

# NATURA IMPACT STATEMENT

IN SUPPORT OF THE

## APPROPRIATE ASSESSMENT

OF A

*proposed development at Oldcastle, Co. Meath*

In accordance with the requirements of Article 6(3) of the Habitats Directive (Council Directive 92/43/EEC)



Report prepared January 2012 by



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### Summary

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In December 2011, FERS Ltd. was commissioned to carry out an Appropriate Assessment of the construction at Oldcastle, Co. Meath of 53 no. two storey houses (comprising 6 no. 2 bed semi-detached houses, 9no. 2 bed terraced houses, 34no. 3 bed semi-detached houses, 2no. 4 bed semi-detached houses and 2no. 4 bed detached houses) and 1 no. two storey Crèche and all ancillary site works. Waste from the development will enter the public foul sewer. Having regard to the nature and scale of the proposed development, with foul sewage discharges to the public sewerage system, and having further regard to the location of a number of Natura 2000 sites in the wider catchment area, the proposed development requires an Appropriate Assessment to be carried out under article 6(3) of the Habitats Directive. **Following an Appropriate Assessment of the aforementioned development, there is a potential for negative impacts on a minimum of two Natura 2000 sites (Lough Sheelin SPA and the Moneybeg and Clareisland Bogs SAC) owing to currently insufficient waste-water treatment capacity. Until the waste-water treatment capacity of the Oldcastle waste-water treatment plant is increased to allow for population increases associated with this development, there is a significant probability that this development may impact on the conservation objectives of the Natura 2000 sites as described herein.**

## 1 Introduction

### 1.1 FERS Ltd. company background

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Forest, Environmental Research and Services have been conducting ecological surveys and research since the company's formation in 2005 by Dr Patrick Moran and Dr Kevin Black. Dr. Moran, the senior ecologist with FERS, has a 1st class honours degree in Environmental Biology (UCD), a Ph.D. in Ecology (UCD), a Diploma in EIA and SEA management (UCD) and is currently studying for a Masters in Geographical Information Systems (University of Ulster, Coleraine). He has in excess of 15 years of experience in carrying out ecological surveys on both an academic and a professional basis.

FERS client list includes National Parks and Wildlife Service, Meath County Council, the Heritage Council, University College Dublin, the Environmental Protection Agency, Inland Waterways Association of Ireland, the Department of Agriculture, the OPW, Coillte and Drogheda Port Company in addition to numerous private individuals and companies. Work has included many Ecological Impact Assessments and Appropriate Assessments.

### 1.2 The aim of this report

This Natura Impact Statement has been prepared in compliance with Appropriate Assessment of Plans and Projects in Ireland – Guidance for Planning Authorities (DoEHLG 2009, February 2010) and the European Communities (Birds and Natural Habitats) Regulations 2011 (DoEHLG 2011). This report provides an Appropriate Assessment of the construction at Oldcastle, Co. Meath of 53 no. two storey houses (comprising 6no. 2 bed semi-detached houses, 9no. 2 bed terraced houses, 34no. 3 bed semi-detached houses, 2no. 4 bed semi-detached houses and 2no. 4 bed detached houses) and 1 no. two storey Creche and all ancillary site works. The proposed development will involve the discharge of foul sewage to the public sewer. This report was prepared in order to address item 15 as raised by Meath County Council in a request for Additional Information with regards to the development. The proposed development has the potential to have a negative impact on several Natura 2000 sites, and as such requires an Appropriate Assessment under article 6(3) of the Habitats Directive. This report provides the information required in order to establish whether or not this development is likely to have a significant ecological impact on any Natura 2000 sites, in the context of their conservation objectives and specifically on the habitats and species for which the sites have been designated.

### 1.3 An outline of the Appropriate Assessment process

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The “Habitats Directive” (Council Directive 92/43/EEC on the Conservation of Natural Habitats and of Wild Flora and Fauna) is the main legislative instrument for the protection and conservation of biodiversity within the European Union and lists certain habitats and species that must be protected within wildlife conservation areas, considered to be important at a European as well as at a national level. A “Special Conservation Area” or SAC is a designation under the Habitats Directive.

The “Birds Directive” (Council Directive 2009/147/EC on the Conservation of Wild Birds) provides for a network of sites in all member states to protect birds at their breeding, feeding, roosting and wintering areas. This directive identifies species that are rare, in danger of extinction or vulnerable to changes in habitat and which need protection. A “Special Protection Area” or SPA, is a designation under The Birds Directive.

Special Areas of Conservation and Special Protection Areas form a pan-European network of protected sites known as Natura 2000 sites.

The Habitats Directive sets out the protocol for the protection and management of SACs. The Directive sets out key elements of the system of protection including the requirement for Appropriate Assessment of plans and projects. The requirements for an Appropriate Assessment are set out in the EU Habitats Directive. Articles 6(3) and 6(4) of the Directive state:

- (3) *“Any plan or project not directly connected with or necessary to the management of the site but likely to have a significant effect thereon, either individually or in combination with other plans or projects, shall be subject to appropriate assessment of its implications for the site in view of the site’s conservation objectives. In the light of the conclusions of the assessment of the implications for the site and subject to the provisions of paragraph 4, the competent national authorities shall agree to the plan or project only after having ascertained that it will not adversely affect the integrity of the site concerned and, if appropriate, after having obtained the opinion of the general public.”*
- (4) *“If, in spite of a negative assessment of the implications for the site and in the absence of alternative solutions, a plan or project must nevertheless be carried out for imperative reasons of over-riding public interest, including those of social or economic nature, the Member State shall take all compensatory measures necessary to ensure that the overall coherence of Natura 2000 is protected. It shall inform the Commission of the compensatory measures adopted.”*

#### 1.4 Methodology for Appropriate Assessment

A number of guidance documents on the appropriate assessment process have been referred to during the preparation of this NIS. These are:

- Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities (DoEHLG 2009, Revised February 2010);
- EU Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC (2007);
- 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 (Nov. 2001 – published 2002); and
- Managing Natura 2000 Sites: The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC (2000).
- European Communities (Birds and Natural Habitats) Regulations 2011 (DoEHLG 2011).

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The assessment requirements of Article 6 are generally dealt with in a stage by stage approach. The stages as outlined in "Appropriate Assessment of Plans and Projects in Ireland - Guidance for Planning Authorities" are:

##### Stage (1) Screening

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

##### Stage (2) Appropriate Assessment

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

##### Stage (3) Assessment of Alternative Solutions

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

Stage (4) Assessment where Adverse Impacts Remain

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

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At each stage, there is a determination as to whether a further stage in the Appropriate Assessment process is required. If, for example, the conclusions of the Screening stage indicate that there will be no significant impacts on the Natura 2000 site, there is no requirement to proceed further. Stages 1 and 2 deal with the main requirements for assessment under Article 6.3. Stage 3 may be part of Article 6(3) or a necessary precursor for Stage 4. This report is comprised of the ecological impact assessment and testing required under the provisions of Article 6(3) by means of the first stage of Appropriate Assessment, the screening process (as set out in the EU Guidance documents).

EU guidance states:

*“This stage examines the likely effects of a project or plan, either alone or in combination with other projects or plans, upon a Natura 2000 site and considers whether it can be objectively concluded that these effects will not be significant.*

The report also provides the information required for the Competent Authority to complete the Appropriate Assessment (Stage 2) should this be necessary and appropriate in the opinion of the competent Authority. Screening has been undertaken in accordance with the European Commission’s Guidance on Appropriate Assessment (European Commission, 2001) which comprises the following:

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

## 1.5 Consultations

The primary body consulted with regard to matters involving Natura 2000 sites is the National Parks and Wildlife Services (NPWS). The role of the NPWS is:

- To secure the conservation of a representative range of ecosystems and maintain and enhance populations of flora and fauna in Ireland.
- To implement the EU Habitats and Birds Directives.
- To designate and advise on the protection of Natural Heritage Areas (NHA) having particular regard to the need to consult with interested parties.
- To make the necessary arrangements for the implementation of National and EU legislation and policies and for the ratification and implementation of the range of international Conventions and Agreements relating to the natural heritage.
- To manage, maintain and develop State-owned National Parks and Nature Reserves.

Information pertaining to Natura 2000 sites within the Republic of Ireland are typically held by NPWS and are publically accessible through their on-line system at [www.npws.ie](http://www.npws.ie) . Consultations carried out involved searching through the NPWS database for information pertaining to the potential impact of the proposed development on Natura 2000 sites within 15 km of the proposed development.

## 2 Appropriate Assessment Screening exercise

### 2.1 Description

Page | 7 2.1.1 Description of plan

The RJVB Property Partnership has made an application for planning permission to Meath County Council for the construction at Oldcastle, Co. Meath, of 53 no. two storey houses (comprising 6 no. 2 bed semi-detached houses, 9 no. 2 bed terraced houses, 34 no. 3 bed semi-detached houses, 2 no. 4 bed semi-detached houses and 2 no. 4 bed detached houses) and 1 no. two storey Crèche and all ancillary site works. The proposed development will involve the discharge of foul sewage to the public sewer. The location of the proposed development is shown in figures 1 and 2. A site plan of the proposed development is illustrated in figure 3.



Fig 1: Map indicating general location of proposed development.



