the freshwater lower reaches of the River Shannon (between Killaloe and Limerick), the freshwater stretches of much of the Feale and Mulkear catchments and the marine area between Loop Head and Kerry Head. Rivers within the sub-catchment of the Feale include the Galey, Smearlagh, Oolagh, Allaughan, Owveg, Clydagh, Caher, Breanagh and Glenacorney. Rivers within the sub-catchment of the Mulkear include the Killeenagarraiff, Annagh, Newport, the Dead River, the Bilboa, Glashacloonaraveela, Gortnageragh and Cahernahallia.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

- [1110] Sandbanks
- [1130] Estuaries
- [1140] Tidal Mudflats and Sandflats
- [1150] Coastal Lagoons\*
- [1160] Large Shallow Inlets and Bays
- [1170] Reefs
- [1220] Perennial Vegetation of Stony Banks
- [1230] Vegetated Sea Cliffs
- [1310] *Salicornia* Mud
- [1330] Atlantic Salt Meadows
- [1410] Mediterranean Salt Meadows
- [3260] Floating River Vegetation
- [6410] *Molinia* Meadows
- [91E0] Alluvial Forests\*
- [1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*)
- [1095] Sea Lamprey (*Petromyzon marinus*)
- [1096] Brook Lamprey (*Lampetra planeri*)
- [1099] River Lamprey (*Lampetra fluviatilis*)
- [1106] Atlantic Salmon (*Salmo salar*)
- [1349] Bottle-nosed Dolphin (*Tursiops truncatus*)
- [1355] Otter (*Lutra lutra*)



The Shannon and Fergus Rivers flow through Carboniferous limestone as far as Foynes, but west of Foynes Namurian shales and flagstones predominate (except at Kerry Head, which is formed from Old Red Sandstone). The eastern sections of the Feale catchment flow through Namurian rocks and the western stretches through Carboniferous limestone. The Mulkear flows through Lower Palaeozoic rocks in the upper reaches before passing through Namurian rocks, followed by Lower Carboniferous shales and Carboniferous limestone. The Mulkear River itself, immediately north of Pallas Green, passes through an area of Rhyolites, Tuffs and Agglomerates.

The Shannon and Fergus Estuaries form the largest estuarine complex in Ireland. They form a unit stretching from the upper tidal limits of the Shannon and Fergus Rivers to the mouth of the Shannon Estuary (considered to be a line across the narrow strait between Kilcredaun Point and Kilconly Point). Within this main unit there are several tributaries with their own 'sub-estuaries' e.g. the Deel River, Mulkear River, and Mague River. To the west of Foynes, a number of small estuaries form indentations in the predominantly hard coastline, namely Poulmasherry Bay, Ballylongford Bay, Clonderalaw Bay and the Feale or Cashen River estuary.

Both the Fergus and inner Shannon Estuaries feature vast expanses of intertidal mudflats, often fringed with saltmarsh vegetation. The smaller estuaries also feature mudflats, but have their own unique characteristics, e.g. Poulmasherry Bay is stony and unusually rich in species and biotopes. Plant species are typically scarce on the mudflats, although there are some eelgrass (*Zostera* spp.) beds and patches of green algae (e.g. *Ulva* sp. and *Enteromorpha* sp.). The main macro-invertebrate community which has been noted from the inner Shannon and Fergus estuaries is a *Macoma-Scrobicularia-Nereis* community.

In the transition zone between mudflats and saltmarsh, specialised colonisers of mud predominate. For example, swards of Common Cord-grass (*Spartina anglica*) frequently occur in the upper parts of the estuaries. Less common are swards of Glasswort (*Salicornia europaea* agg.). In the innermost parts of the estuaries, the tidal channels or creeks are fringed with species such as Common Reed (*Phragmites australis*) and club-rushes (*Scirpus maritimus*, *S. tabernaemontani* and *S. triquetrus*). In addition to the nationally rare Triangular Club-rush (*Scirpus triqueter*), two scarce species are found in some of these creeks (e.g. Ballinacurra Creek): Lesser Bulrush (*Typha angustifolia*) and Summer Snowflake (*Leucojum aestivum*).

Saltmarsh vegetation frequently fringes the mudflats. Over twenty areas of estuarine saltmarsh have been identified within the site, the most important of which are around the Fergus estuary and at Ringmoylan Quay. The dominant type of saltmarsh present is Atlantic salt meadow occurring over mud. Characteristic species occurring include Common Saltmarsh-grass (*Puccinellia maritima*), Sea Aster (*Aster tripolium*), Thrift (*Armeria maritima*), Sea-milkwort (*Glaux maritima*), Sea Plantain (*Plantago maritima*), Red Fescue (*Festuca rubra*), Creeping Bent (*Agrostis stolonifera*), Saltmarsh Rush (*Juncus gerardi*), Long-bracted Sedge (*Carex extensa*), Lesser Sea-spurrey

(*Spergularia marina*) and Sea Arrowgrass (*Triglochin maritima*). Areas of Mediterranean salt meadows, characterised by clumps of Sea Rush (*Juncus maritimus*) occur occasionally. Two scarce species are found on saltmarshes in the vicinity of the Fergus estuary: a type of robust saltmarsh-grass (*Puccinellia foucaudii*), sometimes placed within the species Common Saltmarsh-grass (*P. maritima*) and Hard-grass (*Parapholis strigosa*).

Saltmarsh vegetation also occurs around a number of lagoons within the site, two of which have been surveyed as part of a National Inventory of Lagoons. Cloonconeen Pool (4-5 ha) is a natural sedimentary lagoon impounded by a low cobble barrier. Seawater enters by percolation through the barrier and by overwash. This lagoon represents a type which may be unique to Ireland since the substrate is composed almost entirely of peat. The adjacent shore features one of the best examples of a drowned forest in Ireland. Aquatic vegetation in the lagoon includes typical species such as Beaked Tasselweed (*Ruppia maritima*) and green algae (*Cladophora* sp.). The fauna is not diverse, but is typical of a high salinity lagoon and includes six lagoon specialists (*Hydrobia ventrosa*, *Cerastoderma glaucum*, *Lekanesphaera hookeri*, *Palaemonetes varians*, *Sigara stagnalis* and *Enochrus bicolor*). In contrast, Shannon Airport Lagoon (2 ha) is an artificial saline lake with an artificial barrier and sluiced outlet. However, it supports two Red Data Book species of stonewort (*Chara canescens* and *Chara* cf. *connivens*).

Most of the site west of Kilcredaun Point/Kilonly Point is bounded by high rocky sea cliffs. The cliffs in the outer part of the site are sparsely vegetated with lichens, Red Fescue, Sea Beet (*Beta vulgaris* subsp. *maritima*), Sea Campion (*Silene vulgaris* subsp. *maritima*), Thrift and plantains (*Plantago* spp.). A rare endemic type of sea-lavender, *Limonium recurvum* subsp. *pseudotranswallianum*, occurs on cliffs near Loop Head. Cliff-top vegetation usually consists of either grassland or maritime heath. The boulder clay cliffs further up the estuary tend to be more densely vegetated, with swards of Red Fescue and species such as Kidney Vetch (*Anthyllis vulneraria*) and Common Bird's-foot-trefoil (*Lotus corniculatus*).

The site supports an excellent example of a large shallow inlet and bay. Littoral sediment communities in the mouth of the Shannon Estuary occur in areas that are exposed to wave action and also in areas extremely sheltered from wave action. Characteristically, exposed sediment communities are composed of coarse sand and have a sparse fauna. Species richness increases as conditions become more sheltered. All shores in the site have a zone of sand hoppers at the top, and below this each of the shores has different characteristic species giving a range of different shore types.

The intertidal reefs in the Shannon Estuary are exposed or moderately exposed to wave action and subject to moderate tidal streams. Known sites are steeply sloping and show a good zonation down the shore. Well developed lichen zones and littoral reef communities offering a high species richness in the sublittoral fringe and strong populations of the Purple Sea Urchin *Paracentrotus lividus* are found. The communities found are tolerant to sand scour and tidal streams. The littoral reefs range from sloping platforms with some vertical steps, to ridged bedrock with



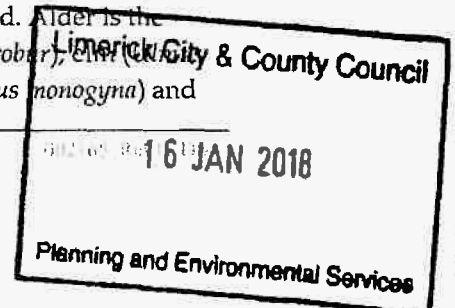
gullies of sand between the ridges, to ridged bedrock with boulders or a mixture of cobbles, gravel and sand. Kelp is very common to about 18 m. Below this it becomes rare and the community is characterised by coralline crusts and red foliose algae.

Other coastal habitats that occur within the site include stony beaches and bedrock shores (these support a typical zonation of seaweeds such as *Fucus* spp., *Ascophyllum nodosum* and kelps), shingle beaches (with species such as Sea Beet, Sea Mayweed - *Matricaria maritima*, Sea Campion and Curled Dock - *Rumex crispus*), sandbanks which are slightly covered by sea water at all times (e.g. in the area from Kerry Head to Beal Head) and sand dunes (a small area occurs at Beal Point, where Marram - *Ammophila arenaria* is the dominant species).

Freshwater rivers have been included in the site, most notably the Feale and Mulkear catchments, the Shannon from Killaloe to Limerick (along with some of its tributaries, including a short stretch of the Kilmastulla River), the Fergus up as far as Ennis, and the Cloon River. These systems are very different in character: the Shannon is broad, generally slow flowing and naturally eutrophic; the Fergus is smaller and alkaline; while the narrow, fast flowing Cloon is acid in nature. The Feale and Mulkear catchments exhibit all the aspects of a river from source to mouth. Semi-natural habitats, such as wet grassland, wet woodland and marsh occur by the rivers, but improved grassland is the most common habitat type. One grassland type of particular conservation significance, *Molinia* meadows, occurs in several parts of the site and the examples at Worldsend on the River Shannon are especially noteworthy. Here are found areas of wet meadow dominated by rushes (*Juncus* spp.) and sedges (*Carex* spp.), and supporting a diverse and species-rich vegetation, including such uncommon species as Blue-eyed Grass (*Sisyrinchium bermudiana*) and Pale Sedge (*C. pallescens*).

Floating river vegetation characterised by species of water-crowfoot (*Ranunculus* spp.), pondweeds (*Potamogeton* spp.) and the moss *Fontinalis antipyretica* are present throughout the major river systems within the site. The rivers contain an interesting bryoflora with *Schistidium alpicola* var. *alpicola* recorded from in-stream boulders on the Bilboa, new to Co. Limerick.

Alluvial woodland occurs on the banks of the Shannon and on islands in the vicinity of the University of Limerick. The woodland is up to 50 m wide on the banks and somewhat wider on the largest island. The most prominent woodland type is gallery woodland where White Willow (*Salix alba*) dominates the tree layer with occasional Alder (*Alnus glutinosa*). The shrub layer consists of various willow species with Rusty Willow (*Salix cinerea* ssp. *oleifolia*) and what appear to be hybrids of *S. alba* x *S. viminalis*. The herbaceous layer consists of tall perennial herbs. A fringe of bulrush (*Typha* sp.) occurs on the river side of the woodland. On slightly higher ground above the wet woodland and on the raised embankment remnants of mixed oak-ash-alder woodland occur. These are poorly developed and contain numerous exotic species but locally there are signs that it is invading open grassland. Alder is the principal tree species, with occasional Pedunculate Oak (*Quercus robur*), Elm (*Ulmus glabra* and *U. procera*), Hazel (*Corylus avellana*), Hawthorn (*Crataegus monogyna*) and



the shrubs Guelder-rose (*Viburnum opulus*) and willows. The ground flora is species-rich.

While woodland is infrequent within the site, however Cahiracon Wood contains a strip of old oak woodland. Sessile Oak (*Q. petraea*) forms the canopy, with an understorey of Hazel and Holly (*Ilex aquifolium*). Great Wood-rush (*Luzula sylvatica*) dominates the ground flora. Less common species present include Great Horsetail (*Equisetum telmateia*) and Pendulous Sedge (*Carex pendula*).

In the low hills to the south of the Slievefelim Mountains, the Cahernahallia River cuts a valley through the Upper Silurian rocks. For approximately 2 km south of Cappagh Bridge at Knockanavar, the valley sides are wooded. The woodland consists of birch (*Betula* spp.), Hazel, oak, Rowan (*Sorbus aucuparia*), some Ash (*Fraxinus excelsior*) and willow (*Salix* spp.). Most of the valley is not grazed by stock, and as a result the trees are regenerating well. The ground flora features prominent Great wood-rush and Bilberry (*Vaccinium myrtillus*), along with a typical range of woodland herbs. Bracken (*Pteridium aquilinum*) is a feature in areas where there is more light available.

The valley sides of the Bilboa and Gortnageragh Rivers, on higher ground north-east of Cappamore, support patches of semi-natural broadleaf woodland dominated by Ash, Hazel, oak and birch. There is a good scrub layer with Hawthorn, willow, Holly and Blackthorn (*Prunus spinosa*) common. The herb layer in these woodlands is often open, with a typically rich mixture of woodland herbs and ferns. Moss species diversity is high. The woodlands are ungrazed. The Hazel is actively coppiced in places.

There is a small area of actively regenerating cut-away raised bog at Ballyrorheen. It is situated approximately 5 km north-west of Cappamore in Co. Limerick. The bog contains some wet areas with good cover of bog mosses (*Sphagnum* spp.). Species of particular interest include Cranberry (*Vaccinium oxycoccos*) and White Sedge (*Carex curta*), along with two regionally rare mosses, including the bog moss *S. fimbriatum*. The site is being invaded by Downy Birch (*Betula pubescens*) scrub woodland. Both commercial forestry and the spread of Rhododendron (*Rhododendron ponticum*) has greatly reduced the overall value of the site.

A number of plant species that are listed in the Irish Red Data Book occur within the site, and several of these are protected under the Flora (Protection) Order, 1999. These include Triangular Club-rush (*Scirpus triquetrus*), a species which is only found in Ireland only in the Shannon Estuary, where it borders creeks in the inner estuary. Opposite-leaved Pondweed (*Groenlandia densa*) is found in the Shannon where it passes through Limerick City, while Meadow Barley (*Hordeum secalinum*) is abundant in saltmarshes at Ringmoylan and Mantlehill. Hairy Violet (*Viola hirta*) occurs in the Askeaton/Foynes area. Golden Dock (*Rumex maritimus*) is noted as occurring in the River Fergus estuary. Finally, Bearded Stonewort (*Chara canescens*), a brackish water specialist, and Convergent Stonewort (*Chara connexa*) are both found in Shannon Airport Lagoon.

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Overall, the Shannon and Fergus Estuaries support the largest numbers of wintering waterfowl in Ireland. The highest count in 1995-96 was 51,423 while in 1994-95 it was 62,701. Species listed on Annex I of the E.U. Birds Directive which contributed to these totals include: Great Northern Diver (3; 1994/95), Whooper Swan (201; 1995/96), Pale-bellied Brent Goose (246; 1995/96), Golden Plover (11,067; 1994/95) and Bar-tailed Godwit (476; 1995/96). In the past, three separate flocks of Greenland White-fronted Goose were regularly found, but none were seen in 1993/94.

Other wintering waders and wildfowl present include Greylag Goose (216; 1995/96), Shelduck (1,060; 1995/96), Wigeon (5,976; 1995/96), Teal (2,319; 1995-96), Mallard (528; 1995/96), Pintail (45; 1995/96), Shoveler (84; 1995/96), Tufted Duck (272; 1995/96), Scaup (121; 1995/96), Ringed Plover (240; 1995/96), Grey Plover (750; 1995/96), Lapwing (24,581; 1995/96), Knot (800; 1995/96), Dunlin (20,100; 1995/96), Snipe (719; 1995/96), Black-tailed Godwit (1,062; 1995/96), Curlew (1,504; 1995/96), Redshank (3,228; 1995/96), Greenshank (36; 1995/96) and Turnstone (107; 1995/96). A number of wintering gulls are also present, including Black-headed Gull (2,216; 1995/96), Common Gull (366; 1995/96) and Lesser Black-backed Gull (100; 1994/95). This is the most important coastal site in Ireland for a number of the waders including Lapwing, Dunlin, Snipe and Redshank. It also provides an important staging ground for species such as Black-tailed Godwit and Greenshank.

A number of species listed on Annex I of the E.U. Birds Directive breed within the site. These include Peregrine Falcon (2-3 pairs), Sandwich Tern (34 pairs on Rat Island, 1995), Common Tern (15 pairs: 2 on Sturamus Island and 13 on Rat Island, 1995), Chough (14-41 pairs, 1992) and Kingfisher. Other breeding birds of note include Kittiwake (690 pairs at Loop Head, 1987) and Guillemot (4,010 individuals at Loop Head, 1987).

There is a resident population of Bottle-nosed Dolphin in the Shannon Estuary. This is the only known resident population of this E.U. Habitats Directive Annex II species in Ireland. The population is estimated (in 2006) to be  $140 \pm 12$  individuals. Otter, a species also listed on Annex II of this Directive, is commonly found on the site.

Five species of fish listed on Annex II of the E.U. Habitats Directive are found within the site. These are Sea Lamprey (*Petromyzon marinus*), Brook Lamprey (*Lampetra planeri*), River Lamprey (*Lampetra fluviatilis*), Twaite Shad (*Allosa fallax fallax*) and Salmon (*Salmo salar*). The three lampreys and Salmon have all been observed spawning in the lower Shannon or its tributaries. The Fergus is important in its lower reaches for spring salmon, while the Mulkear catchment excels as a grilse fishery, though spring fish are caught on the actual Mulkear River. The Feale is important for both types. Twaite Shad is not thought to spawn within the site. There are few other river systems in Ireland which contain all three species of lamprey.

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Two additional fish species of note, listed in the Irish Red Data Book, also occur, namely Smelt (*Osmerus eperlanus*) and Pollan (*Coregonus autumnalis pollan*). Only the former has been observed spawning in the Shannon.

Freshwater Pearl Mussel (*Margaritifera margaritifera*), a species listed on Annex II of the E.U. Habitats Directive, occurs abundantly in parts of the Cloon River.

There is a wide range of land uses within the site. The most common use of the terrestrial parts is grazing by cattle, and some areas have been damaged through over-grazing and poaching. Much of the land adjacent to the rivers and estuaries has been improved or reclaimed and is protected by embankments (especially along the Fergus estuary). Further, reclamation continues to pose a threat, as do flood relief works (e.g. dredging of rivers). Gravel extraction poses a major threat on the Feale.

In the past, cord-grass (*Spartina* sp.) was planted to assist in land reclamation. This has spread widely, and may oust less vigorous colonisers of mud and may also reduce the area of mudflat available to feeding birds.

Domestic and industrial wastes are discharged into the Shannon, but water quality is generally satisfactory, except in the upper estuary where it reflects the sewage load from Limerick City. Analyses for trace metals suggest a relatively clean estuary with no influences of industrial discharges apparent. Further industrial development along the Shannon and water polluting operations are potential threats.

Fishing is a main tourist attraction on the Shannon and there are a large number of angler associations, some with a number of beats. Fishing stands and styles have been erected in places. The River Feale is a designated Salmonid Water under the E.U. Freshwater Fish Directive. Other uses of the site include commercial angling, oyster farming, boating (including dolphin-watching trips) and shooting. Some of these may pose threats to the birds and dolphins through disturbance. Specific threats to the dolphins include underwater acoustic disturbance, entanglement in fishing gear and collisions with fast moving craft.

This site is of great ecological interest as it contains a high number of habitats and species listed on Annexes I and II of the E.U. Habitats Directive, including the priority habitats lagoon and alluvial woodland, the only known resident population of Bottle-nosed Dolphin in Ireland and all three Irish lamprey species. A good number of Red Data Book species are also present, perhaps most notably the thriving populations of Triangular Club-rush. A number of species listed on Annex I of the E.U. Birds Directive are also present, either wintering or breeding. Indeed, the Shannon and Fergus Estuaries form the largest estuarine complex in Ireland and support more wintering wildfowl and waders than any other site in the country. Most of the estuarine part of the site has been designated a Special Protection Area (SPA), under the E.U. Birds Directive, primarily to protect the large numbers of migratory birds present in winter.