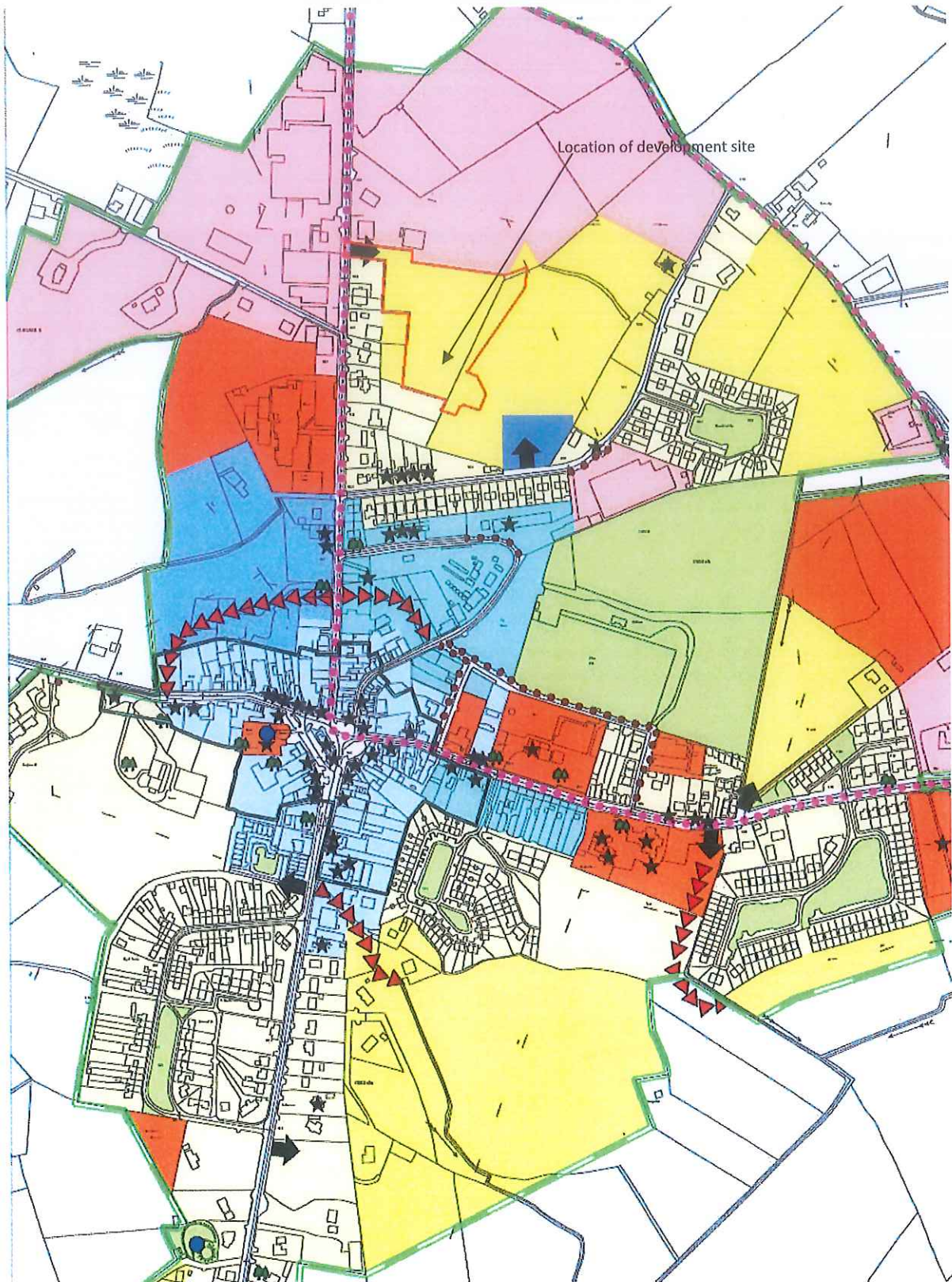


Fig 2: Map indicating location of development site (site boundary indicated in red).

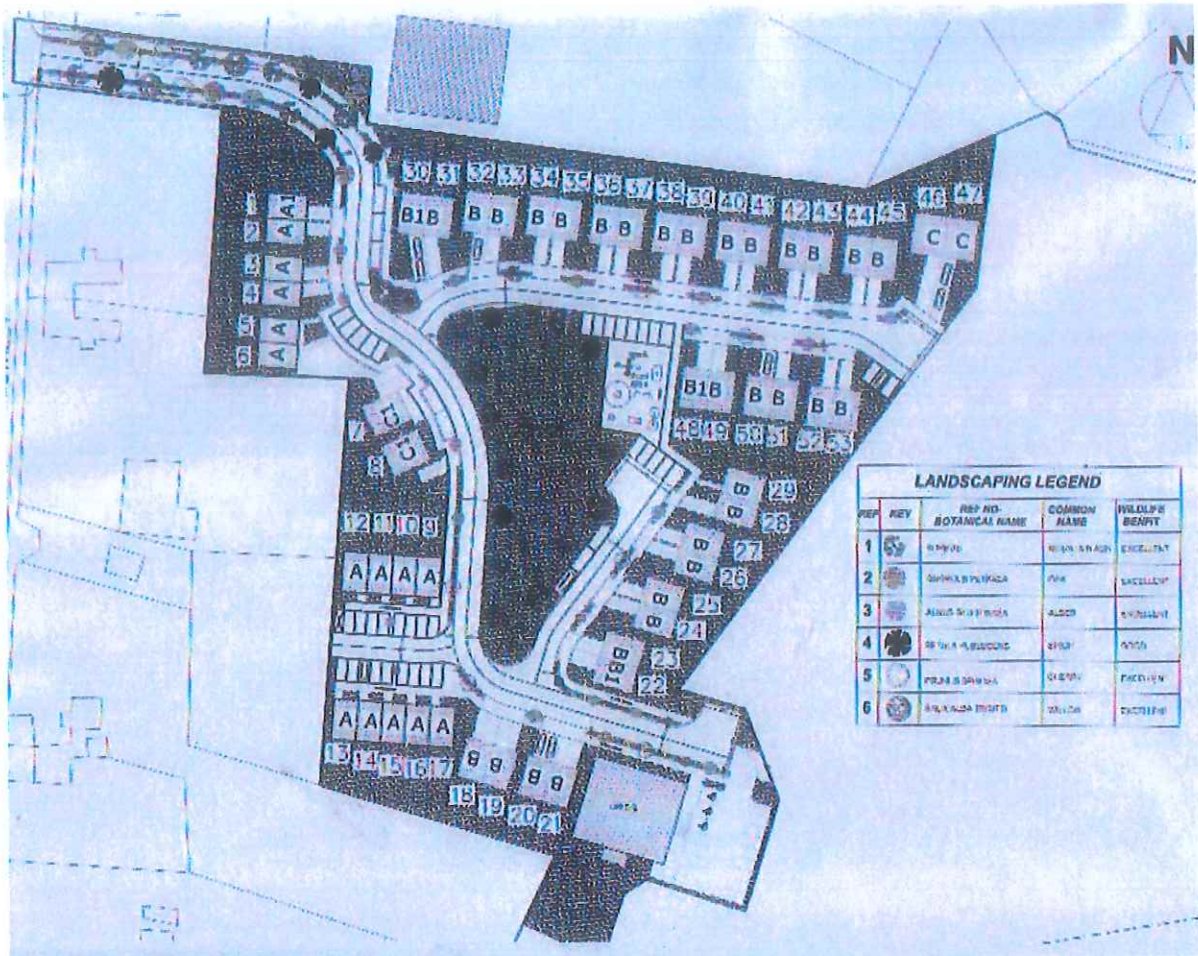


Fig 3: Map indicating footprint of proposed development.

### 2.1.2 Description of existing conditions at site

A site visit was carried out on January 17<sup>th</sup> 2012 in order to assess the habitats present, and to identify potential impacts of the proposed development on the conservation objectives of any Natura sites identified in section 2.1.4. There is an area of recolonising bare ground, which appears to consist of hard-core which has been laid in the past to gain access to the site (see figure 4). This area is dominated by colonizing *Rubus fruticosus* agg. with several *Thuja* seedlings also present in addition to numerous ruderal species. There is a small area of rank grassland that has not been cut or grazed for some time, with an extensive thatch (see figure 5). The dominant species here are *Agrostis stolonifera*, *Festuca rubra*, *Dactylis glomerata* and *Arrhenatherum elatius*. The vast majority of the proposed development site consists of parts of two improved agricultural fields (see figure 6) with an associated hedgerow (see figure 7). The dominant species occurring within the field are *Lolium perenne*, *Dactylis glomerata*, *Agrostis stolonifera*, *Festuca rubra*, *Ranunculus repens*, *Cerastium fontanum*, *Cirsium arvense*, *Urtica dioica*, *Plantago lanceolata* and *Plantago major*. The associated hedgerow is entirely dominated by *Crataegus monogyna*. The fields are at present very

heavily grazed by horses, with some poaching evident in wetter parts of the fields. The existing conditions at the site are typical of improved agricultural grassland. There were no Annex Habitats or Annex species present at the site, nor is the site likely to be utilized by any Annex species at any point.

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Fig 4: Photograph showing existing area of recolonising bare ground at entrance to site.



Fig 5: Photograph illustrating area of rough grassland.



Fig 6: Photograph showing general conditions at the proposed site, comprised largely of improved agricultural grassland.



Fig 7: Photograph illustrating hedgerow between the two fields which will comprise the development.

### 2.1.3 Description of scope

Baseline conditions at the site were ascertained by carrying out a field visit on January 17<sup>th</sup> 2012. This is not an optimal time at which to carry out a comprehensive field survey – however, given the habitat type present (heavily grazed, improved agricultural grassland-GA1) and the relatively poor ecological value of such habitat, a field visit at this time of year is sufficient to appraise the habitat present. The footprint of this development is primarily restricted to this habitat type, with a small quantity of rough grassland of the type GSi2 (improved dry meadow and grassy verges) and an area of recolonising bare ground (ED3). The feature of greatest ecological importance is the hedgerow running between the two fields comprising the bulk of the development site. This hedgerow will have to be removed to allow the development proceed in its current configuration.

There are records of 2 species of conservation interest within the 10 km squares in and around the development site (source NPWS) – Otter (*Lutra lutra*) and Basil Thyme (*Acinos arvensis*). There was evidence for neither of these species at the site, and given the habitat present it is highly unlikely that either will be present at this site in the future.

The nature of habitats, species, and necessary ecological features present within the footprint of the development are typical of intensively farmed agricultural land in this part of the country. No Annex species or habitats were observed, nor is it likely, given the present land use in the surrounding countryside (primarily urban area and agriculture), that any Annex species or habitats are likely to occur here in the foreseeable future. There will be no loss of species of significant ecological value associated directly with this development. There will, however, be the loss of a valuable ecological corridor (hedgerow) if this development proceeds in its current configuration.

There are a number of Natura 2000 sites within 15 km of the proposed development. Any impact of the proposed development on local water quality has the potential to impact negatively on one or more of these Natura 2000 sites.

#### 2.1.4 Identification of Natura 2000 sites potentially impacted upon by the proposed development

The maintenance of habitats and species within individual Natura 2000 sites at favourable conservation condition contributes to the overall maintenance of favourable conservation status of those habitats and species at a national level. It is therefore necessary to identify any potential impacts of the proposed development on the conservation status of Natura 2000 sites.

The National Parks and Wildlife Service deem that the favourable conservation status of a habitat is achieved when:

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

The National Parks and Wildlife Service deem that the favourable conservation status of a species is achieved when:

- Population data on the species concerned indicate that it is maintaining itself.
- The natural range of the species is neither being reduced, or likely to be reduced in the foreseeable future.
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis.