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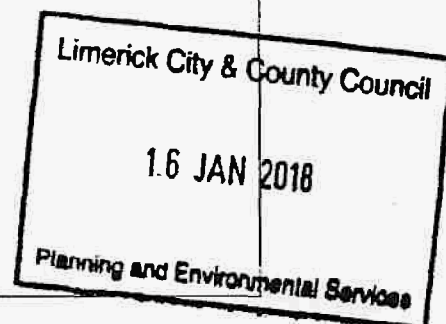
**Site Name: Blackwater River (Cork/Waterford) SAC**

**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 include the Licky, Bride, Flesk, Chimneyfield, Finisk, Araglin, Awbeg (Buttevant), Clyda, Glen, Allow, Dalua, Brogeen, Rathcool, Finnow, Owentaraglin and Awnaskirtaun. The portions of the Blackwater and its tributaries that fall within this SAC flow through the counties of Kerry, Cork, Limerick, Tipperary and Waterford. Nearby towns include Rathmore, Millstreet, Kanturk, Banteer, Mallow, Buttevant, Doneraile, Castletownroche, Fermoy, Ballyduff, Rathcormac, Tallow, Lismore, Cappoquin and Youghal.

The site is a Special Area of Conservation (SAC) selected for the following habitats and/or species listed on Annex I / II of the E.U. Habitats Directive (\* = priority; numbers in brackets are Natura 2000 codes):

- [1130] Estuaries
- [1140] Tidal Mudflats and Sandflats
- [1220] Perennial Vegetation of Stony Banks
- [1310] *Salicornia* Mud
- [1330] Atlantic Salt Meadows
- [1410] Mediterranean Salt Meadows
- [3260] Floating River Vegetation
- [91A0] Old Oak Woodlands
- [91E0] Alluvial Forests\*
- [91J0] Yew Woodlands\*
- [1029] Freshwater Pearl Mussel (*Margaritifera margaritifera*)
- [1092] White-clawed Crayfish (*Austropotamobius pallipes*)
- [1095] Sea Lamprey (*Petromyzon marinus*)
- [1096] Brook Lamprey (*Lampetra planeri*)
- [1099] River Lamprey (*Lampetra fluviatilis*)
- [1103] Twaite Shad (*Alosa fallax*)
- [1106] Atlantic Salmon (*Salmo salar*)
- [1355] Otter (*Lutra lutra*)
- [1421] Killarney Fern (*Trichomanes speciosum*)



The Blackwater rises in boggy land in 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 Boggeragh Mountains 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.

Wet woodlands are found where river embankments have broken down and channel edges are subject to daily inundation. This is particularly evident in the steep-sided valley of the River Bride, between Cappoquin and Youghal. 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*). Rusty Willow (*S. cinerea* subsp. *oleifolia*) 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 in Europe, 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 (*Acer pseudoplatanus*), Beech (*Fagus sylvatica*) 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 E.U. Life Programme. Owing to its rarity, Yew woodland is listed with priority status on Annex I of the E.U. 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*), Common Nettle (*Urtica dioica*), Purple Loosestrife (*Lythrum salicaria*)

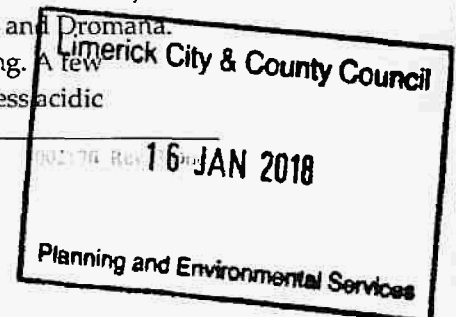
Common Valerian (*Valeriana officinalis*), Water Mint (*Mentha aquatica*) and Water Forget-me-not (*Myosotis scorpioides*) are all also found.

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 water table and several different communities have developed on the acidic or neutral sediments. Many of the ponds are ringed with Rusty Willow, 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 Common Water-starwort (*Callitriche stagnalis*) and Marsh Ragwort (*Senecio aquaticus*). One of the depressions has Silver Birch (*Betula pendula*), Ash (*Fraxinus excelsior*), Crab Apple (*Malus sylvestris*) and a little Pedunculate 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, with species such as water-crowfoots, including Pond Water-crowfoot (*Ranunculus peltatus*), Canadian Pondweed (*Elodea canadensis*), pondweed species, including Broad-leaved Pondweed (*Potamogeton natans*), water-milfoil species (*Myriophyllum* spp.), Common Club-rush (*Scirpus lacustris*), water-starwort species (*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* all occurring.

The grasslands adjacent to the rivers of the site are generally heavily improved, although liable to flooding in many places. However, fields of more species-rich wet grassland with species such as Yellow Iris (*Iris pseudacorus*), Meadowsweet, 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 and a few conifers, and sometimes of the invasive species Rhododendron (*Rhododendron ponticum*) and Cherry Laurel (*Prunus laurocerasus*). Oak woodland is well developed on sandstone about Ballinatrach, with the acid oak woodland community of Holly (*Ilex aquifolium*), Bilberry (*Vaccinium myrtillus*), Great Wood-rush (*Luzula sylvatica*) and the ferns *Dryopteris affinis* and *D. aemula* occurring in one place. Irish Spurge (*Euphorbia hyberna*) continues eastwards on acid rocks from its headquarters to the west, but there are also many plants of richer soils, for example Wood Violet (*Viola reichenbachiana*), Goldilocks Buttercup (*Ranunculus auricomus*), Broad-leaved Helleborine (*Epipactis helleborine*) and Red Campion (*Silene dioica*). Oak woodland is also found in Rincrew, Carrigane, Glendine, Newport and Promana. 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 have invaded the woodland.

The oak wood community in the Lismore and Glenmore valleys is of the classic 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 Great Wood-rush, 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*), the buckler-ferns *D. dilatata* and *D. aemula*, and Lady Fern (*Adiantum filix-femina*). There are many mosses present and large species such as *Rhytideladelphus* spp., *Polytrichum formosum*, *Minium 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*), Ramsons (*Allium ursinum*), Garlic Mustard (*Alliaria petiolata*) and Wild Strawberry (*Fragaria vesca*). The presence of Ivy Broomrape (*Orobanchae hederaceae*), 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, 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 europaea*) 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 Aven (*Cicum 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 Wood-rush in the ground flora.

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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 (i.e. floating vegetation) with characteristic species like Marsh Willowherb (*Epilobium palustre*) and Early 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 (*Polystichum* sp.) occur. There is some Ramsons, Three-nerved Sandwort (*Moehringia trinervia*) and Early-purple Orchid (*Orchis mascula*) locally, with Opposite-leaved Golden-saxifrage, Meadowsweet and Bugle (*Ajuga reptans*) in wet places. A stand of Hazel woodland 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 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 habitats within and associated with 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. There are also 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 filamentous algae (*Ulva* sp. and *Enteromorpha* sp.) occur in places, while furoid 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. These four townlands are generally characteristic of Atlantic salt meadows. The species list at Foxhole consists

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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. Some Sea Aster (*Aster tripolium*) occurs, generally with Creeping Bent (*Agrostis stolonifera*). Sea Couch (*Elymus pycnanthus*) and small isolated clumps of Sea Club-rush (*Scirpus maritimus*) are also seen. On the Tourig River additional saltmarsh species found include sea-lavenders (*Limonium* spp.), Thrift (*Armeria maritima*), Red Fescue (*Festuca rubra*), Common Scurvygrass (*Cochlearia officinalis*) and Sea Plantain (*Plantago maritima*). Oraches (*Atriplex* spp.) are found on channel edges. Species such as Saltmarsh Rush (*Juncus gerardi*) and Sea Rush (*J. maritimus*) are found in places in this site also, and are indicative of Mediterranean salt meadows. Areas of *Salicornia* mud are found at the eastern side of the townland of Foxbole above Youghal, at Blackbog, along the Tourig and Kinsalebeg estuaries.

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* subsp. *maritima*), Curled Dock (*Rumex crispus*) and Yellow Horned-poppy (*Glaucium flavum*) occur, while at a slightly higher level Sea Mayweed (*Matricaria maritima*), Cleavers (*Galium aparine*), Rock Samphire (*Crithmum maritimum*), Sea 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 and Kidney Vetch (*Anthyllis vulneraria*). The top of the spit is more vegetated and supports 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, while the Killarney Fern is also listed on Annex II of the E.U. Habitats Directive. 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, Sand Leek (*Allium scorodoprasum*) and Wood Club-rush (*Scirpus sylvaticus*) on the Awbeg.

The site is also important for the presence of several E.U. 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 springs, 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 significant pools, 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 highly regarded especially at Careyville. The Bride, main Blackwater upstream of Fermoy, and some of the tributaries are more associated with grise 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, can 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 *Mitroptera roselli* (Order Orthoptera) 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 5, 1996/97-2000/01) 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 maximum 2,141, 1994/95). Staging Terns visit the site annually, with >300 Sandwich Tern and >200 Arctic/Common Tern (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 breed at the site (12 pairs in 1997, 19 pairs in 1998).

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 2,752), Teal (average peak 1,316), 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),



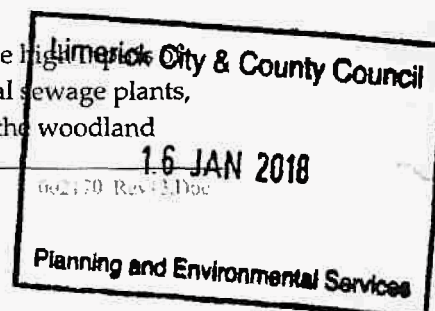
Plover (36), Lapwing (1,680), Knot (150), Dunlin (2,293), Snipe (272), Black-tailed Godwit (845), Bar-tailed Godwit (130), Curlew (920), Redshank (340), Turnstone (130), Black-headed Gull (4,000) and Lesser Black-backed Gull (172). The greatest numbers (75%) of the wintering waterfowl of the estuary 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; approximately 25 pairs in the woodland opposite; 8 pairs at Ardsallagh Wood and around 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 Co. 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 breeds nearby to the south of Youghal. Dipper occurs on the rivers.

Land use 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 also grown. The spreading of slurry and fertiliser poses a threat to the water quality of this salmonid river and to the populations of E.U. 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 levels of nutrients into the river system from agricultural run-off and several sewage plants, dredging of the upper reaches of the Awbeg, over-grazing within the woodland





areas, and invasion by non-native species, for example Rhododendron and Cherry Laurel.

Overall, the River Blackwater is of considerable conservation significance for the occurrence of good examples of habitats and 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.