There are six areas designated as special areas of conservation (SAC) and two areas designated as special protection areas (SPA) within 15 km of the proposed development site (see table 1 below and figures 8 and 9).

Table 1: Natura 2000 sites within 15 km of the proposed development.

Site Code	Designation	Site Name
000006	SAC	Killyconny Bog
002299	SAC	River Boyne and River Blackwater
002340	SAC	Moneybeg and Clareisland bogs
001810	SAC	White Lough, Ben Loughs and Lough Doo
002120	SAC	Lough Bane and Lough Glass
002121	SAC	Lough Lene
004065	SPA	Lough Sheelin
004232	SPA	River Boyne and River Blackwater

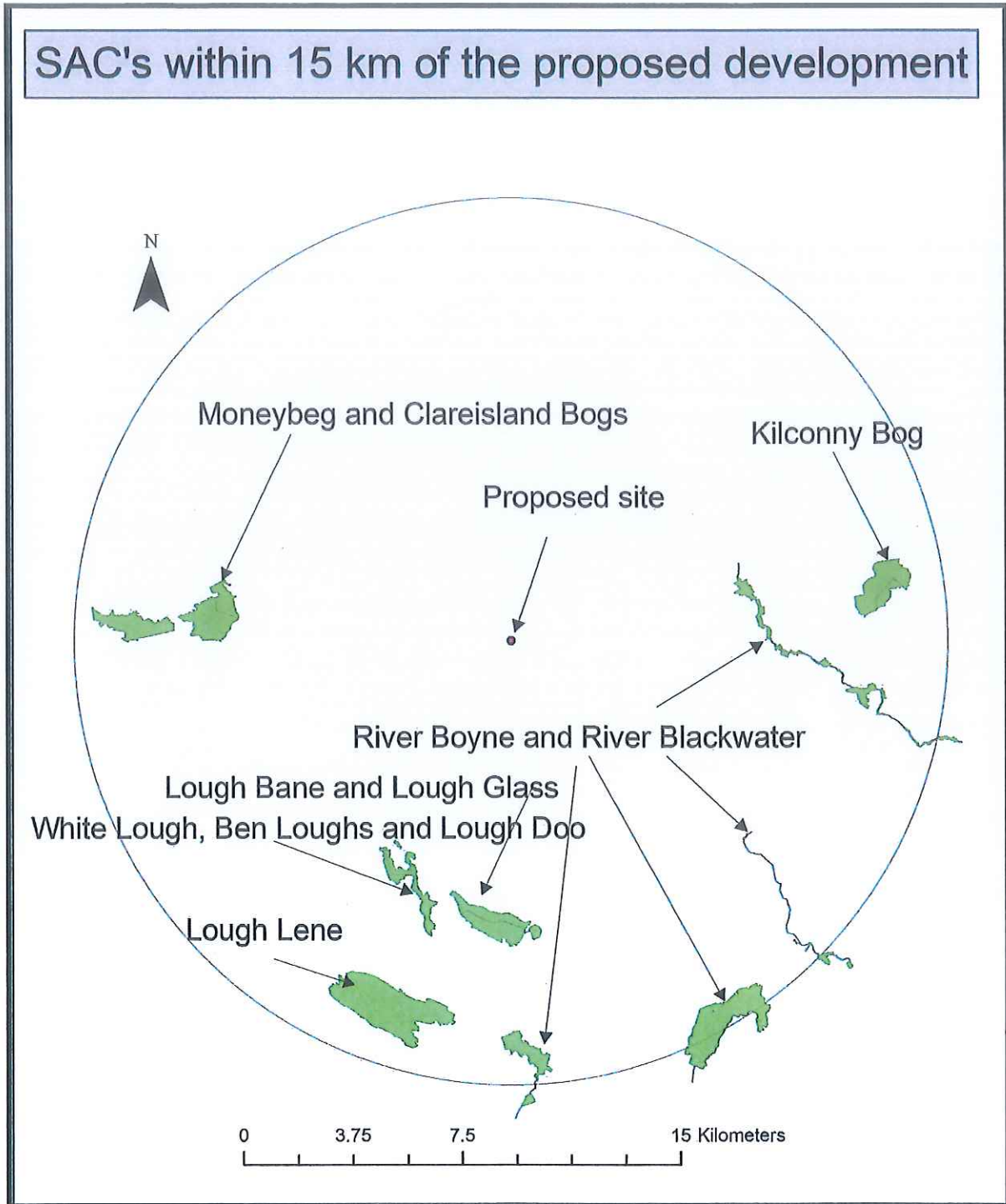


Fig 8: Map indicating location of special areas of conservation relative to the proposed site.

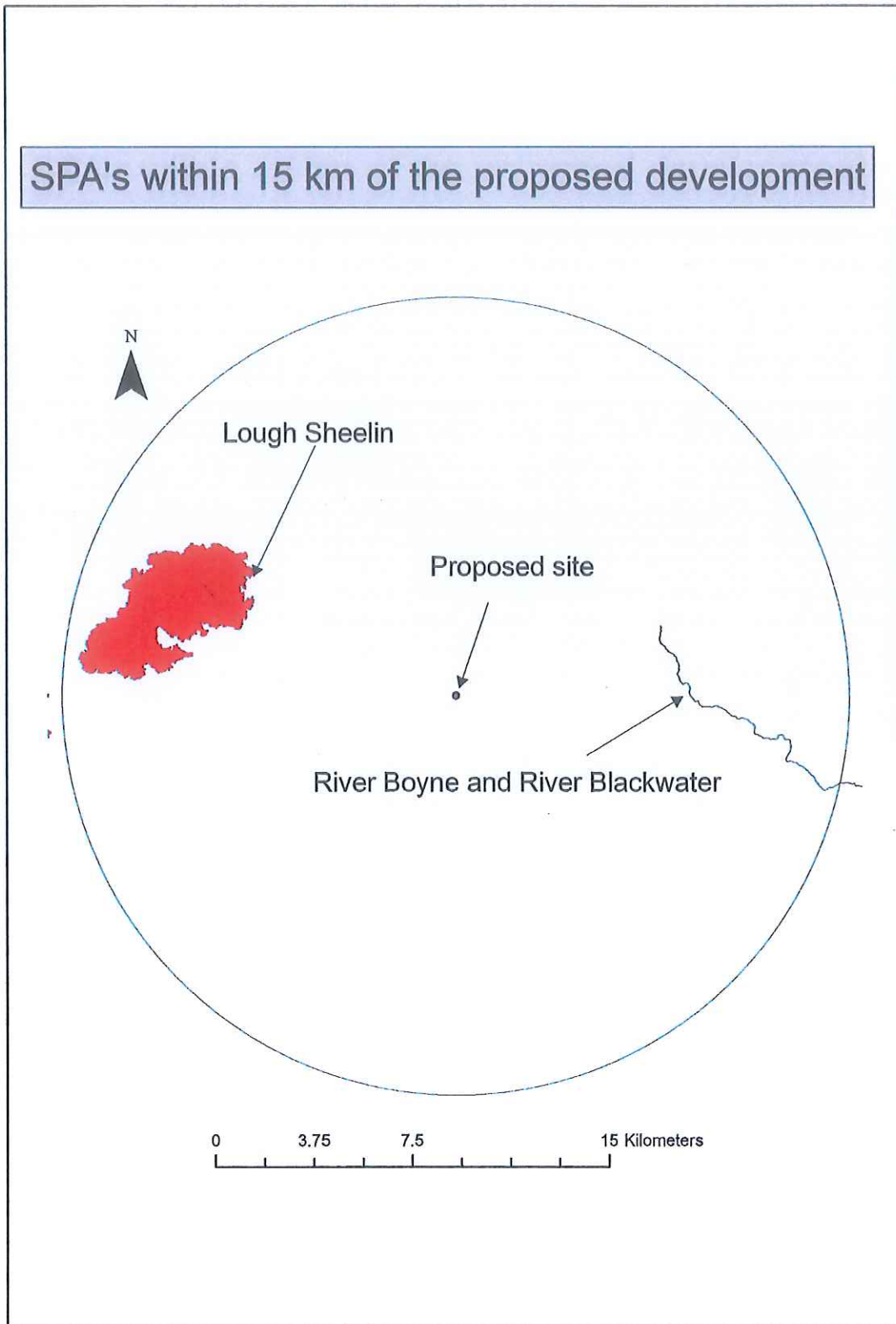


Fig 9: Map indicating location of special protection areas relative to the proposed site.



### 2.1.5 Description of Natura 2000 sites potentially impacted upon by the proposed development

In addition to a description of the individual sites within 15 km of the proposed development, a synopsis of the conservation status of qualifying interests will be presented in table form for each site, as recorded in the Natura 2000 Data Form for each site.

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For Special Areas of Conservation, this table will take the form of:

#### **Code**

Site code.

#### **% Cover**

Percentage cover of annex habitat out of total area of site.

#### **Representativity**

The degree of representativity of the natural habitat type on site – three ranks:

A = Excellent representativity.

B = Good representativity.

C = Significant representativity.

#### **Relative Surface**

The area of the site covered by the natural habitat type in relation to the total area covered by that natural habitat type within the national territory – three ranks where 'p' is the value of the relative surface:

A:  $100\% \geq p > 15\%$

B:  $15\% \geq p > 2\%$

C:  $2\% \geq p > 0\%$

#### **Conservation Status**

Degree of the conservation of the structure and functions of the natural habitat type concerned, and restoration possibilities. There are three sub-criteria (degree of conservation of structure, degree of conservation of function, restoration possibilities), which are evaluated individually, but combined to categorize the conservation status of the site. Conservation status has three ranks:

A = Excellent conservation.

B = Good conservation.

C = Average or reduced conservation.

### Global Assessment

A global assessment of the site for conservation of the habitat type concerned – three ranks:

A = Excellent value.

B = Good value.

C = Significant value.

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For Special Protection Areas, this table will take the form of:

### Code

Species code.

### Species Name

Species name – in latin, removes any confusion owing to the use of different local names for species.

### Population – with four sub-categories

**Resident:** To be found throughout the year on the site.

**Breeding/Reproducing:** Uses the site to nest and raise young.

**Staging:** Site used on migration or for moulting outside of breeding grounds.

**Wintering:** Uses the site during the winter.

Numbers indicate an exact number where known, or a range. A suffix of (i) indicates individuals observed, while a suffix of (p) indicates pairs observed. For some species, it may be necessary to distinguish between males (m) and females (f) also. If, in the absence of any population data a site is still known to be of community importance for a species, describe the character of the population in the site description text field 'Quality' outlining the nature of the population (e.g. dense, dispersed or isolated).

### Site Assessment – with four sub-categories

**Population:** Size and density of the population of the species present on the site in relation to the populations present within national territory. Four ranks;

A:  $100\% \geq p > 15\%$

B:  $15\% \geq p > 2\%$

C:  $2\% \geq p > 0\%$

D: Present on site in a non-significant manner

**Conservation:** Degree of conservation of the features of the habitat which are important for the species concerned and possibilities for restoration. There are two subcriteria –

- (a) Degree of conservation of the features of the habitat important for the species.
- (b) Restoration possibilities. There are three ranks;

- A: Conservation excellent.
- B: Good conservation.
- C: Average or reduced conservation.

**Isolation:** Degree of isolation of the population present on the site in relation to the natural range of the species. This criterion may be interpreted as an approximate measure of the contribution of a given population to the genetic diversity of the species on the one hand and of the fragility of this specific population on the other hand. Using a simplistic approach one may say that the more a population is isolated (in relation to its natural range), the greater is its contribution to the genetic diversity of the species. Consequently the term "isolation" should be considered in a wider context, applying equally to strict endemics, to sub-species/varieties/races as well as sub-populations of a meta-population. In this context the following grading should be used:

- A: Population (almost) isolated.
- B: Population not isolated, but on the margins of the area of distribution.
- C: Population not isolated within extended distribution range.

**Global:** Global assessment of the value of the site for conservation of the species concerned. This criterion refers to the global assessment of the value of the site for the conservation of the species concerned. It may be used to sum up the previous criteria and also to assess other features of the site thought to be relevant for a given species. These features may vary from one species to another and might include human activities on the site or in nearby areas which are capable of influencing the conservation status of the species, land management, the statutory

protection of the site, ecological relations between the different types of habitats and species, etc.

A 'best expert judgment' may be used for this global evaluation, using the following ranking system:

A : excellent value

B : good value

C : significant value

Killyconny Bog SAC (site code 000006):

Killyconny bog is located 2 km south of Mullagh, Co. Cavan, and is the most north-easterly raised bog in the Republic of Ireland. It was chosen as an SAC owing to the unique conditions under which it developed, and is classified as a "Ridge Basin" type bog (Valverde *et al* 2005). The area covered by the site is 191.22 Ha, and 46% of this area is represented by Annex I habitat. A synopsis of the conservation status of the habitat is presented in table 2 below. While this site is relatively small, and has been damaged due to draining activities, it is one of the largest extant areas of relatively intact raised bog in the north east of the country. This site is particularly vulnerable to the effects of peat cutting and drainage, which are causing water loss and an overall deterioration in habitat quality. The cut-over margins are vulnerable to agricultural reclamation.

The conservation objective of the Killyconny Bog SAC is to maintain or restore the favourable conservation condition of the habitat for which the site has been designated, i.e.:

[7110] Active raised bogs (**\*Priority Habitat**)

[7120] Degraded raised bogs still capable of natural regeneration

Table 2: The Conservation status of the qualifying interest for which Killyconny Bog SAC is designated.

**ANNEX I HABITAT TYPES:**

CODE	%COVER	REPRESENTATIVITY	RELATIVE SURFACE	CONSERVATION STATUS	GLOBAL ASSESSMENT
7120	26	B	C	C	B
7110	20	B	C	C	C

River Boyne and River Blackwater SAC (site code 002299):

The River Boyne and River Blackwater SAC comprises the freshwater element of the River Boyne as far as the Boyne Aqueduct, the Blackwater as far as Lough Ramor and the Boyne tributaries including the Deel, Stoneyford and Tremblestown Rivers and occupies approximately 2320.86 Ha. The site is a candidate SAC selected for alkaline fen and alluvial woodlands, both 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 – Atlantic Salmon, Otter and River Lamprey. The main threats to the ecological integrity of this site are drainage schemes and water pollution. Water quality is impaired in areas of this site owing to runoff from and inputs from agricultural, domestic and industrial sources. A reduction in the input of pollutants to this system is required to preserve the important aquatic interests of this site.

The conservation objective of the River Boyne and River Blackwater SAC (site code 002299) is to maintain or restore the favourable conservation condition of the Annex I habitat(s) and or Annex II species for which the SAC has been designated:

[1099] Lampetra fluviatilis

[1106] Salmo salar (only in fresh water)

[1355] Lutra lutra

[7230] Alkaline fens

[91E0] Alluvial forests with Alnus glutinosa and Fraxinus excelsior (**\*Priority Habitat**)

A synopsis of the conservation status of the habitat(s) is presented in tables 3(a-d).

Table 3a: The Conservation status of Annex I habitats for which river Boyne and river Blackwater SAC is designated

**ANNEX I HABITAT TYPES:**

CODE	%COVER	REPRESENTATIVITY	RELATIVE SURFACE	CONSERVATION STATUS	GLOBAL ASSESSMENT
91e0	1	B	B	B	B
7230	1	B	C	B	B

Table 3b: The Conservation status of Annex I bird species present within the site.

CODE	NAME	POPULATION			SITE ASSESSMENT				
		Resident	Migratory		Population	Conservation	Isolation	Global	
			Breed	Winter	Stage				
A038	Cygnus cygnus		50-200+	1		C	B	C	B

Table 3c: The Conservation status of Annex II mammal species for which river Boyne and river Blackwater SAC is designated

CODE	NAME	POPULATION			SITE ASSESSEMENT				
		Resident	Migratory		Population	Conservation	Isolation	Global	
			Breed	Winter	Stage				
1355	Lutra lutra	P				C	A	C	A

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Table 3d: The Conservation status of Annex II fish species for which river Boyne and river Blackwater SAC is designated

CODE	NAME	POPULATION			SITE ASSESSEMENT				
		Resident	Migratory		Population	Conservation	Isolation	Global	
			Breed	Winter	Stage				
1106	Salmo salar		C			C	B	C	B
1099	Lampetra fluviatilis		P			C	B	C	B

Moneybeg and Clareisland Bogs (site code 002340):

This site consists of two small raised bogs, separated by approximately 400 m, located along the southern shore of Lough Sheelin with an area of 364.32 Ha of which approximately 40% consists of Annex I habitat. Clareisland bog is linear in outline, while Moneybeg is ovoid. The areas of uncut high bog are classified primarily as degraded raised bog, and the high bog is surrounded by cutover areas. The main road between the villages of Finnea and Ross traverses both bogs. The primary threats to the site are peat-cutting and associated activities such as drainage and burning. Agricultural reclamation and forestry are potential threats to areas of cutover bog. The conservation objective of the Moneybeg and Clareisland bogs SAC is to maintain or restore the favourable conservation condition of the Annex I habitat(s) and or Annex II species for which the SAC has been designated:

[7110] Active raised bogs (**\*Priority Habitat**)

[7120] Degraded raised bogs still capable of natural regeneration

[7150] Depressions on peat substrates of the Rhynchosporion

A synopsis of the conservation status of the habitat(s) is presented in table 4.

Table 4: The Conservation status of qualifying interests for which Moneybeg and Clareisland Bogs SAC is designated

**ANNEX I HABITAT TYPES:**

CODE	%COVER	REPRESENTATIVITY	RELATIVE SURFACE	CONSERVATION STATUS	GLOBAL ASSESSMENT
7120	33	B	C	C	B
7110	6	B	C	C	B
7150	1	B	C	C	C

White loughs, Ben Loughs and Lough Doo SAC (site code: 001810):

This site is comprised of four hard-water lakes in a small, poorly drained valley 4 km east of Castlepollard in Co. Westmeath, with a combined area of approximately 116.2 Ha, of which 46% is an Annex I habitat. The presence of an abundance of stoneworts, Otter, White-clawed Crayfish and large areas of Great Fen-sedge Swamp is of great ecological significance. This site provides a good example of an oligotrophic system, not showing any obvious signs of eutrophication. A synopsis of the conservation status of the habitat(s) is presented in tables 5a and b. The conservation objective of this site is to maintain or restore the favourable conservation status of the Annex I habitat(s) and/or the Annex II species for which this site was selected:

[1092] *Austropotamobius pallipes*

[3140] Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.

The primary threat to this site is agricultural improvement and consequential impacts on water quality. Owing to the presence of a population of White-clawed Crayfish, crayfish plague also poses a large threat to the ecological integrity of this site. A synopsis of the conservation status of qualifying interests is presented in Tables 5(a) and (b).

Table 5a: The Conservation status of the qualifying habitat for which SAC is designated

**ANNEX I HABITAT TYPES:**

CODE	%COVER	REPRESENTATIVITY	RELATIVE SURFACE	CONSERVATION STATUS	GLOBAL ASSESSMENT
3140	46	B	C	B	B

Table 5b: The Conservation status of the qualifying invertebrate species for which SAC is designated

CODE	NAME	POPULATION			SITE ASSESSMENT				
		Resident	Migratory		Population	Conservation	Isolation	Global	
			Breed	Winter	Stage				
1092	<i>Austropotamobius pallipes</i>	P				C	F	C	B

Lough Bane and Lough Glass SAC (site code: 002120):

This site is a fine example of a hard water marl lake system with good stonewort communities, with an area of approximately 203.50 Ha, of which 63% is comprised of Annex Habitat. The site is located approximately 10 km south of Oldcastle and is comprised of three lakes situated in a shallow valley. Despite being located in an area in which there is intensive agriculture, water quality appears to be good. A synopsis of the conservation status of the habitat(s) is presented in tables 6a and b. The

conservation objective of this site is to maintain or restore the favourable conservation status of the Annex I habitat(s) and/or the Annex II species for which this site was selected:

[1092] *Austropotamobius pallipes*

[3140] Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.

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The primary threat to this site is from eutrophication, primarily associated with run-off from surrounding agricultural fields. Some afforestation is occurring near the site - should this increase, water quality could be affected. Increased use of lake for boating could cause physical damage to *Chara* communities. A synopsis of the conservation status of qualifying interests is shown in Tables 6a and b.