## SITE SYNOPSIS

**SITE NAME: STACK'S TO MULLAGHAREIRK MOUNTAINS, WEST LIMERICK HILLS AND MOUNT EAGLE SPA**

**SITE CODE: 004161**

The Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA is a very large site centred on the borders between the counties of Cork, Kerry and Limerick. The site is skirted by the towns of Newcastle West, Ballydesmond, Castleisland, Tralce and Abbeyfeale. The mountain peaks included in the site are not notably high or indeed pronounced, the highest being at Knockfeha (451 m). Other mountains included are Mount Eagle, Knockanefune, Garraunbaun, Taur, Rock Hill, Knockacummer, Mullaghmuish, Knight's Mt, Ballincollig Hill, Beennageeha Mt, Sugar Hill, Knockanimpuba and Knockathea, amongst others. Many rivers rise within the site, notably the Blackwater, Owentaraglin, Owenkeal, Glenlara, Feale, Clydagh, Allaghaun, Allow, Oolagh, Galcy and Smerlagh.

The site consists of a variety of upland habitats, though almost half is afforested. The coniferous forests include first and second rotation plantations, with both pre-thicket and post-thicket stands present. Substantial areas of clear-fell are also present at any one time. The principal tree species present are Sitka Spruce (*Picea sitchensis*) and Lodgepole Pine (*Pinus contorta*). A substantial part (28%) of the site is unplanted blanket bog and heath, with both wet and dry heath present. The vegetation of these habitats is characterised by such species as Ling Heather (*Calluna vulgaris*), Bilberry (*Vaccinium myrtillus*), Common Cottongrass (*Eriophorum angustifolium*), Hare's-tail Cottongrass (*Eriophorum vaginatum*), Deergrass (*Scirpus cespitosus*) and Purple Moor-grass (*Molinia caerulea*). The remainder of the site is mostly rough grassland that is used for hill farming. This varies in composition and includes some wet areas with rushes (*Juncus* spp.) and some areas subject to scrub encroachment.

The site is a Special Protection Area (SPA) under the E.U. Birds Directive, of special conservation interest for Hen Harrier.

This SPA is a stronghold for Hen Harrier and supports the largest concentration of the species in the country. A survey in 2005 recorded 45 pairs, which represents over 20% of the all-Ireland total. A similar number of pairs had been recorded in the 1998-2000 period. The mix of forestry and open areas provides optimum habitat conditions for this rare bird, which is listed on Annex I of the E.U. Birds Directive. The early stages of new and second-rotation conifer plantations are the most frequently used nesting sites, though some pairs may still nest in tall heather of unplanted bogs and heath. Hen Harriers will forage up to c. 5 km from the nest site, utilising open bog and moorland, young conifer plantations and hill farmland that is not too rank. Birds will often forage in openings and gaps within forests. In Ireland, small birds and small mammals appear to be the most frequently taken prey.

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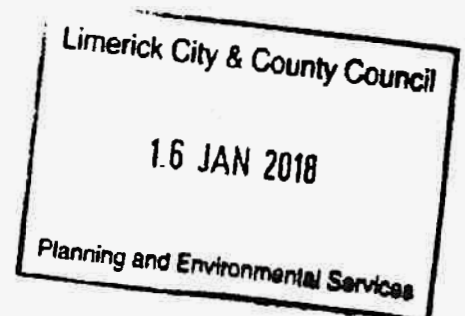
16 JAN 2018

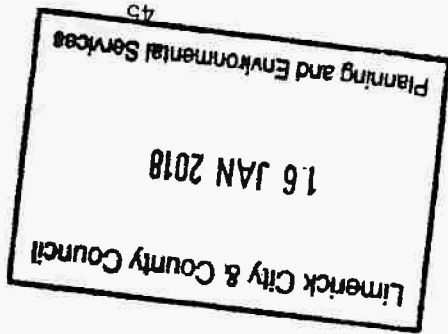
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Short-eared Owl, a very rare species in Ireland, has been known to breed within the site. Nesting certainly occurred in the late 1970s and birds have been recorded intermittently since. The owls are considered to favour this site due to the presence of Bank Voles, a favoured prey item. Merlin also breed within the site but the size of the population is not known. Red Grouse is found on some of the unplanted areas of bog and heath – this is a species that has declined in Ireland and is now Red-listed.

The Stack's to Mullaghareirk Mountains, West Limerick Hills and Mount Eagle SPA is of ornithological importance because it provides excellent nesting and foraging habitat for breeding Hen Harrier and is one the top sites in the country for the species. The presence of three species, Hen Harrier, Merlin and Short-eared Owl, which are listed on Annex I of the E.U. Birds Directive is of note.

20.1.2015

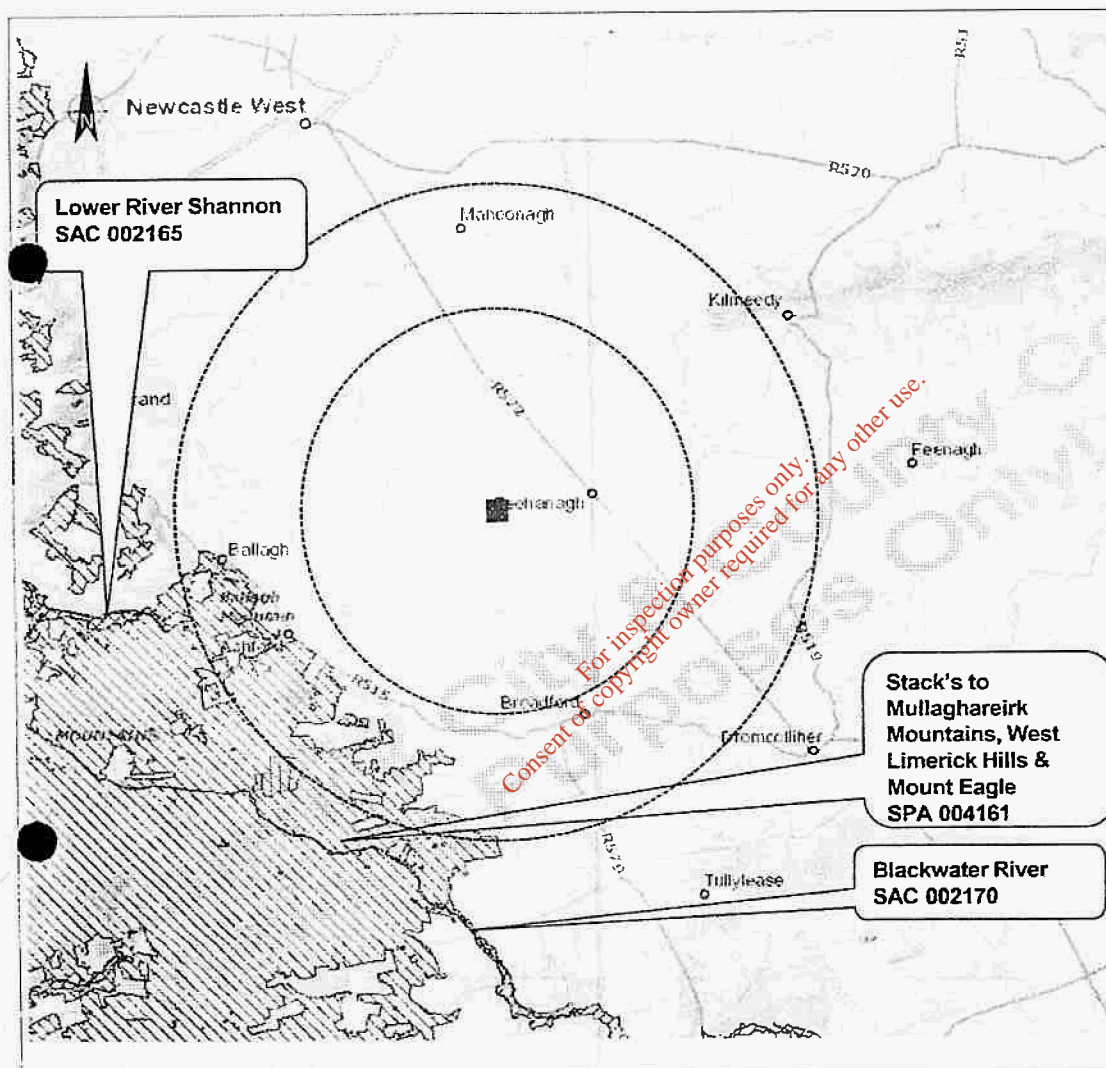




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Appendix 2- Figures





# Legend

 Site Location

 5 km and 10 km Radius

-  Special Protection Areas
-  Proposed Natural Heritage Areas
-  Natural Heritage Areas
-  Special Areas of Conservation

Scale: 1:50,000 Date: 16/01/2018

**MEHS**  
ENVIRONMENT, HEALTH & SAFETY

environmental health and safety engineering project management  
100, Keshel, Ballymore Park, Keshel, Ballymore, Co. Limerick  
Tel: 01274 500171 Email: info@mehs.ie

Client: Patrick O'Connell

Title: Figure 1 - Location

Scale: 1:50,000 Project No: P018 058


Figure No: P018 058A Rev: A

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16 JAN 2018  
Planning and Environmental Services



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 16 JAN 2018  
 Planning and Environmental Services

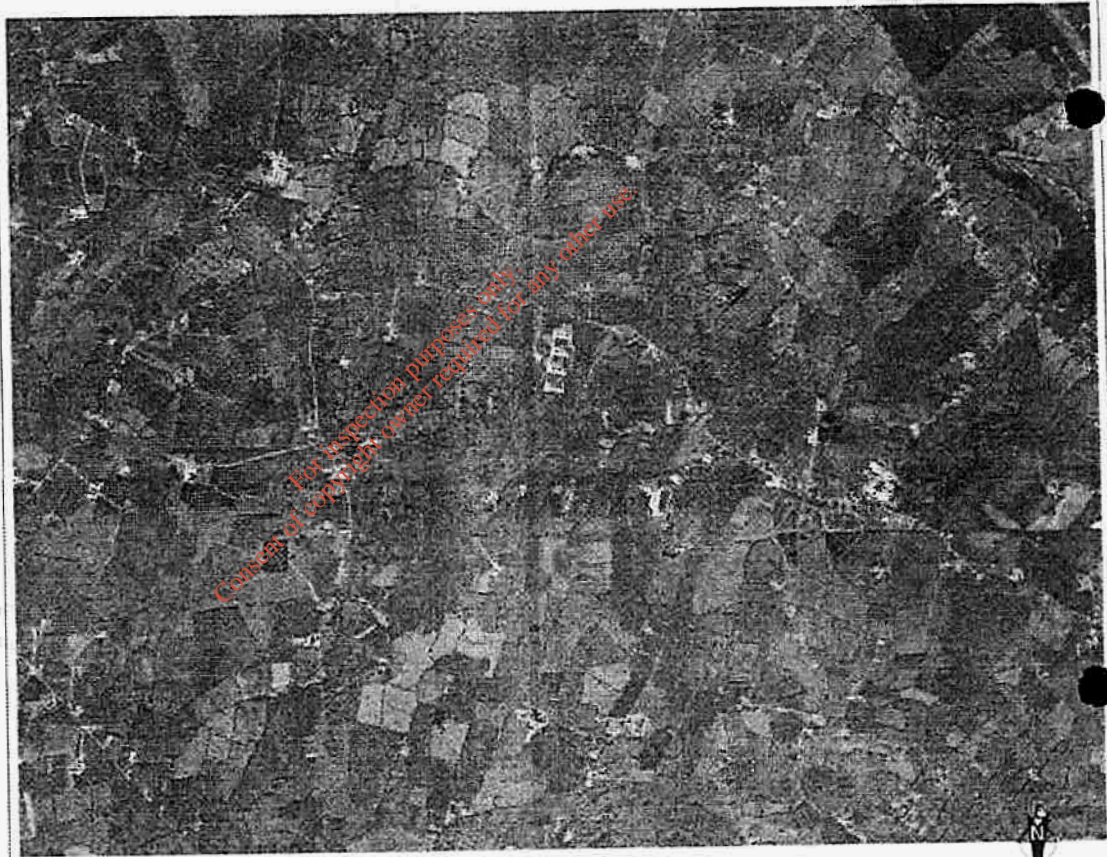
|   |                               |
|---|-------------------------------|
| Figure No   | P016 058AC                    |
| Scale   | 1:5000                        |
| Project No  | P016 058                      |
| Title   | Figure 3 - Aerial Photography |
| Client  | Patrick O'Connell             |
| <small>Environmental Health and Safety Engineering Ltd. 2001-2002<br/>       10000 Highway 100, Suite 100, Limerick, Ireland<br/>       Tel: 021 454 1111 Fax: 021 454 1112</small> |                               |



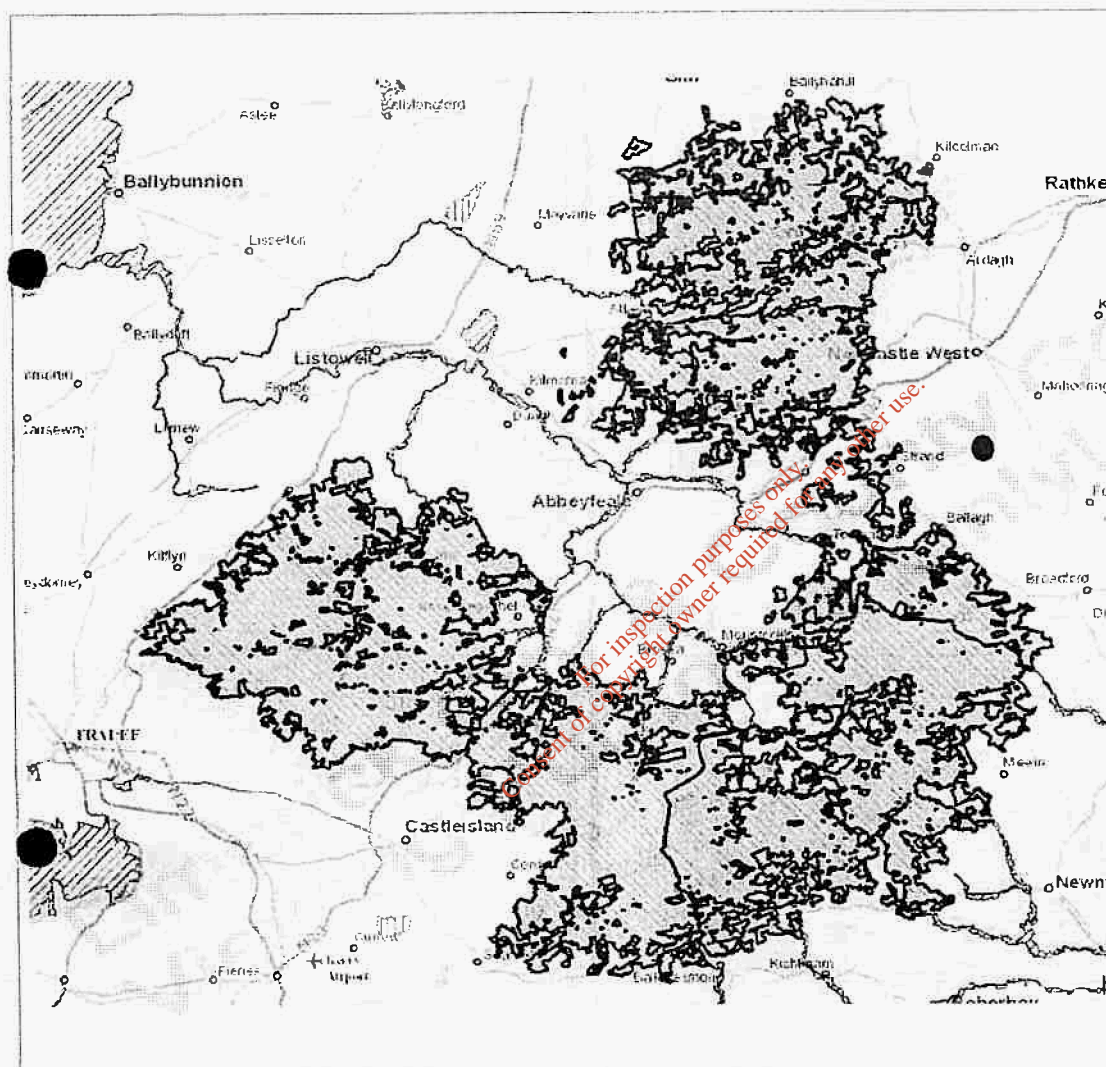
**MEHS**  
 ENVIRONMENT, HEALTH & SAFETY

**Legend**

- Site Location
- Special Protection Areas
- Proposed Natural Heritage Areas
- Natural Heritage Areas
- Special Areas of Conservation







# Legend

● Site Location

- Special Protection Areas
- Proposed Natural Heritage Areas
- Natural Heritage Areas
- Special Areas of Conservation

Issue Date By Checked Approved Date Rat User

**MEHS**  
ENVIRONMENT, HEALTH & SAFETY

environmental health and safety engineering project management  
Montgomery End, Kesh, Co. Down, Co. Limerick  
Tel: 087 933 88888 Fax: 087 933 88888

Client Patrick O'Connell

Title Figure 4 - Stack's to Mullaghareirk SPA

Scale 1:50000 Project No P016 058

Figure No P016 058AD Rev A

Limerick City & County Council  
1.6 JAN 2018  
Planning and Environmental Services



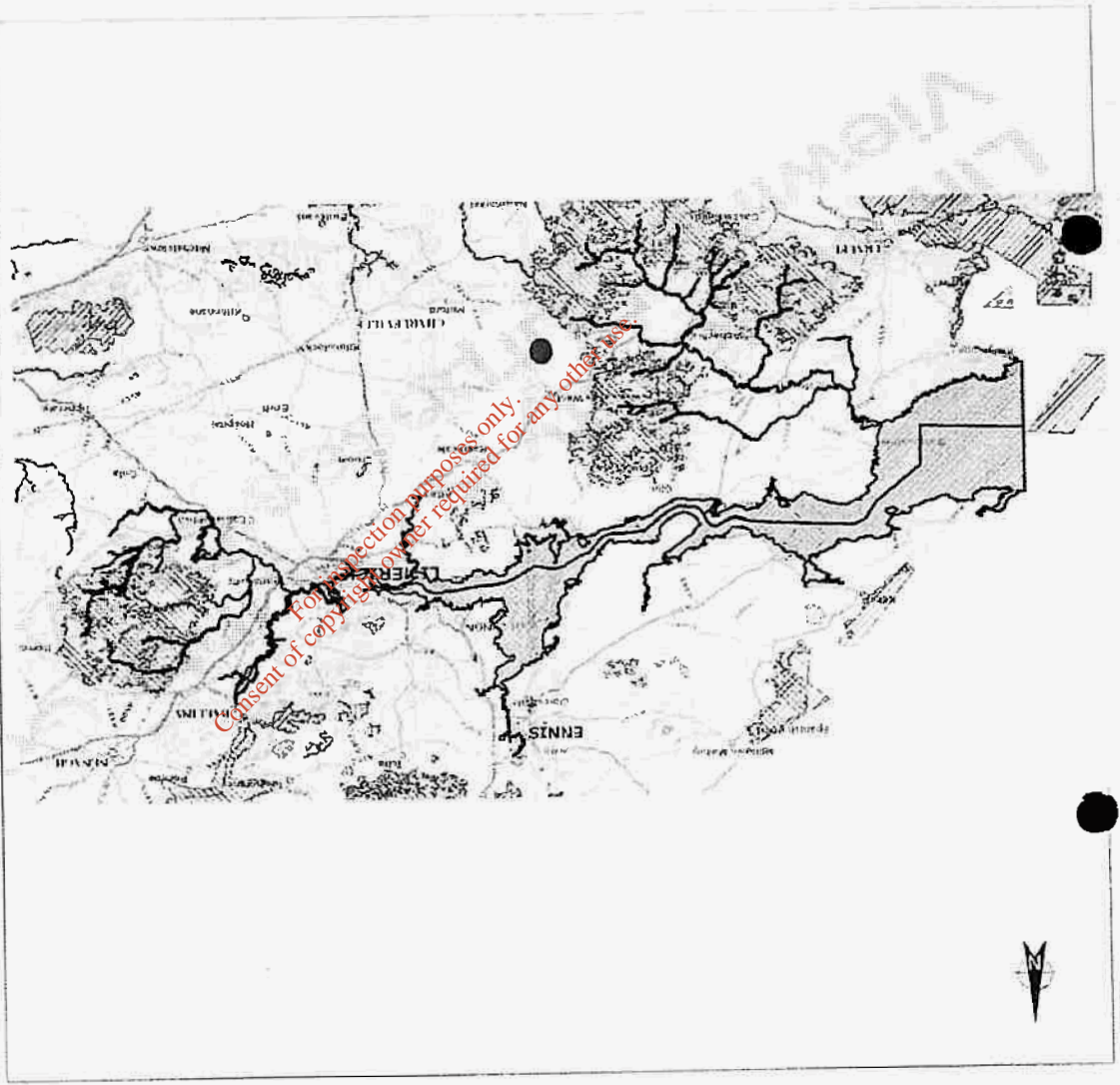
Limerick City & County Council  
 16 JAN 2018  
 Planning and Environmental Services