Table 6a: The Conservation status of the qualifying habitats for which 2120 is designated

**ANNEX I HABITAT TYPES:**

CODE	%COVER	REPRESENTATIVITY	RELATIVE SURFACE	CONSERVATION STATUS	GLOBAL ASSESSMENT
3140	€3	A	C	B	B

Table 6b: The Conservation status of the qualifying species for which 2120 is designated

CODE	NAME	POPULATION			SITE ASSESSMENT			
		Resident	Migratory		Population	Conservation	Isolation	Global
			Breed	Winter				
1092	<i>Austropotamobius pallipes</i>	0	1		C	B	C	C

Lough Lene (site code 002121):

Lough Lene is a deep, clear, hard-water lake with marl deposition, supporting a variety of Stonewort species, located approximately 4 km north east of Castlepollard in Co. Westmeath. The SAC is approximately 489.94 Ha in area, of which 85% is comprised of Annex habitat. The lake has a stoney fringe along much of its shore, with areas of freshwater marsh and fen vegetation occurring. Important to note is the fact that Lough Lene, like Lough Bane/Lough Glass once supported a thriving population of White-clawed Crayfish, which was wiped out by the crayfish plague fungus. The conservation objective of this site is to maintain or restore the favourable conservation status of the Annex I habitat(s) and/or the Annex II species for which this site was selected:

[1092] *Austropotamobius pallipes*

[3140] Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.



NPWS indicates that the primary threat to this site is eutrophication caused by agricultural run-off from surrounding areas. Reclamation of the semi-natural habitats around the lakes shore would be detrimental to the overall ecology of the lake system. Increased usage of the lake for boating and angling could cause physical damage to the *Chara* communities. The crayfish population is vulnerable to both water pollution and to further introductions of the crayfish fungus. A synopsis of the conservation status of qualifying interests is indicated in Tables 7a and b.

Table 7a: The Conservation status of the qualifying habitat for which 2121 is designated

**ANNEX I HABITAT TYPES:**

CODE	%COVER	REPRESENTATIVITY	RELATIVE SURFACE	CONSERVATION STATUS	GLOBAL ASSESSMENT
3140	£5	B	B	B	B

Table 7b: The Conservation status of the qualifying species for which 2121 is designated

CODE	NAME	POPULATION			SITE ASSESSMENT				
		Resident	Migratory		Population	Conservation	Isolation	Global	
			Breed	Winter					Stage
1092	<i>Austroptamobius pallipes</i>	P				C	B	C	B

Lough Sheelin SPA (site code 004065)

Lough Sheelin is a medium, relatively shallow alkaline lake located on the borders of counties Cavan, Westmeath and Meath covering an area of approximately 1901.74 ha. The shore of the lake is wooded in areas and there are also some small islands occurring on the lake. A good range of Charophytes has been recorded from the lake. Despite varying water quality in recent decades, Lough Sheelin is a very important site for wintering waterfowl and is a special protection area for several species. The site covers an area of 2,194.11 Ha. The conservation objective of this site is to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:

[wintering] *Podiceps cristatus*

[wintering] *Aythya ferina*

[wintering] *Aythya fuligula*

[wintering] *Bucephala clangula*

Wetlands & Waterbirds

The primary threat to this site are activities with the potential to impact on water quality. Variable water quality over the years, with periods of highly eutrophic conditions, undoubtedly has had some adverse impacts on the wintering waterfowl, and especially the diving duck. The lake is still considered to be vulnerable to pollution and there is a need to reduce the phosphorus inputs to the feeder streams entering the lake. Recreational and wildfowling activities currently cause some disturbance to the birds and any increase in such activities would be of concern. The conservation status of birds occurring at this site are presented in tables 8.

Table 8: Birds not listed on Annex I.

CODE	NAME	POPULATION			SITE ASSESSMENT			
		Resident	Migratory		Population	Conservation	Isolation	Global
			Breed	Winter				
A005	Podiceps cristatus		140	i	C	B	C	B
A059	Aythya ferina		546	i	C	B	C	B
A061	Aythya fuligula		762	i	C	B	C	B
A067	Bucephala clangula		224	i	C	B	C	B
A125	Fulica atra		24	i	C	C	C	C
A173	Larus ridibundus		202	i	C	C	C	C
A017	Phalacrocorax carbo		42	i	C	C	C	C
A053	Anas platyrhynchos		76	i	C	C	C	C

River Boyne and River Blackwater SPA (site code 4232):

The River Boyne and River Blackwater SPA is a long, linear site that comprises stretches of the River Boyne and several of its tributaries; most of the site is in Co. Meath, but it extends also into Counties Cavan, Louth and Westmeath. It includes the following river sections: the River Boyne from the M1 motorway bridge, west of Drogheda, to the junction with the Royal Canal, west of Longwood, Co Meath; the River Blackwater from its junction with the River Boyne in Navan to the junction with Lough Ramor in Co. Cavan; the Tremblestown River/Athboy River from the junction with the River Boyne at Kilnagross Bridge west of Trim to the bridge in Athboy, Co. Meath; the Stoneyford River from its junction with the River Boyne to Stonestown Bridge in Co. Westmeath; the River Deel from its junction with the River Boyne to Cummer Bridge, Co. Westmeath.

The NPWS currently recognize no significant threats to this site according to the Standard Natura 2000 data form for the site.

The site includes the river channel and marginal vegetation. This site is a Special Protection Area, selected for Kingfisher. The conservation status of birds occurring at this site are presented in tables 9a and b.

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The conservation objective of the River Boyne and River Blackwater SPA is to maintain or restore the favourable conservation condition of the bird species listed as Special Conservation Interests for this SPA:

- Kingfisher, *Alcedo atthis* [breeding ]

Table 9a: The conservation status of Annex I species occurring at the river Boyne and river Blackwater SPA

CODE	NAME	Resident	POPULATION			SITE ASSESSMENT			
			Migratory		Population	Conservation	Isolation	Global	
			Breed	Winter					Stage
A229	<i>Alcedo atthis</i>		19	p		C	B	C	B

Table 9b: The conservation status of regularly occurring migratory non-Annex I species at the river Boyne and river Blackwater SPA

CODE	NAME	Resident	POPULATION			SITE ASSESSMENT			
			Migratory		Population	Conservation	Isolation	Global	
			Breed	Winter					Stage
A052	<i>Anas crecca</i>		166	i		C	B	C	C
A053	<i>Anas platyrhynchos</i>		219	i		C	B	C	C
A017	<i>Phalacrocorax carbo</i>		36	i		C	B	C	C
A028	<i>Ardea cinerea</i>		44	i		C	B	C	C

## 2.2 Identification and evaluation of likely significant effects

### 2.2.1 Description of source-pathway-receptor linkages.

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While the proposed development at Oldcastle is not situated immediately adjacent to a significant water course linking any of the Natura 2000 sites described, the development will involve the discharge of foul sewage to the public foul sewer and the discharge of surface water. In response to the Strategic Environmental Assessment of the Oldcastle Local Area Plan 2009 – 2015, the Department of Communications, Energy and Natural Resources responded that it was their view that the Oldcastle waste water treatment plant is currently operating at capacity and that water service issues must be addressed before an increase in the population of Oldcastle can be sustainably accommodated. In the absence of available waste water treatment capacity to cater for increased load on the treatment system owing to increases in populations associated with developments such as that proposed here, the Department identified that there is a significant risk of pollution to both the river Inny and Lough Sheelin from effluent discharges. The river Inny and Lough Sheelin are sensitive ecological receptors, which could be impacted upon through increased load on the at capacity waste water treatment plant in Oldcastle.

There are, therefore, significant source-pathway-receptor linkages identified between the proposed development, through effluent discharge from the public foul sewer, and:

- Lough Sheelin SPA (site code 004065).
- Moneybeg and Clareisland Bogs SAC (site code 2340).

### 2.2.2 Probability of impacts upon Natura 2000 site conservation objectives

The primary cause of concern with regards to the potential impacts of the proposed development on the conservation objectives of the Natura 2000 sites outlined above is the potential for negative impacts on the water quality of the river Inny and Lough Sheelin.

#### *Construction Phase:*

Given the location of the proposed site, with no significant water body linking directly the site to any of the Natura 2000 sites, and the fact that the site is located adjacent to a built-up area. it is unlikely that there will be any significant impacts during the construction phase upon the ecological integrity of any of the Natura 2000 sites described herein.

*Operational lifetime of dwelling:*

The primary source of concern during the lifetime of the development (53 no. two storey houses (comprising 6no. 2 bed semi-detached houses, 9no. 2 bed terraced houses, 34no. 3 bed semi-detached houses, 2no. 4 bed semi-detached houses and 2no. 4 bed detached houses) and 1 no. two storey Creche), is the increased load on the Oldcastle Waste-water Treatment plant, which is already operating at capacity. In the absence of sufficient waste water treatment capacity, there is a significant risk of pollution to both the river Inny and Lough Sheelin from effluent discharges associated with the proposed development.

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2.2.3 Gauging of Impacts

The potential impacts of the proposed development on Natura 2000 sites is gauged using a checklist, which aids in determining whether the development has the potential to have a significant negative impact on any Natura 2000 site. This checklist consists of a number of pertinent questions as in table 10 below.

Table 10: Potential of the implementation of this development to impact on Natura 2000 sites

Does the Plan have the potential to:	Yes/No
Cause delays in progress towards achieving the conservation objectives of the Natura 2000 site?	YES
Interrupt progress toward achieving the conservation objectives of the Natura 2000 site?	YES
Disrupt those factors helping to maintain the favourable conditions at the Natura 2000 site?	YES
Interfere with the balance, distribution and density of key species that are the indicators of the favourable condition of the Natura 2000 site?	YES
Cause changes to the vital defining aspects (e.g. nutrient balance) that determine how the Natura 2000 site functions as a habitat or ecosystem?	YES
Change the dynamics of the relationships (between, for example, soil and water or plants and animals) that define the structure and/or function of the Natura 2000 site?	YES
Interfere with predicted or expected natural changes to the Natura 2000 site (such as water dynamics or chemical composition)?	YES
Reduce the area of key habitats within the Natura 2000 site?	YES
Reduce the population of key species of the Natura 2000 site?	YES
Alter the balance between key species of the Natura 2000 site ?	YES

Reduce the biodiversity of the Natura 2000 site?	YES
Result in disturbance that could affect population size or density or the balance between key species within the Natura 2000 site?	YES
Result in fragmentation?	YES
Result in the loss or reduction of key features of Natura 2000 sites?	YES

2.2.4 Identification and evaluation of likely significant cumulative impacts

In the absence of sufficient waste water treatment capacity, it is highly likely that this development, in conjunction with any planned or future developments will have significant cumulative impacts on the water quality of the river Inny and Lough Sheelin, and therefore on a minimum of two Natura 2000 sites (if there is an impact on, for example birds within the Lough Sheelin SPA, which move onto another Natura 2000 site, the impacts could go beyond the Natura 2000 sites associated with Lough Sheelin.)