Figure No: P016 058AF  
 Scale: 1:25,000  
 Project No: P016 058  
 Title: Figure 5 - Lower River Shannon SAC  
 Client: Patrick O'Connell  
 Date: 16/01/2018  
 By: [Signature]  
 Checked: [Signature]  
 Approved: [Signature]  
 Date for: [Signature]  
 Drawn: [Signature]

**MEHS**  
 ENVIRONMENT, HEALTH & SAFETY

**Legend**

- Site Location
- Special Protection Areas
- Proposed Natural Heritage Areas
- Natural Heritage Areas
- Special Areas of Conservation



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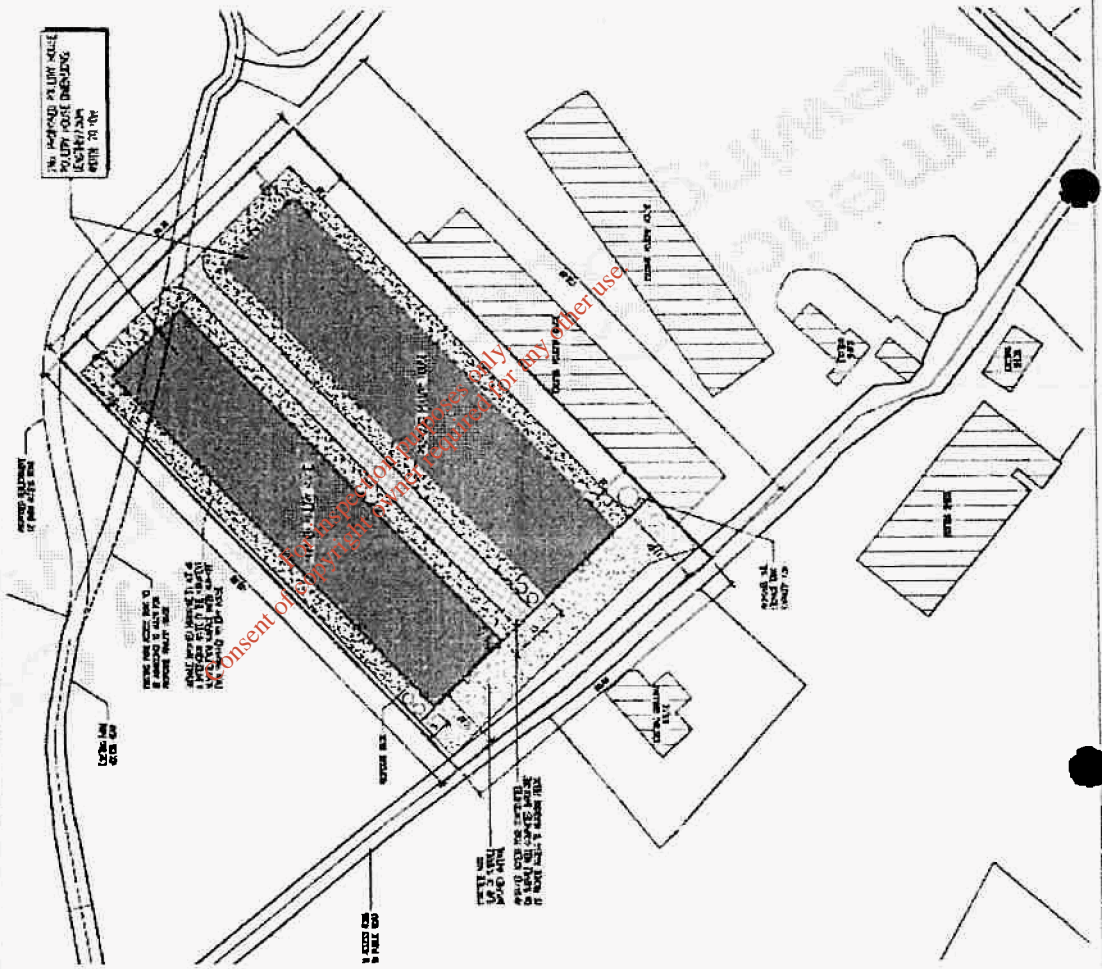
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|           |                                 |
|-----------|---------------------------------|
| Figure No | P016 058                        |
| Scale     | 1:50,000                        |
| Title     | Figure 7 - Proposed Site Layout |
| Client    | Patrick O'Connell               |
| Author    | MEHS                            |
| Check     |                                 |
| Drawn     |                                 |
| Reviewed  |                                 |
| Approved  |                                 |
| By        |                                 |
| Date      |                                 |

MEHS  
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Site Location

Legend





## **Appendix 3 Existing legislation, plans and proposals**

### **A3.1 Convention on Biological Diversity (CBD)**

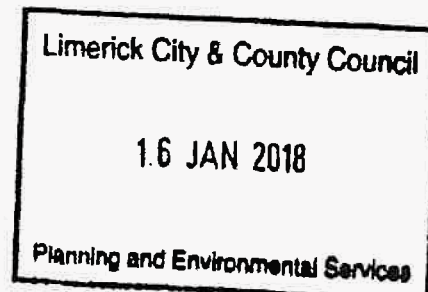
The protection of biodiversity is enshrined in the CBD to which Ireland is a signatory. As part of its commitment to this international treaty Ireland, as part of a wider European Union initiative, is committed to the halt in loss of biodiversity by the year 2010. The National Biodiversity Plan (Dúchas, 2002), published in 2002, states that "each local authority is to prepare a local biodiversity action plan". All Local Authorities are or have completed the process of drawing up its first Biodiversity Action Plan. Limerick City & County Council have not yet produced a Biodiversity Action Plan but one is under preparation. In addition, the Department of the Environment, Heritage and Local Government is currently preparing the second National Biodiversity Plan.

The plan aims to provide a framework for the conservation of nature and wildlife within the County, which will tie together the policy of national government with the issues that most affect us locally. Its implementation will contribute to achieving national and international targets for the conservation of biodiversity. This is in the context of constantly accelerating rates of species extinction and habitat loss globally.

### **A3.2 Environment**

The Local Agenda 21 Partnership Fund provides for projects on the theme of Biodiversity, as it is a fundamental part of sustainable development. Control of permits and licencing for waste disposal by this section, as well as enforcement, helps protect sensitive habitats. Provision of better information for the section on the location of locally important habitats would avoid habitat damage and loss and so avoid costly clean-up bills.

- To protect natural heritage sites designated in National and European legislation. This includes sites proposed to be designated or designated as Special Areas of Conservation (SAC), Natural Heritage Areas (NHA), Special Protection Areas (SPA) Nature Reserves and Wildfowl Sanctuaries. This protection will extend to any additions or alterations to sites that may arise during the lifetime of this plan.
- To assess all proposed developments (individually or in combination with other





proposals, as appropriate) which are likely to impact on designated natural heritage sites or those sites proposed to be designated.

- To consult with the prescribed bodies and relevant government agencies when assessing developments which are likely to impact on designated natural heritage sites or those sites proposed to be designated.
- To ensure that any development in or near a designated natural heritage site will avoid any significant adverse impact on the features for which the site has been designated.
- To require an appropriate environmental assessment in respect of any proposed development likely to have an impact on a designated natural heritage site, or those sites proposed to be designated.

#### **A3.3 National Sustainable Development Strategy**

The 2002 document: 'Making Ireland's Development Sustainable' (DOEHLG, 2002) highlights "respect for ecological integrity and biodiversity" as a core theme, while the associated principle is that "the diversity of wildlife, habitats and species should be maintained and improved". An update to this document is to be published.

#### **A3.4 Long-term Strategy of the Environmental Protection Agency (EPA)**

In 2007 the EPA published '2020 Vision: Protecting and Improving Ireland's Environment' (EPA, 2007) and identified the protection of soil and biodiversity as one of six environmental goals.

#### **A3.5 National Biodiversity Plan 2011 to 2016**

This sets out Ireland's biodiversity strategy in response to Article 6 of the Convention on Biological Diversity 1992. Its main goal is to secure conservation (and where possible enhancement) and sustainable use of biological diversity in Ireland and contribute to conservation and sustainability of biodiversity globally. It includes the statement that environmental policy in Ireland is now based on 'the precautionary principle' and includes key objectives to conserve habitats, species and genetic diversity.

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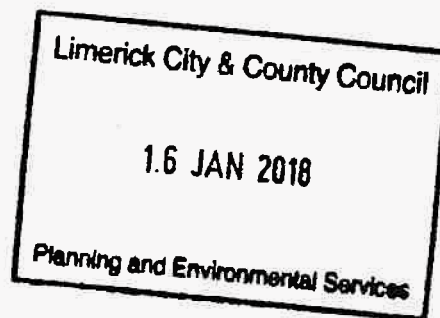
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In addition to biodiversity many important ecosystems exist which provide a variety of services which bring many benefits to society and the economy; there are four main categories:

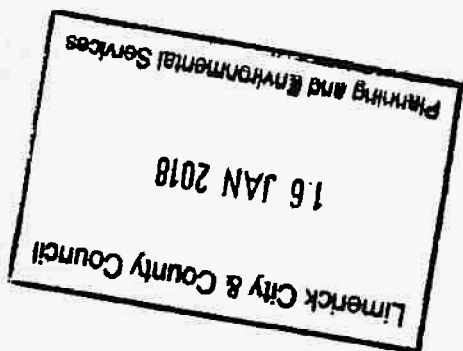
- Provisioning services (production of food and water, etc.)
- Regulating services (e.g. the control of climate and disease)
- Supporting services (e.g. nutrient cycling and crop pollination)
- Cultural services (such as spiritual and recreational benefits)

The measures Ireland will take are presented as 102 actions under a series of 7 Strategic Objectives. Some of the actions within the plan are continuing elements of existing work and many are requirements under existing EU Directives. The objectives cover

- The conservation of biodiversity in the wider countryside and in the marine environment, both within and outside protected areas.
- The mainstreaming of biodiversity across the decision making process in the State.
- The strengthening of the knowledge base on biodiversity.
- Increasing public awareness and participation; and Ireland's contribution to international biodiversity issues, including North South co-ordination on issues of common interest.