### 3 Mitigation/Preventative measures and general recommendations

- The primary concern with regard to this development entails the potential for negative impacts on the water quality of the river Inny and Lough Sheelin owing to a lack of sufficient Waste-water treatment capacity for increased load associated with population increases as a result of this development. Until such time as there is sufficient waste-water treatment capacity (as verified by the County Engineer or other suitable authority), there will be a possibility of significant negative impact on a minimum of two Natura 2000 sites associated with this development.
- Meath County Council has committed policies supporting Sustainable Urban Drainage Systems (SUDS). According to INF POL 62 of the Meath County Development Plan 2007 – 2013, all new large scale developments in all designated settlements are to provide ‘Sustainable Urban Drainage Systems’ (SUDS) as part of their development.
- With regard to the impact of the abstraction of water, this development must take regard of INF POL 29 of the Meath County Development Plan (2007 – 2013), which states “To continue the development and upgrading of the water supply system so as to ensure that an adequate, sustainable and economic supply of piped water of suitable quality is available for domestic, commercial, industrial, fire safety and other use for the sustainable development of the county in accordance with the settlement structure identified in this Plan and as finances permit”
- It is recommended that all hedgerows and mature trees be retained intact on, and adjacent to the site. In the current configuration, a large section of hedgerow is to be removed. It is recommended to reconfigure the layout so as to avoid the removal of this corridor. According to section 46 of the Wildlife (Amendment) Act 2000, it is an offence to cut, grub or otherwise destroy any vegetation growing in any hedge or ditch during the period beginning on March 1<sup>st</sup> and ending on August 31<sup>st</sup> inclusive owing to the impact upon breeding birds. If there is to be disturbance/clearance of any areas of scrub/hedges/trees adjacent to the site during works (for the purpose of vehicular access, etc.), works must be carried out outside of this period.
- Under Irish Law (Irish Wildlife Act 1976 and Wildlife (Amendment) Act 2000) it is a criminal offence to intentionally harm or disturb a bat in its place of rest. The hedgerow on site may provide a commuting/foraging corridor for numerous bat species. If the development is to proceed in the current configuration, surveys of use of this corridor by bats should be carried out.

- If the development proceeds in its current configuration, a replacement hedgerow habitat, comprised of the same species (Hawthorn, *Crataegus monogyna*), consisting an equal, or greater number of individuals should be planted on a raised earthen bank along the eastern boundary of the site to replace the ecological corridor removed. The trees planted should be of a minimum of 3 m in height, and the replacement hedgerow should be planted **prior** to the removal of the existing hedgerow.



## 4 Conclusions

It is likely that the proposed development will have a significant negative impact upon the water quality of the river Inny, and Lough Sheelin, and thus there is the potential that the proposed development will have an impact upon the conservation objectives of a number of Natura 2000 sites in the vicinity, whether through direct, or indirect linkages. The potential impacts are largely owing to the fact that the Oldcastle waste-water treatment plant is operating at capacity according to the response of the Department of Communications, Energy and Natural Resources to the Strategic Environmental Assessment of the Oldcastle Local Area Plan 2009 – 2015. When sufficient waste-water treatment capacity to deal with an increase in the population of Oldcastle is available, such that there will be no significant impact on the water quality of the river Inny or Lough Sheelin, the impact of this development on these Natura 2000 sites should no longer be of concern.

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[www.npws.ie](http://www.npws.ie) – website of the National Parks and Wildlife Service, source of information for data regarding Natura 2000 sites.

[www.europa.eu](http://www.europa.eu) – official website of the European Union, source of information on EU Directives.

[www.meath.ie](http://www.meath.ie) – official website of Meath Co. Council, source of information regarding Co. Meath Development Plan (2007 – 2013).

## Appendix 1: Flora listed in the schedule of the Flora Protection Order 1999

Scientific Name	Common Name
Page   34 <i>Acinos arvensis</i> (Lam.) Dandy	Basil Thyme
<i>Allium schoenoprasum</i> L.	Chives
<i>Alopecurus aequalis</i> Sobol.	Orange Foxtail
<i>Arenaria ciliata</i> L. (incl. subsp. <i>hibernica</i> Ostenf. & O. C. Dahl)	Fringed Sandwort
<i>Arthrocnemum perenne</i> (Miller) Moss (syn. <i>Salicornia perennis</i> Miller)	Perennial Glasswort
<i>Asparagus officinalis</i> L.	Wild Asparagus
<i>Asplenium obovatum</i> Viv. subsp. <i>lanceolatum</i> (Fiori)	Lanceolate
<i>P. Silva</i> (syn. <i>A. billotii</i> F.W. Schultz)	Spleenwort
<i>Asplenium septentrionale</i> (L.) Hoffm.	Forked Spleenwort
<i>Astragalus danicus</i> Retz.	Purple Milk Vetch
<i>Calamagrostis epigejos</i> (L.) Roth	Wood small-reed
<i>Callitriche truncata</i> Guss.	Short-leaved water starwort
<i>Cardamine impatiens</i> L.	Narrow leaved Bittercress
<i>Cardaminopsis petraea</i> (L.) Hiitonen	Northern Rockcress
<i>Carex depauperata</i> Curtis ex With.	Starved Wood Sedge
<i>Carex divisa</i> Hudson	Divided Sedge
<i>Centaureum pulchellum</i> (Swartz) Druce	Lesser Centaury
<i>Cephalanthera longifolia</i> (L.) Fritsch	Narrow-leaved Helleborine
<i>Colchicum autumnale</i> L.	Autumn Crocus
<i>Cryptogramma crista</i> (L.) R. Br. ex Hooker	Parsley Fern
<i>Deschampsia setacea</i> (Hudson) Hackel	Bog Hair Grass
<i>Epilobium alsinifolium</i> Vill.	Chickweed Willowherb
<i>Equisetum X moorei</i> Newman	Moore's Horsetail
<i>Eriophorum gracile</i> Koch ex Roth	Slender Cotton Grass
<i>Galeopsis angustifolia</i> Ehrh. ex Hoffm.	Red Hemp Nettle
<i>Groenlandia densa</i> (L.) Fourr. (syn. <i>Potamogeton densus</i> L.)	Opposite-leaved Pondweed
<i>Gymnocarpium robertianum</i> (Hoffm.) Newman	Limestone Fern
<i>Hammarbya paludosa</i> (L.) O. Kuntze (syn. <i>Malaxis paludosa</i> (L.) Swartz)	Bog Orchid
<i>Helianthemum nummularium</i> (L.) Miller	Common Rockrose

<i>Hordeum secalinum</i> Schreber	Meadow Barley
<i>Hydrilla verticillata</i> (L.fil.) Royle	Irish Hydrilla
<i>Hypericum canadense</i> L.	Canadian St. Johns Wort
<i>Hypericum hirsutum</i> L.	Hairy St. John's Wort
<i>Inula salicina</i> L.	Irish Fleabane
<i>Lathyrus japonicus</i> Willd.	Sea pea
<i>Limosella aquatica</i> L.	Mudwort
<i>Logfia minima</i> (Sm.) Dumort. (syn. <i>Filago minima</i> (Sm.) Pers.)	Slender Cudweed
<i>Lotus subbiflorus</i> Lag. (syn. <i>L. hispidus</i> Desf. ex DC. 1815)	Hairy Birdsfoot Trefoil
<i>Lycopodiella inundata</i> (L.) Holub (syn. <i>Lycopodium innundatum</i> L.)	Marsh Clubmoss
<i>Mentha pulegium</i> L.	Penny Royal
<i>Mertensia maritima</i> (L.) S. F. Gray	Oyster Plant
<i>Minuartia recurva</i> (All.) Schinz & Thell.	Recurved Sandwort
<i>Najas flexilis</i> (Willd.) Rostk. & W.L.E. Schmidt	Slender Naiad
<i>Omalotheca sylvatica</i> (L.) Schultz Bip.	Wood Cudweed
<i>Otanthus maritimus</i> (L.) Hoffmanns.	Cottonweed
<i>Papaver hybridum</i> L.	Round Prickly-headed Poppy
<i>Pilularia globulifera</i> L.	Pillwort
<i>Polygonum viviparum</i> L.	Alpine Bistort
<i>Pseudorchis albida</i> (L.) Á. & D. Löve	Small-white Orchid
<i>Puccinellia fasciculata</i> (Torrey) E.P. Bicknell	Tufted Salt-marsh
<i>Pyrola rotundifolia</i> L. ssp. <i>maritima</i> (Kenyon) E.F. Warburg	Round-leaved
<i>Sanguisorba officinalis</i> (L.)	Great Burnet
<i>Saxifraga granulata</i> L.	Meadow Saxifrage
<i>Saxifraga hartii</i> D.A. Webb	Hart's Saxifrage
<i>Saxifraga hirculus</i> L.	Yellow Marsh Saxifrage
<i>Saxifraga nivalis</i> L.	Alpine Saxifrage
<i>Scirpus triqueter</i> L. (syn. <i>Schoenoplectus triqueter</i> (L.) Palla)	Triangular Club
<i>Scleranthus annuus</i> L.	Annual Knawel
<i>Simethis planifolia</i> (L.) Gren.	Kerry Lily
<i>Spiranthes romanzoffiana</i> Cham.	Drooping Lady's Tresses
<i>Stachys officinalis</i> (L.) Trevisan (syn. <i>Betonica officinalis</i> L.)	Betony

<i>Trichomanes speciosum</i> Willd.	Killarney Fern
<i>Trifolium glomeratum</i> L.	Clustered Clover
<i>Trifolium subterraneum</i> L.	Subterranean Clover
<i>Trollius europaeus</i> L.	Globe Flower
<i>Vicia orobus</i> DC.	Bitter Vetch
<i>Viola hirta</i> L.	Hairy Violet
<i>Viola lactea</i> Sm.	Pale Heath Violet

Lower plants: mosses

Scientific Name	Common Name
<i>Bryum calophyllum</i> R.Br.	—
<i>Bryum marratii</i> Wils.	—
<i>Catocopium nigratum</i> (Hedw.) Brid.	—
<i>Drepanocladus vernicosus</i> (Mitt.) Warnst.	—
<i>Leptobarbula berica</i> (De Not.) Schimp.	—
<i>Orthotrichum pallens</i> Brid.	—
<i>Orthotrichum sprucei</i> Mont.	—
<i>Orthotrichum stramineum</i> Hornsch. ex Brid.	—
<i>Paludella squarrosa</i> (Hedw.) Brid.	—
<i>Pottia wilsonii</i> (Hook.) Br. Eur.	—
<i>Tetraplodon angustatus</i> (Hedw.) Br. Eur.	—
<i>Tortella inclinata</i> (Hedw.f.) Limpr.	—
<i>Weissia longifolia</i> Mitt.	—
<i>Weissia rostellata</i> (Brid.) Lindb.	—

Lower plants: liverworts

Scientific Name	Common Name
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<i>Leiocolea gillmanii</i> (Aust.) Evans syn. <i>Lophozia gillmanii</i> (Aust.) Schust.	—
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Page | 37 *Leiocolea rutheana* (Limpr.) K. Müll.) syn. *Lophozia rutheana* (Limpr.) Howe Fen flapwort

<i>Petalophyllum ralfsii</i> (Wils.) Nees & Gott.	—
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<i>Plagiochila atlantica</i> F. Rose	—
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Lower plants: lichens

Scientific Name	Common Name
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<i>Fulgensia fulgens</i> (Sw.) Elenkin	—
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Lower plants: stoneworts

Scientific Name	Common Name
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<i>Lamprothamnium papulosum</i> (Wallr.) J. Groves	Foxtail Stonewort
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<i>Nitella gracilis</i> (Smith) Agardh	Slender Stonewort
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## Appendix 2: Habitats listed on Annex I of the Habitats Directive

### Annex I Habitats (Priority habitats indicated by \*)

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#### Marine, coastal and halophytic habitats

- 1110 Sandbanks which are slightly covered by sea water all the time
- 1130 Estuaries
- 1140 Mudflats and sandflats not covered by seawater at low tide
- 1150 \* Coastal lagoons
- 1160 Large shallow inlets and bays
- 1170 Reefs
- 1180 Submarine structures made by leaking gases
- 1210 Annual vegetation of drift lines
- 1220 Perennial vegetation of stony banks
- 1230 Vegetated sea cliffs of the Atlantic and Baltic coasts
- 1310 Salicornia and other annuals colonising mud and sand
- 1320 Spartina swards (*Spartinion maritimae*)
- 1330 Atlantic salt meadows (*Glauco-Puccinellietalia maritimae*)
- 1340 \* Inland salt meadows
- 1420 Mediterranean and thermo-Atlantic halophilous scrubs (*Sarcocornetea fruticosi*)

#### Coastal sand dunes and continental dunes

- 2110 Embryonic shifting dunes
- 2120 Shifting dunes along the shoreline with *Ammophila arenaria* ('white dunes')
- 2130 \* Fixed dunes with herbaceous vegetation ('grey dunes')
- 2140 \* Decalcified fixed dunes with *Empetrum nigrum*
- 2150 \* Atlantic decalcified fixed dunes (*Calluno-Ulicetea*)
- 2160 Dunes with *Hippophae rhamnoides*
- 2170 Dunes with *Salix repens* ssp. *argentea* (*Salicion arenariae*)
- 2190 Humid dune slacks
- 21A0 Machairs
- 2250 \* Coastal dunes with *Juniperus* spp.
- 2330 Inland dunes with open *Corynephorus* and *Agrostis* grasslands

Freshwater habitats

- 3110 Oligotrophic waters containing very few minerals of sandy plains (Littorelletalia uniflorae)
- 3130 Oligotrophic to mesotrophic standing waters with vegetation of the Littorelletea uniflorae and/or of the Isoëto-Nanojuncetea
- 3140 Hard oligo-mesotrophic waters with benthic vegetation of Chara spp.
- 3150 Natural eutrophic lakes with Magnopotamion or Hydrocharition-type vegetation
- 3160 Natural dystrophic lakes and ponds
- 3170 \* Mediterranean temporary ponds
- 3180 \* Turloughs
- 3260 Water courses of plain to montane levels with the Ranunculion fluitantis and Callitriche-Batrachion vegetation

Temperate heath and scrub

- 4010 Northern Atlantic wet heaths with Erica tetralix
- 4020 \* Temperate Atlantic wet heaths with Erica ciliaris and Erica tetralix
- 4030 European dry heaths
- 4040 \* Dry Atlantic coastal heaths with Erica vagans
- 4060 Alpine and Boreal heaths
- 4080 Sub-Arctic Salix spp. scrub

Sclerophyllous scrub (matorral)

- 5110 Stable xerothermophilous formations with Buxus sempervirens on rock slopes (Berberidion p.p.)
- 5130 Juniperus communis formations on heaths or calcareous grasslands

Natural and semi-natural grassland formations

- 6130 Calaminarian grasslands of the Violetalia calaminariae
- 6150 Siliceous alpine and boreal grasslands
- 6170 Alpine and subalpine calcareous grasslands
- 6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (Festuco-Brometalia)
- 6211 \* Semi-natural dry grasslands and scrubland facies: on calcareous substrates (Festuco-Brometalia) (important orchid sites)
- 6230 \* Species-rich Nardus grassland, on siliceous substrates in mountain areas (and submountain areas in continental Europe)
- 6410 Molinia meadows on calcareous, peaty or clayey-silt-laden soils (Molinion caeruleae)



6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels

6510 Lowland hay meadows (*Alopecurus pratensis*, *Sanguisorba officinalis*)

6520 Mountain hay meadows

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*Raised bogs and mires and fens*

7110 \* Active raised bogs

7120 Degraded raised bogs still capable of natural regeneration

7130 \* Blanket bogs

7140 Transition mires and quaking bogs

7150 Depressions on peat substrates of the *Rhynchosporion*

7210 \* Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*

7220 \* Petrifying springs with tufa formation (*Cratoneurion*)

7230 Alkaline fens

7240 \* Alpine pioneer formations of the *Caricion bicoloris-atrofuscae*

*Rocky habitats and caves*

8110 Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*)

8120 Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*)

8210 Calcareous rocky slopes with chasmophytic vegetation

8220 Siliceous rocky slopes with chasmophytic vegetation

8240 \* Limestone pavements

8310 Caves not open to the public

8330 Submerged or partially submerged sea caves

*Forests*

9120 Atlantic acidophilous beech forests with *Ilex* and sometimes also *Taxus* in the shrublayer (*Quercion robori-petraeae* or *Ilici-Fagenion*)

9130 *Asperulo-Fagetum* beech forests

9160 Sub-Atlantic and medio-European oak or oak-hornbeam forests of the *Carpinion betuli*

9180 \* *Tilio-Acerion* forests of slopes, screes and ravines

9190 Old acidophilous oak woods with *Quercus robur* on sandy plains

91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

91C0 \* Caledonian forest

91D0 \* Bog woodland

91E0 \* Alluvial forests with *Alnus glutinosa* and *Fraxinus excelsior* (Alno-Padion, Alnion incanae, Salicion albae)

91J0 \* *Taxus baccata* woods of the British Isles

### Appendix 3: Species listed in Annex II of the Habitats Directive of relevance in Ireland

#### Invertebrate species: molluscs

- 1013 Geyer's whorl snail *Vertigo geyeri*  
1014 Narrow-mouthed whorl snail *Vertigo angustior*  
1016 Desmoulin's whorl snail *Vertigo moulinsiana*  
1029 Freshwater pearl mussel *Margaritifera margaritifera*

#### Invertebrate species: arthropods

- 1044 Southern damselfly *Coenagrion mercuriale*  
1065 Marsh fritillary butterfly *Euphydryas (Eurodryas, Hypodryas) aurinia*  
1092 White-clawed (or Atlantic stream) crayfish *Austropotamobius pallipes*

#### Vertebrate species: fish

- 1095 Sea lamprey *Petromyzon marinus*  
1096 Brook lamprey *Lampetra planeri*  
1099 River lamprey *Lampetra fluviatilis*  
1102 Allis shad *Alosa alosa*  
1103 Twaite shad *Alosa fallax*  
1106 Atlantic salmon *Salmo salar*

#### Vertebrate species: mammals

- 1303 Lesser horseshoe bat *Rhinolophus hipposideros*  
1349 Bottlenose dolphin *Tursiops truncatus*  
1351 Harbour porpoise *Phocoena phocoena*  
1355 Otter *Lutra lutra*  
1364 Grey seal *Halichoerus grypus*  
1365 Common seal *Phoca vitulina*

#### Lower plant species

- 1386 Green shield-moss *Buxbaumia viridis*  
1390 \* Western rustwort *Marsupella profunda*  
1393 Slender green feather-moss *Drepanocladus (Hamatocaulis) vernicosus*  
1395 Petalwort *Petalophyllum ralfsii*

#### Higher plant species

- 1421 Killarney fern *Trichomanes speciosum*  
1528 Marsh saxifrage *Saxifraga hirculus*  
1831 Floating water-plantain *Luronium natans*  
1833 Slender naiad *Najas flexilis*

Appendix 4: Birds listed on Annex I of the Birds Directive.

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<i>Acrocephalus melanopogon</i>	Moustached Warbler
<i>Acrocephalus paludicola</i>	Aquatic Warbler
<i>Aegolius funereus</i>	Tengmalm's Owl
<i>Alcedo atthis</i>	Kingfisher
<i>Anser albifrons subsp. flavirostris</i>	Greenland white-fronted goose
<i>Anser erythropus</i>	Lesser White-Fronted Goose
<i>Anthus campestris</i>	Tawny Pipit
<i>Aquila chrysaetos</i>	Golden Eagle
<i>Aquila clanga</i>	Spotted Eagle
<i>Ardea purpurea</i>	Purple Heron
<i>Ardeola ralloides</i>	Squacco Heron
<i>Asio flammeus</i>	Short-Eared Owl
<i>Aythya nyroca</i>	Ferruginous Duck
<i>Botaurus stellaris</i>	Great Bittern
<i>Branta leucopsis</i>	Barnacle Goose
<i>Branta ruficollis</i>	Red-Breasted Goose
<i>Bubo bubo</i>	Eagle Owl
<i>Bubo scandiaca</i>	Snowy Owl
<i>Bulweria bulwerii</i>	Bulwer's Petrel
<i>Burhinus oedicephalus</i>	Stone-Curlew
<i>Calandrella brachydactyla</i>	Short-Toed Lark
<i>Calidris alpina subsp. schinzii</i>	Dunlin
<i>Calonectris diomedea</i>	Cory's Shearwater
<i>Caprimulgus europaeus</i>	Nightjar
<i>Charadrius morinellus</i>	dotterel
<i>Chlamydotis undulata</i>	Houbara Bustard
<i>Chlidonias niger</i>	Black Tern
<i>Ciconia ciconia</i>	White Stork
<i>Ciconia nigra</i>	Black Stork
<i>Circus aeruginosus</i>	Marsh Harrier
<i>Circus cyaneus</i>	Hen Harrier
<i>Circus macrourus</i>	Pallid Harrier
<i>Circus pygargus</i>	Montagu's Harrier
<i>Coracias garrulus</i>	Roller
<i>Crex crex</i>	Corncrake
<i>Cursorius cursor</i>	Cream-Coloured Courser
<i>Cygnus columbianus</i>	
<i>Cygnus cygnus</i>	Whooper Swan
<i>Egretta garzetta</i>	Little Egret
<i>Emberiza caesia</i>	Cretzschmar's Bunting
<i>Emberiza hortulana</i>	Ortolan Bunting
<i>Falco columbarius</i>	Merlin
<i>Falco eleonora</i>	Eleonora's Falcon
<i>Falco naumanni</i>	Lesser Kestrel
<i>Falco peregrinus</i>	Peregrine Falcon
<i>Falco rusticolus</i>	Gyr Falcon
<i>Ficedula albicollis</i>	Collared Flycatcher
<i>Ficedula parva</i>	Red-Breasted Flycatcher
<i>Gallinago media</i>	Great Snipe
<i>Gavia arctica</i>	Black-Throated Diver
<i>Gavia immer</i>	Great Northern Diver
<i>Gavia stellata</i>	Red-Throated Diver
<i>Glareola pratincola</i>	Collared Pratincole
<i>Grus grus</i>	Crane
<i>Gyps fulvus</i>	Griffon Vulture
<i>Haliaeetus albicilla</i>	White-Tailed Eagle
<i>Himantopus himantopus</i>	Black-Winged Stilt
<i>Hydrobates pelagicus</i>	Storm Petrel
<i>Hydroprogne caspia</i>	Caspian Tern