APPENDIX 4 OUTPUT OF SCAL AGRICULTURE SCREENING TOOL



# SCAIL

Simple Calculation of Atmospheric Impact Limits

Simple Calculation of Atmospheric Impact Limits from Agricultural Sources (SCAIL-Agriculture) is a screening tool for assessing the impact from pig and poultry farms on human health and on semi-natural areas like SSSIs and SACs. The model provides an estimate of the amount of acidity and nitrogen deposited from a farm as well as predictions of air concentrations of odour and PM10. These values can then be used to assess whether impact limits for human health or habitats are exceeded or not.

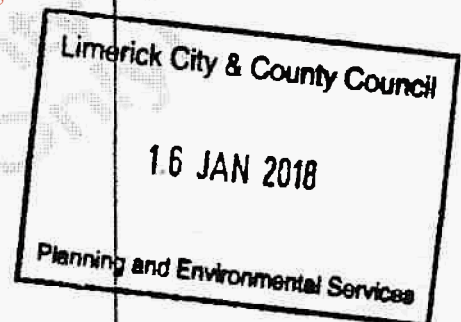
Information regarding the use of SCAIL-Agriculture as a screening tool and instructions for completing the assessment form are provided in the SCAIL-Agriculture User Guide. The User Guide also contains background information on regulatory requirements for the use of SCAIL-Agriculture, including instances where further detailed modelling of emissions will be required. **The relevant regulatory authority should be consulted for guidance regarding assessment requirements for planning and permitting purposes.**

[Scail Home](#) | [User Guide](#) | [SCAIL-Agriculture Report](#) | [Regulator Contact Details](#) | [Online Tutorial](#)

[Load Input Data](#) ?

Click on the question mark icon ? to view guidance on each form field.

|                            |  |
|----------------------------|--|
| <b>Project Details</b>     |  |
| Project Notes ?            | Patrick O'Connell  |
| Project Run Mode ?         | <input checked="" type="radio"/> Conservative Met <input type="radio"/> Realistic Met                                    |
| <b>Location Details</b>    |  |
| Select Country ?           | Republic of Ireland ▼  |
| Installation Details       |  |
| Installation ?             | 1 ▼  |
| Installation Name ?        | Patrick O'Connell  |
| Installation Location ?    | 132108,125887 <input type="radio"/> Landranger <input checked="" type="radio"/> x,y<br><a href="#">Verify Location</a> ? |
| <b>Source Details</b>      |  |
| Source ?                   | 1 ▼ ?  |
| Source ?                   | <input type="radio"/> Pig <input checked="" type="radio"/> Poultry   |
| New or Existing Source ?   | Existing   |
| Source Name ?              | Patrick O'Connell  |
| Source Location ?          | 132108,125887 <input type="radio"/> Landranger <input checked="" type="radio"/> x,y<br><a href="#">Verify Location</a> ? |
| Source Type ?              | Housing ▼  |
| Naturally Vented           | <input checked="" type="checkbox"/>  |
| Building Height            | 5.5 m  |
| Fan Location ?             | please select... ▼   |
| No. of Fans (optional) ?   |  |
| Fan Diameter ?             | m  |
| Fan Flowrate ?             | m <sup>3</sup> /s  |
| Livestock Number ?         | 120000   |
| Housing Floor Area ?       | 6300 m <sup>2</sup>  |
| Type ?                     | Broilers ▼   |
| Details ?                  | Naturally ventilated, fully littered floor, non-leaking drinkers ▼   |
| <b>Total emissions : ?</b> |  |
| NH <sub>3</sub> :          | 3600 (kg)  |
| PM <sub>10</sub> :         | 3600 (kg)  |
| Odour:                     | 1892160000 (kOu)   |





Get Emissions Values (P)

NH<sub>3</sub> emission (kg) (P) 3600

(comment)

PM<sub>10</sub> emission (kg) (P) 3600

(comment)

Odour emission (kOu) (P) 1892160000

(comment)

## Designated Site details:

Search Radius (P) 10 km

Run Receptor Search (P)

No. of Designated Sites (P) 4 found

Verify Receptor Locations (P)

| Site No. | Name  | Distance(km) | Designation | Easting | Northing |
|----------|---|--------------|-------------|---------|----------|
| 1        | STACK'S TO MULLAGHAREIRK MOUNTAINS, WEST LIMERICK HILLS AND MOUNT EAGLE SPA | 4.48         | SPA         | 128772  | 122895   |
| 2        | Lough Gay Bog NHA   | 6.28         | NHA         | 127979  | 121155   |
| 3        | Lower River Shannon   | 6.816        | SAC         | 125646  | 123718   |
| 4        | Blackwater River (Cork/Waterford)   | 7.597        | SAC         | 130979  | 118373   |

User specified site

Select (P) Add site

Site Name

Site Location

Landranger (P) x,y

Verify Location (P)

Habitat within site

please select...

Check Background Levels (P)

## Human Health Receptor Details

Receptor

Select (P) Add Receptor

PM<sub>10</sub> percentile Annual Average (P)

Receptor Name

Receptor Location

Landranger (P) x,y

Verify Location (P)

Check Background PM10 Levels (P)

Finished adding sources?

Save Input Data

Clear Form

Calculate

Limerick City &amp; County Council

1.6 JAN 2018

Planning and Environmental Services

# SCAIL

Simple Calculation of Atmospheric Impact Limits

## Results

[Scail Home](#) | [User Guide](#) | [SCAIL-Agriculture Report](#) | [SEPA/EA/NIEA/EPA Contact Details](#) | [Online Tutorial](#)

### Content Specific Help Text

#### Site Information site 1 ▾ ⓘ

Region: Republic of Ireland

Site Name: STACK'S TO MULLAGHAREIRK MOUNTAINS| WEST LIMERICK HILLS AND MOUNT EAGLE SPA

Site Code: ⓘ 004161

Designation Status: ⓘ SPA

Distance from Installation (m): ⓘ 4480

Habitat Type: ⓘ Habitat

Grid Reference: ⓘ 128772.8,122895.6

Met Site: ⓘ SHAN

Run Mode: ⓘ Conservative

PM<sub>10</sub> Percentile: ⓘ Average

#### Installation Information ⓘ

| No. | Name      | No. of sources | No. of new sources | PM <sub>10</sub> (t/a) | NH <sub>3</sub> (t/a) | Odour (kOu/a) | Dep N (kg/ha/yr) | Conc PM <sub>10</sub> (µg/m <sup>3</sup> ) | Conc NH <sub>3</sub> (µg/m <sup>3</sup> ) | Conc Odour (Ou/m <sup>3</sup> ) | Dep Acid (kEq H <sup>+</sup> /ha/yr) |
|-----|-----------|----------------|--------------------|------------------------|-----------------------|---------------|------------------|--|---|---------------------------------|--------------------------------------|
| 1   | Patrick O | 1              | undefined          | -                      | undefined             | -             | 0.25             | -  | 0.05                                      | -                               | 0.017                                |

#### Total Depositions/Concentrations and Exceedances ⓘ

| Concentrations/Depositions and Critical Loads             | PM <sub>10</sub> (µg/m <sup>3</sup> ) ⓘ | NH <sub>3</sub> (µg/m <sup>3</sup> ) | Odour (Ou/m <sup>3</sup> ) | N Dep. (kg N/ha/yr)                          | Acid Dep. (kEq H <sup>+</sup> /ha/yr)        |
|---|---|--------------------------------------|----------------------------|--|--|
| Process Contribution (PC) at receptor edge                | -                                       | 0.05                                 | -                          |  |  |
| Background concentration at receptor edge ⓘ               | -                                       | 1.81                                 | -                          |  |  |
| Predicted Environmental Concentration (PEC) ⓘ             | -                                       | 1.86                                 | -                          |  |  |
| Process Contribution (PC) at receptor edge                |   |                                      |                            | 0.26   | 0.018  |
| Background deposition at receptor ⓘ                       |   |                                      |                            | 14.60  | 2.11 (N:1.04 S:1.06)                         |
| Predicted Environmental Deposition (PEC) ⓘ                |   |                                      |                            | 14.86  | 2.13   |
| Environmental Assessment Level or Critical Load / Level ⓘ |   | 1 or 3 ⓘ                             | -                          | No sensitive habitat or species at this site | No sensitive habitat or species at this site |
| Alternative Critical Load Info                            |   |                                      |                            |  |  |
| % of relevant standard PC ⓘ                               | -                                       | 5% or 2%                             | -                          | n/a  | n/a  |
| % of relevant standard PEC ⓘ                              | -                                       | 186% or 62%                          | -                          | n/a  | n/a  |
| EXCEEDANCE ⓘ  | -                                       | 0.86 or No exceedance                | -                          | n/a  | n/a  |

#### Project Notes

Patrick O'Connell

Save Results



Save Inputs



[Use this Back button. Do not use the  
browser back button - you could lose all  
inputs!]

Back



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SNIFFER  
CONCENTRATION MONITORING  
SYSTEMS FOR AIR QUALITY

Limerick City & County Council

16 JAN 2018

Planning and Environmental Services

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# SCAIL

Simple Calculation of Atmospheric Impact Limits

## Results

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### Content Specific Help Text

#### Site Information site 2

Region: Republic of Ireland  
 Site Name: Lough Gay Bog NHA  
 Site Code: 002454  
 Designation Status: NHA  
 Distance from Installation (m): 6280  
 Habitat Type: Habitat  
 Grid Reference: 127979.2,121155.5  
 Met Site: SHAN  
 Run Mode: Conservative  
 PM<sub>10</sub> Percentile: Average

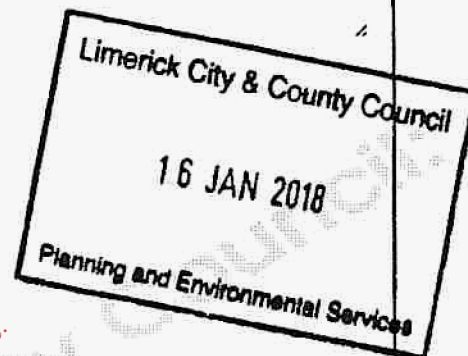
#### Installation Information

| No. | Name      | No. of sources | No. of new sources | PM <sub>10</sub> (t/a) | NH <sub>3</sub> (t/a) | Odour (kOu/a) | Dep N (kg/ha/yr) | Conc PM <sub>10</sub> (µg/m <sup>3</sup> ) | Conc NH <sub>3</sub> (µg/m <sup>3</sup> ) | Conc Odour (Ou/m <sup>3</sup> ) | Dep Acid (kEq H <sup>+</sup> /ha/yr) |
|-----|-----------|----------------|--------------------|------------------------|-----------------------|---------------|------------------|--|---|---------------------------------|--------------------------------------|
| 1   | Patrick O | 1              | undefined          | -                      | undefined             | -             | 0.14             | -  | 0.03                                      | -                               | 0.01                                 |

#### Total Depositions/Concentrations and Exceedances

| Concentrations/Depositions and Critical Loads           | PM <sub>10</sub> (µg/m <sup>3</sup> ) | NH <sub>3</sub> (µg/m <sup>3</sup> ) | Odour (Ou/m <sup>3</sup> ) | N Dep. (kg N/ha/yr) | Acid Dep. (kEq H <sup>+</sup> /ha/yr)              |
|---|---------------------------------------|--------------------------------------|----------------------------|---------------------|--|
| Process Contribution (PC) at receptor edge              | -                                     | 0.03                                 | -                          |                     |  |
| Background concentration at receptor edge               | -                                     | 1.81                                 | -                          |                     |  |
| Predicted Environmental Concentration (PEC)             | -                                     | 1.84                                 | -                          |                     |  |
| Process Contribution (PC) at receptor edge              |                                       |                                      |                            | 0.16                | 0.011  |
| Background deposition at receptor                       |                                       |                                      |                            | 14.60               | 2.11 (N:1.04 S:1.06)                               |
| Predicted Environmental Deposition (PEC)                |                                       |                                      |                            | 14.76               | 2.12   |
| Environmental Assessment Level or Critical Load / Level | -                                     | 1 or 3                               | -                          | Peatland<br>5.0     | Peatland<br>maxN: 0.14<br>maxS: 0.06<br>minN: 0.03 |
| Alternative Critical Load Info                          |                                       |                                      |                            |                     |  |
| % of relevant standard PC                               | -                                     | 3%<br>or<br>1%                       | -                          | 3%                  | 7%   |
| % of relevant standard PEC                              | -                                     | 184%<br>or<br>61%                    | -                          | 295%                | 1514%  |
| EXCEEDANCE  | -                                     | 0.84<br>or<br>No exceedance          | -                          | 9.76                | 1.98   |

#### Project Notes





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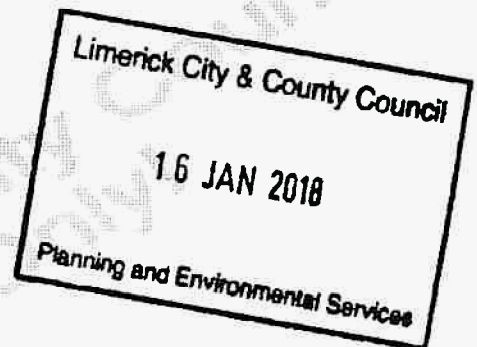
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## Content Specific Help Text

## Site Information site 3

Region: Republic of Ireland  
Site Name: Lower River Shannon  
Site Code: 002165  
Designation Status: SAC  
Distance from Installation (m): 6816  
Habitat Type: Habitat  
Grid Reference: 125646.6, 123718  
Met Site: SHAN  
Run Mode: Conservative  
PM<sub>10</sub> Percentile: Average

## Installation Information

| No. | Name      | No. of new sources | No. of PM <sub>10</sub> (t/a) | NH <sub>3</sub> (t/a) | Odour (kOu/a) | Dep N (kg/ha/yr) | Conc PM <sub>10</sub> (µg/m <sup>3</sup> ) | Conc NH <sub>3</sub> (µg/m <sup>3</sup> ) | Conc Odour (OU/m <sup>3</sup> ) | Dep Acid (kg H+/ha/yr) |
|-----|-----------|--------------------|-------------------------------|-----------------------|---------------|------------------|--|---|---------------------------------|------------------------|
| 1   | Patrick O | 1                  | undefined                     | undefined             | 0.13          | -                | 0.02                                       | -   | -                               | 0.008                  |

## Total Depositions/Concentrations and Exceedances

| Concentrations/Depositions and Critical Loads           | PM <sub>10</sub> (µg/m <sup>3</sup> ) | NH <sub>3</sub> (µg/m <sup>3</sup> ) | Odour (OU/m <sup>3</sup> ) | N Dep. (kg N/ha/yr)                 | Acid Dep. (kg H+/ha/yr) |
|---|---------------------------------------|--------------------------------------|----------------------------|-------------------------------------|-------------------------|
| Process Contribution (PC) at receptor edge              | 0.02                                  | -                                    | -                          | -                                   | -                       |
| Background concentration at receptor edge               | 1.81                                  | -                                    | -                          | -                                   | -                       |
| Predicted Environmental Concentration (PEC)             | 1.83                                  | -                                    | -                          | -                                   | -                       |
| Process Contribution (PC) at receptor edge              | 0.10                                  | 14.60                                | 14.7                       | 0.007                               | 2.11 (N:1.04S:1.06)     |
| Background deposition at receptor                       | -                                     | -                                    | -                          | -                                   | 2.12                    |
| Predicted Environmental Deposition (PEC)                | -                                     | -                                    | -                          | -                                   | -                       |
| Environmental Assessment Level or Critical Load / Level | 1 or 3                                | 1                                    | -                          | Perennial vegetation of stony banks | 8.0                     |
| % of relevant standard PC                               | 2%                                    | 1%                                   | -                          | 1%                                  | n/a                     |
| % of relevant standard PEC                              | 183%                                  | 61%                                  | -                          | 184%                                | n/a                     |
| EXCEEDANCE  | No exceedance or 0.83                 | -                                    | -                          | 6.70                                | n/a                     |

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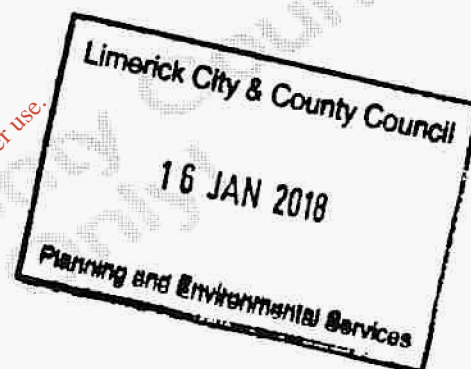
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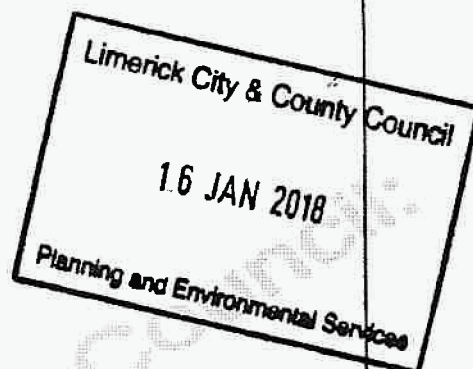
## Results

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### Content Specific Help Text

#### Site Information site 4

Region: Republic of Ireland  
 Site Name: Blackwater River (Cork/Waterford)  
 Site Code: 002170  
 Designation Status: SAC  
 Distance from Installation (m): 7597  
 Habitat Type: Habitat  
 Grid Reference: 130979.2,118373.8  
 Met Site: SHAN  
 Run Mode: Conservative  
 PM<sub>10</sub> Percentile: Average



#### Installation Information

| No. | Name      | No. of sources | No. of new sources | PM <sub>10</sub> (t/a) | NH <sub>3</sub> (t/a) | Odour (kOu/a) | Dep N (kg/ha/yr) | Conc PM <sub>10</sub> (µg/m <sup>3</sup> ) | Conc NH <sub>3</sub> (µg/m <sup>3</sup> ) | Conc Odour (Ou/m <sup>3</sup> ) | Dep Acid (kEq H <sup>+</sup> /ha/yr) |
|-----|-----------|----------------|--------------------|------------------------|-----------------------|---------------|------------------|--|---|---------------------------------|--------------------------------------|
| 1   | Patrick O | 1              | undefined          | -                      | undefined             | -             | 0.16             | -  | 0.02                                      | -                               | 0.011                                |

#### Total Depositions/Concentrations and Exceedances

| Concentrations/Depositions and Critical Loads           | PM <sub>10</sub> (µg/m <sup>3</sup> ) | NH <sub>3</sub> (µg/m <sup>3</sup> ) | Odour (Ou/m <sup>3</sup> ) | N Dep. (kg N/ha/yr)                             | Acid Dep. (kEq H <sup>+</sup> /ha/yr)   |
|---|---------------------------------------|--------------------------------------|----------------------------|---|---|
| Process Contribution (PC) at receptor edge              | -                                     | 0.02                                 | -                          |   |   |
| Background concentration at receptor edge               | -                                     | 1.84                                 | -                          |   |   |
| Predicted Environmental Concentration (PEC)             | -                                     | 1.86                                 | -                          |   |   |
| Process Contribution (PC) at receptor edge              |                                       |                                      |                            | 0.16  | 0.011   |
| Background deposition at receptor                       |                                       |                                      |                            | 24.36   | 3.46 (N:1.74 S:1.72)  |
| Predicted Environmental Deposition (PEC)                |                                       |                                      |                            | 24.52   | 3.47  |
| Environmental Assessment Level or Critical Load / Level | -                                     | 1 or 3                               | -                          | Taxus baccata woods of the British Isles<br>5.0 | Old sessile oak woods with Ilex and Blechnum in the British Isles<br>maxN: 0.30<br>maxS: 0.10<br>minN: 0.07 |
| Alternative Critical Load Info                          |                                       |                                      |                            |   |   |
| % of relevant standard PC                               | -                                     | 2% or 1%                             | -                          | 3%  | 3%  |
| % of relevant standard PEC                              | -                                     | 186% or 62%                          | -                          | 490%  | 1157%   |
| EXCEEDANCE  | -                                     | 0.86 or No exceedance                | -                          | 19.52   | 3.17  |

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