<i>Ixobrychus minutus</i>	Little Bittern
<i>Lanius collurio</i>	Red-Backed Shrike
<i>Lanius minor</i>	Lesser Grey Shrike
<i>Larus genei</i>	Slender-Billed Gull
<i>Larus melanocephalus</i>	Mediterranean Gull
<i>Larus minutus</i>	Little Gull
<i>Limosa lapponica</i>	Bar-Tailed Godwit
<i>Loxia scotica</i>	Scottish Crossbill
<i>Lullula arborea</i>	Woodlark
<i>Luscinia svecica</i>	Bluethroat
<i>Melanocorypha calandra</i>	Calandra Lark
<i>Mergellus albellus</i>	Smew
<i>Milvus migrans</i>	Black Kite
<i>Milvus milvus</i>	Red Kite
<i>Neophron percnopterus</i>	Egyptian Vulture
<i>Nycticorax nycticorax</i>	Night Heron
<i>Oceanodroma castro</i>	Madeiran Storm-petrel
<i>Oceanodroma leucorhoa</i>	Leach's Storm-petrel
<i>Otis tarda</i>	Great Bustard
<i>Pandion haliaetus</i>	Osprey
<i>Pelagodroma marina</i>	White-faced Storm-petrel
<i>Pernis apivorus</i>	Honey Buzzard
<i>Phalaropus lobatus</i>	Red-Necked Phalarope
<i>Philomachus pugnax</i>	Ruff
<i>Platalea leucorodia</i>	Spoonbill
<i>Plegadis falcinellus</i>	Glossy Ibis
<i>Pluvialis apricaria</i>	Golden Plover
<i>Podiceps auritus</i>	Slavonian Grebe
<i>Porzana parva</i>	Little Crake
<i>Porzana porzana</i>	Spotted Crake
<i>Porzana pusilla</i>	Baillon's Crake
<i>Pterodroma feae</i>	
<i>Pterodroma madeira</i>	
<i>Puffinus assimilis</i>	Little Shearwater
<i>Pyrrhocorax pyrrhocorax</i>	Red-billed Chough
<i>Recurvirostra avosetta</i>	Pied Avocet
<i>Sterna dougallii</i>	Roseate Tern
<i>Sterna hirundo</i>	Common Tern
<i>Sterna paradisaea</i>	Arctic Tern
<i>Sterna sandvicensis</i>	Sandwich Tern
<i>Sternula albifrons</i>	Little Tern
<i>Surnia ulula</i>	Northern Hawk Owl
<i>Sylvia nisoria</i>	Barred Warbler
<i>Sylvia rueppelli</i>	Rüppell's Warbler
<i>Sylvia sarda</i>	Marmora's Warbler
<i>Sylvia undata</i>	Dartford Warbler
<i>Tadorna ferruginea</i>	Ruddy Shelduck
<i>Tetrao urogallus</i>	Western Capercaillie
<i>Tetrax tetrax</i>	Little Bustard
<i>Tringa glareola</i>	Wood Sandpiper
<i>Troglodytes troglodytes subsp. fridariensis</i>	Fair Isle Wren
<i>Xenus cinereus</i>	Terek Sandpiper

In English, emotional reactions such as hope, regret, satisfaction, may be expressed through sentences such as *She hopes he answers soon, I'm sorry they can't come, I'm glad she's here*. These sentences contain two clauses: a main clause with a verb in the present tense (e.g. *she hopes...*), followed by another clause with a verb which is also in the present tense (e.g. ... *(that) he answers soon*).

Sentences which express possibility and doubt have a similar structure, for example: *It's possible that they may get married, I doubt that he has the money*. Spanish differs somewhat from English in the way it expresses these ideas. In the main clause there is no variation. As in English, the main verb may be in the present, the past or the future, but the linking word *que* (*that*, in English), which introduces the second clause, known as the *subordinate clause*, may not be omitted. If the subject of the subordinate clause is different from that of the main clause (e.g. *she hopes that he answers*) then the verb in the subordinate clause must be in the subjunctive. This is an alternative form of the verb, not a tense. The subjunctive covers a range of tenses - present, imperfect, perfect and pluperfect subjunctive - which are different from the tenses you have learned so far in this book, and which grammar books refer to as tenses of the *indicative*.

### Expressing emotional reactions

- Ella espera que él responda/ *She hopes he answers/*  
escriba pronto *writes soon*
- Siento que no vengan/viajen *I'm sorry they can't come/*  
travel *travel*
- Me alegra de que ella esté/ *I'm glad she is/works here*  
trabaje aquí *works here*

### Expressing possibility

- Es posible que se casen/ *It's possible that they may get*  
divoricien *married/divorced*
- Es probable que llueva/nieve *It'll probably rain/snow*

### Grammar summary

#### 1 The subjunctive

##### General usage

The subjunctive is generally associated with a subordinate clause introduced by *que* which is dependent on a main clause. The main clause usually carries the type of verb which calls for the use of the subjunctive in the subordinate clause, for example, verbs expressing emotion, possibility and doubt (see earlier examples). The subjunctive may also occur in clauses introduced by *que*, for example when the antecedent is not known, as in:

- Buscamos una secretaria que *We're looking for a secretary*  
~~habla~~ *who speaks English*
- Queremos una persona que *We want a person who knows*  
conozca el oficio *the trade*

The subjunctive is always used after certain subordinators, for example:

- para que (*so that*) *I'll invite her so that you may*  
La invitaré para que la veas *see her*
- en caso de que (*in case*) *In case he/she arrives tell*  
En caso de que llegue dile *him/her to wait*  
que me espere *—*
- con tal de que (*as long as*) *I'll tell you as long as you*  
Te lo contaré con tal de *don't tell him/her*  
que ~~no~~ se lo digas

The subjunctive is found in main clauses containing commands or instructions (imperative form):

- Venga aquí un momento, *Come here a moment, please*  
por favor
- No se lo diga *Don't tell him/her*  
No se lo digas *—*

UNCERTAIN  
DOUBT  
EMOTIONAL  
SUBJUNCTIVE

PAST TENSE  
VINO

The idea of unreality or something which has not yet taken place is a common feature of many subjunctive clauses:

- Se lo diré cuando llegue *I'll tell him/her when he/she arrives*
  - Trabajaré hasta que termine *I'll work until I finish*
- For other uses of the subjunctive see Units 22 and 23.

## 2 Present subjunctive

### Uses

The uses of the present subjunctive are no different from those of the subjunctive in general, as outlined earlier. The decision whether to use the present rather than some other subjunctive tense will depend largely on tense agreement and time reference. Although there is no strict rule about it, the present subjunctive normally occurs in sentences which carry a main clause in the present indicative, future or imperative.

*Present indicative* → *present subjunctive*

No creo que él esté allí *I don't think he's there*

*Future* → *present subjunctive*

Será imposible que ellos nos visiten *It'll be impossible for them to visit us*

*Imperative* → *present subjunctive*

Alégrese de que no sea nada serio *You should be glad it's nothing serious (literally, be glad ...)*

### Formation

Like the imperative (see Unit 20) the present subjunctive is formed from the 1st person singular of the present indicative, e.g. hablo (hablar, to speak), respondo (responder, to reply, answer) escribo (escribir, to write). Drop the -o and add the corresponding endings: one set of endings for 1st conjugation verbs and another for the 2nd and 3rd conjugation. The 1st and 3rd person singular of the present subjunctive correspond in form to formal imperatives (see Unit 20).

hablar (to speak)	responder (to reply)	escribir (to write)
hable	responda	escriba
hables	respondas	escribas
hable	responda	escriba
hablemos	respondamos	escribamos
habléis	respondáis	escribáis
hablen	respondan	escriban

Study the use of the present subjunctive in the following sentences:

- With verbs expressing emotion:

Espero que ellos hablen español *I hope they speak Spanish*

Me alegro de que ellos trabajen tan bien juntos *I'm glad they work so well together*

Temo que ella no comprenda *I'm afraid she may not understand*

- With phrases indicating possibility:

Es posible que ellos no respondan *It's possible that they may not answer*

Es probable que él nos escriba *He'll probably write to us*

Puede ser que regresen en avión *They may return by plane*

- With verbs indicating doubt or uncertainty:

Dudamos que él nos responda *We doubt that he will reply to us*

No creo que Carlos me escriba *I don't think Carlos will write to me*

- In independent clauses with words indicating doubt and possibility:

Quizás John hable con él mañana *Perhaps John will speak to him tomorrow*

Tal vez ella viaje a Inglaterra *Perhaps she may travel to England*

Posiblemente se queden allí *They may stay there*

If the clause with *creer* is in the affirmative, the verb in the subordinate clause will be an indicative verb. Compare these two sentences:

No creo que él me llame *I don't think he'll call me*

Creo que él me llamará *I think he'll call me*

### Irregular forms of the present subjunctive

As with imperatives, verbs which are irregular in the 1st person singular of the present indicative are also irregular in the present subjunctive. Overleaf is an example: