APPENDIX 5
TERRESTRIAL FLORA, FAUNA AND BIRDS

APPENDIX 5.1 APPROPRIATE ASSESSMENT

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1.0 INTRODUCTION

RPS has been commissioned to provide a statement for Habitats Directive Article 6(3) Assessment (Appropriate Assessment or AA) on behalf of Islandmagee Storage Limited ('The Applicant') for a proposed underground gas storage facility beneath Larne Lough at Islandmagee, Co. Antrim in Northern Ireland. An Environmental Impact Statement (ES) is being produced. This report makes reference to the results of ecology surveys undertaken as part of the Terrestrial Flora & Fauna Chapter 5.0 of the Environmental Statement (ES).

Under Articles 6 (3) of the EC Habitats Directive 92/43/EEC, an assessment is required where a project may give rise to significant effects upon the Natura 2000 network. Natura 2000 is a European network of protected sites which includes Special Areas of Conservation (SAC) and Special Protection Areas (SPA). The transposing legislation in Northern Ireland is The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995, requiring a Competent Authority (CA) to undertake an Appropriate Assessment, before deciding to undertake, or give any consent, permission or other authorization for a project.

As the Competent Authority in this instance, the Department of Environment for Northern Ireland must make key decisions prior to granting consent for a project which has potential to result in significant impacts on the Natura 2000 network. RPS has produced this report to collate and present the key data required for the CA to accurately undertake assessment. Data relating to the present scheme has been presented, and/or summarised for clarity. Provisional assessments have also been made of likely potential impacts, and which of these may be significant.

The proposed underground gas storage scheme is located within the Larne Lough Special Protection Area (SPA), and within 1km of the Swan Island SPA. These two sites are considered within Larne Lough SPA according to the Joint Nature Conservation Committee (JNCC) and are considered as one Natura site for the purposes of this report. The Larne Lough Ramsar and Larne Lough ASSI designated areas also share their boundaries with the SPA, but are not considered as part of this assessment as they are not protected under European law.

Please note the following abbreviations frequently used throughout this report primarily relating to legislation and scheme design. The latter is described in detail later in this report.

- Northern Ireland Environment Agency (NIEA)
- European Union (EU)
- Joint Nature Conservation Committee (JNCC)
- British Trust for Ornithology (BTO)
- Gas Plant Facilities (GPF)
- Sea-Water Intake Pumping Station (IPS)
- Seawater & Brine Pumping Facilities (Leaching Plant)
- Sub-surface Pipelines (SSP)
- Temporary Set Down and Storage Compound (TSC)

This report should be read with the following figures

- Figure 1 Conservation Objectives
- Figure 2 RPS Ecology Survey Areas
- Figures 3 A-B Habitat Maps
- Figures 4A-B Breeding Bird Survey Maps

There are also a large number of appendices included to this report which include a large number of existing bird survey datasets held by public bodies. All appendices are listed on the cover page to this report.

1.1 SCHEME AREA

The scheme is located on the east Antrim coast, in northeast Northern Ireland and is dominated by farmlands and coastal habitats on the Islandmagee peninsula adjacent to Larne Lough (Figure 1; Plates in Appendix 8). Larne Lough is a sea Lough separating the Antrim mainland from the Islandmagee peninsula that is internationally important for both breeding and wintering seabirds and waterfowl. The Lough to the south of the site is shallow, having become extensively in-filled with sediments of fine muddy sand, and at low tide, large areas of intertidal flats are exposed. The northern parts of the Lough are wider and relatively deep, especially at the mouth by the commercial port of Larne, where dredging is regularly carried out. This area of the Lough is very weakly tidal, and there are small areas of mud and sandflats exposed at low tide.

1.2 PROJECT DESCRIPTION

A full description of the scheme is provided in Chapter 4.0 Project Description of the ES. The location of the scheme is illustrated in Figure 1. The scheme entails creating an underground gas storage facility at Islandmagee, Co. Antrim. Gas will be stored beneath the eastern side of Larne Lough in caverns that are created within salt layers of Permian age. The complex of above-ground facilities for the proposed development is primarily located in farmland adjacent to the existing power station. However an additional element (Sea-Water Intake & Pumping Station) is located on the eastern shoreline of the Islandmagee peninsula at Castle Robin Bay. Sub-surface pipelines will be installed to interconnect the scheme elements.

The following is a list of the proposed elements of the scheme with estimated post-construction footprints (in hectares). Abbreviations are employed throughout this section to facilitate brief reference and are included in brackets after each element in the list below:

- Gas Plant Facilities (GPF) in farmland above eastern shore of Larne Lough (1.67ha)
- Sea-Water Intake Pumping Station (IPS) on shingle and farmland at Castle Robin Bay on eastern coast of Islandmagee Peninsula (CA. 0.02ha)
- Seawater & Brine Pumping Facilities (Leaching Plant) on hardstanding by Ballylumford Road (0.61ha)
- Brine outfall pipeline 450m off-shore of IPS location.

- Sub-surface Pipelines (SSP) connecting GPF and Wellpad, and connecting Leaching Plant with IPS by crossing Islandmagee farmland to reach outfall at Castle Robin Bay. Lengths of all pipelines provided in Chapter 4.0 Project Description
- Temporary Set Down and Storage Compound (TSCA) at junction of Ferris Bay Road and Ballylumford Road (2.7ha)
- Wellpad in farmland on eastern shore of Larne Lough south of GPF (0.48ha)
- Vent Stack between farmland and shingle above Larne Lough shoreline (0.8m²)

The detailed project description is included as Appendix 1.

2.0 FIELD SURVEYS

In November 2008, prior to commencement of the EIA surveys, an in-house wintering bird desktop study (Appendix 2) was commissioned by RPS to highlight potential gaps in existing survey data at Larne Lough. The report concluded that the BTO WeBS dataset for the Lough was complete in terms of both coverage and quality of records, and recommended wintering farmland surveys for which only scattered CEDaR records are available despite known wintering populations of Yellowhammer *Emberiza citrinella* and Twite *Carduelis flavirostris,*.

Following this report and consultation with the Northern Ireland Environment Agency Natural Heritage (see Appendix 3); the following ecology surveys with relevance to Larne Lough SPA were undertaken within the study area as part of the EIA

- Extended Phase 1 Habitat Survey (May-August 2009) (Maps in Figures 3A-B)
- Breeding bird Survey (April-July 2009) (Maps in Figures 4A-B)
- Wintering farmland bird survey (November 2008-February 2009) (Not Mapped)
- Wintering & breeding open coastal bird survey (December 2008-August 2009) (Not Mapped)
- Black Guillemot *Cephhus grylle* breeding survey (April-July 2009)

The survey areas are illustrated in Figure 2. The Phase 1 Habitat Survey (JNCC, 2003) Maps are provided in Figure 3. The Breeding Bird Survey Maps are provided in Figure 4. The Black Guillemot *Cephhus grylle* breeding survey ma ` p is not included.

There were no records of SPA feature species in the wintering farmland bird surveys. Records of key SPA features from breeding bird and black guillemot surveys are detailed in section 5.2.2 of this report.

3.0 DESKTOP STUDIES

A desk study was carried out to gather information relevant for the evaluation of the SPA site. Information was obtained through consultation, databases, current legislation, planning policy guidance, published and peer-reviewed literature, and websites.

3.1 KEY SOURCES

The following legislation and key publications were consulted and/or are referred to in this document. Please note the abbreviations used throughout this document in brackets. Legislation is ordered chronologically

International

- The EC Habitats Directive (92/43/EEC) (' The Habitats Directive')
- The EC Birds Directive (92/43/EEC) ('The Birds Directive')
- Directive 2000/60/EC of the European Parliament and of the Council establishing a framework for the Community action in the field of water policy ('the Water Framework Directive');
- Directive 2006/44/EC of the European Parliament and of the Council of 6 September 2006 on the quality of fresh waters needing protection or improvement in order to support fish life ('the Fish Directive (consolidated)');

All-Ireland

- Lynas, P. 2007. The status of birds in Ireland: an analysis of conservation concern 2008-2013. Irish Birds 8: 149-167 ('Birds of conservation Concern -BoCCI')
- Heath, M. F. & Evans, M. I. (eds). 2000. Important Bird Areas in Europe: Priority sites for conservation. 2 vols. Cambridge, UK: BirdLife International.

Northern Ireland

- The Wildlife (Northern Ireland) Order 1985 (S.I. 1985/171 (N.I. 2)) as amended by The Wildlife (Amendment) (Northern Ireland) Order 1995 (S.I. 1995 No. 761 (N.I. 6)) ('The Wildlife Order');
- The Department of the Environment (DOE) Review of The Wildlife (Northern Ireland) Order 1985 – A Consultation Paper ('Review of The Wildlife Order');
- The Nature Conservation and Amenity Lands (Northern Ireland) Order 1985 (S.I. 1985/170) ('The Nature Conservation Order');
- The Conservation (Natural Habitats, etc.) Regulations (Northern Ireland) 1995 (S.R. 1995 No. 380) as amended by the Conservation (Natural Habitats, etc.) (Amendment) Regulations (Northern Ireland) 2004 (S.R. 2004 No. 435) and The Conservation (Natural Habitats, etc.) (Amendment) Regulations (Northern Ireland) 2007 (S.R. 2007 No. 345)
- The Conservation (Natural Habitats, etc.) (Amendment) Regulations (Northern Ireland) 2009 (S.R. 2009 No. 8) ('The Conservation Regulations') ;
- Northern Ireland Biodiversity Strategy (EHS, 2002);
- The Environment (Northern Ireland) Order 2002 (S.I. 2002/3153 (N.I. 7)) ('The Environment Order');
- The Water Environment (Water Framework Directive) Regulations (Northern Ireland) 2003 (S.R. 2003 No. 544);

The following Databases were consulted to retrieve habitat and general ecological data:

- Northern Ireland Environment Agency (NIEA) Designation Maps www.ni-environment.gov.uk/.

- National Biodiversity Data Centre (NBDC) Records & Mapping http://www.biodiversityireland.ie/
- National Biodiversity Network (NBN) database (http://data.nbn.org.uk/)
- BTO/Birdwatch Ireland (BWI) Bird Atlas 2007-2011 Preliminary Results http://blx1.bto.org/atlas/

Many of the following ornithological datasets available for Larne Lough contain relevant data on Larne Lough SPA feature species and are referenced in this report. Those marked by an * are included as appendices to this report:

- RPS Open Coast Bird Surveys December 2008-August 2009 (Appendix 4)
- BTO Wetland Bird Survey Data (WeBS) (Appendix 5)
- *CeDAR Records (See CeDAR record locations in Figure 1 of Appendix 2)
- *Royal Society for Protection of Birds (RSPB) Larne Lough Dataset Review Table (Appendix 6)
- BTO Non-Estuarine Wetland Bird Survey Data
- Swan Island Tern Colonies Survey Data (RSPB) (Not Included)
- JNCC Seabird 2000 Counts for Black Guillemot in Larne Lough

The following websites were also consulted

- BTO (www.bto.org/)
- Joint Nature Conservancy Committee (JNCC) (http://www.jncc.gov.uk);
- Institute of Ecology & Environmental Management (IEEM) http://www.ieem.net/
- BirdLife International (www.birdlife.org)

3.2 CONSULTATION

ES Consultation responses are included as Appendix 3.

4.0 ARTICLE 6 ASSESSMENT METHODOLOGY

This Report has been completed in accordance with DOE(NI) and European Commission recommended methodology.

- Managing Natura 2000 Sites, The provisions of Article 6 of the 'Habitats' Directive 92/43/EEC' (EC, 2000);
- Assessment of plans and projects significantly affecting Natura 2000 sites, Methodological guidance on the provisions of Article 6 (3) and (4) of the Habitats Directive 92/43/EEC' (EC, 2001);
- The Habitats Regulations: A guide for competent authorities, (EHS, 2002);
- Guidance document on Article 6(4) of the 'Habitats Directive' 92/43/EEC – Clarification of the concepts of: alternative solutions, imperative reasons of overriding public interest, compensatory measures, overall coherence, opinion of the commission; (EC, 2007).

The European Commission's methodological guidance (EC, 2002) promoting a four-stage process to complete the AA, and outlines the issues and tests at each stage. An important

aspect of the process is that the outcome at each successive stage determines whether a further stage in the process is required.

The four stages are summarised diagrammatically below, and an outline of the steps and procedures involved in completing each stage follows. Stages 1-2 deal with the main requirements for assessment under Article 6(3). Stage 3 may be part of Article 6(3) or may be a necessary precursor to Stage 4. Stage 4 is the main derogation step of Article 6(4).

Stage 1: Screening for Appropriate Assessment
Screening is the process that addresses and records the reasoning and conclusions in relation to the first two tests of Article 6(3):

i) whether a plan or project is directly connected to or necessary for the management of the site, and
ii) (whether a plan or project, alone or in combination with other plans and projects, is likely to have significant effects on a Natura 2000 site in view of its conservation objectives.

If the effects are deemed to be significant, potentially significant, or uncertain, or it the screening process becomes overly complicated, then the process must proceed to Stage 2 (AA). Screening should be undertaken without the inclusion of mitigation, unless potential impacts clearly can be avoided through the modification or redesign of the plan or project, in which case the screening process is repeated on the altered plan. The greatest level of evidence and justification will be needed in circumstances when the process ends at screening stage on grounds of no impact.

Stage 2: Appropriate Assessment
This stage considers whether the plan or project, alone or in combination with other projects or plans, will have adverse effects on the integrity of a Natura 2000 site, and includes any mitigation measures necessary to avoid, reduce or offset negative effects. The proponent of the plan or project will be required to submit a Statement for Appropriate Assessment, i.e. the report of a targeted professional scientific examination of the plan or project and the relevant Natura 2000 sites, to identify and characterise any possible implications for the site in view of the site's conservation objectives, taking account of in combination effects. This should provide information to enable the competent authority to carry out the appropriate assessment. If the assessment is negative, i.e. adverse effects on the integrity of a site cannot be excluded, then the process must proceed to Stage 4, or the plan or project should be abandoned. The AA is carried out by the competent authority, and is supported by the Statement for AA.

Stage 3: Alternative Solutions
This stage examines any alternative solutions or options that could enable the plan or project to proceed without adverse effects on the integrity of a Natura 2000 site. The process must return to Stage 2 as alternatives will require appropriate assessment in order to proceed. Demonstrating that all reasonable alternatives have been considered and assessed, and that the least damaging option has been selected, is necessary to progress to Stage 4.

Stage 4: Imperative Reasons of Overriding Public Interest (IROPI)/Derogation
Stage 4 is the main derogation process of Article 6(4) which examines whether there are imperative reasons of overriding public interest (IROPI) for allowing a plan or project that will have adverse effects on the integrity of a Natura 2000 site to proceed in cases where it has been established that no less damaging alternative solution exists. The extra protection measures for Annex I priority habitats come into effect when making the IROPI case1. Compensatory measures must be proposed and assessed. The Commission must be informed of the compensatory measures. Compensatory measures must be practical, implementable, likely to succeed, proportionate and enforceable, and they must be approved by the Department.

5.0 NATURA SITE DESCRIPTION

There is one Natura 2000 site that must be taken into consideration in the Appropriate Assessment; namely the Larne Lough SPA (Site Code 9020042). This report will determine the significance of the effects of the project on the selection features and conservation objectives of this Natura site.

5.1 LARNE LOUGH SPA

The Natura 2000 standard data form, NIEA site declaration form, and detailed NIEA conservation objectives are located in Appendix 7. Lough Larne SPA was classified as an SPA on the 19/03/1997. The extent of the SPA is 395.9ha (including Swan Island).The boundary of the SPA is shown in Figure 1 (Note Swan island is also illustrated in Figure 1)

5.1.1 Qualifying features and Conservation Objectives

Table 1 below describes the qualifying selection features for the designation of the SPA while the conservation objectives are presented in Appendix 7.

Primary Feature	Factor[3]	Birds Directive Annex I Species	Population	Isolation	Count
Light-bellied Brent Goose *Branta bernicla hrota* (winter migratory population)			C	C	227.1[1] individuals
Roseate Tern *Sterna dougalii* (European migratory breeding population)		√	C	C	6 Pairs[1]
Common Tern *Sterna hirundo* (Northeastern migratory breeding		√	B	C	199 Pairs[1]

population)					
Sandwich Tern *Sterna sandwicensis*					407 Pairs[2]
	Habitat extent				
	Roost site locations				

Key to Table 1
[1] Population at time of designation (Appendix 7)
[2]Average of 2000 and 2006 counts from Important Bird Area Review (Appendix 6)
[3]Factor is the term used on the conservation objectives in Appendix 7 to describe habitats within context of the SPA designation

5.2 DETAILED ECOLOGY OF LARNE LOUGH SPA

This section provides a brief description of the key plant habitats and bird populations within the SPA which are found within or adjacent to the scheme area, with reference to both existing survey data and the results of surveys undertaken by RPS from November 2008-August 2009. This section should be read with the plates in Appendix 9 which illustrate the study area photographically.

5.2.1 Habitats

Larne Lough SPA is a sea Lough with a diverse range of marine and intertidal habitats including salt marshes, artificial brackish lagoons (in the northwest), mudflats, sand flats, and tidal rivers and rocky shores (including shingle). Terrestrial lands adjacent to the SPA are primarily pastoral farmlands. There are no sandy beaches within the SPA, but there are two to the northeast in Ferris Bay and Browns Bay. The Lough is only weakly tidal in its northern (or outer) part resulting in limited mudflats compared to the tidal areas in the southern (or inner) part. The coastal habitats along the Lough shoreline below the wellpad, vent stack, and gas plant facilities are weakly tidal shingle beaches with no exposed mud or sandflats at low tide.

As noted in Appendix 7 (Table 1 therein), Habitat is not a feature of the SPA, but Habitat extent, and Roost site locations are noted as ‘factors’ and are included within the SPA feature table in the conservation objectives. Specific habitat types for the factor are not provided within the conservation objectives, rather “areas of natural and semi-natural habitats potentially usable by Feature bird species (intertidal areas)” are. Table 2 below details all habitats within or immediately adjacent to the footprint of each element including JNCC category, conservation status, and links to SPA habitat ‘factors’ (read with Figure 3). Of all the habitats in Table 2, only two may be considered to fit the Habitat factor criteria, namely shingle which has potential as a Tern roost site, and improved grassland with potential as a Brent goose roosting/feeding site. During the suite of ecology surveys undertaken by RPS from November 2008-August 2009 (see section 2.0), there was no evidence of either species using shingle grassland habitats within or adjacent to the scheme.

Table 2 Habitats potentially affected by scheme with ecological value and conservation status.

Habitats which may be considered habitat 'factors' listed in the SPA conservation objectives are marked by an *. To be read with Figure 3.

Scheme Element (see section 1.2 and Appendix 1)	Habitat loss (JNCC)	Lost Habitat Conservation Value	Adjacent Habitat (JNCC)	NI Priority Habitat	Links with EU habitats	Notes
Wellpad	Improved Grassland* (B4)	Low	Shingle (H3) *	Coastal Vegetated Shingle	Perennial vegetation of stony banks (Code:1220)	-
	Intact native hedge (J2.1)	Medium	-			-
SSP	Semi-natural broad-leaved woodland (A1.1.2)	Low	-			Several Badger Setts
	Scrub (A2.1/A2.2)	Low	-			-
	Improved Grassland* (B4)	Low	Running Water (G2)	Low		-
	Intact native hedge (J2.1)	Low	-			One Protected Flower (Primrose).
	Neutral Semi-improved Grassland (B2.2)	Medium	-	Lowland Meadow		-
	Shingle (H3)	High	Hard Maritime Cliff (H8.1)	Coastal Vegetated Shingle Maritime Cliff & Slope	Perennial vegetation of stony banks (Code:1220)	-
Gas Plant Facilities	Neutral Semi-improved Grassland (B2.2)	Medium		Lowland Meadow		-
	Intact native hedge (J2.1)	Medium				-
	Improved	Low				-

Scheme Element (see section 1.2 and Appendix 1)	Habitat loss (JNCC)	Lost Habitat Conservation Value	Adjacent Habitat (JNCC)	NI Priority Habitat	Links with EU habitats	Notes
	Grassland * (B4)					
, Leaching Plant ,	Semi-natural broad-leaved woodland (A1.1.2)	Low		-	-	-
	Scrub (A2.1/A2.2)	Low		-	-	
	Inland Rock Exposure (I1.4)	Low			-	Includes Orchid swarms
	Buildings (J3.6)			-	-	-
Vent Stack	Neutral Flush (E2.1)	Low	Shingle (H3)* Improved Grassland (B4) *	Coastal Vegetated Shingle	Perennial vegetation of stony banks (Code:1220)	-
IPS	Shingle (H3) *	High		Coastal Vegetated Shingle	Perennial vegetation of stony banks (Code:1220)	-
	Neutral Semi-improved Grassland (B2.2)	Medium	Hard Maritime Cliff (H8.1)	Maritime Cliff & Slope	-	
	Improved Grassland * (B4)	Low				
TSCA	Ephemeral/short perennial (J1)	Low		-	-	-
	Introduced Shrub (J1.4)			-	-	Snowberry *Symphoricarpos alba*
	Hard Standing (J5)			-	-	

Key to Table 2
*Considered to be included in Habitat factor within SPA conservation objectives

5.2.2 Ornithology

This section gives a brief summary of the key SPA populations occurring within the scheme area, and also describes the range of non-SPA feature wintering and breeding bird species within the vicinity of Larne Lough SPA and the scheme. This section was written by pooling information from the sources in section 3.0, as well as existing, and RPS survey records. The observational information in this section is important as the BTO WeBS dataset for outer Larne Lough does not inform as to bird use of the sections of Lough directly within or adjacent to the scheme (covers entire outer Lough).

5.2.2.1 Birds within Larne Lough SPA

Please note that the scheme subsurface cavern areas are located in the northern (outer) part of the Lough (as defined by BTO WeBS inner and outer subsite boundaries- see Appendix 5).

There are similar total peak counts in the inner and outer Lough as evidenced by the 2001-2006 BTO WeBS mean winter peaks (Appendix 5) of 3557 for the inner Lough compared to 3528 for the outer. However Brent geese (SPA qualifying feature) are significantly less abundant in the outer Lough (within the scheme area) with a mean winter peak of 22 compared to 212 in the inner Lough. There are no known Brent goose grassland feeding sites within the scheme area. 6 were recorded in February 2009 foraging in seaweed by the Ballylumford jetties, while the (same?) 6 were recorded later that day at Ferris Bay. None were recorded on the open coast on the eastern coast of Islandmagee during RPS open coast surveys. No surveys of the Lough were undertaken by RPS due to quality and coverage of existing WeBS BTO counts, so the fine-scale distribution of Brent within the outer Lough is not known.

The Swan and Blue Circle islands (SPA) near the eastern shore of the outer Lough are home to the internationally significant breeding colonies of Common, Sandwich and Roseate Terns (SPA qualifying features) detailed in Table 1. The distribution of Terns in the inner and outer Lough cannot be elucidated from BTO WeBS data as Terns are optionally recorded in WeBS surveys and absent from most counts. Terns were recorded flying and dive fishing extensively along the eastern shore of the Lough during RPS Black Guillemot and breeding bird surveys in May-July 2009, but were never recorded landing along the eastern shore, possibly due to the high disturbance levels associated with the power station, nearby harbour, and housing.

The Swan and Blue Circle islands are also home to small breeding populations of ducks (Eider and Red-breasted Merganser) (Kerry Leonard, Personal Communication). A single pair of Merganser was recorded foraging within the area of proposed scheme subsurface caverns by RPS in summer 2009. These islands are located 0.9km to the nearest scheme subsurface cavern, and 1.4km west of the nearest on-land scheme element (Wellpad). The open water within the Lough provides feeding/roosting habitat to wintering ducks, grebes, swans, and divers, as well as wintering Cormorants and Shags including resident populations of the two latter species which breed at rocky coastal sites at Portmuck ASSI and Gobbins ASSI. Large flocks of black-headed gulls roost on the open water and shore near the eastern shore. Black Guillemots breed in the jetties beside the existing Ballylumford

Power station, at Larne Harbour and in characteristically thinly scattered colonies in appropriate nesting sites along the entire Lough shoreline. RPS recorded a total of 9 nest sites (i.e. 9 pairs) in the jetties with an average productivity of 0.94 (see Figure 6). The jetties are located 0.6km northwest of the nearest subsurface cavern and approximately 500m from the nearest on-site element. The JNCC Seabird 2000 data set recorded a total of 112 individual birds within Larne Lough in April 2000.

There are a wide range of other breeding and wintering birds within the SPA. However, there are very few wintering waterfowl feeding on the Lough shoreline by the scheme subsurface caverns and on-shore elements near the power station due to the lack of intertidal mudflat or sandflat feeding habitat here. Incidental records on the eastern Lough shoreline near the scheme by RPS during winter mammal and farmland bird surveys indicate very small numbers of Oystercatcher and Heron (non-feature species) as the only frequent land species. Cormorants, Shags, and divers are predictably frequent open water species near the shoreline here. There may be a small number of breeding waterfowl on the shingle beaches here, although none were recorded during breeding surveys in summer 2009. For example, there are anecdotal records of a single pair of ringed plover breeding here (David Galbraith, personal communication), and broken Oystercatcher eggs whose original location remains unknown (were found in the fields by the GPF, and were probably predated by gulls or crows.

5.2.2.2 Birds outside Larne Lough SPA

Terns were recorded frequently crossing the Islandmagee farmland peninsula to forage on the open coast in the vicinity of the scheme brine outfall, as well as and around the coastline of Ferris and Browns Bay. It is worth noting the skilful avoidance of the many power cables linking Moyle interconnector power pylons by Sandwich Terns (in high winds). This was frequently observed during breeding bird surveys in summer 2009, and indicates the birds are extremely unlikely to suffer collisions with any of the proposed scheme elements.

The RPS open coast surveys (December 2008-August 2009) and NEWS dataset (2007 data only; not included) both covered areas from Skernaghan Point to Portmuck including the IPS location at Castle Robin, and revealed moderate numbers of resident (e.g. oystercatcher), passage (Whimbrel) and wintering waders (Curlew, Purple Sandpiper Redshank) roosting on the rocky coastline in addition to divers (Red-throated and Great Northern), Cormorant, Shag and gulls in open water. Foraging seabirds from Portmuck/Gobbins were frequently noted here, with summer/autumn peaks for Guillemot, and Razorbill. Cormorant and Shag are common here, but other foraging Portmuck/Gobbins birds are rare (e.g. Fulmar) or apparently absent (Puffin). No Brent geese were recorded on the open coast.

6.0 APPROPRIATE ASSESSMENT

The AA is presented in sections 6.1, 6.2, and 6.3 to follow. First, all potential risks are screened and any likely significant effects are predicted (6.1). Mitigation measures are then proposed as part of the project to remove or reduce the residual effects upon those features and attributes of the Natura 2000 sites (6.2). Finally, the residual risks which remain after mitigation measures have been considered (6.3).These residual impacts are examined with respect to the conservation objectives of the Natura 2000 sites, and their ecological structure and functioning, thereby examining whether or not the residual effects which remain adversely affect the integrity of the Natura 2000 sites.

6.1 STAGE 1 SCREENING

This section describes 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 virtue of:

- Size and scale;
- Land-take;
- Distance from Natura 2000 site or key features of the site;
- Resource requirements (water abstraction etc);
- Emission (disposal to land, water or air);
- Excavation requirements;
- Transportation requirements;
- Duration of construction, operation, de-commissioning etc;

This section should be read with the project description in Appendix 1.

6.1.1 Elements of Project likely to give rise to impacts on Larne Lough SPA

In the absence of mitigation, construction and operation of the elements outlined in section 1.2, and detailed in Appendix 1 are likely to give rise to a series of pollution and disturbance impacts on Larne Lough SPA.

The project proposes the following elements on the eastern shore of Larne Lough near the Natura Site:

- Use of plant including 55m high (max potential height) drill rig apparatus and cranes to drill seven boreholes into subsurface caverns beneath the eastern shore of Larne Lough (within the SPA) to dissolve Permian salt layers, and fill these caverns with natural gas as a storage facility. These elements to be constructed on boundary of Natura site.

- Reprofiling of coastal grassland habitats bordering Larne Lough to provide a flat area of 105 x 45 metres to host a wellpad to house below-ground wellhead apparatus plant on the boundary of the Natura site (i.e. 0m from Natura boundary).

- Removal of 16,700m² of coastal grassland to create above-ground Gas Plant Facilities and associated access roads and car parking within 10m of the Natura site.

- Construction of c.1m², 40m high vent stack and stabilization of adjacent slope on eastern shore of Larne Lough within 10m of the Natura site.

The project proposes the following elements on the eastern Islandmagee coastline at Castle Robin at significant distance from the Natura Site:

- Excavation of a 174m² sump into the bedrock (by rock breaking, or possible blasting) on the foreshore of Castle Robin Bay on the eastern coast of the Islandmagee peninsula 2.7km east of the Natura site to house pumps for seawater intake.

- Construction of seawater intake, brine outfall and gas pipelines to connect the elements described above. The pipeline will pass within 20m of the Natura site

- Discharging brine to open ocean on the eastern Islandmagee coastline at Castle Robin via the Brine outfall pipe. Nearest discharge will occur ca. 2.7km east of the Natura site

- Temporarily increased levels of construction traffic on roads within 300m of Natura site, and new presence of construction traffic on farmland within 10m of the Natura site.

6.1.2 Likely Potential Impacts on Swan Island SPA (Part of Larne Lough SPA)

Table 3 summarises potential impacts to Larne Lough SPA prior to implementation of any mitigation measures. Of potential impacts identified in Table 3, one is probable, with all other impacts of unknown likelihood or unlikely.

Two potential impacts are very large adverse (and of unknown likelihood), and two are slight adverse (one likely and one unlikely). Both very large adverse impacts are potential pollution incidents during construction or decommissioning whose likelihood is difficult. The potential consequence of worst-case large scale pollution is direct fatalities/injuries to Terns and Brent Geese or indirect disturbance via pollution-induced food depletion. No potential collision impacts with newly built artificial elements are predicted to Terns due to their small size and agile flight. No potential collision impacts with newly built artificial elements are predicted to Terns due to their small size and agile flight. No potential collision impacts with Brent are predicted due to their rare occurrence in significant numbers in the locality. Sandwich terns were seen to easily navigate through the series of Pylons by the Moyle interconnector in high winds in late summer 2009.

The remaining two slight adverse impacts are the unlikely potential indirect impacts to Tern colonies due to brine-induced decreases in prey abundance (see below), and the potential slight adverse physical disturbance impacts predicted for foraging terns from physical construction disturbance.

All residual impacts are non-significant

6.1.2.1 Potential Impact of Brine emissions on Foraging Terns

The potential brine impact of brine emissions on terns has been classed as slight adverse. The data in this section 6.1.2.1 has been taken from Chapter 9.0 Coastal Processes of the ES (Appendix 10) which presents detailed tidal, bathymetric, and brine emission modelling data

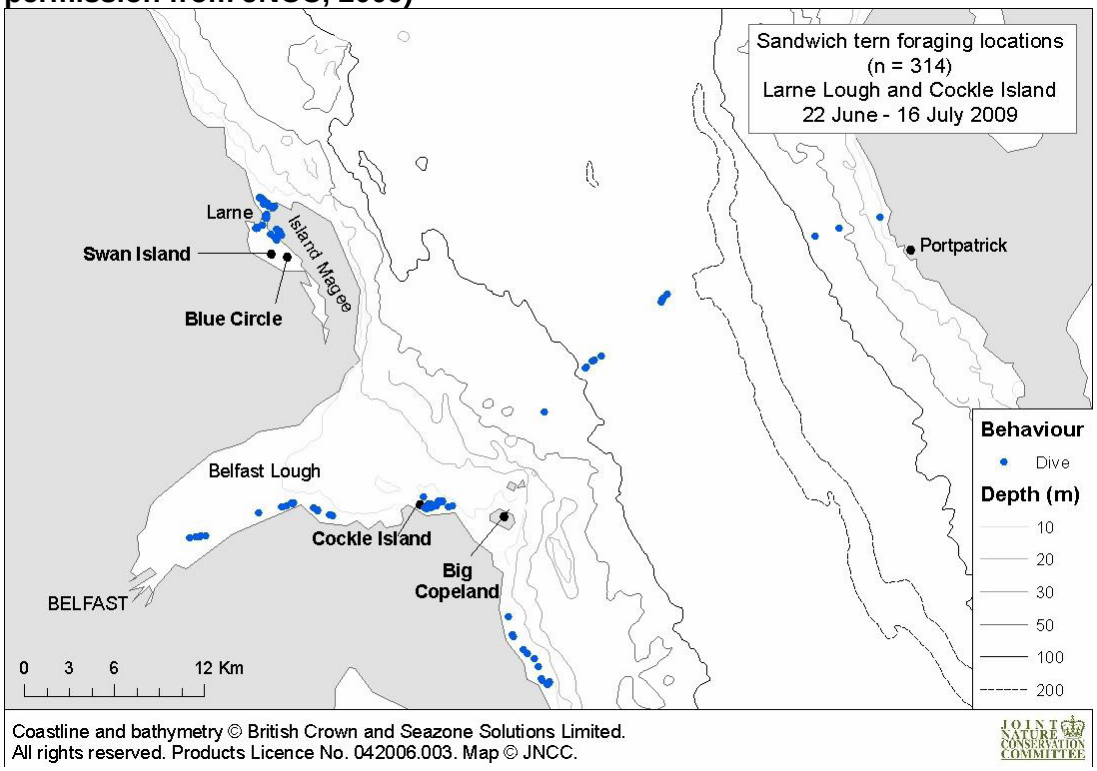
The brine outfall will discharge brine approximately 450m off-shore, with the discharge point located at 27 metres depth (chart datum). The brine, even at 10°C above ambient, will be more dense than the surrounding seawater, thus there will be a tendency for the brine plume to initially sink. However the eddying in the water column will mix the brine and seawater as the tidal currents flow across the outfall area (average tidal current speed of 0.22m/s). Any salinity increase in excess of the range normally experienced in seasonal variations is expected to be restricted to the initial mixing zone of <100m from the outfall. This corresponds to a distance of ca. 550m from the open coastline at its nearest point. Applying the Precautionary Principle (SNIFFER, 2006), this distance has been increased to 800m for the purposes of the analysis below, and is referred to as 'the limit of significant brine influence'.

Open coast surveys (Appendix 4) indicated that within the Open Coast survey area (limited to area in Figure 2) no fishing was observed by Terns. However incidental observations during other surveys such as the Black Guillemot surveys around the power station indicated that Sandwich Terns appeared to fish frequently along the eastern shore of Larne Lough north of Ballylumford. Common and Arctic Terns were not observed fishing in the Open Coast survey area, or wider area. However the open coast surveys only recorded birds within approximately 300m of the coastline.

Data on Tern distributions at distances of greater than 300m are provided by the preliminary results of the recent JNCC study on Tern foraging distributions (Wilson et al., 2009). The JNCC data mirror the open coast survey observations for the 300m buffer from the open coastline, in that all three Tern species appeared to avoid fishing here. The data further shows that each species in fact occupies a distinct foraging area either far off-shore, or within Larne Lough as shown in the following Charts 1-3. The distances below have been calculated by comparing foraging observations on the JNCC charts 1-3 with the proposed limit of significant brine influence of 800m.

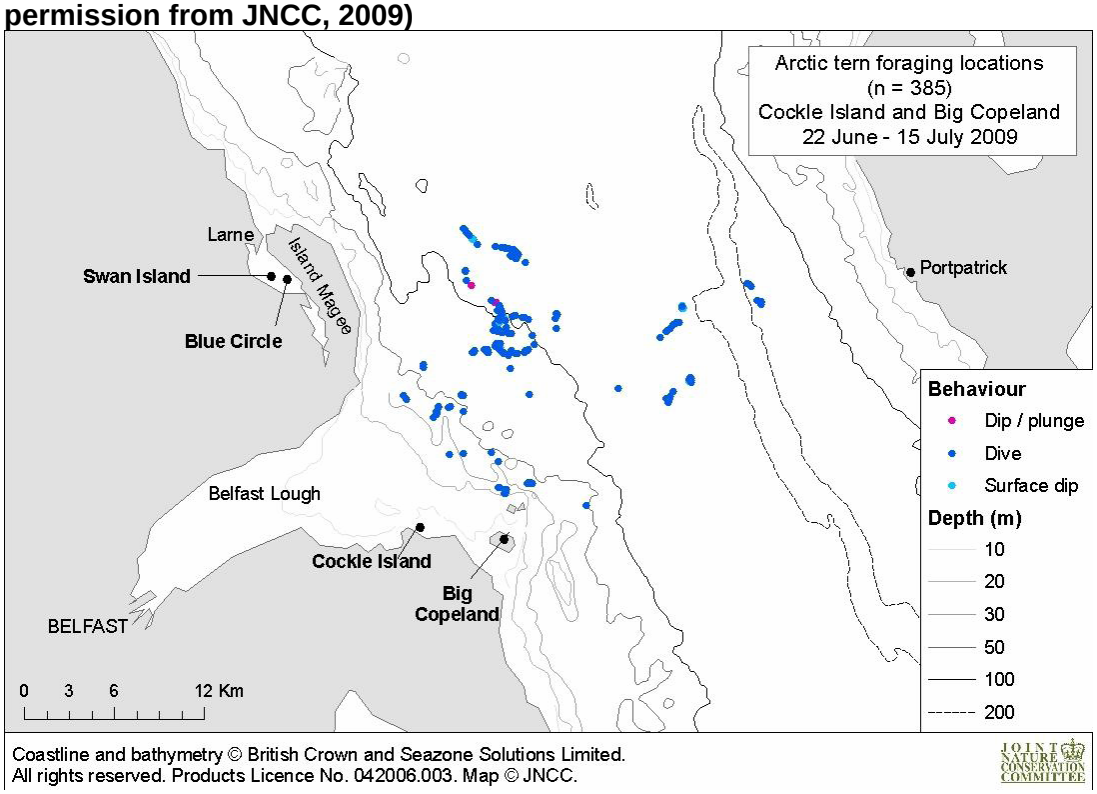
Sandwich Terns show a strong preference for fishing within Larne Lough (Chart 1) and were not recorded fishing east of Barrs Point by JNCC. No brine impacts are therefore predicted on Arctic Terns.

Chart 1 Sandwich Tern Foraging Locations around Larne Lough (Reproduced under permission from JNCC, 2009)



In contrast, Arctic Terns (Chart 2) fished only the open ocean far out to the east and south of Skernaghan Point. This species did not fish within c.8km of the limit of significant brine influence on a single occasion. No brine impacts are therefore predicted on Arctic Terns.

Chart 2 Arctic Tern Foraging Locations around Larne Lough (Reproduced under permission from JNCC, 2009)



Common Terns (Chart 3) fished the open ocean to the east and north of Skernaghan Point. In contrast to both Sandwich and Arctic Terns, this species did occasionally fish in the vicinity of the open coastline. However the species only fished once at Skernaghan Point (c.3km from limit of brine influence), and occasionally in the open ocean 3km off-shore to the north (also c. 3km from limit of brine influence). Further out to sea from the limit of brine influence, the Common Tern forages in a scattered northerly distribution at distances of up to 11km from the limit of significant brine influence. Common Terns generally forage in different open water locations to Arctic Terns. Applying the precautionary principle, a slight adverse impact to Common Terns is predicted.

Chart 3 Common Tern Foraging Locations around Larne Lough (Reproduced under permission from JNCC, 2009)

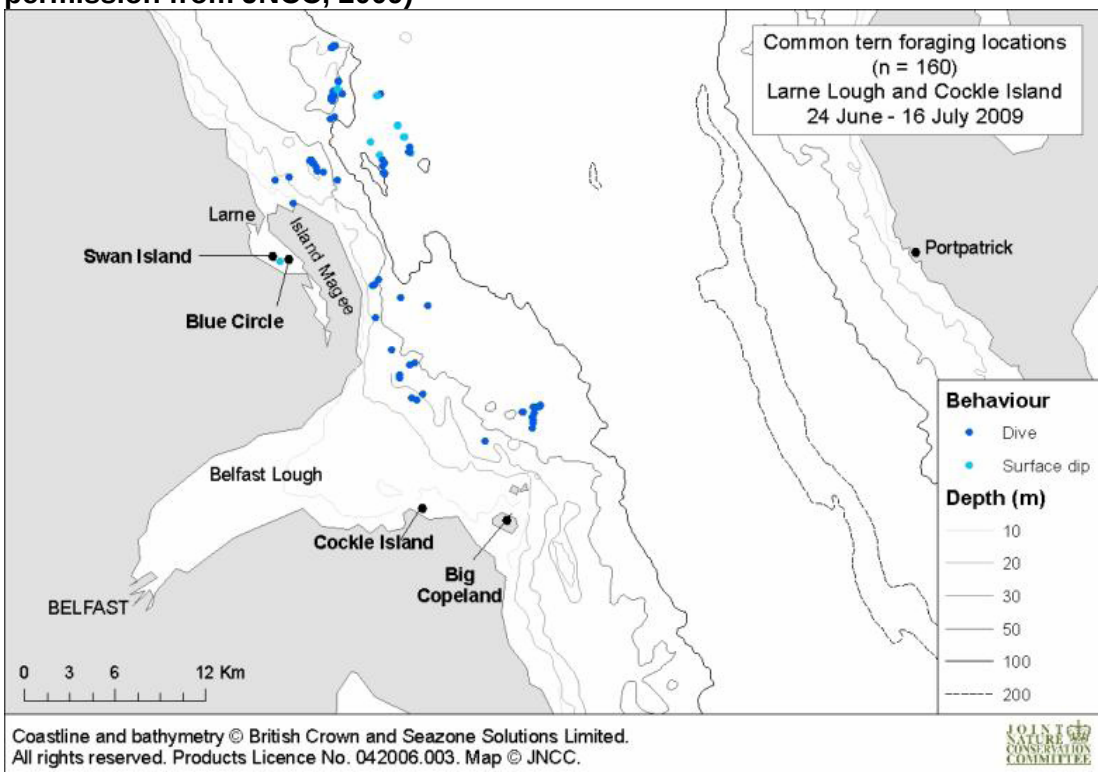


Table 3 Summary of Potential Impacts to Swan Island SPA (Part of Larne Lough SPA) prior to Mitigation.

Potential Impact	Nature	Magnitude[1]	Ecological Value of Habitat/Species/	Significance of Impact	Potential Impact Type	Phase of occurrence	Duration	Direct/ Indirect	Likelihood of Occurence[2]	Mitigation Proposed	Significance of Residual Impacts
Pollution of Larne Lough during construction leading to Tern disturbance from food resource depletion	-ve	Major	Very High	Very Large adverse	Indirect Fatality/Disturbance	Construction	Temporary (36 months)	I	Unknown	Yes	Not Significant
Pollution of Larne Lough at Decommissioning causing Tern disturbance via food resource depletion	-ve	Major	Very High	Very Large adverse	Indirect Fatality/Disturbance	Decommissioning	Temporary (Unknown)	I	Unknown	Yes	Not Significant
Physical disturbance to Terns from change in prey distribution due to brine emission from outfall	-ve	Minor	Very High	Slight Adverse	Disturbance via prey loss	Construction	Temporary (5 years)	I	Unlikely	Yes	Not Significant
Physical disturbance to Terns from drilling at wellpad during construction	-ve	Minor	Very High	Slight Adverse	Disturbance and/or Displacement	Construction	Temporary (18 months)	D	Likely	Yes	Not Significant

6.1.3 Likely Potential Impacts on Larne Lough SPA

Table 4 (overleaf) summarises potential impacts to Larne Lough SPA (excluding Swan Island SPA)

Of potential impacts identified in Table 4, only one is likely, with the rest of unknown probability of occurrence or unlikely. Two impacts are very large adverse (likelihood unknown), two are large adverse (one likely, one unlikely), and one is slight adverse (unlikely). All very large adverse impacts are direct bird fatalities, or injury or indirect food loss disturbance due to an unlikely pollution incident during construction or decommissioning.

Potential collision impacts on Brent Geese are deemed to be unlikely due to the temporary presence of all construction plant structures (drill rig and cranes for 36 months only). Only the vent stack (40m high) will remain a permanent feature. The small Brent populations in the locality of the scheme (WeBS Peak Count 26; RPS Peak count 6) will further reduce collision risk. As noted in section 5.2.2.1, Brent geese are significantly less abundant in the outer Lough (within the scheme area) compared to the inner Lough (where intertidal mudflats are located).

The remaining slight adverse impact is due to the permanent loss of potential grassland bird feeding fields. The word potential here is key, because there is no evidence that the improved fields to be lost during project construction are used by local Brent populations. In any case, the areas lost (3.7ha) are relatively small and significant areas of alternative improved feeding fields to the south of the wellpad site.

All residual impacts are non-significant

Table 4: Summary of Potential Impacts to Larne Lough SPA (Excluding Swan Island SPA) prior to Mitigation.

Potential Impact	Nature	Magnitude[1]	Ecological Value of Habitat/Species/Feature	Significance of Impact	Impact Type	Phase of occurrence	Duration	Direct/Indirect	Likelihood of Occurence[2]	Mitigation Proposed	Significance of Residual Impacts
Point pollution of Larne Lough during construction leading to degradation of plant habitats and Brent Goose feeding resources	-ve	Major	Very High	Very Large Adverse	Bird Death/Disturbance	Construction	Temporary (36 months)	D/I	Unknown	Yes	N.S.
Point pollution of Larne Lough during decommissioning leading to degradation of plant habitats and Brent Goose feeding resources	-ve	Major	Very High	Very Large Adverse	Bird Death/Disturbance	Decommissioning	Temporary (Unknown)	D/I	Unknown	Yes	N.S.
Collision impacts of Brent Geese with 55m high drill rig, 40m high vent stack, and cranes (22 Individuals[3])	-ve	Intermediate	Very High	Large Adverse	Bird Death	Construction	Temporary (36 months) (Drill rig, cranes) Permanent (Vent Stack)	D	Unlikely	Yes	N.S.
Noise and visual disturbance to feeding/roosti	-ve	Intermediate	Very High	Large Adverse	Disturbance	Construction	Temporary (36 months)	D	Likely	Yes	N.S.

ng Brent geese from drilling at wellpad											
Disturbance to Brent Geese through loss of approx 3.7ha grassland feeding fields (235 Individuals[4])	-ve	Minor	Very High	Slight Adverse	Displacement	Construction & operation	Permanent	I	Unlikely	No	N.S.

6.1.4 Cumulative effects

There is potential for the two identified disturbance impacts on terns (construction disturbance and brine-induced changes in fish prey distribution) to cumulatively interact and result in an overall disturbance impact greater than the individual impacts. However, following mitigation, neither of the individual impacts is considered to be greater than slight adverse, and the cumulative impact is similarly predicted to be insignificant.

There is equally potential for the two identified disturbance impacts on Brent geese (construction disturbance and collision risk) to cumulatively interact and result in an overall disturbance impact greater than the individual impacts. However again, this is not considered significant.

No significant cumulative effects resulting from other extant or proposed projects are known.

6.2 MITIGATION MEASURES

Mitigation of the identified potential impacts in section 6.2 is addressed by both avoidance of impact and management or reduction of impact.

6.2.1 Pollution and Disturbance Impacts during Construction and Operation

Sensitive construction methods have been integrated into engineering works as detailed in the Project Description (Appendix 1). Pollution prevention guidelines have been outlined in the Ecology Chapter of the ES (Appendix 10), and will be an integral part of the Site Environmental Management Plan (EMP), which will be prepared during the detailed design stage.

6.2.2 Pollution and Disturbance Impacts during Decommissioning

Prior to undertaking planning of any decommissioning works, an ecologist will be contracted to undertake an ornithological review of the scheme area, and undertake further surveys should he/she consider it necessary. Pollution prevention guidelines will be strictly adhered to during the decommissioning phase, and measures required to minimise construction disturbance to wintering birds will be agreed in consultation with NIEA following the outcome of the ornithological review. This may include installation of acoustic fencing to reduce noise and screening to reduce the level of perceived threat due to visible human presence.

6.2.3 Collision impacts

Construction cranes and the drill rig will be lit at night for safety reasons. Illuminating the vent stack may reduce the risk of bird collision, however the risk of collision is considered unlikely and lighting the stack would significantly increase the visual impact of the vent stack to observers.

6.2.4 Changes in fish distribution at brine outfall

The brine outfall pipe will discharge brine solution on the seabed to improve mixing of discharge and reduce potential impacts to localized fish populations, which are potential prey items to Terns

6.2.5 Disturbance to wintering birds during construction of IPS

At this stage of the preliminary design, it is not certain whether blasting will be required at the site of the IPS. Upon completion of the pre-construction ground investigation studies, if it is determined that blasting is required; a detailed methodology will be prepared and submitted with the environmental management plan for approval by the NIEA. If required and where possible, Islandmagee Storage will endeavour to undertake blasting works during the month of September, which will significantly reduce the potential adverse impact on birds. This avoids the bird breeding season, an has the lowest counts of both Brent goose and total wintering wildfowl numbers at Larne Lough (Five-year peak of 5 individuals see Appendix 5.7), and on the island of Ireland (Data from Boland & Crowe, 2007). If blasting works are required outside of the month of September, a strategy for mitigation will be agreed with the NIEA ahead of any works commencing.

6.3 RESIDUAL EFFECTS ON NATURA SITE INTEGRITY

There will be no significant residual effects following full and proper implementation of the recommended mitigation measures which the project proponent is committed to undertaking.

7.0 CONCLUDING REMARKS

Following mitigation, the scheme is likely to result in several slight adverse disturbance impacts to key SPA Brent geese and Tern populations, however no identified impacts are considered significant. Mitigation has been proposed to minimise the magnitude of the slight adverse impacts. No significant impacts to SPA habitat factors are predicted.

Waterloo ASSI

Larne Lough RAMSAR/SPA/ASSI

Portmuck ASSI

Gobbins Cliffs pASSI

Larne Lough RAMSAR/SPA/ASSI

Swan Island SPA/NNR

Larne Lough RAMSAR/SPA/ASSI

Newlands ASSI

Woodland West of Black Hill SLNCI

West of Mutton Burn SLNCI

Castletown ASSI

LEGEND

- Scheme Area
- Scheme Subsurface Cavern Locations
- 2km Buffer Area
- 5km Buffer Area
- Special Protection Area (SPA)
- Area of Special Scientific Interest (ASSI)
- Ramsar
- Site of Local Nature Conservation Interest (SLNCI)

ISSUE DETAILS

Drawn:	RF	Project No.	NI 1024
Chkd:	JMC	File Ref.	A
Appd:	RH		
Date:	March 2010	Drawing No.	X
Scale:	1:7,000	Rev.	D01

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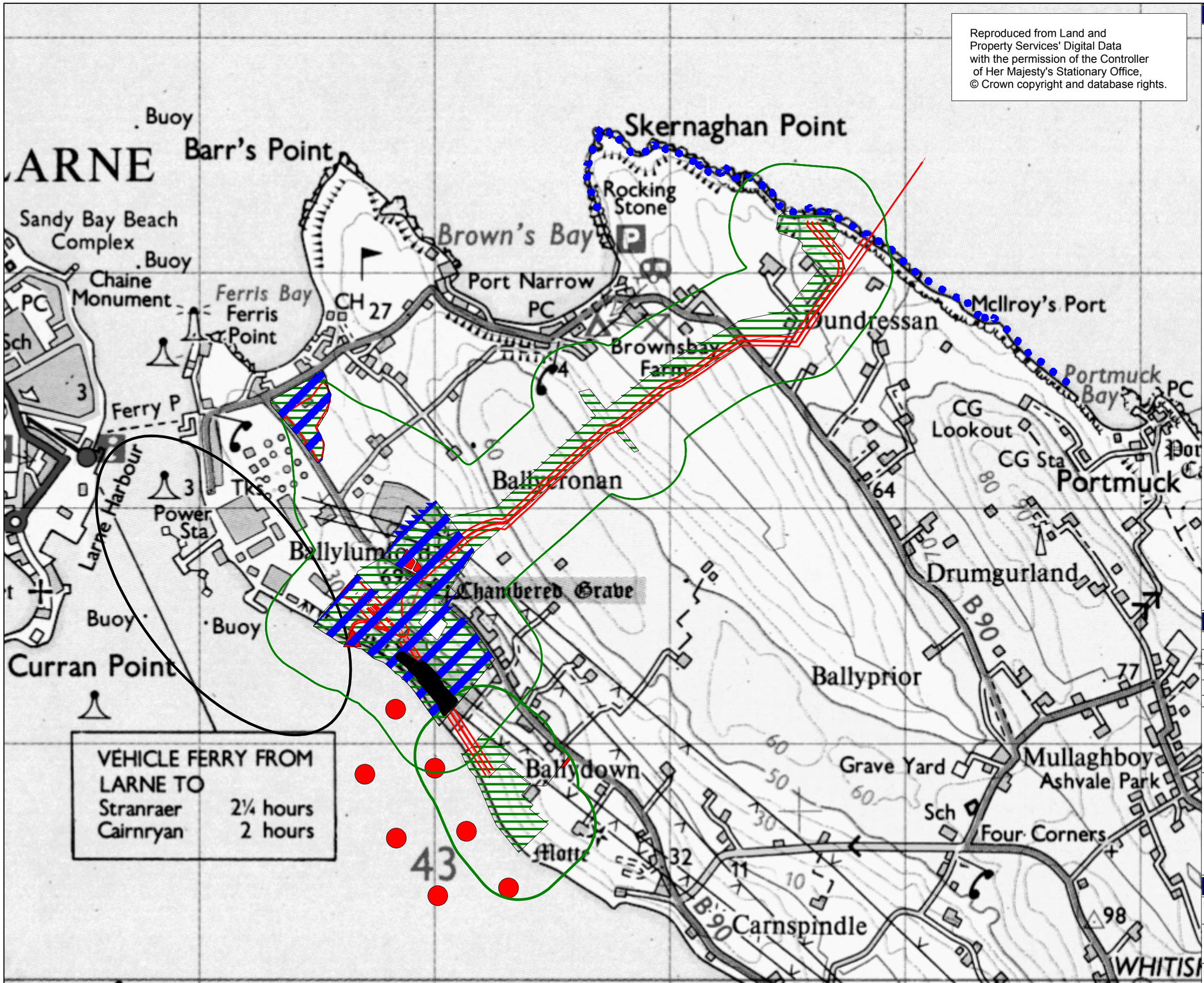
RPS

PROJECT & FIGURE DETAILS

Project Title:
Islandmagee Storage Project

Figure Title:
Conservation Designations

Figure Number: 1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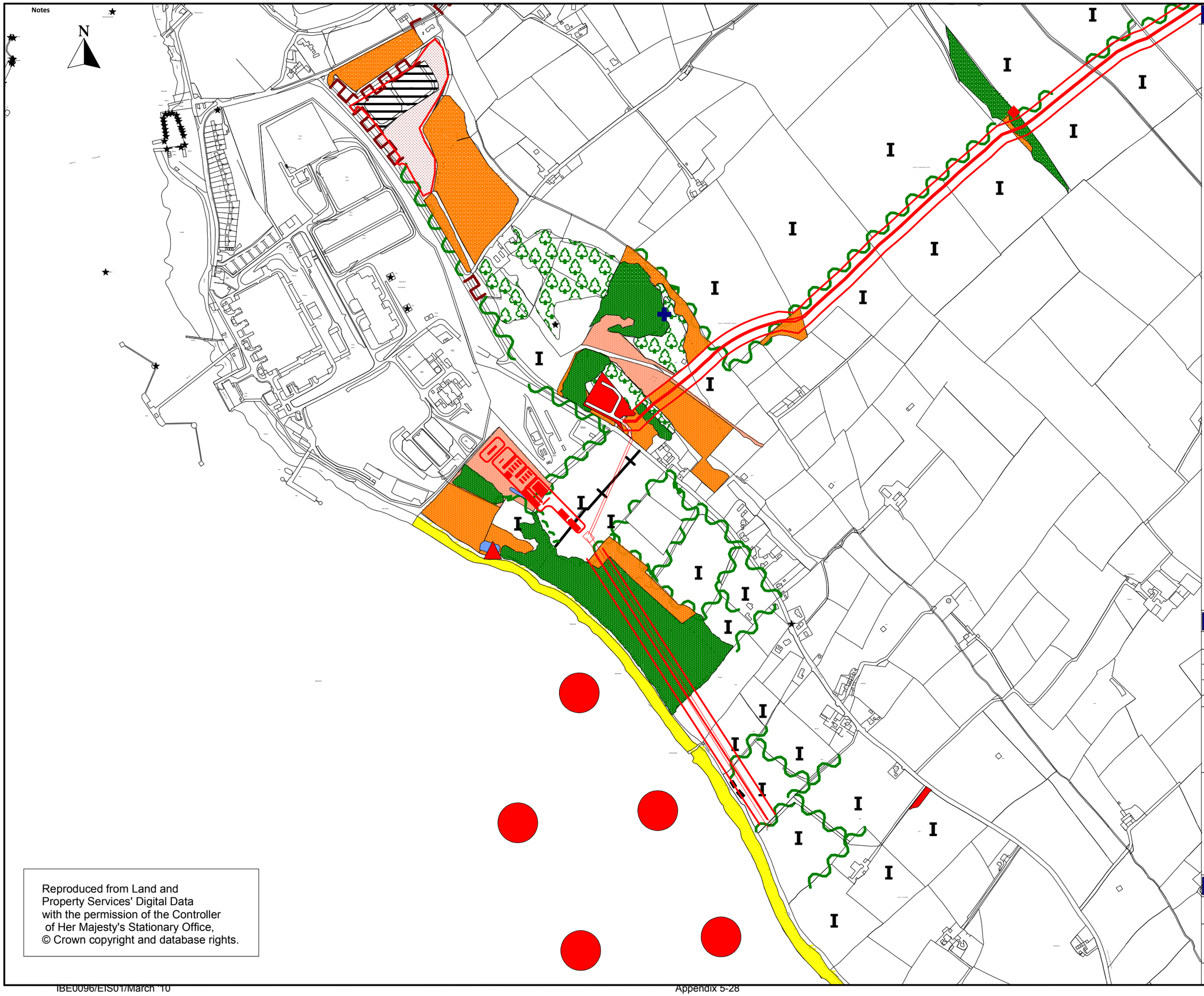
LEGEND
Scheme Area
Scheme Subsurface Cavern Location
Scheme Vent Stack
Mammal Survey Area
Breeding Bird Survey Area
Phase 1 Habitat & Wintering Farmland Bird Suvrey Area
Black Guillemot Breeding Survey Area
Open Coast Bird Surveys (All Year)
No Access to survey (ca. 2.5ha)
Skernaghan Point
Barr's Point
Rocking Stone
Brown's Bay
Port Narrow
Sandy Bay Beach Complex
Chaine Monument
Ferris Bay
Ferris Point
Brownsbay Farm
McIlroy's Port
Portmuck Bay
CG Lookout
CG Sta
Portmuck
Ferry P
Harbour
Power Sta
Ballylumford
Chambered Grave
Drumgurland
Curran Point
Ballyprior
Ballydown
Grave Yard
Mullaghboy
Ashvale Park
Four Corners
Carnspindle
VEHICLE FERRY FROM LARNE TO
Stranraer 2¼ hours
Cairnryan 2 hours
43
ISSUE DETAILS
Drawn: RF
Chkd: JMC
Appd: RH
Date: March 2010
Scale: 1:15,000
Project No. NI 1024
File Ref.
Drawing No.
Rev. D01
Environmental Consultants
RPS
PROJECT & FIGURE DETAILS
Project Title: Islandmagee Storage Project
Figure Title: RPS Ecology Survey Areas
Figure Number: 2

Notes

N



LEGEND

- Scheme Area
- Scheme Subsurface Caverns
- Scheme Vent Stack
- Broad-leaved Woodland
- Ephemeral/Short Perennial
- Neutral Flush
- Improved
- Neutral Semi-improved Grassland
- Poor Semi-improved Grassland
- Scrub
- Shingle
- Native species-poor treeline
- Invasive Non-Native Hedge (Snowberry Sympharicarpos alba)
- Fenceline
- Cowslip Primula veris
- Primrose Primula vulgaris

ISSUE DETAILS

Drawn:	RF	Project No.	NI 1024
Chkd:	JMC	File Ref.	A
Appd:	RH		
Date:	March 2010	Drawing No.	Rev. D01
Scale:	1:750		

Environmental Consultants

RPS

PROJECT & FIGURE DETAILS

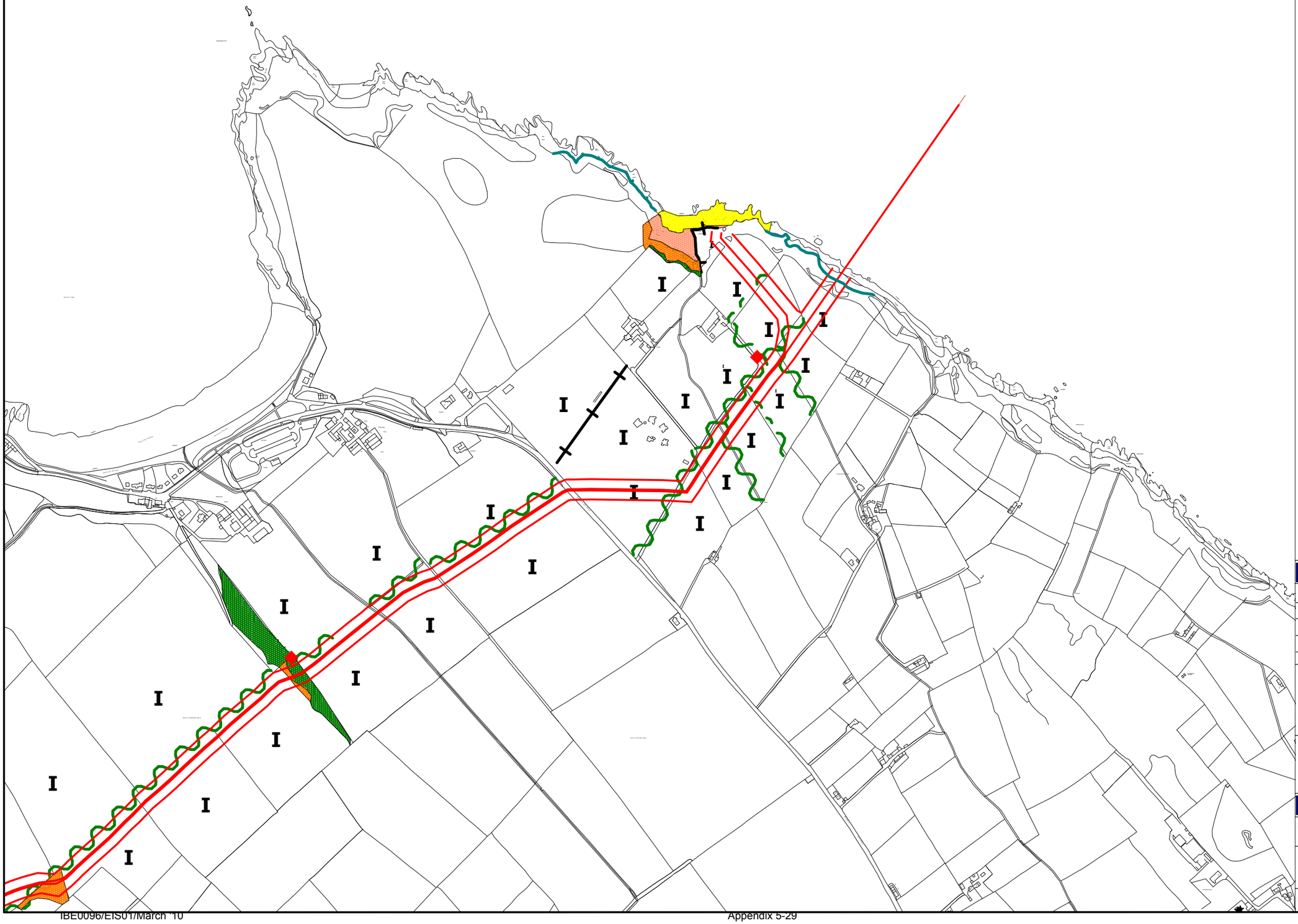
Project Title:
Islandmagee Storage Limited

Figure Title:
Habitat Map 1 (West)

Figure Number: 3A

Notes

N



LEGEND

- Scheme Area
- I — Improved
- Neutral Semi-improved Grassland
- Poor Semi-improved Grassland
- Scrub
- Shingle
- Marine Sea Cliff
- Native species-poor treeline
- Fenceline
- Primrose (Primula vulgaris)

This Figure should be read with Section 5.1.1 and Table 2 of the AA

ISSUE DETAILS

Drawn:	RF	Project No.	NI 1024
Chkd:	JMC	File Ref.	A
Appd:	RH		
Date:	March 2010	Drawing No.	X
Scale:	1:750	Rev.	D01

Environmental Consultants

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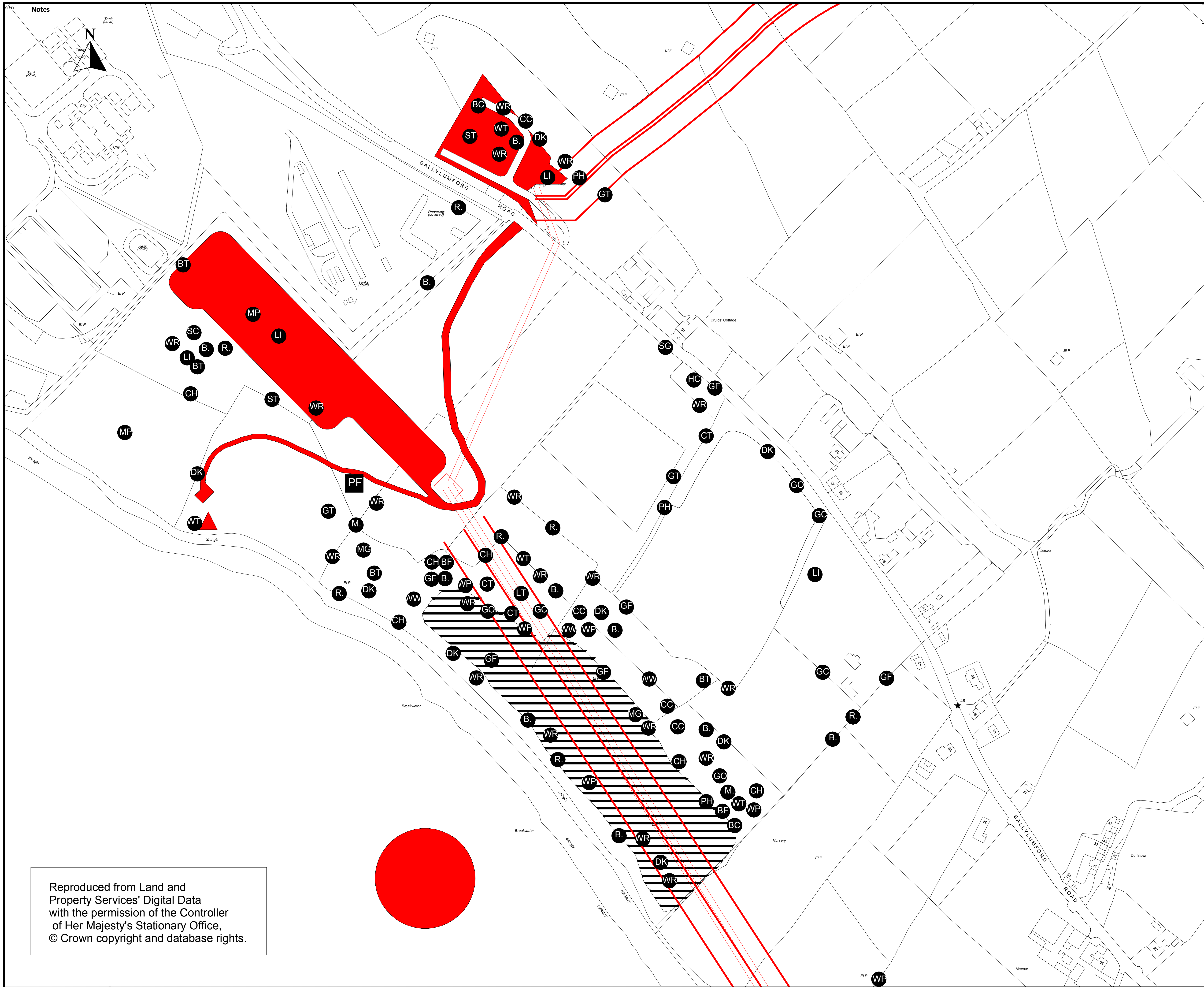
PROJECT & FIGURE DETAILS

Project Title:
Islandmagee Storage Limited

Figure Title:
Habitat Map 2 (East)

Figure Number: 3B

Notes



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LEGEND

- Scheme Area
- Vent Stack
- Sub-surface Cavern Locations

- No Access (scrub)
- Individual Bird Territory
- PF Non-breeder

BTO Speces Codes are included in Appendix 9 to the AA

ISSUE DETAILS

Drawn: RF	Project No. NI 1024		
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PROJECT & FIGURE DETAILS

Project Title: **Islandmagee Storage Limited**

Figure Title: **Breeding Bird Territories Map 1**

Figure Number: **4A**

Temporary Set Down & Storage Compound

Wellpad

Sub-surface Pipeline Route (SSP)

Sea-Water Intake Pumping Station

LEGEND

- Scheme Area
- Vent Stack
- Sub-surface Cavern Locations
- No Access (scrub)
- Individual Bird Territory

BTO Speces Codes are included in Appendix 8 to the AA

ISSUE DETAILS

Drawn: RF	**Project No.** NI 1024		
Chkd: JMC	**File Ref.**		
Appd: RH			
Date: March 2010	**Drawing No.**	**Rev.**	
Scale: 1:5,000		D01	

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PROJECT & FIGURE DETAILS

Project Title:
Islandmagee Storage Limited

Figure Title:
Breeding Bird Territories Map 2

Figure Number: 4B

Notes

N

Jetty A

Powerstation Walll

Jetty B

LEGEND

Scheme Design

Scheme Subsurface Cavern Locations

Scheme Vent Stack

Black Guillemot Cephhus grylle Breeding Population Survey Area (c. 500m from jetties)

Black Guillemot Productivity Survey Area

Confirmed Nest SIte

ISSUE DETAILS

Drawn:	RF	Project No.	NI 1024
Chkd:	JMC	File Ref.	
Appd:	RH		
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Scale:	1:800		

Environmental Consultants

RPS

PROJECT & FIGURE DETAILS

Project Title: Islandmagee Storage Limited

Figure Title: Black Guillemot Breeding Sites

Figure Number: 5

8.0 REFERENCES

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APPENDIX 5.2 PHOTOGRAPHIC PLATES

Appendix 5.2 Photographic Plates

Plate 5.1 Neutral semi-improved grassland embankment on site of Gas Plant Facilities (GPF). Top is View south towards Wellpad location (distant grassland to rear of central pylon). Bottom is view north from existing access track towards powerstation.

Plate 5.2: Peregrine Falcon (bottom photo) on mast in vicinity of main gas plant facilities, and Black Guillemots (top photo) on Ballylumford jetty A during breeding season.

Plate 5.3: Black Guillemot Breeding Site (Ballylumford Power Station Jetty A),

Plate 5.4: Black Guillemot Breeding Site (Ballylumford Jetty B and powerstation wall)

Plate 5.5 Hybrid swarms of Heath-spotted Orchid *Dactylorhiza maculata* and Common-spotted Orchid *Dactylorhiza fuchsia* in species-rich neutral semi-improved grassland by Moyle interconnector access road along SSP route.

Plate 5.6 SSP route. Bottom photo is from northeast SSP route, south of Browns Bay Rd. Pipe route (bottom photo) is towards viewer along low intact hedge to left of view. Top photo is from southwest SSP route, from existing interconnector access rd. Pipe route is away from viewer along hedge.

Plate 5.7 Small neutral flush at location of Vent Stack on south-facing slope above shoreline south of the power station, dominated by Tufted Hair Grass, Marsh Horsetail, and Marsh Willowherb.

Plate 5.8 Tiny (0.002ha) linear neutral flush south of power station below proposed GPF location. Dominated by Articulated Rush and Glaucous sedge.

Plate 5.9 Shingle habitat (Northern Ireland Priority Habitat) within the scheme, at Open Coast Castle Robin Bay IPS site (Top), and Larne Lough Wellpad site (Bottom)

Plate 5.10 Snowberry *Symphoricarpos alba* hedge (on left) near junction of Ballylumford Rd and Ferris Bay Rd. Non-native invasive species on The Review of Wildlife Order.

Plate 5.11 Intact farm sheds at site of Leaching Plant.

Plate 5.12 Ephemeral/short perennial establishing on hardstanding on site of Temporary set-down area by junction with Ferris Bay Road and Ballylumford Road.

Plate 5.13 Extensive inaccessible scrublands between GPF and wellpad sites. viewed from shingle shore (Top) and in infrequent species-poor clearings (Bottom).

Plate 5.14 Castle Robin Bay IPS, on Antrim open coast showing improved (pale green below), and semi-improved (darker green above) grasslands - the latter of moderately high diversity. Site used by small number of waders and waterfowl, but occasionally moderate gull flocks, and foraging SandwichTerns.

Plate 5.15 Primrose *Primula vulgaris* at two locations along SSP. Top photo is within SSP in hedges within the scheme area

Plate 5.16 Black guillemot pair roosting above nest in Ballylumford Jetty B (July 2009)

Plate 5.17: One of two entrances in annex Badger Sett (Ref 1) on margin of scrub and farmland in west of SSP route.

Plate 5.18: three of seven entrances in main Badger Sett (Ref 4) on margin of scrub and farmland near middle of SSP route.

APPENDIX 5.3 LARNE LOUGH WINTERING BIRD DESK STUDY

Larne Lough Wintering Bird Desk Study

REVISED ISSUE: 1

November 2008

DOCUMENT CONTROL

Client	RPS Engineers
Project Title	Portland Gas Northern Ireland
Document Title	Larne Lough Wintering Bird Desk Study
Document Ref.	NI 1024 Portland Gas NI

Rev.	Status	Author	Reviewed By	Approved By	Office of Origin	Issue Date
R01	Revision	R. Fennelly	J. McCrory	R. Holbeach	RPS Planning & Environment	05/11/2008

RPS Planning & Environment

TABLE OF CONTENTS

Figures

1.0 INTRODUCTION

This Desk study is a review of all existing ecological data relating to wintering birds at Larne sea Lough and Island Magee, Co. Antrim. It is envisaged that this desk study will form part of an Environmental Impact Assessment (EIA) for a proposed Gas Storage Facility beneath the surface of Larne Lough.

Reference to breeding species is made occasionally in the text, where such species have been fundamental in the designation of sites within the study area as important. The study area contains internationally important breeding sites, particularly for Terns, and there are notable breeding seabird colonies on the north and eastern coasts by the Lough. However this report deals exclusively with wintering bird use. Any further study should implicitly detail breeding records.

1.1 The Study Area

As the proposed project plans to drill underneath Larne Lough, the study area includes the entire area covered by the Lough as advised by Environmental Heritage Service (EHS). The area of the Lough amounts to approximately 13km^2. Collation of existing records also includes those within a 1km buffer zone around Larne Lough and around the existing power station, where the new buildings associated with the gas storage facility will be housed (Figure 1). The precise boundary of Larne Lough is taken to be coincident with the boundary of WEBS surveys (Figure 1). In total the study area measures approximately 47.5km^2. The buffer area ensures a cautious attitude to potential impacts of the proposed development on wintering birdlife, which may have indirect impacts on the surrounding landscape outside of the Lough. The buffer has been extended to 2km only when considering conservation designations (section 3.1).

1.2 Scope of Desk Study

The desk study will detail the following elements within the study area:

- Identification of all wintering bird species recorded from the Lough, and 1km buffer area.
- Identification of habitat types in the study area and all relevant environmental information
- Identification of all protected bird species and habitats at national and international level
- Analysis of coverage and quality of existing data
- Identification of gaps in survey data that require additional survey

1.3 Protection and Conservation status

The following terms relating to the current conservation and protection status of birds and habitats in Northern Ireland are used in this report

Protected Species

- All breeding birds are protected by Part II, Article 4 of the Wildlife (Northern Ireland) Order 1985 (S.I. 1985/171) as amended from 1st February-31st August.

- The Wildlife Order Northern Ireland 1985 (S.I. 1985/171), as ammended additionally lists bird species on Schedule 1 which are protected at all times

- The EC Wild Birds Directive (79/409/EEC) lists birds protected on Annex 1 which are the subject of special conservation measures concerning their habitat in order to ensure their survival and reproduction in their area of distribution. These, meet one or more of the following criteria
  - In danger of extinction
  - Vulnerable to specific changes in their habitat
  - Considered rare because of small populations or restricted local distribution
  - Requiring particular attention for reasons of the specific nature of their habitat.

- *Internationally important* numbers of a bird species are 1% or more of the international population (BTO, UK). These populations enable a site to satisfy certain criterion required for a site to be designated and thus protected.

- *Nationally important* numbers of a bird species are 1% or more of the national population (BTO, UK). These populations enable a site to satisfy certain criterion required for a site to be designated and thus protected.

. Conservation Status

- *Amber-listed species* (Lynas et al., 2007) are not protected, but are of Medium conservation concern in Ireland. There are separate breeding and passage/wintering lists. Species must meet one of the following criteria
  - Their breeding population has declined by 25%-50% in the last 25 years.
  - They are rare or sporadically breeding species
  - Their breeding or wintering population is internationally important and/or localised
  - They have an unfavourable conservation status in Europe

- *Red-listed species* (Lynas et al., 2007) are not protected, but are are of High conservation concern in Ireland. There are separate breeding and passage/wintering lists. Species meet one of the following criteria:
  - Their breeding population or range has declined by more than 50% in last 25 years
  - Their breeding population has undergone a significant decline since 1900
  - They are of global conservation concern

- *Northern Ireland Priority Species* (EHS) are not protected, but are species under threat that meet any one of the following 7 criteria:
  - Listed as a UK Priority Species.
  - Rapid decline (2% per year).
  - Decline (1% year) with Northern Ireland being a stronghold (S) consisting of either
    - >50% Irish population or
    - >20% UK population/range
    - or with the Irish or UK population restricted to Northern Ireland
  - Rare - confined to a small population of one or two sites in Northern Ireland with Northern Ireland being a stronghold consisting of either

- >50% Irish population or
- >20% UK population/range

- or with the Irish or UK population restricted to Northern Ireland

At least 20% of international population of species or well-recognised subspecies occurring in Northern Ireland.
Irish Red Data Book (RDB) species classed as critically endangered, endangered or vulnerable.

Red-listed species in either Ireland or the UK Birds of Conservation Concern (BOCC) lists.

- *Northern Ireland Priority Habitats*

The Northern Ireland biodiversity Group (NIBG) identified issues affecting biodiversity in Northern Ireland and proposed a number of specific recommendations in response to international commitments to biodiversity conservation. In response, the Environment and Heritage Service (EHS), Department of Environment (DoE) produced the Northern Ireland Biodiversity Strategy and a list of Northern Ireland Priority Species and Habitats. Those UK priority habitats that occur in Northern Ireland are considered to be automatically selected as priority habitats in Northern Ireland. There are 37 such habitats which are already the subject of costed action plans at UK level

2.0 METHODOLOGY

An experienced ecologist was engaged to review the existing ecological and anecdotal information for the study area.

2.1 Consultation

Consultation was undertaken with

- The Royal Society for the protection of Birds (RSPB)
- The British Trust for Ornithology (BTO)
- The Centre for Environmental Data and Recording (CEDaR)
- The EHS
- The Joint Nature Conservation Committee (JNCC)

All correspondence is presented in Appendix 1 of this report

2.2 Results of Consultation

2.2.1 Survey Data

Consultation resulted in the following sources of wintering bird records (Appendix 2).

1. Wetland Bird Surveys (WeBS; BTO) for wintering birds

2. Non- Estuarine coastal Waterbird Surveys (NEWS; BTO) for wintering birds (see Section
3. CEDaR Data (EHS) for all birds
4. Northern Ireland Lake Survey data (EHS)
5. Neither RSPB nor JNCC held no wintering bird records for the study area

Please note that due to copyright considerations, the WEBS datasets in Appendix 1 of this report must not be published or publicly distributed without consultation with BTO. An analysis of the coverage and quality of these data sets is provided in section 4.

2.2.2 General Environmental Data

All environmental data and anecdotal information relevant to birds was collated, and the location and nature of any designated sites within the study area were researched in detail. Reference was made to the following Websites:

- Ulster Museum Website;
- EHS (NI) Website;
- BTO Website;
- WEBS Website and Data Request Overview Document;
- CEDaR Website;
- Joint Nature Conservation Committee (JNCC) Website;
- UK biodiversity Action Plan Website;
- Teagasc Website (RSPB & BirdwatchIreland All-Ireland conservation status):
    - http://www.client.teagasc.ie/environment/natural_heritage/Birds_of_conservation_concern_in_Ireland.asp

Legislation:

- The Freshwater Fish Directive (78/659/EEC)
- The EC Wild Birds directive (Council Directive 79/409/EEC).
- The Wildlife and Countryside Act 1981;
- The Wildlife (Northern Ireland) Order 1985, as ammended;
- The EC Habitats Directive (Council Directive 92/43/EEC)
- 'Biodiversity Strategy - Northern Ireland' (EHS, 2002);
- Department of Environment (DoE), 2002. Article 28 of the Environment (Northern Ireland Order) 2002. Declaration of area of special scientific interest at the Gobbins, County Antrim.
- The Water Environment (Water Framework Directive) Regulations (Northern Ireland) 2003;
- Belfast Metropolitan Area Plan Draft Plan (BMAP) 2015 (DoE, 2001)
- Regional Development Strategy for Northern Ireland 2025 under SPG-Env 1.2

Further sources of literature are provided in the References section 6.

3.0 BASELINE CONDITIONS

3.1 Designated Sites

A number of designated ecological areas occur within Larne Lough itself, and within a 2km buffer zone. (Figure 2).

3.1.1 Larne Lough

The boundaries of the Larne Lough Ramsar site, Area of Special Scientific Interest (ASSI), and Special Protection Area (SPA) are all entirely coincident. In addition to the Larne Lough designations, Swan Island, which is located near the western Lough shore, approximately 750m northwest of Dalaradia Point was assigned its own SPA status in 1992, and is also home to the tiny area (0.04Ha) designated as Swan Island National Nature Reserve. A detailed document describing the conservation objectives of Larne Lough SPA and Larne Lough ASSI has been provided by EHS and is attached in Appendix 3 of this report.

Ramsar site

Larne Lough qualifies under Criterion 2 of the Ramsar convention by virtue of the numerous vulnerable and endangered Irish Red Data Book bird species, and under Criterion 3c by regularly supporting internationally important numbers of Light-bellied Brent Geese in winter (EHS Website, 2008).

SPA site

Larne Lough SPA qualifies under Article 4.1 of EC Directive 79/409 on the Conservation of Wild Birds by regularly supporting internationally important numbers of Light-bellied Brent Geese in winter. The extent of the habitat and the numerous roost site locations are additional selection features for Larne Lough. Swan Island qualifies under the same article because it supports nationally important breeding populations of 4 different Tern Species which are all EU Birds directive Annex 1 species (EHS Website, 2008).

ASSI site

Larne Lough has been designated an ASSI (Site no. RSAR003) by virtue of the diverse habitats found here ranging from artificial brackish lagoons in the northwest to mudflats, rocky shores and saltmarshes throughout. Additional selection features are nationally important wintering populations of:

- Goldeneye
- Great Crested Grebe
- Red-breasted Merganser
- Shelduck
- Redshank (EHS Website, 2008)

NNR site

Swan Island is a small National Nature Reserve off the western shore of Larne Lough, whose area (0.1ha) coincides with the Swan Island SPA. It therefore merits its designation for the same reasons as the Swan Island SPA (EHS Website, 2008).

3.1.2 2km Buffer Area

Assi

Castletown ASSI (Site no. ASSI193) is located approximately 1km southeast of the Lough (9.5km southeast of the proposed buildings). Casteltown is a series of four traditionally managed hay meadow fields containing species-rich dry grassland notable for plant diversity. This type of grassland provides valuable feeding and roosting sites for a range of animals, including birds and invertebrates; the variety of butterflies recorded at the ASSI include small copper and large numbers of meadow brown and common blue. (EHS Website, 2008)

Gobbins Cliffs proposed ASSI is located 2.2km east of the Lough at its nearest point, but is included here. It is an area of maritime cliffs and slopes, and Intertidal rock, and is located

along the eastern coast between Hills' Port and two-Mouthed Cave. At the time of the Seabird 2000 survey, the Gobbins held 1.6% of the all-Ireland populations of Kittiwakes and 1.1% of the all-Ireland populations of Razorbills. The site also supports the only mainland nesting Atlantic Puffins in Northern Ireland and significant populations of Fulmar, Cormorant, Shag and Common Guillemot. Peregrine Falcons also breed within the designated area (DoE, 2007). A detailed description of the site has been provided by EHS and is presented in Appendix 4 of this report.

Waterloo ASSI (Site No: ASSI084) is located approximately 0.5km northwest of the mouth of the Lough, and is designated for its geological rather than ecological features, and is home to some of the best and most accessible exposures of Upper Triassic and Lower Jurassic strata in Ireland (EHS Website, 2008).

Portmuck ASSI (Site no. ASSI177) is located approximately 3km northeast of the Lough at its nearest point (approximately 2.5km northeast of the proposed buildings). This site is valued for its geological formations, in particular the only exposure of the Cretaceous Hibernian Formation in Northern Ireland, and the only occurrence of the mineral sodalite in Ireland and the international type locality of Gobbinsite. The Isle of Muck which is a small island lincluded in this ASSI is home to seacliff and calcareous grassland habitats and consequently holds notable breeding seabird populations including Razorbill, Guillemot, Puffin, Kittiwake and Fulmar (EHS Website, 2008).

3.2 Non-Designated Sites

A number of non-designated ecological areas occur within the 2km buffer zone (Figure 2).
SLNCIs (Sites of Local Nature Conservation Importance) are local designations within Northern Ireland, and derive from the Regional Development Strategy for Northern Ireland 2025 under SPG-Env 1.2. They are designated in area plans and development plans, with the aim of managing suitable sites, particularly in urban and urban fringe locations, as Local Nature Reserves (LNRs), where habitat creation and conservation is combined with public access and environmental education (EHS Website, 2008).

The Bentra Wood SLNCI is located approximately 1km southwest of Larne Lough at its nearest point (9km south of the proposed buildings) and is characterised by woodland, grassland, scrub, stream, flushes (EHS Website, 2008).

The Antrim Coast (Black Head to Whitehead) SLNCI is approximately 1.5km southeast of the Lough at its nearest point (10km southeast of the proposed buildings) and is characterised by scrub, grassland and sea cliffs (EHS Website, 2008).

3.3 Designated Watercourses

Watercourses are designated within the terms of the Drainage (Northern Ireland) Order 1973, and the Water Environment (Water Framework Directive) Regulations (Northern Ireland) 2003. There is an unusually high diversity of dynamic freshwater systems in the study area. The river Glynn flows into the Lough on its western shore south of the village of Glynn, and is a 'River Water Body' protected for its drinking water, (EHS Website, 2008). It is also an economically significant Salmonid river (EHS Website, 2008), as is the Larne river that flows into the Lough north of Poguestown. The Slaughterford Water tidal river flows from Larne Lough south to its mouth at Castle Chichester.
In addition, Larne Lough is protected under the Shellfish Waters Directive (79/923/EEC) due to the economic significance of its shellfish stocks.

3.4 Designated Habitat types

Table 3.5 lists the diversity of habitats found on site, and their classification according to the JNCC Phase 1 Habitat Methodology (2003). The high diversity of coastal habitats provides potential for high bird diversity. Seven of the habitats are listed under Annex 1 of the EU Habitats Directive and are thus protected. Areas where these habitats occur automatically meet one of the criterion required for designation of a site under the EU Habitats directive. The Republic of Ireland Heritage Council have compiled a distinct habitat classification system for the Republic (Fossitt, 2000), and these have been included as a reference aid.

Most of the habitats in Table 3.4 are Priority Habitats (PH) for conservation in Northern Ireland and are subject to Northern Ireland Habitat Action Plans (NHP), despite not being legally protected.

Table 3.4 EU Protected, NI Priority and UK/ROI Classification of Habitat types in the study area

Habitat	JNCC	EU Annex 1	Northern Ireland
Arable lands	J1.1		
Fens	E3		PH
Hedgerows	J2		PH
Improved Grasslands	B4		
Inter-tidal Mudflats	H1.1		PH
Inter-tidal Boulders	H1.3		PH
Maritime Cliff and slopes	H8.1	Atlantic vegetated sea-cliffs (1230)	PH
Saline Lagoons/Saline Loughs	G1.6	Coastal lagoons (1150)	PH
Reed-beds	F2		PH
Rivers	G2		PH
Coastal Saltmarshes	H2	Numerous	PH
Sand, gravel and boulder beaches	H1.1		PH
Scrub	A2		
Seagrass beds			PH
Species-rich dry calcareous grasslands	B3.2	Semi-natural dry grasslands (6210)	PH
Shingle and gravel banks	H1.2	Perennial vegetation of stony banks (1120)	PH
Tidal Rivers/Rapids	G2.6	Estuaries (1130)	PH
Upland Mixed Ashwoods	A1.1.1		PH

3.5 Wintering Bird species in the Study Area

The following species lists have been collated from the sources cited in sections 2.2 and 6.0. In order to identify specific areas within the study where gaps in bird records exist, separate species lists are presented for Larne Lough (Table 3.5), and the broader study area that surrounds the lough in a 1km radius (Table 3.6). Species in Tables 3.5 and 3.6 protected on a European level are listed in Table 3.7. Please refer to section 1.2 for definition of terms relating to conservation and protection status.

Table 3.5 Bird Species recorded from September-March in Larne Lough with national protection and All Ireland Conservation status.

Common Name	Scientific Name	All Ireland Status	Protection
Arctic Tern	*Sterna paradisaea*	Amber (B)	WO
Bar-tailed Godwit	*Limosa lapponica*	Amber	
Bewick's Swan	Cygnus bewickii	Red (P/W)	WO
Black-headed Gull	*Larus ridibundus*	Red (B)	
Black-tailed Godwit	*Limosa limosa*	NI, Amber	
Black Swan	*Cygnus atratus*		
Chinese goose	*Anser cygnoides*		
Common Gull	*Larus canus*	Amber (B)	
Common Scoter	Melanitta nigra	NI, Red (B)	WO
Common Tern	Sterna Hirundo	Amber (B)	WO
Great Cormorant (nominate race)	*Phalacrocorax carbo carbo*	Amber (B)	
Curlew	*Numenius arquata*	NI, NP, Red (B)	
Curlew Sandpiper	*Calidris ferruginea*		
Dunlin	*Calidiris alpina*	Amber (B)	WO
Eider	*Somateria mollissima*	Amber	
Glaucous Gull	*Larus hyperboreus*		
Golden Plover	*Pluvialis apricaria*	Red (B)	
Goldeneye	*Bucephala clangula*	Amber (B)	
Goosander	*Mergus merganser*	Amber	WO
Great Northern Diver	*Gavia immer*		
Great Black-backed Gull	*Larus marinus*	Amber (B)	
Great-crested Grebe	*Podiceps cristatus*	Amber (B)	
Green Sandpiper	*Tringa ochropus*		
Greenland White-fronted Goose	*Anser albifrons flavirostris*		
Greenshank	*Tringa nebularia*		WO
Green-winged Teal	*Anas carolinensis*		
Grey Heron	*Ardea cinerea*		WO
Grey Plover	*Pluvialis squatarola*	Amber (W0)	
Greylag Goose	*Anser anser*	Amber (B)	
Herring Gull	*Larus argentatus*	Red (B), NI	
House Martin	*Delichon urbica*	Amber (B)	
Iceland Gull	*Larus glaucoides*		
Jack Snipe	*Lymnocryptes minimus*		
Kingfisher	*Alcedo atthis*	Amber (B)	WO
Knot	*Caldiris*	Red (P/W)	
Lapwing	*Vanellus vanellus*	NI, Red (B)	
Lesser Black-backed Gull	*Larus fuscus*	Amber (B)	
Light-bellied Brent Goose (East Canadian high Arctic population)	*Brenta bernicla hrota*	NI, Amber (B)	
Little Egret	*Egretta garzetta*		
Little Grebe	*Tachybaptus ruficollis*	Amber (B)	
Long-tailed Duck	*Clangula hyemalis*		
Little Gull	*Larus minutus*		

Mallard	*Anas platyrhynchos*		
Manx Shearwater	*Puffinus puffinus*	Amber (B)	
Mediterranean Gull	*Larus melanocephalus*	Amber (B)	
Moorhen	*Gallinula chloropus*		
Mute Swan	*Cygnus olor*	Amber (B)	
Oystercatcher	*Haematopus ostralegus*	Amber (B)	
Pink-footed Goose	*Anser brachyrhynchus*		
Pintail	*Anas acuta*	Red (P/W)	
Pochard	*Aythya farina*	Amber (B)	
Purple Sandpiper	*Calidris maritima*		
Red-necked Grebe	*Podiceps grisegena*		
Red-breasted Merganser	*Mergus serrator*		
Redshank	*Tringa totanus*	NI, NIP, Red (B)	
Red-throated Diver	*Gavia stellata*	Amber (B)	WO
Ruff	*Philomachus pugnx*		WO
Sandwich Tern	*Sterna sandvicensis*	Amber (B)	WO
Sanderling	*Calidris alba*		
Shag	*Phalacrocorax aristotelis*		
Shelduck	*Tadorna tadorna*	Amber (B)	
Shore Lark	*Eremophila alpestris*		
Slavonian Grebe	*Podiceps auritus*		
Smew	*Mergellus albellus*		
Snipe	*Gallinago gallinago*	Amber (B)	
Snow goose	*Anser Caerulescens*		
Spoonbill	*Platalea leucorodia*		
Spotted Redshank	*Tringa erythopus*		
Swallow	*Hirundo rustica*	Amber (B)	
Swift	*Apus apus*	Amber (B)	
Teal	*Anas crecca*	Amber (B)	
Tufted Duck	*Aythya fuligula*	Amber (B)	
Turnstone	Arenaria interpres		
Velvet Scoter	*Melanitta fusca*		
Wigeon	*Anas penelope*		
Whimbrel	*Numenius phaeopus*		WO
Whooper Swan	*Cygnus cygnus*	Amber (B)	WO
Wigeon	Anas Penelope	Amber (B)	
Wilson's Phalarope	*Phalaropus tricolor*		

NI – Northern Ireland Priority Species
NP – Northern Ireland Species Action Plan
Amber – Medium Conservation Concern in Ireland:
B= as breeding species; P/W as passage/wintering species
Red– High Conservation Concern in Ireland
B= as breeding species; P/W as passage/wintering species
WO–Schedule 1 of Wildlife Order (Northern Ireland), as ammended

Table 3.6 Bird Species recorded in 1km buffer outside Larne Lough with national protection and All Ireland Conservation status.

Common Name	Scientific Name	All Ireland Status	Protection
Barnacle Goose	*Branta leucopsis*	Amber (B)	
Blackcap	*Sylvia atricapilla*		
Bluetit	*Parus caeruleus*		
Brambling	*Fringilla montifringilla*		
Buzzard	*Buteo buteo*		WO
Carrion Crow	*Corvus corone corone*		
Chaffinch	*Fringilla coelebs*		
Chiffchaff	*Phylloscopus collybita*		
Dipper	*Cinclus cinclus*		
Fulmar	*Fulmarus glacialis*		
Gannet	*Sula bassana*	Amber (B)	
Garden Warbler	*Sylvia borin*		WO
Goshawk	*Accipiter gentilis*	Amber (B)	WO
Hoopoe	*Upupa epops*		
Long-tailed Tit	*Aegithalos caudatus*		
Merlin	*Falco columbarius*	Amber (B)	WO
Peregrine	*Falco peregrinus*		WO
Redwing	*Turdus iliacus*		
Ring-billed Gull	*Larus delawarensis*		
Ringed Plover	*Charadrius hiaticula*		
Rock Pipit	*Anthus petrosus*		
Sand Martin	*Riparia riparia*		
Scandinavian Rock Pipit	*Anthus petrosus littoralis*		
Snow Bunting	*Plectrophenax nivalis*		
Sparrowhawk	*Accipiter nisus*		WO
Tawny Owl	*Strix aluco*		
Tree Sparrow	*Passer montanus*	NI, Red (B)	
Twite	*Carduelis flavirostris*	NI, Red (B)	WO
Waxwing	*Bombycilla garrulus*		
Wheatear	*Oenanthe oenanthe*		
Woodcock	*Scolopax rusticola*	Amber (B)	
Yellowhammer	*Emberiza citrinella*	NI, Red (B)	

3.7 European Protected Bird Species

The following species present September-March in the Lough are additionally protected at all times on a European level by virtue of their listing on Annex I of the EC Wild Birds Directive (79/ 409/EEC):

Table 3.7 Birds Directive Annex I Protected avifauna recorded in the study area

Common Name	Scientific Name
Arctic Tern	*Sterna paradisaea*
Bar-tailed Godwit	*Limosa lapponica*
Golden Plover	*Pluvialis apricaria*

Goshawk	*Accipiter gentilis*
Great Northern Diver	*Gavia immer*
Kingfisher	*Alcedo atthis*
Little Egret	*Egretta garzetta*
Merlin	*Falco columbarius*
Red-throated Diver	*Gavia stellata*
Ruff	*Philomachus pugnx*
Shag	*Phalacrocorax aristotelis*
Slavonian Grebe	*Podiceps auritus*
Whooper Swan	*Cygnus cygnus*

As noted in section 3, the Lough also holds a number of 'important' (defined in section 1.2), populations of wintering birds, which have been instrumental in the protection of the site on national and/or international level. These populations are listed in Table 3.8:

Table 3.8 Birds regularly wintering in populations of National (N) or International (I) Importance on Larne Lough

Common Name	Scientific Name	Importance of Population
Common Gull	*Larus canus*	N
Golden Eye	*Bucephala clangula*	N
Great-Crested Grebe	*Podiceps cristatus*	N
Greenshank	*Tringa nebularia*	N
Light-bellied Brent Goose (East Canadian high Arctic population)	*Brenta bernicla hrota*	N, I
Red-breasted Merganser	*Mergus serrator*	N
Redshank	*Tringa totanus*	N
Shelduck	*Tadorna tadorna*	N

4.0 COVERAGE OF EXISTING DATA

4.1 WeBS Data

WeBS is a joint scheme of the BTO, the Wildfowl & Wetlands Trust, the RSPB, and the JNCC. All WEBS data is divided into two separate national schemes; which both survey non-breeeding water birds.

4.1.1 Core Counts

Core counts are made once monthly at high tide, usually on pre-selected dates, focusing on the winter period from September-March. Core counts are the co-ordinated monthly counts of waterbirds (wildfowl and waders) on around 2,500 inland and coastal wetlands. Larne Lough is one of these listed wetlands, and core count data is available for the Lough.

Digital data sets are held from 1960-61 onwards but the most recent data was obtained for this desktop study in the form of *tabulated five-year synopses* for 2001-2006. Counts from several years are more representative than a single year's data, and these latest data provides the most up-to-date picture of bird use of the Lough. In consultation, EHS agreed this was the appropriate data on which to focus the current study.

This data provides:

Total yearly counts for all species combined
Average counts from five consecutive years for each species in each month
Five-year peak monthly counts of each species
Five-year autumn peak counts, and month in which this was recorded, for each species
Five-year winter peak counts, and month in which this was recorded, for each species
National and International importance of the site for each species

4.1.1a Coverage of Larne Core Counts

Due to the large size of the Lough, surveys were divided into two areas, centred on two survey points. Each survey area was further divided into a number of count sectors to facilitate comprehensive coverage of the whole lough area. Each survey point corresponds to the central location of one survey area. These central points are shown, along with the total coverage of both Core Count survey areas in Figure 1. Coverage, which totals approximately 13km^2 includes a small (1.14km^2) area in the mouth of the Lough, which includes Ferris and Browne's Bay east of the Lough mouth.

Two major coastal areas neglected by the surveys are

1. The rocky coastline that curves east from Skernaghan Point for approximately 2km until the northeastern site boundary
2. The area stretching north of Sandy Bay beach northwest of the mouth of the Lough.

In addition, as the surveys are restricted to wetland areas, the entire terrestrial zone around the lake within the 1km buffer is not covered.

4.1.1b Quality of Larne Core Counts

Complete counts are reliable estimates of bird abundances, while incomplete counts are considered under-estimates. Incomplete counts refer to surveys carried out in poor weather conditions, surveys in which the survey area was not observed in its entirety, surveys where counts were split into two days, or surveys completed by more than one recorder.

In Core count datasets, the completeness of each monthly count is simply described as *good* (>= 75% of birds present), or *poor* (<75% of birds present).

Analysis of the data reveals that for any species from 2001-2006, the completeness of counts is never poor more than one month a year, meaning that at least 86% of survey months in each year are complete.

A criticism of the WEBS data is that a number of species known to regularly winter at Larne Lough, are not recorded. Dempsey & O'Clery (2007) note the following ducks as wintering in Larne: Pochard (small numbers), Sanderling, and Tufted Duck (occasional), None of these are recorded in the 2001-2006 WEBS data, but have been observed on the Lough during this period by amateur birdwatchers as proven by CEDaR records. The WEBS data interpretation notes offer a range of reasons for possible oversights, including the likelihood that focusing counts at a few locations at high tide neglects the importance of other feeding areas at other stages of the tidal cycle. In any case, these species are not known to occur at Larne in large numbers, and so it is less likely that a WEBS recorder visiting the site only once a month will chance to record them. In addition, none of these species are red-listed, or Annex I protected, and so the discrepancies in species counts between WEBS, CEDaR, and Dempsey & O'Clery are considered not sufficient to warrant further surveys of the lake.

4.1.2 Low Tide Counts

The second WEBS scheme is Low Tide Counts. These are made monthly from November-February in most large estuaries in the UK. There are no Low Tide Count data available for Larne Lough.

4.2 NEWS Data

NEWS (The Non-Estuarine coastal Waterbird Survey) runs about every nine years (the last surveys being 1998 and 2007) and is a one-off count in mid-winter (typically January) to cover the areas that are not well counted by WeBS.

4.2.1a Coverage of NEWS Data

Coverage of the NEWS count areas for coastal areas nearest to Larne Lough is shown in Figure 1. All of the areas shown were counted during the last NEWS survey in January 2007.

Figure 1 shows that the coverage sufficiently fills both coastal gaps in WeBs core count data noted in section 4.1.1a. In particular NEWS covers the important stretch of rocky coastline that curves east from Skernaghan Point for approximately 2km until the northeastern site boundary, an area that holds notable numbers of seabirds including the Amber-listed Merlin (September-March), Gannet (September to December, and February-March) and Cormorant (September-March), which have all previously been recorded from Skernaghan Point, the Merlin as recently as October 2004 (CEDaR). Merlins occur in large populations on the coasts of Northern Ireland, and Merlin from Iceland and other northern countries join native birds to winter in low-lying coastal areas in Ireland (Cabot, 2004).

4.2.1b Quality of NEWS data

Quality of NEWS surveys was not be analysed.

4.3 CEDaR Data

CEDaR records were gathered for the Lough and a 1km buffer area. However in contrast to WEBS data, records for the period 1990 to 2006 were analysed. This time period was decided upon, because records from 2001-2006 would provide relatively little data, while records dating further back would be too time-intensive to interpret, and would be unrepresentative of the current and recent wintering bird use of the study area.

4.3.1a Coverage of CEDaR Data

CEDaR record GPS co-ordinates vary in their precision (4-6 digits), and the locations of records marked in Figure 1 are therefore often approximate. This lack of precision makes it impossible to ascertain whether numerous records from the same imprecise GPS location cover the entire area of the coordinates, or only one section of that area. Between 1990 and 2006, there were a total of 1091 records for the Lough and the 1km buffer area, with 76% of records for the buffer area, and 26% of records for the Lough itself. CEDaR record locations for this time period are distributed relatively evenly around the study area, but due to the small number of locations, there are large regular gaps where no records exist.

CEDaR holds no records for the entire eastern boundary of the study area, on Island Magee between Ballylumford and Old Church Bay. This 8km^2 area is largely agricultural land with scattered housing, which may offer suitable habitat for Twites, and Yellowhammers, both Red-listed and Northern Ireland Priority species that feed on weed seeds in agricultural land, which are both recorded by CEDaR n the 1km buffer area. The Twite has been recorded regularly since 1992 in the study area, and since Scottish flocks may boost resident Twite numbers in winter, there is potential for significant wintering populations of the species around the Lough. Yellowhammers are declining in northern Ireland due to a decrease in land under tillage (Cabot, 2004), but there are two records from Ballylumford from February

and March 2005. Only formal surveys of this area, and other coastal fields in the study area may reveal the actual numbers of wintering and breeding Yellowhammers and Twites here.

CEDaR also holds no records for the southern end of the study area, between Ballycarry to the west and Muldersleigh Hill to the east. This latter area may be of particular value to wintering birds because the Slaughterford Water tidal river extends south for 500m through this area. This river is listed as an asset and constraint in the BMAP 2015 (DoE, 2001). East of this tidal river, the species-rich grasslands of Castletown ASSI are found atop Muldersleigh Hill, which form one of the highest points in the study area at 130 metres above sea level. This area merits further survey as a possible wintering habitat for birds such as Skylarks (Northern Ireland Priority Species) and protected raptors such as Merlins and Peregrine falcons which may hunt over the open hilly grasslands.

4.3.1b Quality of CEDaR data

All 1091 records are from only 15 sites (Figure 1) and within this small number, many are represented by very few records, or even a single record (in the case of Glynn Hill Woods, cited only once for a Goshawk sighting). Ballycarry bridge accounted for the majority of records (50%), with Glynn (21%) also accounting for a large majority. The dataset therefore is a very uneven representation of the study area, and in many cases provides data on species recorded only due to their rarity within the site. This is the nature of CEDaR data, which offers a different service to formal survey data, however in the present context where extensive records are required for an entire site, the data contains gaps for many areas.

4.4 Northern Ireland Lake Survey data

During consultation with EHS, it was highlighted that research carried out by Queens University and EHS in the 1980's and 1990's (Smith et al., 2001) included surveys of some of the wetland areas surrounding the lake such as Glynn lagoon. However, time restricted analysis of this dataset, and in any case, given the time elapsed since its completion, these records are now outdated.

5.0 CONCLUSIONS AND RECCOMENDATIONS

5.1 Larne Lough

WEBS core count recorders have comprehensively covered wintering bird surveys in the period 2001-2006 on Larne sea Lough itself. The Larne Lough WeBS data is complete in terms of both the area covered, and quality of records obtained (although some less common species are understandably missing from surveys), and it is recommended that no additional surveying of the Lough be carried out. NEWS data sufficiently covers the gaps in coastal coverage of WeBS core counts.

5.2 1km BufferArea

The 1km buffer area of terrestrial sites around the Lough has not been sufficiently covered by wintering bird surveys. Surveys of some areas have been carried out by the Northern Ireland Lake Survey, but these surveys need updating. CEDaR data for this area indicates that there are a number birds of conservation concern regularly recorded here. In particular, there are two red-listed species; Twite (protected in Northern Ireland) and Yellowhammer. Many more amber and protected species are also recorded.

RPS therefore recommends that wintering surveys be carried out in these areas in 2008-2009.

6.0 REFERENCES

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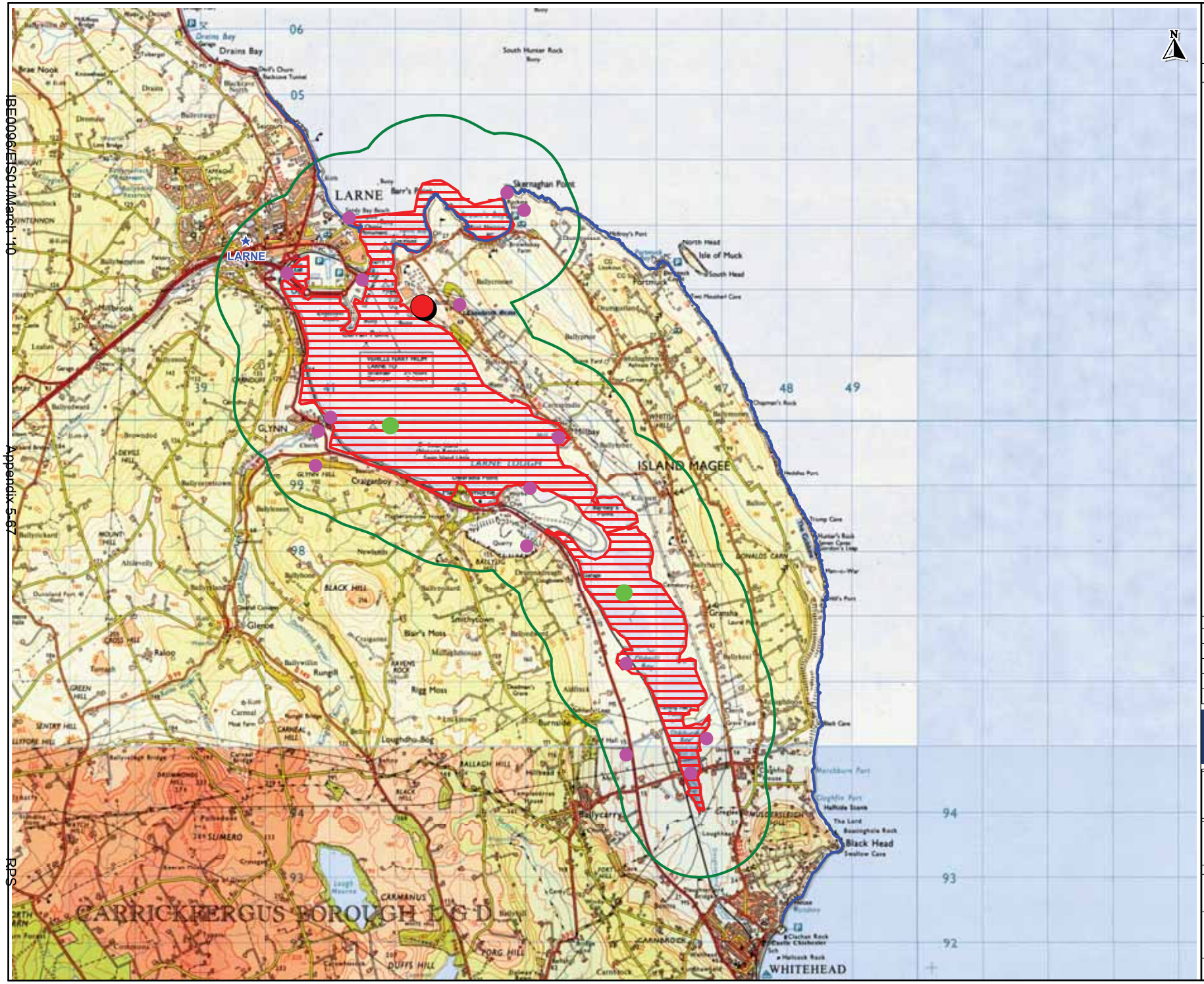

Notes 1. This drawing is the property of RPS Planning & Environment. It is a confidential document and must not be copied, used, or its contents divulged without prior written consent.

LEGEND

- Proposed Buildings
- WEBS Survey locations
- WEBS Survey Coverage
- Study Area (1km buffer around lake)
- CEDaR Record Locations (1990-2006)
- NEWS Survey Coverage (1998-2007)

Issue Details

Drawn:	RF	No Window
Chkd:	SMCA	
Appd:	RH	
Date:	December 2007	
Scale:	1cm = 0.54 km	Revision: 01

RPS Planning & Environment

Project: Portland Gas

Title: Study area and Survey Coverage

Figure Number: 1

IBE0096/ES01/March '10

Appendix 5.6.7

RPS

Notes 1. This drawing is the property of RPS Planning & Environment. It is a confidential document and must not be copied, used, or its contents divulged without prior written consent.

LEGEND

- 2km Buffer Area
- Proposed Buildings
- SPA
- ASSI
- Proposed ASSI
- Ramsar
- SLINCI
- National Nature Resrve

Issue Details

Drawn:	RF
Chkd:	SMCA
Appd:	RH
Date:	January 2008
Scale:	1cm = 0.54 km
Revision:	01

RPS Planning & Environment

No Window

Project: **Portland Gas**

Title: **Conservation Designations**

Figure Number: **2**

PLE0006/ES01/March '10

Appendix 5.9B

RPS

Appendix 1 Correspondence

EHS- RPS

From: Lynne Rendle [Lynne.Rendle@magni.org.uk]; on behalf of; cedar info [cedar.info@magni.org.uk]
Sent: 10 January 2008 14.16
To: Robert Fennelly
Subject: Larne Lough Bird surveys - Portland Gas Ltd - Proposed gas storage facility

EHS ref. CB15475

<<The Gobbins_maps.doc>> <<The Gobbins_citation & VAM.doc>>

Dear Robert

Re. Larne Lough Bird surveys – Portland Gas Ltd - Proposed gas storage facility

Thanks you for the further hard copy correspondence, after our phone call.

In any report you must make detailed mention of the Larne Lough Special Protection Area (SPA) and Area of Special Scientific Interest (ASSI) and the various selection features of the site.

With Larne Lough being a SPA under the EU Birds Directive, an article 6 assessment will have to be undertake for this project

Can I clarify some of the points generated from your letter.

Your first point suggests the WeBS bird counts having been made from only two survey points, these two BTO survey locations refer to the two whole shoreline sections of Larne Lough, for counting purposes the Lough is split into an inner and outer sections. In addition you have not indicated how many years of over-wintering bird data you have obtained fro the BTO. We would suggest looking at a five year data stream. Special reference should be made to the Light-Bellied Brent Goose population which over winter in the Lough

2. Again, further WeBS data would be available from the BTO. In addition, reference should be made to the breeding bird population; especially the Sandwich, Roseate and Common Tern population on the two off shore islands. I had suggested you contact the RSPB ecologist; Matthew Tickner over this. The RSPB may make a charge for this data. RSPB Belfast Office, Belvoir Park Forest, Belfast, BT8 7QT

3. Over the phone I talked to you about the proposed Gobbins ASSI (see attached information above). Your 2km search buffer would also bring in the Isle of Muck, which has a breeding seabird colony, information of the site would be available from the Ulster Wildlife Trust at 3 New Line, Crossgar, Co. Down, BT30 9EP

Many thanks,

Gregor

Gregor Watson

Conservation Science

Environment and Heritage Service

Klondyke Building

Cromac Avenue

Gasworks Business Park

Belfast

BT7 2JA

028 9056 9534

CEDaR-RPS

From: Lynne Rendle [Lynne.Rendle@magni.org.uk]; on behalf of; cedar info [cedar.info@magni.org.uk]
Sent: 21 December 2007 11:44
To: Robert Fennelly
Subject: Information Request

Hi Robert
I've checked the database and there are records for the above area. There will be charge of £45 + VAT (**£52.88 in total**) for the time taken to process this request. **Let me know if you are happy with this charge** and I will proceed with the collation and analysis of the data. Subject to receiving you remittance (made payable to MAGNI) and my getting the relevant permissions from the recorders, the data will be released to you in Excel form.
Feel free to contact me if you have any queries.
By the way, I'm off now until the 3rd Jan, for Christmas break. So have a good Christmas and a Happy New Year. Please pass on my best wishes to Suzanne as well.

Best wishes - Lynne

Lynne Rendle
Vertebrate Officer
CEDaR
National Museums Northern Ireland
153 Bangor Road
CULTRA
Co Down BT18 0EU

BTO-RPS

1)
From: Mark Collier
Sent: 17/01/2008 11:16
To: Robert Fennelly
Subject: Larne Lough NEWS Coverage

Dear Robert

Thank you for the map and letter regarding your data search in the Larne Lough area. As you are aware WeBS provides the best coverage for non-breeding waterbirds in the Lough, I see

that you have these data already. NEWS (The Non-Estuarine coastal Waterbird Survey) runs about every nine years (the last surveys being 2007 and 1998) and is a one-off count in mid-winter (typically January) to cover the areas that are not well counted by WeBS. I have attached a GIS shapefile of the count areas nearest to Larne Lough, some of these are outside of your 1km buffer but have included others so you can see for which areas data are available.

All of the areas shown in the attached file were counted during the last NEWS survey in January 2007. Data from this survey are currently being loaded and validated and should be available sometime in the summer.

I hope that these details of of use, if you have any further questions regading NEWS or WeBS then please let me know.
Yours sincerely

Mark Collier
WeBS Research Officer
British Trust for Ornithology, The Nunnery, Thetford, Norfolk IP24 2PU, UK
Tel: +44 (0)1842 750050, fax: +44 (0)1842 750030, Charity No 216652 www.bto.org

2)
From: Neil Calbrade [mailto:neil.calbrade@bto.org]
Sent: 04 January 2008 12:29
To: Robert Fennelly
Subject: Re: NEWS Data Request

Hi Robert,

Alex has now left the BTO, so I have taken over his responsibilities for data requests and low tide counts. I will ask Mark Collier who also deals with data requests to speak to the person who will know about the NEWS sites when he is back in on Monday and get him to contact you.

Regards,

Neil

3)
From: Neil Calbrade [mailto:neil.calbrade@bto.org]
Sent: 14 December 2007 11:44
To: Robert Fennelly
Subject: WeBS Data Request

Dear Robert,

Many thanks for your request regarding WeBS data. Due to the number of data requests we get, we require a data request form before we are able to provide a quote and provide data, though the attached guidance notes do provide some indication of cost depending on the number of sectors required.

For the core sections, it is now possible to find which sites are covered by WeBS through the WeBS website at:
http://www.bto.org/webs/sites/ we are still working on the low tide section.

With regard NEWS data, I am unsure which is the most up to date coverage for Northern Ireland and the person who would know is not in this today. I am out of the office next week,

but will speak to him when I get back and send you a map or shapefile of these areas but in the meantime if you could just add it to the data request form. If you need the information before I am I next in, please contact Mark Collier on mark.collier@bto.org who will be able to assist.

Please find attached a copy of the latest Wetland Bird Survey data request form and guidance notes. I would be grateful if you could return a completed form, I will then be able to check coverage and confirm any costs involved.

If you have any further questions then please feel free to contact me.

Yours sincerely

Neil Calbrade

WeBS Low Tide Count National Organiser
BTO
The Nunnery
Thetford
Norfolk
IP24 2PU

neil.calbrade@bto.org
01842-750050

4)
From: Neil Calbrade [mailto:neil.calbrade@bto.org]
Sent: 12 December 2007 16:25
To: Suzanne Lowry
Subject: WeBS Data Request

Dear Suzanne,

Please find attached the data for Larne Lough that you requested. You will also find an interpretation document to assist your understanding of the data provided. Please note that data are supplied in three different file formats (.rtf, .pdf and .htm) for your convenience. The information contained in each is the same.

An invoice for £820 +VAT will follow shortly by post.

If you have any questions regarding these data please get back in touch.

Yours sincerely

Neil Calbrade

RSPB-RPS

1)
From: Tickner, Matthew [Matthew.Tickner@rspb.org.uk]
Sent: 11 January 2008 17:39
To: Robert Fennelly
Subject: RE: Data request for Larne Lough

Dear Robert

Thank-you for your email. As suggested, I am primarily concerned with the monitoring of breeding birds on the islands in Larne Lough, so unfortunately don't have any recent information on wintering birds.

(I did collect a small amount of information on gulls - in about 1994-5 I believe - which may or may not be retrievable, but I imagine this would be a little out of date and too specific for your purposes?)

Best wishes

Matthew
Conservation Officer
RSPB Northern Ireland
Belvoir Park Forest
Belfast
BT8 7QT
Tel.: 028 90 491547
www.rspb.org.uk

2)
From: Ferry, Claire [Claire.Ferry@rspb.org.uk]
Sent: 12 December 2007 16:25
To: Suzanne Lowry
Subject: Winter Bird Data Larne Lough/Islandmagee

Hi Suzanne

The RSPB doesn't hold any wintering data. All winter counts are done through the WEBS scheme run by BTO so you would have to contact them. BTO also hold the Seabird 2000 counts - they were summer counts but do highlight the importance of the nearby old jetty to your 'site location' dot for black guillemots.

Ian Enlander at EHS does many of the Larne Lough WEBS counts I think, so it might be worth having a word with him.

Claire

WeBS
The Wetland Bird Survey

Five year summary for Inner Larne Lough

Table1: Total Counts - All Species Combined.

Peak monthly total = maximum of the sum of the counts of all species within each month.
Seasonal peaks = sum of the maximum counts of all species within each season.

Year	Peak Monthly Total	Autumn Peak	Winter Peak	Spring Peak
01/02	2202 (MAR)	1886	3243	N/C
02/03	2352 (FEB)	2248	3193	N/C
03/04	3273 (DEC)	1287	3714	N/C
04/05	2243 (DEC)	994	3655	N/C
05/06	3151 (DEC)	1411	3981	N/C
MEAN		1565	3557	N/C

Table2: Five-year average monthly counts of each species.

Figure in parentheses give number of complete and incomplete counts upon which the average is based.
Incomplete counts are excluded from calculation where, if included, they would depress the mean.

Species	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Mute Swan			7(5,.)	11(5,.)	14(4,1)	17(4,1)	13(5,.)	4(5,.)	7(3,1)			
Whooper Swan			0(5,.)	8(5,.)	1(4,1)	0(4,1)	0(5,.)	0(5,.)	1(3,1)			
Chinese Goose			0(5,.)	0(5,.)	1(4,1)	0(4,1)	0(5,.)	0(5,.)	0(4,.)			
Pink-footed Goose			0(5,.)	0(5,.)	0(4,1)	0(5,.)	0(5,.)	1(5,.)	0(3,1)			
Greylag Goose (re-established)			0(5,.)	0(5,.)	4(4,1)	19(4,1)	15(5,.)	18(5,.)	6(3,1)			
Snow Goose			0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(5,.)	1(3,1)			
Light-bellied Brent Goose (East Canadian high Arctic population)			1(5,.)	12(5,.)	69(4,1)	158(4,1)	135(5,.)	158(5,.)	90(3,1)			
Shelduck			6(5,.)	105(5,.)	172(4,1)	384(4,1)	532(5,.)	588(5,.)	423(3,1)			
Wigeon			17(5,.)	134(5,.)	197(4,1)	327(4,1)	238(5,.)	127(5,.)	70(3,1)			
Teal			17(5,.)	97(5,.)	46(4,1)	358(4,1)	218(5,.)	153(5,.)	76(3,1)			
Green-winged Teal			0(5,.)	0(5,.)	0(5,.)	0(4,1)	0(5,.)	0(5,.)	0(3,1)			
Mallard			51(5,.)	37(5,.)	68(4,1)	97(4,1)	51(5,.)	46(5,.)	27(3,1)			
Pintail			0(5,.)	22(5,.)	0(4,1)	0(5,.)	0(5,.)	0(5,.)	0(4,.)			
Eider			9(5,.)	2(5,.)	3(4,1)	0(4,1)	0(5,.)	0(5,.)	4(3,1)			
Goldeneye			0(5,.)	4(5,.)	14(4,1)	18(4,1)	6(5,.)	16(5,.)	10(3,1)			
Red-breasted Merganser			32(5,.)	28(5,.)	33(4,1)	26(4,1)	17(5,.)	14(5,.)	6(3,1)			
Goosander			0(5,.)	0(5,.)	0(4,1)	0(4,1)	0(5,.)	0(5,.)	0(4,.)			
Red-throated Diver			0(5,.)	0(5,.)	0(4,1)	0(4,1)	0(5,.)	0(5,.)	0(3,1)			
Little Grebe			0(5,.)	1(5,.)	3(4,1)	2(4,1)	3(5,.)	3(5,.)	2(3,1)			
Great Crested Grebe			7(5,.)	6(5,.)	12(4,1)	7(4,1)	10(5,.)	2(5,.)	10(3,1)			
Cormorant			10(5,.)	5(5,.)	2(4,1)	6(4,1)	1(5,.)	0(5,.)	0(3,1)			
Shag			4(5,.)	11(5,.)	9(4,1)	11(4,1)	3(5,.)	3(5,.)	0(3,1)			
Little Egret			1(5,.)	0(5,.)	1(4,1)	1(4,1)	0(5,.)	0(5,.)	0(3,1)			
Grey Heron			7(5,.)	8(5,.)	7(4,1)	6(4,1)	4(5,.)	2(5,.)	3(3,1)			
Moorhen			0(5,.)	0(5,.)	1(4,1)	0(4,1)	0(5,.)	0(5,.)	0(3,1)			
Oystercatcher			70(5,.)	96(5,.)	43(4,1)	69(4,1)	63(5,.)	69(5,.)	72(3,1)			
Golden Plover			0(5,.)	10(5,.)	0(4,1)	0(4,1)	7(5,.)	0(5,.)	8(3,1)			
Lapwing			4(5,.)	34(5,.)	170(4,1)	222(4,1)	124(5,.)	167(5,.)	14(3,1)			
Knot			2(5,.)	0(5,.)	17(4,1)	1(4,1)	0(5,.)	0(5,.)	0(3,1)			
Curlew Sandpiper			0(5,.)	0(5,.)	0(4,1)	0(5,.)	0(5,.)	0(5,.)	0(4,.)			
Dunlin			5(5,.)	34(5,.)	84(4,1)	444(4,1)	228(5,.)	224(5,.)	52(3,1)			
Jack Snipe			0(5,.)	1(5,.)	0(4,1)	1(4,1)	0(5,.)	0(5,.)	0(3,1)			
Snipe			1(5,.)	8(5,.)	2(4,1)	20(4,1)	10(5,.)	3(5,.)	10(3,1)			
Black-tailed Godwit			0(5,.)	1(5,.)	0(4,1)	0(4,1)	0(5,.)	0(5,.)	0(3,1)			
Bar-tailed Godwit			2(5,.)	2(5,.)	0(4,1)	0(4,1)	0(5,.)	0(5,.)	0(3,1)			
Whimbrel			0(5,.)	0(5,.)	0(4,1)	1(4,1)	0(5,.)	0(5,.)	0(4,.)			
Curlew			112(5,.)	161(5,.)	165(4,1)	176(4,1)	85(5,.)	115(5,.)	110(3,1)			
Redshank			61(5,.)	167(5,.)	182(4,1)	269(4,1)	98(5,.)	109(5,.)	130(3,1)			
Greenshank			3(5,.)	2(5,.)	4(4,1)	3(4,1)	2(5,.)	1(5,.)	1(3,1)			
Turnstone			0(5,.)	0(5,.)	0(5,.)	0(4,1)	6(5,.)	0(5,.)	0(4,.)			
Black-headed Gull			336(5,.)	118(5,.)	36(4,1)	86(4,1)	70(5,.)	110(5,.)	263(3,1)			
Common Gull			82(5,.)	58(5,.)	15(4,1)	29(4,1)	45(5,.)	39(5,.)	19(3,1)			
Lesser Black-backed Gull			4(5,.)	1(5,.)	0(4,1)	0(4,1)	0(5,.)	0(5,.)	0(3,1)			

Data provided by the British Trust for Ornithology on behalf of The Wetland Bird Survey.
These tabulations are based exclusively on data collected as part of the monthly Core Counts.
For some species (e.g. wintering geese) data collected by other surveys may be more appropriate for the purpose of site assessment.
Missing or unexpectedly low counts for gulls and terns should be treated with caution - counting these groups is optional and determination of count effort not always possible.

The Wetland Bird Survey is a partnership between the British Trust for Ornithology, The Wildfowl and Wetlands Trust, the Royal Society for the Protection of Birds and the Joint Nature Conservation Committee, the latter on behalf of Natural England, Scottish Natural Heritage, the Countryside Council for Wales and the Environment and Heritage Service in Northern Ireland.

Table2: Five-year average monthly counts of each species.

Figure in parentheses give number of complete and incomplete counts upon which the average is based.
Incomplete counts are excluded from calculation where, if included, they would depress the mean.

Species	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Herring Gull			53(5,.)	22(5,.)	8(4,1)	8(4,1)	23(5,.)	10(5,.)	5(3,1)			
Iceland Gull			0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(5,.)	1(5,.)	0(3,1)			
Glaucous Gull			0(5,.)	0(5,.)	0(5,.)	0(4,1)	0(5,.)	0(5,.)	0(3,1)			
Great Black-backed Gull			6(5,.)	2(5,.)	2(4,1)	0(4,1)	3(5,.)	0(5,.)	0(3,1)			
Sandwich Tern			0(5,.)	0(5,.)	0(4,1)	0(5,.)	0(5,.)	0(5,.)	0(4,.)			
Kingfisher			0(5,.)	0(5,.)	0(4,1)	0(4,1)	0(5,.)	0(5,.)	0(4,.)			

Data provided by the British Trust for Ornithology on behalf of The Wetland Bird Survey.
These tabulations are based exclusively on data collected as part of the monthly Core Counts.
For some species (e.g. wintering geese) data collected by other surveys may be more appropriate for the purpose of site assessment.
Missing or unexpectedly low counts for gulls and terns should be treated with caution - counting these groups is optional and determination of count effort not always possible.

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Table3: Five-year peak monthly counts of each species.

Species	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Mute Swan			18	25	25	22	26	17	10			
Whooper Swan			0	36	3	0	1	0	2			
Chinese Goose			0	0	2	0	2	0	0			
Pink-footed Goose			0	0	0	0	0	2	0			
Greylag Goose (re-established)			0	0	9	41	28	57	9			
Snow Goose			0	0	0	0	0	2	2			
Light-bellied Brent Goose (East Canadian high Arctic population)			5	43	140	235	248	215	202			
Shelduck			11	280	430	646	662	864	776			
Wigeon			61	182	323	549	407	236	89			
Teal			47	280	87	569	406	296	111			
Green-winged Teal			0	0	0	0	0	0	1			
Mallard			74	76	96	173	95	58	49			
Pintail			0	110	0	0	0	0	0			
Eider			15	11	12	0	0	0	10			
Goldeneye			0	11	30	32	14	36	19			
Red-breasted Merganser			60	37	43	30	21	24	15			
Goosander			0	0	1	1	1	0	0			
Red-throated Diver			0	1	0	0	0	0	0			
Little Grebe			1	3	7	3	5	6	3			
Great Crested Grebe			19	28	26	12	23	7	14			
Cormorant			15	17	5	20	2	1	1			
Shag			13	31	20	42	17	17	0			
Little Egret			4	1	2	2	1	1	0			
Grey Heron			10	18	10	8	13	4	5			
Moorhen			0	0	2	0	0	0	0			
Oystercatcher			132	183	89	86	117	127	135			
Golden Plover			0	37	1	0	36	0	25			
Lapwing			12	123	225	472	214	389	34			
Knot			5	0	69	2	1	0	0			
Curlew Sandpiper			2	1	0	0	0	0	0			
Dunlin			22	100	285	906	321	343	112			
Jack Snipe			0	3	0	2	1	0	0			
Snipe			4	18	6	48	48	14	18			
Black-tailed Godwit			1	1	0	0	0	0	0			
Bar-tailed Godwit			8	8	1	0	0	0	0			
Whimbrel			1	0	0	1	0	0	0			
Curlew			148	206	254	227	108	215	171			
Redshank			94	267	275	548	134	151	131			
Greenshank			6	4	9	5	3	2	2			
Turnstone			0	0	0	0	30	0	0			
Black-headed Gull			525	236	54	170	136	207	436			
Common Gull			155	129	37	100	143	127	28			
Lesser Black-backed Gull			19	2	0	0	0	0	0			
Herring Gull			130	38	14	17	42	30	10			

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Table3: Five-year peak monthly counts of each species.

Species	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Iceland Gull			0	0	0	0	0	3	0			
Glaucous Gull			0	0	0	0	0	1	0			
Great Black-backed Gull			14	5	2	0	4	0	0			
Sandwich Tern			2	2	0	0	0	0	0			
Kingfisher			0	1	1	0	0	0	0			

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Table4a: Five-year autumn peak counts, and month in which this was recorded, of each species.

Where a count is enclosed by parentheses this indicates that it was considered incomplete i.e. those parts of the site not visited typically holds at least 25% of the species in question. Incomplete counts are excluded from calculation where, if included, they would depress the mean. When all counts are considered to be incomplete the maximum replaces the mean.

Species	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006	Mean Peak
Mute Swan	10 (OCT)	4 (SEP)	25 (OCT)	18 (SEP)	7 (OCT)	13
Whooper Swan	0	0	36 (OCT)	1 (OCT)	1 (OCT)	8
Light-bellied Brent Goose (East Canadian high Arctic population)	0	43 (OCT)	5 (SEP)	12 (OCT)	6 (OCT)	13
Shelduck	95 (OCT)	280 (OCT)	80 (OCT)	47 (OCT)	25 (OCT)	105
Wigeon	182 (OCT)	154 (OCT)	143 (OCT)	108 (OCT)	83 (OCT)	134
Teal	105 (OCT)	280 (OCT)	18 (SEP)	36 (OCT)	65 (OCT)	101
Mallard	38 (SEP)	74 (SEP)	76 (OCT)	43 (SEP)	47 (SEP)	56
Pintail	110 (OCT)	0	0	0	0	22
Eider	1 (OCT)	15 (SEP)	15 (SEP)	15 (SEP)	1 (SEP)	9
Goldeneye	7 (OCT)	3 (OCT)	11 (OCT)	0	0	4
Red-breasted Merganser	60 (SEP)	26 (OCT)	37 (OCT)	34 (SEP)	37 (SEP)	39
Red-throated Diver	0	1 (OCT)	0	0	0	0
Little Grebe	0	2 (OCT)	3 (OCT)	0	0	1
Great Crested Grebe	28 (OCT)	1 (OCT)	0	9 (SEP)	19 (SEP)	11
Cormorant	15 (SEP)	17 (OCT)	3 (SEP)	8 (SEP)	15 (SEP)	12
Shag	0	31 (OCT)	22 (OCT)	1 (SEP)	0	11
Little Egret	0	0	0	2 (SEP)	4 (SEP)	1
Grey Heron	18 (OCT)	3 (OCT)	9 (SEP)	9 (SEP)	4 (SEP)	9
Oystercatcher	136 (OCT)	183 (OCT)	87 (OCT)	29 (SEP)	53 (SEP)	98
Golden Plover	37 (OCT)	0	13 (OCT)	1 (OCT)	0	10
Lapwing	0	123 (OCT)	26 (OCT)	22 (OCT)	12 (SEP)	37
Knot	0	5 (SEP)	0	3 (SEP)	0	2
Curlew Sandpiper	1 (OCT)	0	2 (SEP)	0	0	1
Dunlin	12 (OCT)	40 (OCT)	22 (SEP)	100 (OCT)	19 (OCT)	39
Jack Snipe	3 (OCT)	0	0	0	0	1
Snipe	18 (OCT)	9 (OCT)	11 (OCT)	0	1 (SEP)	8
Black-tailed Godwit	0	1 (OCT)	1 (OCT)	1 (SEP)	0	1
Bar-tailed Godwit	1 (SEP)	8 (SEP)	0	0	0	2
Whimbrel	0	0	0	1 (SEP)	0	0
Curlew	206 (OCT)	203 (OCT)	169 (OCT)	95 (SEP)	149 (OCT)	164
Redshank	267 (OCT)	127 (OCT)	109 (OCT)	147 (OCT)	187 (OCT)	167
Greenshank	5 (SEP)	3 (OCT)	6 (SEP)	3 (SEP)	0	3
Black-headed Gull	356 (SEP)	385 (SEP)	262 (SEP)	151 (SEP)	525 (SEP)	336
Common Gull	126 (SEP)	155 (SEP)	86 (SEP)	35 (OCT)	19 (SEP)	84
Lesser Black-backed Gull	19 (SEP)	1 (OCT)	1 (SEP)	2 (SEP)	0	5
Herring Gull	18 (SEP)	65 (SEP)	6 (OCT)	47 (SEP)	130 (SEP)	53
Great Black-backed Gull	10 (SEP)	5 (OCT)	1 (SEP)	14 (SEP)	2 (SEP)	6
Sandwich Tern	2 (OCT)	0	2 (SEP)	0	0	1
Kingfisher	0	1 (OCT)	0	0	0	0

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Table4b: Five-year winter peak counts, and month in which this was recorded, of each species.

Where a count is enclosed by parentheses this indicates that it was considered incomplete i.e. those parts of the site not visited typically holds at least 25% of the species in question. Incomplete counts are excluded from calculation where, if included, they would depress the mean. When all counts are considered to be incomplete the maximum replaces the mean.

Species	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006	Mean Peak
Mute Swan	26 (JAN)	25 (NOV)	17 (DEC)	(15) (DEC)	22 (DEC)	23
Whooper Swan	(0)	1 (NOV)	1 (NOV)	2 (MAR)	3 (NOV)	2
Chinese Goose	(0)	2 (NOV)	0	0	0	1
Pink-footed Goose	1 (FEB)	2 (FEB)	0	0	0	1
Greylag Goose (re-established)	57 (FEB)	16 (JAN)	25 (JAN)	8 (NOV)	(9) (MAR)	27
Snow Goose	2 (FEB)	0	0	0	0	0
Light-bellied Brent Goose (East Canadian high Arctic population)	235 (DEC)	125 (FEB)	235 (DEC)	248 (JAN)	215 (FEB)	212
Shelduck	776 (MAR)	592 (FEB)	553 (JAN)	756 (FEB)	864 (FEB)	708
Wigeon	147 (DEC)	251 (DEC)	361 (DEC)	267 (JAN)	549 (DEC)	315
Teal	256 (DEC)	406 (JAN)	569 (DEC)	206 (FEB)	354 (DEC)	358
Green-winged Teal	0	0	0	1 (MAR)	0	0
Mallard	83 (DEC)	63 (DEC)	173 (DEC)	65 (NOV)	96 (NOV)	96
Eider	(0)	0	2 (MAR)	10 (MAR)	12 (NOV)	6
Goldeneye	28 (DEC)	36 (FEB)	32 (DEC)	7 (FEB)	10 (FEB)	23
Red-breasted Merganser	30 (DEC)	37 (NOV)	32 (NOV)	43 (NOV)	24 (FEB)	33
Goosander	(0)	0	0	1 (NOV)	1 (JAN)	1
Little Grebe	6 (FEB)	5 (FEB)	7 (NOV)	5 (JAN)	2 (DEC)	5
Great Crested Grebe	23 (JAN)	8 (JAN)	14 (MAR)	4 (NOV)	26 (NOV)	15
Cormorant	(4) (NOV)	20 (DEC)	1 (NOV)	2 (NOV)	4 (DEC)	7
Shag	(0)	42 (DEC)	17 (FEB)	3 (NOV)	0	16
Little Egret	(0)	0	0	0	2 (NOV)	1
Grey Heron	7 (DEC)	10 (NOV)	4 (DEC)	13 (JAN)	8 (DEC)	8
Moorhen	(0)	0	0	2 (NOV)	0	1
Oystercatcher	135 (MAR)	127 (FEB)	86 (DEC)	(67) (DEC)	117 (JAN)	116
Golden Plover	36 (JAN)	0	0	25 (MAR)	0	12
Lapwing	178 (JAN)	347 (FEB)	472 (DEC)	168 (NOV)	389 (FEB)	311
Knot	(0)	0	69 (NOV)	0	0	17
Dunlin	287 (DEC)	370 (DEC)	326 (DEC)	(906) (DEC)	329 (DEC)	444
Jack Snipe	2 (DEC)	0	1 (DEC)	0	0	1
Snipe	48 (JAN)	2 (NOV)	48 (DEC)	1 (JAN)	0	20
Bar-tailed Godwit	(1) (NOV)	0	0	0	0	0
Whimbrel	1 (DEC)	0	1 (DEC)	0	0	0
Curlew	171 (MAR)	254 (NOV)	171 (DEC)	215 (FEB)	227 (DEC)	208
Redshank	141 (DEC)	275 (NOV)	232 (DEC)	(261) (DEC)	548 (DEC)	299
Greenshank	(2) (NOV)	9 (NOV)	5 (DEC)	2 (NOV)	2 (NOV)	5
Turnstone	30 (JAN)	0	0	0	0	6
Black-headed Gull	436 (MAR)	115 (FEB)	98 (FEB)	276 (MAR)	120 (FEB)	209
Common Gull	54 (JAN)	19 (FEB)	143 (JAN)	26 (JAN)	16 (FEB)	52
Herring Gull	35 (JAN)	30 (JAN)	17 (DEC)	42 (JAN)	30 (FEB)	31
Iceland Gull	0	0	0	3 (FEB)	0	1

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Species	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006	Mean Peak
Glaucous Gull	0	0	0	1 (FEB)	0	0
Great Black-backed Gull	4 (JAN)	4 (JAN)	2 (NOV)	4 (JAN)	2 (NOV)	3
Kingfisher	(1) (NOV)	0	0	0	0	0

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Table5: National and International importance of the site for each species.

Figures given indicate the percentage of the relevant qualifying level represented by the five year mean peak count for the species in question e.g. 50% indicates that the five year mean peak count is half that required for the site to qualify as nationally or internationally important as appropriate for the species in question. Where a count is enclosed by parentheses this indicates that it was considered incomplete i.e. those parts of the site not visited typically holds at least 25% of the species in question. Asterisks indicate that the percentage presented has been derived using a value of 1% of the national population that is less than 50 (50 is normally used as a minimum threshold for designation of sites).

Species	Autumn cf National Threshold	Winter cf National Threshold	Spring cf National Threshold	Autumn cf International Threshold	Winter cf International Threshold	Spring cf International Threshold	Autumn 5yr mean of peaks	Winter 5yr mean of peaks	Spring 5yr mean of peaks
Mute Swan	13%	23%	N/A	13%	23%	N/A	13	23	
Whooper Swan	8%	2%	N/A	4%	1%	N/A	8	2	
Chinese Goose	N/A	N/A	N/A	N/A	N/A	N/A	0	1	
Pink-footed Goose	N/A	N/A	N/A	0%	0%	N/A	0	1	
Greylag Goose (re-established)	N/A	N/A	N/A	N/A	N/A	N/A	0	27	
Light-bellied Brent Goose (East Canadian high Arctic population)	7%	106%	N/A	5%	82%	N/A	13	212	
Shelduck	150%	1011%	N/A	4%	24%	N/A	105	708	
Wigeon	11%	25%	N/A	1%	2%	N/A	134	315	
Teal	16%	55%	N/A	2%	7%	N/A	101	358	
Mallard	11%	19%	N/A	0%	0%	N/A	56	96	
Pintail	37%	0%	N/A	4%	0%	N/A	22	0	
Eider	*45%	*30%	N/A	0%	0%	N/A	9	6	
Goldeneye	4%	21%	N/A	0%	0%	N/A	4	23	
Red-breasted Merganser	*195%	*165%	N/A	2%	2%	N/A	39	33	
Goosander	N/A	N/A	N/A	0%	0%	N/A	0	1	
Little Grebe	N/A	N/A	N/A	0%	0%	N/A	1	5	
Great Crested Grebe	*37%	*50%	N/A	0%	0%	N/A	11	15	
Cormorant	N/A	N/A	N/A	1%	1%	N/A	12	7	
Shag	N/A	N/A	N/A	1%	1%	N/A	11	16	
Little Egret	N/A	N/A	N/A	0%	0%	N/A	1	1	
Grey Heron	N/A	N/A	N/A	0%	0%	N/A	9	8	
Moorhen	N/A	N/A	N/A	0%	0%	N/A	0	1	
Oystercatcher	20%	23%	N/A	1%	1%	N/A	98	116	
Golden Plover	1%	1%	N/A	0%	0%	N/A	10	12	
Lapwing	1%	12%	N/A	0%	2%	N/A	37	311	
Knot	1%	5%	N/A	0%	0%	N/A	2	17	
Curlew Sandpiper	N/A	N/A	N/A	0%	0%	N/A	1	0	
Dunlin	3%	36%	N/A	0%	3%	N/A	39	444	
Jack Snipe	N/A	0%	N/A	N/A	N/A	N/A	1	1	
Snipe	N/A	N/A	N/A	0%	0%	N/A	8	20	
Black-tailed Godwit	1%	0%	N/A	0%	0%	N/A	1	0	
Bar-tailed Godwit	1%	0%	N/A	0%	0%	N/A	2	0	
Curlew	19%	24%	N/A	2%	2%	N/A	164	208	
Redshank	68%	122%	N/A	6%	11%	N/A	167	299	
Greenshank	N/A	*56%	N/A	0%	0%	N/A	3	5	
Turnstone	0%	3%	N/A	0%	0%	N/A	0	6	

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Species	Autumn cf National Threshold	Winter cf National Threshold	Spring cf National Threshold	Autumn cf International Threshold	Winter cf International Threshold	Spring cf International Threshold	Autumn 5yr mean of peaks	Winter 5yr mean of peaks	Spring 5yr mean of peaks
Black-headed Gull	N/A	N/A	N/A	2%	1%	N/A	336	209	
Common Gull	N/A	N/A	N/A	0%	0%	N/A	84	52	
Lesser Black-backed Gull	N/A	N/A	N/A	0%	0%	N/A	5	0	
Herring Gull	N/A	N/A	N/A	1%	1%	N/A	53	31	
Iceland Gull	N/A	N/A	N/A	N/A	N/A	N/A	0	1	
Great Black-backed Gull	N/A	N/A	N/A	0%	0%	N/A	6	3	
Sandwich Tern	N/A	N/A	N/A	0%	0%	N/A	1	0	

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CONSERVATION OBJECTIVES

LARNE LOUGH SPA

1. POLICY STATEMENT

The favourable condition table provided in Annex 1 is intended to supplement the conservation objectives only in relation to management of established and ongoing activities and future reporting requirements on monitoring condition of the site and its features. It does not by itself provide a comprehensive basis on which to assess plans and projects, but it does provide a basis to inform the scope and nature of any appropriate assessment that may be needed. It should be noted that appropriate assessments are a separate activity to condition monitoring, requiring consideration of issues specific to individual plans or projects.

2.1 GENERAL INFORMATION

COUNTY: Antrim

G.R. J450 987 AREA: 398 ha.

2.2 SUMMARY SITE DESCRIPTION

The sea lough extends from Larne town, southwards to Ballycarry. The lough is nearly bisected by Magheramourne dump, created from quarry spoil. It includes the extensive inter-tidal mudflats, together with more limited sand, gravel and boulder beaches. The tidal lagoon at Glynn is also included. Adjoining habitat within the site includes saltmarsh and transitional habitats together with limited wet grassland. Swan Island (natural) and Blue Circle Island (artificial) are important tern nesting sites.

2.3 BOUNDARY RATIONALE

The SPA is coincident with the ASSI and Ramsar boundaries. The site includes all natural and semi-natural habitat both inter-tidal and adjoining. The southern inter-tidal section of the lough is utilised by geese while the northern part is utilised by terns. Swan Island SPA now forms part of this site. Roost sites occurring outside the extent of natural or semi-natural habitat have not been included but their importance must not be underestimated.

3.1 SPA SELECTION FEATURES

Feature Type	Feature	Population	Population at time of designation (ASSI)	Population at time of designation (SPA)	SPA Review population	CSM baseline
Species	Sandwich Tern breeding population	0, 165 (1999-2000)	123	New feature	165	64 (1993-1997)
Species	Roseate Tern breeding population	4, 6 (1999-2000)	6	6	6	0 (1993-1997)
Species	Common Tern breeding population	439, 180 (1999-2000)	174	199	180	177 (1993-1997

Species	Light-bellied Brent Goose wintering population	218, 227 (1995-2000)	202	227	227	177 (1990/91-1996/97)
Habitat[1]	Habitat extent					
Habitat[1]	Roost site locations					

Table 1. List of SPA selection features.

[1] Habitat is not a selection feature but is a factor and is more easily treated as if it were a feature. Habitat extent is also used for breeding birds reported as an area.

3.2. ADDITIONAL ASSI SELECTION FEATURES

Feature Type (i.e. habitat, species or earth science)	Feature	Size/ extent/ pop'	Population at time of designation (ASSI)	CSM baseline
Habitat	Coastal saltmarsh			
Species	Goldeneye wintering population		182	126 (1990/91-1996/97)
Species	Great Crested Grebe wintering population		121	88 (1990/91-1996/97)
Species	Red-breasted Merganser wintering population		180	167 (1990/91-1996/97)
Species	Shelduck wintering population		246	247 (1990/91-1996/97)
Species	Redshank wintering population		415	304 (1990/91-1996/97)

Table 2. List of ASSI features, additional to those that form all or part of SPA selection features. These will be referred to in ANNEX II.

4. MANAGEMENT CONSIDERATIONS

Owner/Occupier's – (to be used to identify any key management considerations arising from ownership e.g. owners/organisations having an obvious bearing on conservation matters or from management agreements).

Approximately 75 individuals/organisations own land within the SPA. Major landowners within the SPA, relevant to the site management, include Crown Estate Commissioners, EHS, Blue Circle Cement and Private Individuals. The RSPB lease Tern Island from Blue Circle Cement, and Swan Island from EHS. The lease expires in 2015. Kilcoan Shellfish lease areas of the seabed from the Crown Estate Commissioners for shellfish production. There may be conflicts of interest between the requirements of individual/organisations, both within and adjacent to the SPA, and the site management needs.

Adjacent commercial operations that may impact upon the SPA include Ballylumford Power Station, Blue Circle Cement, Larne Harbour and P&O European Ferries. Premier Power Ltd operate Ballylumford Power Station which generates electricity for Northern Ireland Electricity. The power station located close to Larne Lough SPA on Isalandmagee, is a Part A Process under the Industrial Pollution Control Order. Additionally sewage

discharge points from Ballystrudder and Ballycarry Treatment Works may impact upon the site.

A number of management agreements are already in place with some landowners.

MAIN IMPACTS ON THE SITE OR SITE FEATURES

Notifiable Operations - Carrying out any of the Notifiable Operations listed in the schedule could affect the site. The list below is not exhaustive, but deals with the most likely factors that are either affecting Lough Foyle SPA, or could affect it in the future. Although, features 1, 2, 3, 4 etc, are the qualifying SPA features, factors affecting ASSI features are also considered.

Generic site/feature issues

No	Issue	Threat/comments	Local considerations	Action
1	Adjoining habitat	Particularly important for swans and geese as well as providing high tide roost locations. Significant changes in land management and disturbance are key considerations. Such areas lie without the site making effective management of developments other than those for which planning permission is required, difficult.	Limited consideration here as the geese do not utilise adjoining habitat.	Assess planning applications. Identify key areas and promote site management schemes. Review use of Wildfowl Refuges. Consider the collective impact.
2	Aquaculture	Disturbance is a minor consideration unless carried out deliberately to minimise losses to shell-feeding waterfowl. Alteration of natural littoral and sub-littoral communities through seeding, tray/trestle cultivation, dredging/control of pest species. Naturalisation of introduced species – both the shellfish themselves and associated species e.g. algae and disease vectors.	Shellfish developments concentrated in the Magheramourne area; mainly tray cultivation of oyster with some rope cultivation of mussels. Areas utilised are of minimal importance birds.	Liaise with DARD Fisheries Division. Assess all license applications individually. Consider the collective impact.
3	Bait digging – commercial or 'recreational' and shellfish gathering.	Disturbance and impact on sediment and invertebrate fauna – may be positive through making deeper prey items available on surface. Shellfish gathering represents a net loss to the system in terms of biomass. Generally unregulated.	Of particular concern in the area of Swan Island which is accessible at low Spring tides, potentially causing disturbance to nesting birds. Otherwise not thought to be a significant issue.	Monitor scale of activity. Consider the collective impact.
6	Boating	Disturbance and potential for	Very limited shipping	Formal consultation likely

	activity – commercial	impact from high-speed liners.	to the Magheramourne Blue Circle quay, currently being run down. Little concern.	relating to new schemes. Consider the collective impact.
7	Boating activity – recreational	Disturbance and potential for impact especially from jet skies. Generally relevant to particularly sensitive areas within site.	Sailing boats are concentrated at the northern end of the lough. Main concern is from disturbance to nesting birds.	Liaise with appropriate authority with codes of good practice, zoning and use of by-laws as necessary. Consider the collective impact. Ensure appropriate signage on both islands.
9	Cull of fledglings/ young	Licensed selective culling of species impacting on 'more desirable' species. Licensed by EHS.	Control of large gull nests has been undertaken at the tern colonies. To be continued as necessary.	EHS to review all licenses. Consider the collective impact.
13	Enhanced bird competition	Activities onsite or offsite that influences or results in a shift in balance of species utilising a site.	Off-site developments may have a bearing on numbers of potentially competing species/individuals using the site. Examples include landfill operations attracting large gulls which then use the designated site.	Liaise with Planning Service. Review wider countryside changes.
15	Habitat extent – inter-tidal	Loss of habitats through development, changes in coastal processes. Loss of inter-tidal habitat is a critical issue as this is the feeding zone for the majority (numbers and species) of birds.	Not a significant issue.	Assess planning applications. Monitor using aerial photography.
16	Habitat extent – open water	Loss likely to be limited but expansion of commercial port facilities can impact on key localities.	Not a significant issue.	Assess planning applications. Consider the collective impact.
17	Habitat quality – inter-tidal	Alteration of habitat quality through diminution of water quality, invasive species or changes in coastal processes.	Lough is enriched, notably through sewage discharge from Ballystrudder and Ballycarry. This has the potential to alter inter-tidal habitat.	Assess planning applications. Deal with invasive alien species by preventing their spread or reducing their impact. Liaise with Environmental Protection. Consider the collective impact.
18	Habitat quality – open water	Alteration of habitat quality through diminution of water quality or invasive species.	Lough is enriched, notably through sewage discharge from Ballystrudder and Ballycarry. This has the potential to alter inter-tidal habitat.	Assess planning applications. Deal with invasive alien species by preventing their spread or reducing their impact. Liaise with Environmental Protection. Consider the collective impact.
19	Habitat extent and quality-	Alteration of habitat area or quality through inappropriate	Blue Circle Island represents a successful	Assess needs of breeding species. Liaise with owner

	breeding	use or absence of site management.	increase in available nesting habitat. Ongoing management of the islands will be required with regard to vegetation succession.	or appropriate authority to adjust or introduce site management if necessary. RSPB are managing body for the islands..
22	Power cables	Specifically a problem in relation to swans and geese. Threat is through impact. Need to consider flight lines, as well as feeding and loafing areas, which ideally should be avoided.	Line markers have been put in place at Ballycarry following a number of Brent fatalities.	Liaise with NIE. Minimum need is for line marking based on best current practice. Consider the collective impact.
23	Predation.	Mainly of concern on bird breeding sites.	Issue of large gulls impacting on breeding terns.	Must be dealt with as part of wider countryside management considerations. Carry out appropriate site management.
24	Recreational activities.	Disturbance is the main consideration although vehicle access may also lead to beach compaction and impacts on beachhead habitats.	Not a significant issue.	Liaise with local authorities and other managing parties.
25	Research activities.	Census and ringing activities especially have the potential to impact on bird populations, particularly at breeding sites.	Routine winter WEBS counts undertaken. Annual visits to the islands undertaken to assess nest numbers and success.	Census and ringing activities to be undertaken by competent individuals, appropriately trained. In case of ringers, appropriate license must be held.
28	System dynamics	Cuts across many other issues. Dynamic systems, especially coastal, can be affected by many factors especially engineered structures and significant changes in dominant wind direction or storm frequency. Many systems may indeed still be undergoing responses to historical developments e.g. partial reclamation, seawall construction. Changes may include alteration in sediment grade, shifts in patterns of erosion and deposition etc. Consequences for habitat and species utilisation of the site can be profound.	The site is a relatively low energy one, with limited coastal engineering. The main impact is from the historical dumping associated with the Magheramourne. This has reduced further tidal and wind energies in the southern part of the lough. Tray cultivation is limited in extent.	Human induced change should be minimised. Assess planning applications and liaise with other relevant authorities. Ad hoc dumping and removal of natural materials should be managed. Major natural shifts in system behaviour may be identified through analysis of aerial photographs and site monitoring. Major and consistent changes to patterns of habitat distribution and bird utilisation of the site should be noted.
31	Wildfowling	Has direct effect through bag sizes/bag species and wider disturbance issue. Issue of regulated (through recognised shooting clubs) and ad hoc shooters. Lead shot on grazing lands.	Local wildfowlers have a strong interest in conservation and undertake, in liaison with EHS, habitat creation and management. Main	Liaise with relevant shooting bodies (BASC especially) to define areas for wildfowling, the development of Wildfowlers Codes of Good Practice and encourage bag returns.

			concerns relates to appropriateness of wildfowlers using Swan Island as a base for shooting.	Support pressure to stop use of lead shot. Review use of Wildfowl Refuges. Assess if wildfowlers should have access right to Swan Island. Consider the collective impact.

Table 3. List of site/feature management issues

5. FEATURE OBJECTIVES

The Conservation Objectives for this site are:

To maintain each feature in favourable condition.

For each feature there are a number of component objectives which are outlined in the tables below. Component objectives for Additional ASSI Selection Features are not yet complete. For each feature there are a series of attributes and measures which form the basis of *Condition Assessment*. The results of this will determine whether a feature is in favourable condition, or not. The feature attributes and measures are found in the attached annexes. Those for Additional ASSI Selection Features (Annex II) are not yet completed.

5.1 SPA SELECTION FEATURE OBJECTIVES

Feature	Component Objective
Sandwich Tern breeding population	No significant decrease in breeding population against national trends, caused by on-site factors
Sandwich Tern breeding population	Fledging success
Roseate Tern breeding population	No significant decrease in breeding population against national trends, caused by on-site factors
Roseate Tern breeding population	Fledging success
Common Tern breeding population	No significant decrease in breeding population against national trends, caused by on-site factors
Common Tern breeding population	Fledging success
Light-bellied Brent Goose wintering population	No significant decrease in population against national trends, caused by on-site factors
Habitat extent	To maintain or enhance the area of natural and semi-natural habitats potentially usable by Feature bird species (325 ha intertidal area), (breeding areas 1 ha) subject to natural processes
Habitat extent	Maintain the extent of main habitat components subject to natural processes
Roost sites	Maintain or enhance sites utilised as roosts

Table 4. SPA Component objectives

5.2 ADDITIONAL ASSI SELECTION FEATURE OBJECTIVES

Feature	Component Objective
Coastal saltmarsh	To maintain or extend, as appropriate, the area of saltmarsh, subject to natural processes
	To maintain or enhance, as appropriate, the composition of the saltmarsh communities
	To maintain transitions between saltmarsh communities and to other adjoining habitats
	To permit the continued operation of formative and controlling natural processes acting on the saltmarsh communities
Goldeneye wintering population	No significant decrease in population against national trends, caused by on-site factors
Great Crested Grebe wintering population	No significant decrease in population against national trends, caused by on-site factors
Red-breasted Merganser wintering population	No significant decrease in population against national trends, caused by on-site factors
Shelduck wintering population	No significant decrease in population against national trends, caused by on-site factors
Redshank wintering population	No significant decrease in population against national trends, caused by on-site factors

Table 5. ASSI Component objectives

Tern nesting localities current and historical (TO BE FINALISED)

Swan Island
Blue Circle Island

Table 5. Tern nesting locations within the SPA

6. MONITORING

Monitoring of our Special Protection Areas takes place at a number of levels, using a variety of methods. Methods for both Site Integrity Monitoring and Condition Assessment can be found in the Monitoring Handbook (To be written).

Maintain the integrity of the site. Undertake Site Integrity Monitoring (SIM) at least annually to ensure compliance with the SPA/ASSI schedule. The most likely processes of change (e.g. dumping, infilling, gross pollution) will either be picked up by Site Integrity Monitoring, or will be comparatively slow (e.g. change in habitat such as growth of mussel beds). More detailed monitoring of site features should therefore be carried out by Site Condition Assessment on a less frequent basis (every 6 years initially to pick up long-term or more subtle changes). A baseline survey will be necessary to establish the full extent of the communities present together with the current condition of the features, against which all further condition assessments will be compared.

In addition, detailed quality monitoring or verification monitoring may be carried out from time to time to check whether condition assessment is adequate to detect long-term changes that could affect the site. This type of quality monitoring may involve assessment of aerial photographs to determine site morphological changes. Methodology for this is being developed.

6.1 MONITORING SUMMARY

1. Monitor the integrity of the site (Site Integrity Monitoring or SIM) – Complete boundary survey to ensure integrity of site and that any fencing is still intact. Ensure that no sand extraction or dumping has been carried out within the SAC boundary. This SIM should be carried out once a year.

2. Monitor the condition of the site (Condition Assessment) - Monitor the key attributes for each selection feature (dune, saltmarsh, species). This will detect if the features are in favourable condition or not. See Annexes I and II for SAC and Additional ASSI Features respectively.

7. ADDITIONAL MONITORING ACTIONS UNDERTAKEN FOR SITES IN UNFAVOURABLE CONDITION

Monitoring actions set out in section 6 and Annex 1 will use, amongst other attributes, bird population data to determine site condition. In the event of a significant population decline being detected, a series of subsequent actions will be initiated. The following list is not exhaustive, actions will be site dependant, but the order of these points IS hierarchical i.e. consider point 1, then 2, etc.

1. Assess the site population in a wider geographical context – Northern Ireland, Ireland, UK, world. Refer to BTO ALERT limits etc. Liaise with other competent bodies to meaningfully assess wider pattern. No site action if site decline mirrors regional pattern the cause of which is not related to the site. Action may be required at regional or larger scale. If the cause of the regional population decline (e.g. eutrophication) is found at the site then action may be necessary, but this may need to form part of a network of strategic species action. Further research may be required.
2. Assess the site population in a wider geographical context – Northern Ireland, Ireland, UK, Europe, world. Determine if site losses are balanced by gains elsewhere e.g. breeding terns. Review site condition to determine if losses are due to site deterioration. Determine if possible whether population has relocated within SPA series (national, biogeographical, European). Note that the reasons for such locational changes may not be readily identifiable. Further research may be required.
3. For passage/wintering species assess breeding information. No site action if site decline is due to breeding ground failure, unless breeding ground failure is related to poor adult condition resulting from factors affecting wintering / passage birds.
4. Determine whether a major incident has affected the site e.g. toxic impact on prey items, predation event or geographical shift in available prey. Ability to respond to impacts may be limited.
5. Assess condition of principal site habitats e.g. vegetational composition and structure, change in habitat balance e.g. mudflats reduced by encroaching mussel beds.
6. Assess prey availability. Issues to consider are both within site e.g. water quality, broad site management, and without site e.g. climatically driven factors.

7. Assess whether there have been any changes in any other site features or management practices (see Table 3) that may have affected populations of site selection features.
8. Long-term site value must be considered even when it is found to be in unfavourable condition for a number of reporting cycles. This is particularly important for breeding seabird and wader sites where ongoing appropriate management may ultimately encourage re-establishment of a favourable population.

8. SELECTION FEATURE POPULATION TRENDS

Site trends are reported using running 5 year means of annual maximum count (WeBS data). Long term trends in index values have been used to assess changes in overall wintering populations for Northern Ireland and UK (WeBS data). Caution is always necessary in the interpretation and application of waterbird counts given the limitations of these data. The reduced number of both sites and birds in Northern Ireland, result in a greater degree of fluctuation. Trends for Ireland are based on five years of data 1994-1999 (I-WeBS data). Consequently short-term fluctuations apparent in the data series may reflect changes in between year productivity, or other short term phenomena, rather than being indicative of a real change in a population.

SPECIES	SITE TREND	NI TREND	ROI TREND	UK TREND	COMMENTS
Sandwich Tern	-	-	-	-	Not known, to be compiled.
Roseate Tern	-	-	-	-	Not known, to be compiled.
Common Tern	-	-	-	-	Not known, to be compiled.
Light-bellied Brent Goose	Stable	Fluctuating	Slight Fluctuation	Not Applicable	

ANNEX I

Feature (SPA) – Breeding seabirds

* = primary attribute. One failure among primary attribute = unfavourable condition
# = Optional factors – these can be in unfavourable condition without the site being in unfavourable condition

Attribute	Measure	Targets	Comments
*Sandwich Tern breeding population	Apparently occupied nests	No significant decrease in Sandwich Tern breeding population against national trends, caused by on-site factors	Requirement that annual data is collected , then apply 5 year mean criteria. Ideally the population will be maintained above 1% of the national population. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Sandwich Tern fledging success	Annual survey (as per Gilbert *et al.* 1998). Determine number of fledglings raised and add to total number of fledglings raised over previous four years and divide by five to obtain average. This should remove variation from season to season, e.g. in response to bad weather.	>1 fledgling per pair successfully raised per year over five year period	Appropriate level of fledgling survival to be determined
*Roseate Tern breeding population	Apparently occupied nests	No significant decrease in Roseate Tern breeding population against national trends, caused by on-site factors	Requirement that annual data is collected , then apply 5 year mean criteria. Ideally the population will be maintained above 1% of the national population. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
# Roseate Tern fledging success	Annual survey (as per Gilbert *et al.* 1998). Determine number of fledglings raised and add to total number of fledglings raised over previous four years and divide by five to obtain average. This should remove variation from season to season, e.g. in response to bad weather.	>1 fledgling per pair successfully raised per year over five year period	Appropriate level of fledgling survival to be determined
* Common Tern breeding population	Apparently occupied nests	No significant decrease in Common Tern breeding population against national trends, caused by on-site factors	Requirement that annual data is collected , then apply 5 year mean criteria. Ideally the population will be maintained above 1% of the national population. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.

# Common tern fledging success	Annual survey (as per Gilbert *et al.* 1998). Determine number of fledglings raised and add to total number of fledglings raised over previous four years and divide by five to obtain average. This should remove variation from season to season, e.g. in response to bad weather.	>1 fledgling per pair successfully raised per year over five year period	Appropriate level of fledgling survival to be determined

Non-avian factors

Attribute	Measure	Targets	Comments
* Habitat extent	Area of natural and semi-natural habitat	Maintain the area of natural and semi-natural habitats used by notified species, within the SPA, subject to natural processes.	Monitor once every reporting cycle by aerial photography.
# Extent of different habitats	Extent of different habitats	Maintain the extent of main habitat components subject to natural processes	Evaluate habitat quality should bird populations decline due to on site factors. Map any changes in area. This may include mapping areas with different vegetation structures or breeding sites, where this would lead to different usage by notified species.

Feature (SPA) – Wintering waterfowl

Attribute	Measure	Targets	Comments
* Light-bellied Brent Goose wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.

Non-avian factors

Attribute	Measure	Targets	Comments
* Habitat extent	Area of natural and semi-natural habitat	Maintain the area of natural and semi-natural habitats used by notified species, within the SPA, subject to natural processes.	Monitor once every reporting cycle by aerial photography.
# Extent of different habitats	Extent of different habitats	Maintain the extent of main habitat components subject to natural processes	Evaluate habitat quality should bird populations decline due to on site factors. Map any changes in area. This may include mapping areas with different vegetation structures where this would lead to different usage by notified species.

Attribute	Measure	Targets	Comments
# Roost sites	Location of roost sites	Maintain all locations of roost sites.	Map roost site locations. Visit once every reporting cycle to ensure sites are available.

ANNEX II

Feature (ASSI)

* = primary attribute. One failure among primary attribute = unfavourable condition
# = Optional factors – these can be in unfavourable condition without the site being in unfavourable condition

Attribute	Measure	Targets	Comments
Feature			
Coastal saltmarsh			
Goldeneye wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
Great Crested Grebe wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
Red-breasted Merganser wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
Shelduck wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.
Redshank wintering population	Bird numbers	No significant decrease in population against national trends, caused by on-site factors	Five year running averages will be used to monitor population trends through WeBs data. Decline to a level below the Common Standards Monitoring baseline over a five year period may indicate unfavourable condition of the site.

ASSI NAME: The Gobbins

COUNTY: Antrim

LOCAL GOVERNMENT DISTRICT: Larne District Council

IRISH GRID REFERENCE: J484983

AREA: 23.18 ha.

OS MAPS: **1:50,000** 17
1:10,000 71 and 84

DESCRIPTION OF INTEREST:

BIOLOGICAL:

FAUNA: Species: Kittiwake (breeding)
Razorbill (breeding)

HABITAT: Maritime cliff and slope
Intertidal rock

GEOLOGICAL**:** Amygdaloidal basalt containing rare zeolite minerals. Site type locality for 'gobbinsite'

References:

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Mitchell, I.P., Newton, S., Ratcliffe, N. & Dunn, T.E. (2004) *Seabird Populations of Britain and Ireland*. Poyser, London.

Walker, G.P.L. 1960. The amygdale minerals in the Tertiary lavas of Ireland – III. Regional distribution. Mineralogical Magazine, 32, 503-527.

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DEPARTMENT OF THE ENVIRONMENT

DECLARATION OF AREA OF SPECIAL SCIENTIFIC INTEREST AT THE GOBBINS, COUNTY ANTRIM. ARTICLE 28 OF THE ENVIRONMENT (NORTHERN IRELAND) ORDER 2002.

The Department of the Environment (the Department), having consulted the Council for Nature Conservation and the Countryside and being satisfied that the area delineated and described on the attached map (the area) is of special scientific interest by reason of the flora and fauna and accordingly needs to be specially protected, hereby declares the area to be an area of special scientific interest to be known as the 'The Gobbins Area of Special Scientific Interest'.

The Gobbins cliffs are of importance for their geological interest, breeding seabird colony and a range of maritime plant communities and notable species. The Gobbins is an area of basalt sea-cliffs, up to 60m in height, on the eastern coast of Island Magee, Co. Antrim.

The basalts at Hill's Port at the south end of The Gobbins cliffs are amygdaloidal (bubbles, or vesicles, in lava that have been filled with minerals) and contain various zeolite minerals; analcime, chabazite, cowlesite, gmelinite, gobbinsite, gonnardite, heulandite, levyne and mesolite have been found here. Some vesicles also contain calcite and travertine. Of particular note is the occurrence of gobbinsite and gonnardite; both are restricted in their occurrence elsewhere and the former actually takes its name from The Gobbins cliffs.

At the time of the Seabird 2000 survey The Gobbins held 791 pairs of Kittiwakes (*Rissa tridactyla*) and 552 Razorbills (*Alca torda)* respectively 1.6% and 1.1% of the all-Ireland populations for these species. The site also supports the only mainland nesting Atlantic Puffins (*Fratercula arctica*) in Northern Ireland and significant populations of Fulmar (*Fulmarus glacialis*), Cormorant (*Phalacrocorax carbo*), Shag (*Phalacrocorax aristotelis*) and Common Guillemot (*Uria aalge*). Peregrine Falcons (*Falco peregrinus*) also breed within the designated area.

The Gobbins is also notable for its maritime cliff plant communities. The diversity of these communities is influenced by a number of factors, including exposure to salt spray, soil depth, aspect, slope and degree of water-logging, in addition to nutrient enrichment from breeding sea-birds.

Much of the area consists of steep vertical cliffs, where the vegetation is restricted to rock ledges. Less vertical slopes include occasional scree deposits and tend to have a more continuous vegetation cover.

The most common species over much of the area is the grass Red Fescue *Festuca rubra*, which achieves high cover values. Some of the less steep slopes are dominated by Bracken *Pteridium aquilinum*. Other prominent components in the sward include Thrift *Armeria maritima*, Common Bird's-foot-trefoil *Lotus corniculatus*, Sea Campion *Silene uniflora* and Kidney Vetch *Anthyllis vulneraria*.

To the south of the area, the cliff vegetation is influenced by the presence of the nesting seabirds, which provide enrichment to the soils through their guano. Additional species such as Hogweed *Heracleum sphondylium,* Sea Mayweed *Tripleurospermum maritimum* and Sea Campion *Silene uniflora* occur here.

Notable plant species include Sea Spleenwort *Asplenium marinum*.

The intertidal area is generally rather narrow, and is dominated by bedrock with wave-cut platforms. Most of the site is very exposed with reduced species diversity, but there are some localised pockets of shelter with high fucoid cover (Spiral Wrack *Fucus spiralis* and Toothed Wrack *Fucus serratus*) and Channelled Wrack *Pelvetia canaliculata* is present in the more sheltered areas. The area is characterised by an upper splash zone dominated by the lichen *Verrucaria maura.* Occasional upper shore rock pools contain ephemeral species of green algae, including *Enteromorpha* spp. and *Cladophora* spp and the brown alga *Chorda filum*. Shallow eulittoral rock pools are characterised by the red alga *Corallina officinalis*.

Many of the exposed mid-shore rocks are dominated by the Acorn barnacle *Semibalanus balanoides* and the Common limpet *Patella vulgata* and there is a zone in the lower eulittoral zone dominated by the red algae *Mastocarpus stellatus*. Common invertebrates include the Periwinkles *Littorina* spp., the Dog Whelk *Nucella lapillus* and the Beadlet Anemone *Actina equina*. The brown algae Oarweed *Laminaria digitata*, Dabberlocks *Alaria esculenta*, Thongweed *Himanthalia elongata* and Cuvie *Laminaria hyperborea* typify lower shores.

SCHEDULE

The following operations and activities appear to the Department to be likely to damage the seabird colonies:

1. Any activity or operation which involves the damage or disturbance by any means of the surface and subsurface of the land, including ploughing, rotovating, harrowing, reclamation and extraction of minerals, including sand, gravel and peat.

2. Any change in the present annual pattern and intensity of grazing, including any change in the type of livestock used or in supplementary feeding practice.

3. The application of manure, slurry or artificial fertiliser.

4. The application of herbicides, fungicides or other chemicals deployed to kill any form of wild plant, other than plants listed as being noxious in the Noxious Weeds (Northern Ireland) Order 1977.

5. The storage or dumping, spreading or discharge of any material not specified under paragraph 5 above.

6. The destruction, displacement, removal or cutting of any plant, seed or plant remains, other than for:

    i. plants listed as noxious in the Noxious Weeds (Northern Ireland) Order 1977;

    ii. normal cutting or mowing regimes for which consent is not required under paragraph 3 above.

7. The release into the area of any animal (other than in connection with normal grazing practice) or plant. 'Animal' includes birds, mammals, fish, reptiles, amphibians and invertebrates; 'Plant' includes seed, fruit or spore.

8. Burning.

9. Construction, removal or disturbance of any permanent or temporary structure including building, engineering or other operations.

10. Alteration of natural or man-made features, the clearance of boulders or large stones and grading of rock faces.

11. The killing or taking of any wild animal except where such killing or taking is treated as an exception in Articles 5, 6, 11, 17, 20, 21 and 22 of the Wildlife (Northern Ireland) Order 1985.

12. The following activities undertaken in a manner likely to damage or disturb the wildlife of the area:

    i. Educational activities;

    ii. Research activities;

    iii. Recreational activities;

    iv. Exercising of animals.

13. Changes in game, waterfowl or fisheries management or fishing or hunting practices.

14. Use of vehicles or craft likely to damage or disturb the wildlife of the area.

15. Sampling of rocks, minerals, fossils or any other material forming a part of the site, undertaken in a manner likely to damage the scientific interest.

FOOTNOTES

(a) Please note that consent by the Department to any of the operations or activities listed in the Schedule does not constitute planning permission. Where required, planning permission must be applied for in the usual manner to the Department under Part IV of the Planning (Northern Ireland) Order 1991.

(b) Also note that many of the operations and activities listed in the Schedule are capable of being carried out either on a large scale or in a very small way. While it is impossible to define exactly what is large and what is small, the Department would intend to approach each case in a common sense and practical way. It is very unlikely that small scale operations would give rise for concern and if this was the case the Department would normally give consent, particularly if there is a long history of the operation being undertaken in that precise location.

THE GOBBINS

Views About Management
The Environment (Northern Ireland) Order 2002 Article 28(2)

A statement of Environment and Heritage Service's views about the management of The Gobbins Area of Special Scientific Interest ("the ASSI")

This statement represents the views of Environment and Heritage Service about the management of the ASSI for nature conservation. This statement sets out, in principle, our views on how the area's special conservation interest can be conserved and enhanced. Environment and Heritage Service has a duty to notify the owners and occupiers of the ASSI of its views about the management of the land.

Not all of the management principles will be equally appropriate to all parts of the ASSI and there may be other management activities, additional to our current views, which can be beneficial to the conservation and enhancement of the features of interest. It is also very important to recognise that management may need to change with time.

The management views set out below do not constitute consent for any operation or activity. The written consent of Environment and Heritage Service is still required before carrying out any operation or activity likely to damage the features of special interest (see the Schedule on pages 3 – 4 for a list of these operations and activities). Environment and Heritage Service welcomes consultation with owners, occupiers and users of the ASSI to ensure that the management of this area maintains and enhances the features of interest, and to ensure that all necessary prior consents are obtained.

MANAGEMENT PRINCIPLES

Areas of coastline holding important colonies of breeding seabirds are scarce in Northern Ireland. Environment and Heritage Service would seek to ensure appropriate management of the area for breeding seabirds, together with the geological and the habitat interests.

Seabird colony

The suitability of the site for breeding seabirds is largely dependent on its physical structure. This determines the availability of nest sites and may reduce the vulnerability of nests to predators. It is therefore important that the physical integrity of the site is maintained as far as is possible, taking into account natural processes.

Environment and Heritage Service would encourage the maintenance and enhancement of the seabird colony through sensitive management of the cliff habitat. Disturbance is another consideration with eggs or young birds on ledges being particularly vulnerable to being accidentally dislodged if adults are startled. Disturbance may affect the breeding success of seabirds, particularly those nesting near the top and base of the cliffs. The source of such disturbance can originate both from the land and the sea. Exceptional activities near the top of the cliffs, including particularly noisy activities, should be avoided during the breeding season (April – July) – routine agricultural activities are unlikely to cause problems.

Material dumped over the cliff top also has the potential to destroy adults, eggs and young and can make nest ledges unusable. Activities which could result in the cliff top being destabilized will have a similar impact. Environment and Heritage Service would hope that these activities could be avoided.

Specific objectives for the breeding seabird include:

1. No rock or mineral extraction should be carried out within the site.

2. Do not undertake exceptional activities near the cliff top which could disturb the birds during the breeding season

3. Avoid inappropriate use of heavy machinery or persistent overgrazing which may weaken the underlying structure and cause collapse.

4. Dumping of waste materials over the cliff edge should not take place

Geology

Earth science features such as those at Hill's Port may require occasional management intervention, this to maintain access to, and fresh exposures of, the geology. This could include selectively removing vegetation.

Specific objectives for the earth science interest include:

1. Maintain the geological series in an undamaged state including slipped material.

2. Maintain access to the geological series.

Habitat

Habitat varies from vertical and near-vertical cliff where vegetation is generally limited, to ledges through less steep slopes which support better soils and more extensive vegetation. Habitat is more varied towards the bottom of the cliff series with vegetated scree and sparsely vegetated cobble and boulder beach heads. The intertidal area comprises either intact rock and/or boulder and cobble beaches. The pattern of all these habitats is determined by the angle and competence of the cliff and slopes, natural rock and debris slippage, storm and tidal effects and the distribution of the seabirds and their droppings.

Care should be taken regarding any activities which affect cliff and slope stability and the naturalness of the various vegetation communities.

Specific objectives for the habitat interest include:

1. No rock or mineral extraction should be carried out within the site.

2. Avoid inappropriate use of heavy machinery or persistent overgrazing which may weaken the underlying structure and cause collapse.

3. Dumping of waste materials over the cliff edge should not take place

4. Ensure that disturbance to the site and its wildlife is minimised.

5. Discourage non-native species, especially those that tend to spread at the expense of native wildlife.

Sealed with the Official Seal of the
Department of the Environment
hereunto affixed is authenticated
by

Mr G R Seymour
Senior Officer of the
Department of the Environment

Dated the of 2007

APPENDIX 5.4 BAT SURVEY

Report on a Bat Survey of a Site of Proposed Development at Larne Lough Portland Gas Site

For RPS Planning and Environment

By
Hopkirk & Russ
Bat Ecology

September 2009

Contents

1.0 Introduction

On the 10th September 2008 and 1st August 2009, Robert Fennelly of RPS asked Hopkirk and Russ Bat Ecology to carry out a bat survey of a proposed development of a gas storage facility, on lands near Ballylumford and Larne Lough, Co. Antrim.

2.0 Bat Biology

2.1 There are 8 known species of bat in Northern Ireland
Common pipistrelle (*Pipistellus pipistrellus*)
Brown long-eared bat (*Plecotus auritus*)
Daubenton's bat (*Myotis daubentonii*)
Leisler's bat (*Nyctalus leisleri*)
Nathusius' pipistrelle (*Pipistrellus nathusii*)
Natterers's bat (*Myotis nattereri)*
Soprano pipistrelle (*Pipistrellus pygmaeus*)
Whiskered bat (*Myotis mystacinus)*

2.2 In March, female bats begin to form maternity colonies (a gathering of bats that live in a cohesive, generally species-specific group) begin to roost collectively. In the months from May to August each female bat may give birth to a single baby bat (pup), exceptionally, twins may be born. The pups are cared for in a nursery colony until they are able to fly at 4 weeks and are weaned at 6 weeks.

2.3 Bats have been found roosting in many types of location; abandoned mines, bridges, caves, in trees and almost every area of buildings, modern and old. Each species of bat having it's own specific foraging and roosting requirements. The disturbance of bats when in their roosts or the loss of a roost or their habitat has been shown to have detrimental effect on all species of bat.

2.4 Throughout the spring, summer and autumn months, bats emerge at night to forage for their insect prey. During autumn, they must seek to store enough body fat to sustain them through the winter, a time when insect abundance is markedly reduced. From the month of September, bats in Ireland enter a state of hibernation or they may migrate. They are prompted to enter hibernation by changing day length, which stimulates hormonal changes.

2.5 During warm winter nights bats may emerge to forage or in response to their metabolic needs. Hibernating bats are particularly vulnerable because it may take as much as 20 minutes for them to become active from a torpid state and because they use up valuable food reserves each time they are aroused from hibernation.

2.6 Factors affecting the reproductive success of bats are:

1. Low reproductive rate
2. Sensitivity to disturbance
3. Changes in land use
4. Exposure to toxic chemicals due to remedial timber treatment
5. Deliberate and unintended exclusion or entombment
6. Vandalism

2.7 Bats rest during the day in roosts (day roosts), where for most species, they will be completely hidden, even when using a roost such as roof voids. Bats may also use night roosts to temporarily rest or as feeding perches.

2.8 Day roosts may be further categorised as:

1. Individual roost, used by single male or female bats
2. Transition roost, used by small numbers of bats as they begin to gather into colonies or disperse from larger colony roosts.
3. Maternity roost, used by a colony of female bats usually ranging from a few tens to exceptionally over 1000 animals that are engaged in parturition (the birthing process)
4. Harem, one male and up to nine female animals
5. Hibernacula, where bats enter prolonged periods of torpor

2.9 Some species of bat are relatively abundant but many are vulnerable or threatened with extinction. It is because of these factors that bats are legally protected with both national and European legislation.

3.0 Legislation

3.1 Under the Habitats and Species Directive (92/43/EC), enacted through **The Conservation (Natural Habitats, etc.) (Amendment) Regulations (Northern Ireland) 2009**, it is illegal for anyone without a licence intentionally to kill, injure or handle a bat of any species, to possess a bat, whether alive or dead (unless obtained legally) or to disturb a bat when roosting or which may lead to a reduction of its local abundance or distribution of its species. It is also an offence to damage, destroy or obstruct access to any place that bats use for shelter or protection whether bats are present or not, or to disturb a bat while it is occupying such a place; this applies even in houses and outbuildings. The only exception is for bats in the living area of a house, which may be carefully removed. This explanation should be regarded only as a guide to the law. In case of doubt, reference should be made to the legislation which may be found at:
http://www.opsi.gov.uk/sr/sr2009/pdf/nisr_20090008_en.pdf

Bats may be excluded from a roost, or roosts may be altered / damaged, but this may only be legal after an exclusion order has been obtained from:

Mr Declan Looney
Wildlife Inspector
The Northern Ireland Environment Agency
Department of the Environment (NI)
Klondyke Building
Cromac Avenue
Gasworks Business Park
Lower Ormeau Road,
Belfast
BT7 2JA
Tele: 028 90569 602
Email: declan.looney@doeni.gov.uk

4.0 Aims

4.1 The aims of the survey were:

1. To describe any evidence of bats in the study area
2. To assess the impact of a change in use of the study area
3. To suggest mitigation measures if appropriate.

5.0 Study Area

5.1 The study area is comprised of parcels of land near Ballylumford, an approximately linear east-west route in the landscape to Dundressa, Islandmagee that lies approximately between grid ref. D425015 to D447032.

5.2 The land types range from coastal shore, broadleaf trees and fields of improved grassland pasture and includes some scrub vegetation.

6.0 Methods

6.1 The area was subjected to an intensive study for bats on 11th September 2008 and 18th and 19th August 2009. Trees were surveyed from the ground for entrance holes to potential roosts, night perches for bats and related signs of bat usage. Observations were made from sunset, at night and in the predawn using a Pettersson D240X bat detector.

7.0 Results

7.1 Conditions

The level of bat activity at an area is dependant on many site-specific conditions, but in general bats are more active in the months from April to September. Where a colony of bats has occupied a roost, discrete evidence in the form of droppings and other signs may remain for weeks or even years. However, in some locations, evidence of bat activity may disappear quite quickly. The degradation rate of evidence such as bat droppings is determined by factors such as exposure to weather and by insect or fungal destruction. Bats are usually cryptic and may not leave any evidence. In particular, bats may be completely hidden when they roost deep within a structure and may occupy holes or crevices at any time after a survey. Most species of bat move roost frequently.

7.2 Bat surveys should normally be carried out throughout the active season, in spring summer and autumn and depending on the site, tree or underground hibernacula surveys may also need to be carried out.

7.3 Day surveys

7.4 Mature broadleaf trees occur mainly in the west of the site no cavities with bat roost potential were found but leaf cover may conceal potential cavities. Only surveys of building externals were undertaken as most buildings are private dwellings and are offline from the proposed pipeline. There was no evidence of bat activity found.

7.5 Night survey

7.6 Activity principally of common pipistrelle *Pipistrellus pipistrellus* was recorded sporadically through the site with an individual Leisler's *Nyctlas leisleri* making social calls from a tree and flying around the tree in a private garden outside the area of development.

7.7 No other bat species were recorded within the site.

7.7 Predawn survey

7.8 In September 2008, an individual Common pipistrelle *Pipistrelllus pipistrellus* was observed to return immediately before dawn to roost in the dwelling beside Dolmen House, No. 91 Ballylumford Road. The observed Leisler's *Nycatlus leisleri* probably day roosts in the tree or nearby detached farm house. Both bat roosts are offline from the proposed route of the gas pipeline. No other bat roosting activity was recorded.

8.0 Conclusions and Mitigation

8.1 The present survey indicates that the route of the proposed pipeline and associated buildings should have a low to no potential impact on bat activity. However, I do recommend further surveys in the active season, May to June inclusive, when maternity colony activity may be observed.

Signed Date

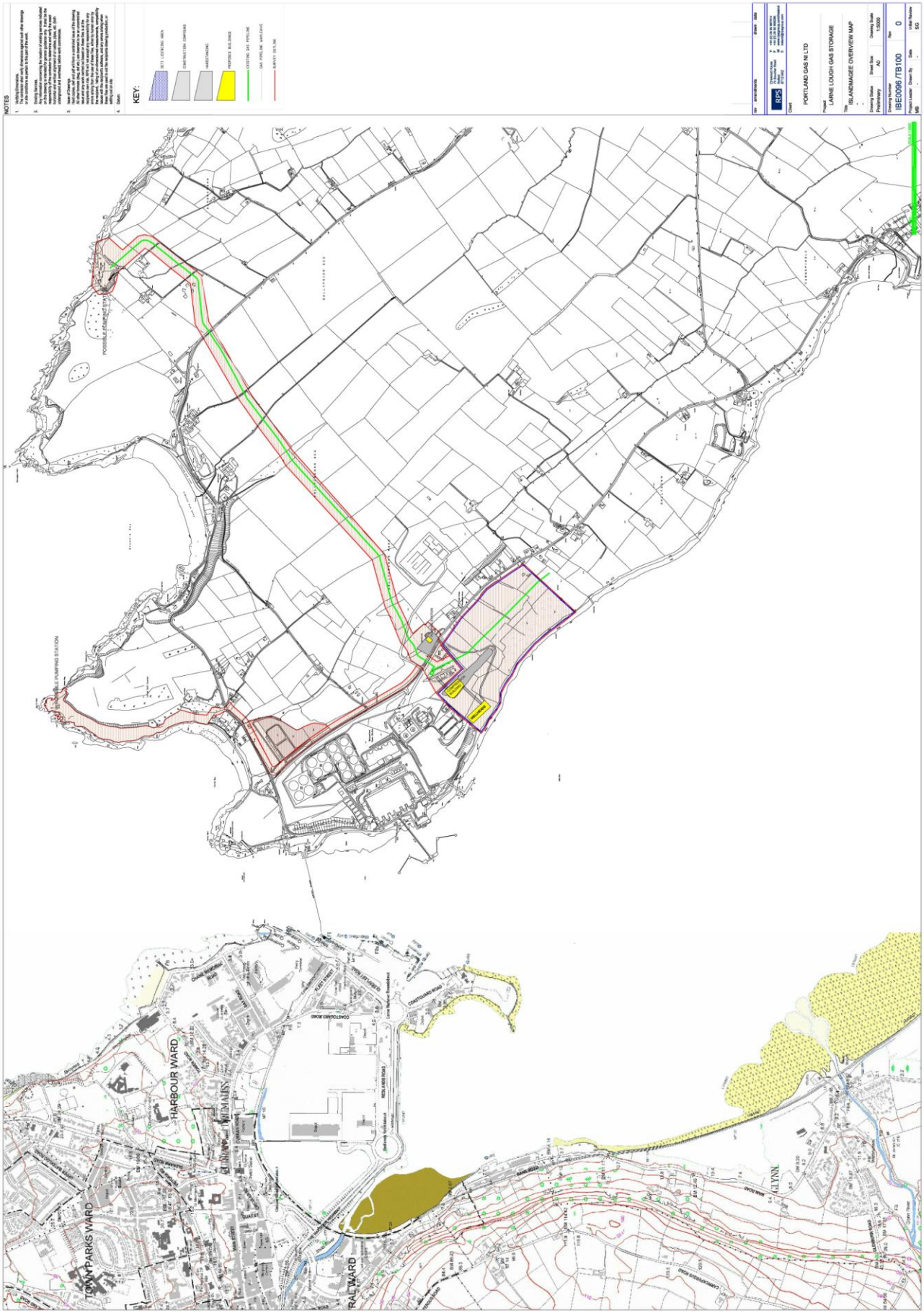

Figure 1 Site layout and location

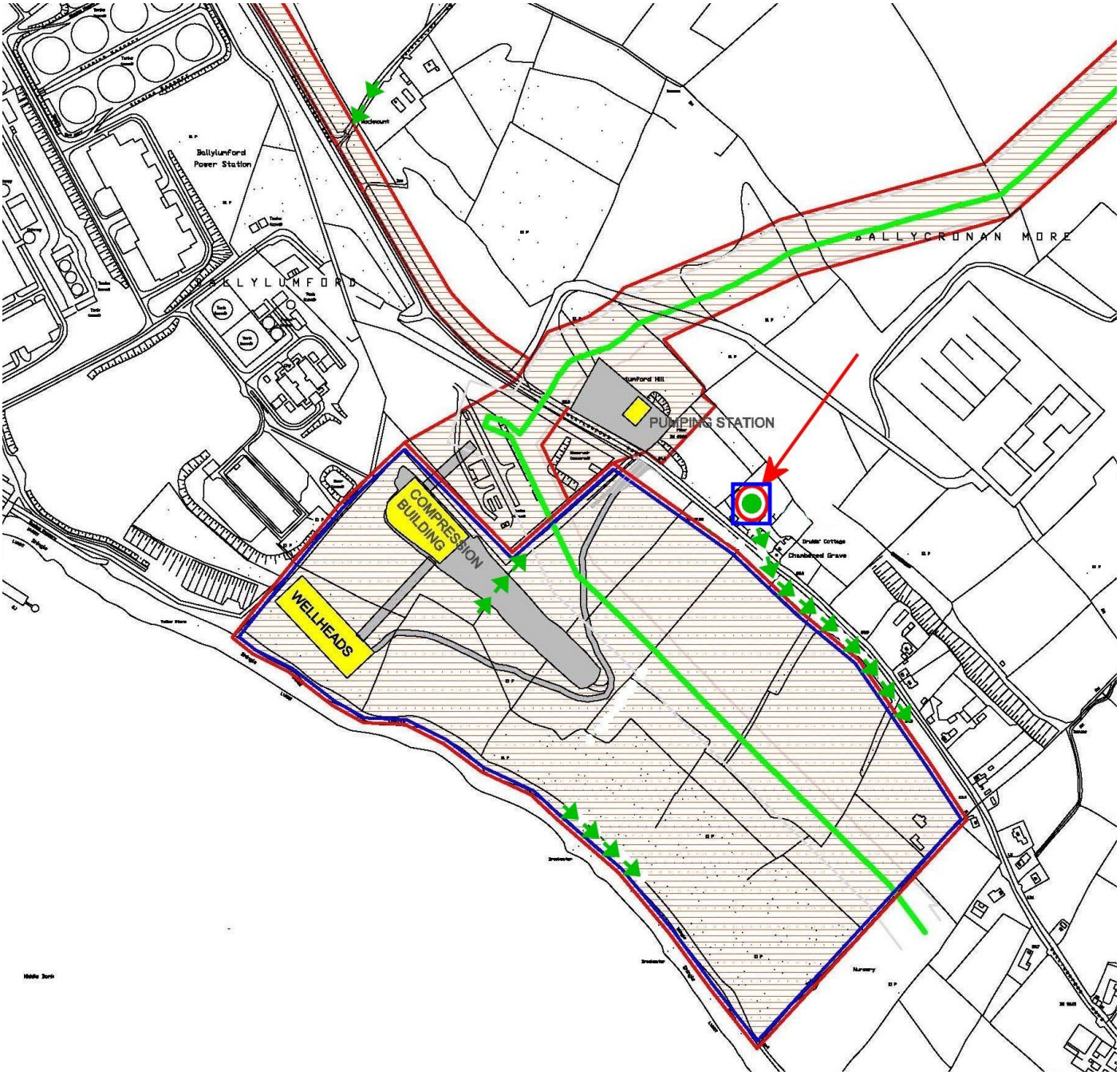

Figure 2 West of the site with simulation of bat activity shown.

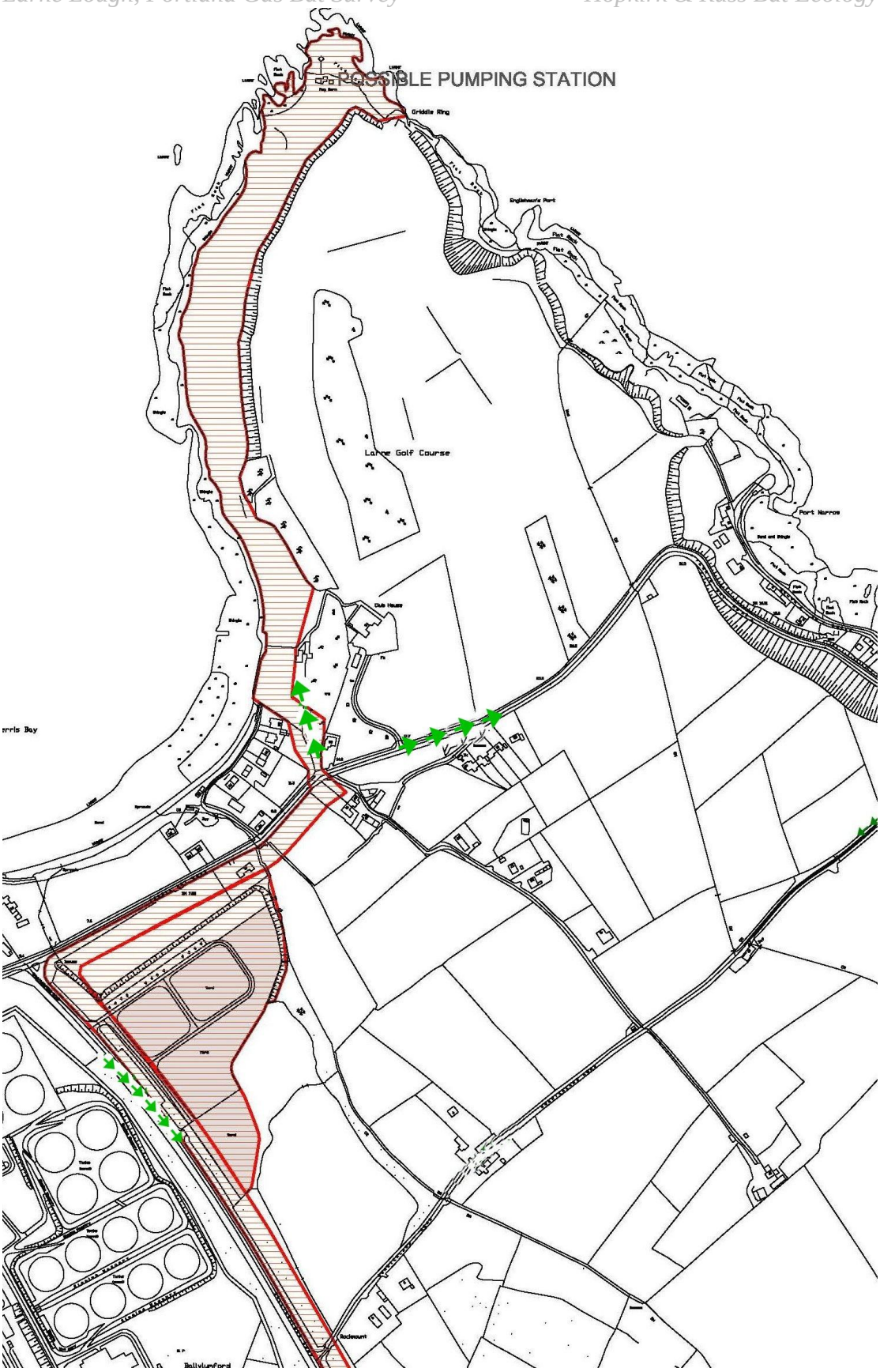

Figure 3 North of the site with simulation of bat activity shown

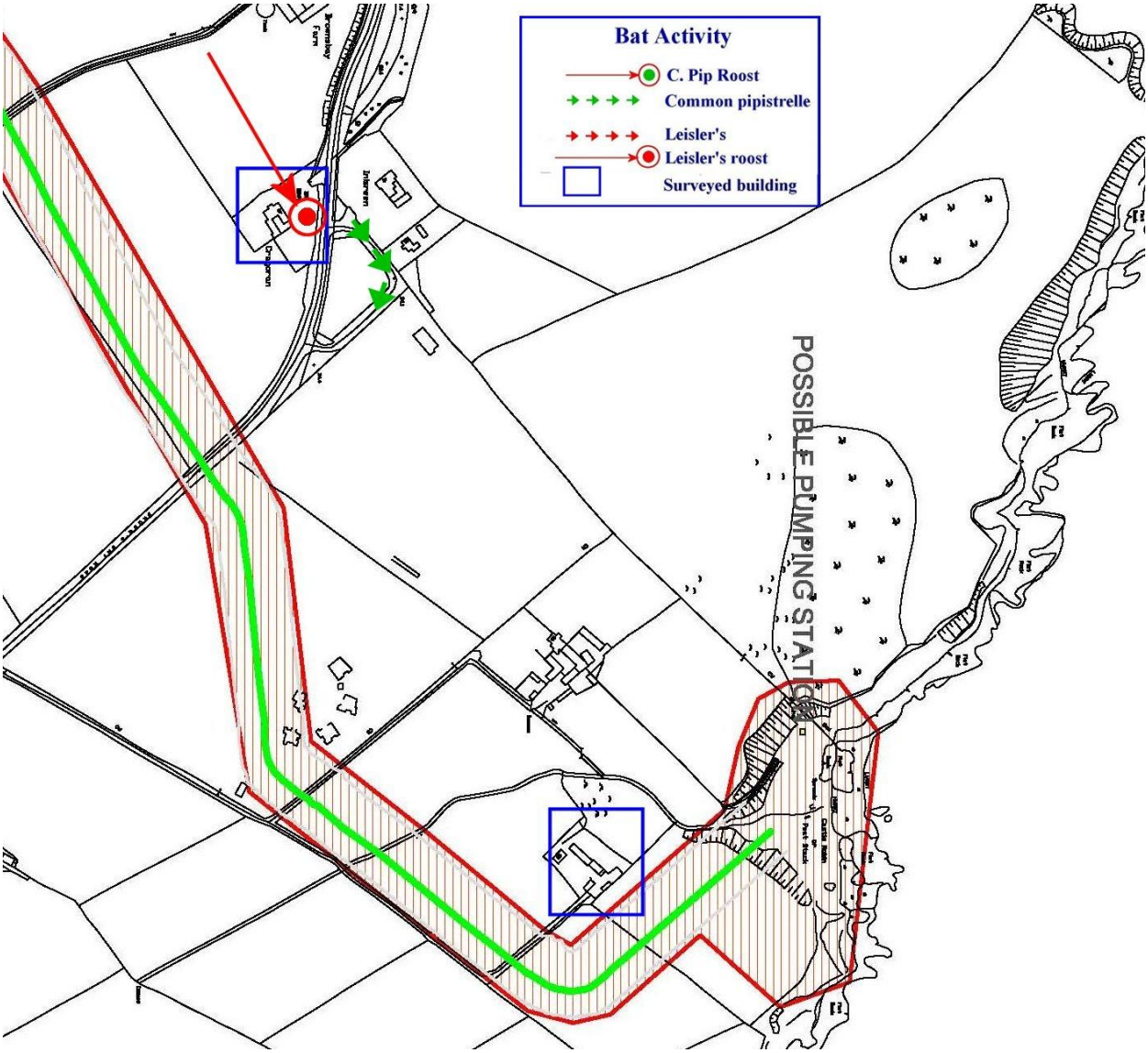

Figure 4 East of the site

Plate 2 Ariel photograph of the proposed pipeline route

LEGAL PROTECTION OF BATS

International protection

Bats are protected by national legislation also protected under several international Conventions, Directives or Agreements. Where these place obligations on the U.K. government, they have been translated into domestic legislation.

- **European Union Directive on the Conservation of Natural Habitats and of Wild Fauna and Flora (Habitats and Species Directive).** This Directive places a legal requirement on all Member States of the European Union to protect specified habitats and species through their own domestic legislation. In the U.K. this has been implemented by the Conservation (Natural Habitats, etc.) Regulations (N.I.), 1994. All species of bat in Northern Ireland are on Annex IV ('European protected species of animal'), which requires they be given full protection.
- **Convention on the Conservation of European Wildlife and Natural Habitats (Bern Convention).** This convention places obligations on Member States to protect threatened or endangered species and their habitats and to ban the use of many unselective methods of capture. It is translated into domestic legislation through the Wildlife (Northern Ireland) Order 1985. All species of bat, except the common pipistrelle, are on Appendix II, which requires that they are given special protection. The common pipistrelle is in Appendix III, which requires the regulation of its exploitation.
- **Convention on the Conservation of Migratory Species of Wild Animals (Bonn Convention).** This global Convention is intended to encourage co-operation between Member Parties in the conservation of species that move between range states. It provides for the protection of migratory species, but its main intended method of operation is to encourage range states to set up Agreements to benefit species listed in Appendix II, which includes all European bats. One such agreement is the *Agreement on the Conservation of Bats in Europe*, 1994. Its main provisions are to restrict the killing or capture of bats; the protection of key bat habitats; the co-ordination of research and conservation experience and work to increase public awareness of bat conservation. These requirements do not appear to need any changes to current U.K. domestic legislation.

Appendix 6

APPENDIX 5.5 LARNE LOUGH SPA NATURA (& ASSI) SITE SYNOPSES & STANDARD DATA FORMS

NATURA 2000

STANDARD DATA FORM

FOR SPECIAL PROTECTION AREAS (SPA)
FOR SITES ELIGIBLE FOR IDENTIFICATION AS SITES OF COMMUNITY IMPORTANCE (SCI)
AND
FOR SPECIAL AREAS OF CONSERVATION (SAC)

1. Site identification:

1.1 Type A

1.2 Site code UK9020042

1.3 Compilation date 199703

1.4 Update 199803

1.5 Relationship with other Natura 2000 sites

1.6 Respondent(s) International Designations, JNCC, Peterborough

1.7 Site name **Larne Lough**

1.8 Site indication and designation classification dates

date site proposed as eligible as SCI	
date confirmed as SCI	
date site classified as SPA	199703
date site designated as SAC	

2. Site location:

2.1 Site centre location

longitude	**latitude**
05 44 38 W	54 48 54 N

2.2 Site area (ha) 395.94

2.3 Site length (km)

2.5 Administrative region

NUTS code	Region name	% cover
UKB	Northern Ireland	100.00%

2.6 Biogeographic region

Alpine	Atlantic	Boreal	Continental	Macaronesia	Mediterranean
	X				

3. Ecological information:

3.1 Annex I habitats

Habitat types present on the site and the site assessment for them:

Annex I habitat	% cover	Representativity	Relative surface	Conservation status	Global assessment

3.2 Annex I birds and regularly occurring migratory birds not listed on Annex I

		Population				Site assessment			
		Resident	Migratory						
Code	Species name		Breed	Winter	Stage	Population	Conservation	Isolation	Global
A046b	*Branta bernicla hrota*			227 I		C		C	
A192	*Sterna dougallii*		6 P			C		C	
A193	*Sterna hirundo*		199 P			B		C	

4. Site description:

4.1 General site character

Habitat classes	% cover
Marine areas. Sea inlets	
Tidal rivers. Estuaries. Mud flats. Sand flats. Lagoons (including saltwork basins)	95.0
Salt marshes. Salt pastures. Salt steppes	5.0
Coastal sand dunes. Sand beaches. Machair	
Shingle. Sea cliffs. Islets	
Inland water bodies (standing water, running water)	
Bogs. Marshes. Water fringed vegetation. Fens	
Heath. Scrub. Maquis and garrigue. Phygrana	
Dry grassland. Steppes	
Humid grassland. Mesophile grassland	
Alpine and sub-alpine grassland	
Improved grassland	
Other arable land	
Broad-leaved deciduous woodland	
Coniferous woodland	
Evergreen woodland	
Mixed woodland	
Non-forest areas cultivated with woody plants (including orchards, groves, vineyards, dehesas)	
Inland rocks. Screes. Sands. Permanent snow and ice	
Other land (including towns, villages, roads, waste places, mines, industrial sites)	
Total habitat cover	**100%**

4.1 Other site characteristics

Soil & geology:

Boulder, Clay, Gravel, Mud, Sedimentary

Geomorphology & landscape:

Coastal, Enclosed coast (including embayment), Estuary, Intertidal rock, Intertidal sediments (including sandflat/mudflat), Lagoon

4.2 Quality and importance

ARTICLE 4.1 QUALIFICATION (79/409/EEC)

During the breeding season the area regularly supports:

Sterna dougallii (Europe - breeding)	1.5% of the all-Ireland breeding population 5 year mean, 1993-1997
Sterna hirundo (Northern/Eastern Europe - breeding)	6.4% of the all-Ireland breeding population 5 year mean, 1993-1997

ARTICLE 4.2 QUALIFICATION (79/409/EEC)

Over winter the area regularly supports:

Branta bernicla hrota (Canada/Ireland)	1.1% of the population 5 year peak mean 1991/92-1995/96

4.3 Vulnerability

Breeding terns are affected by factors such as disturbance, predation from gulls or reduction in suitable breeding habitat due to competition or change in vegetation. It is not known to what extent these factors have affected the tern populations in Larne Lough but a possible reason for the recent decrease in Roseate terns is thought to be due to the species geographically regrouping further south and therefore leaving the northern breeding sites.
Swan Island, where the main tern colony is located, is managed as a National Nature Reserve by the Royal Society for the Protection of Birds. Roseate terns have also recently bred on a small man-made island locally known as the 'Blue-Circle' Island. An existing Conservation Plan for Larne Lough is now under review. This review will up-date existing management prescriptions and refine existing conservation objectives.

5. Site protection status and relation with CORINE biotopes:

5.1 Designation types at national and regional level

Code	% cover
UK01 (NNR)	0.0
UK04 (SSSI/ASSI)	100.0

An Agency within the Department of the Environment for Northern Ireland

ENVIRONMENT AND HERITAGE SERVICE

EC DIRECTIVE 79/409 ON THE CONSERVATION OF WILD BIRDS

LARNE LOUGH SPECIAL PROTECTION AREA

Area: 398 hectares

Geographic co-ordinates: 05° 44' 38" W
54° 48' 54" N

Larne Lough is situated on the Co. Antrim coast in the east of Northern Ireland.

The Special Protection Area site boundary is entirely coincident with both that of the Larne Lough Area of Special Scientific Interest and the Larne Lough Ramsar site.

The site qualifies under Article 4.1 of EC Directive 79/409 on the Conservation of Wild Birds by regularly supporting internationally important numbers of Light-bellied Brent Geese *Branta bernicla hrota* in winter (the five year peak mean for the period 1991/92 to 1995/96 was 227 which comprises 1.1 % of the international population).

Swan Island, which was classified as an SPA in its own right in 1992, still qualifies under Article 4.1 because, in summer, it supports nationally important breeding populations of the following Annex 1 species: Roseate Tern *Sterna dougallii* (the five year mean for the period 1992 to 1996 was 6 pairs which comprises 1.7 % of the Irish population) and Common Tern *Sterna hirundo* (an average of 199 pairs for the period 1992 to 1996 - 6.8 % of the Irish population).

The figure for Roseate Terns is also very close to the number required for international qualification. Swan Island has, in the recent past, held internationally important numbers of breeding Roseate Terns (1% of the international population is 6 pairs).

The Register of European Sites in Northern Ireland
Register reference number UK9020042
Date of registration 17 February 1998

Signed _____
on behalf of the Department of the Environment
for Northern Ireland

DEPARTMENT OF THE ENVIRONMENT FOR NORTHERN IRELAND

DECLARATION OF AREA OF SPECIAL SCIENTIFIC INTEREST AT LARNE LOUGH, COUNTY ANTRIM. ARTICLE 24 OF THE NATURE CONSERVATION AND AMENITY LANDS (NORTHERN IRELAND) ORDER 1985.

The Department of the Environment for Northern Ireland (the Department), having consulted the Council for Nature Conservation and the Countryside and being satisfied that the area delineated and described on the attached map (the area) is of special scientific interest by reason of the flora, fauna and geological features and accordingly needs to be specially protected, hereby declares the area to be an area of special scientific interest to be known as the 'Larne Lough area of special scientific interest'.

The form of the lough is generally structurally controlled by geological faulting, particularly the Larne Lough Fault, most recently active in Tertiary times. Fossiliferous Jurassic (Lower Lias) rocks of planorbis zone age occur at Barney's Point and White House. Erosion of off-shore reefs of Jurassic age yield an exceptionally well-preserved and diverse crinoid fauna on beaches in the north-west corner of the lough. Notable Recent, post 10,000 years ago, sites include the estuarine clay series at Magheramorne tip. These contain abundant remains of the extinct Giant Irish deer Megaceros giganteus.

Rocky shores support patchy fucoid communities on the upper and middle zones and a naturally impoverished community on the lower eulittoral zone, due to the influence of turbid currents.

The mudflats support a single community characterised by a range of polychaete worms including Exogone naidina and Melinna palmata, together with the amphipod Corophium volutator and Baltic Tellin Macoma balthica. The northern mudflats have an abundance of the polychaete Tharyx marioni and Ragworm Hediste diversicolor, the latter typically near the outflows of the brackish lagoons, where salinities are reduced.

The boulder-dominated shore at Barney's Point supports a very unusual community influenced by turbid water currents and characterised by thick mats of the sponge Hymeniacidon spp. on the lower shore. The associated fauna includes bivalves, especially Common Mussel Mytilus edulis, the polychaete worm Polydora ciliata, and the seasquirts Ascidiella scabra and A. conchilega.

The priapulid worm Priapulus caudatus has been noted from the muds at Old Church Bay. This species has only been recorded inter-tidally at one other site in Northern Ireland. The brackish lagoons support an unusual bryozoan community.

Larne Lough is of botanical interest for its maritime plant communities. These include significant areas of saltmarsh, which is generally a scarce habitat in Northern Ireland, and contain a number of notable plant species. The natural transitions from salt to freshwater habitats are also notable.

Beds of Narrow-leaved Eelgrass Zostera angustifolia are present on the intertidal mudflats. These often give way upshore to saltmarsh vegetation, which occurs all around the foreshore, but is most extensive at Ballycarry, in the southern end of the lough. The majority of this has plant communities typical of the middle parts of saltmarsh and is characterised by the dominance of Red Fescue Festuca rubra and Saltmarsh Rush Juncus gerardii. However, the

ASI95082/CWB /JBB

complete zonation, from lower saltmarsh to upper saltmarsh communities, is also represented. A well-developed transition from maritime to brackish and freshwater fen is also present. Also at Ballycarry, where the saltmarsh plain is more extensive, there is a well-developed pattern of drainage channels (creeks) and pools (saltpans). These communities incorporate many typical saltmarsh species as well as a number of scarce plants, such as Lax-flowered Sea-lavender Limonium humile, Saltmarsh Flat-sedge Blysmus rufus, Spring Squill Scilla verna, Frosted Orache Atriplex laciniata and Sea-purslane Atriplex portulacoides.

Some of the saline lagoons on the west shore are also of interest. This is a very rare habitat in Northern Ireland, and the plant communities associated with the transition from open water to terrestrial vegetation are of particular note. The sequence comprises an open water macrophyte community of Eelgrass Zostera marina, Spiral Tasselweed Ruppia cirrhosa, both of which are rare species, and marine algae. The marginal vegetation consists of fringing saltmarsh, which is backed by a series of brackish marsh and fen communities.

Larne Lough provides a significant feeding area for the important tern breeding colony on Swan Island. Over the period 1989-1993 an average of 6 pairs of Roseate Tern Sterna dougallii (1.8% of the European Union's breeding population) was recorded, making this an internationally important area for the species. In addition, over the same period, averages of 174 pairs of Common Tern Sterna hirundo and 123 pairs of Sandwich Tern Sterna sandvicensis (5.6% and 2.7% of the Irish breeding population respectively) occurred. Breeding Arctic Tern Sterna paradisea are present on occasion.

The first record of Irish nesting Mediterranean Gull, Larus melanocephalus occurred in Larne Lough in 1995.

Larne Lough also holds important numbers of wintering waterfowl. Light-bellied Brent Goose Branta bernicla hrota (an average of 202 birds, 1.01% of the international population) are of international importance. Nationally important species are Goldeneye Bucephala clangula (an average of 182 birds, 1.7% of the Irish wintering population), Great Crested Grebe Podiceps cristatus (121, 4.0%), Red-Brested Merganser Mergus serrator (180, 9%) and Shelduck Tadorna tardorna (246, 3.5%). The waders Greenshank Tringa nebularia (15, 1.7%) and Redshank Tringa totanus (415, 1.7%) are also present in nationally significant numbers.

SCHEDULE

The following operations and activities appear to the Department to be likely to damage the flora, fauna and geological interest of the area:

1. Any activity or operation which involves the damage or disturbance by any means of the surface and subsurface of the land, including ploughing, rotovating, harrowing, reclamation and extraction of minerals, including sand, shingle, shell, gravel and peat.

2. Any change in the present annual pattern and intensity of grazing, including any change in the type of livestock used or in supplementary feeding practice.

3. Any change in the established method or frequency of rolling, mowing or cutting.

4. Any change in the annual pattern of application of manure, slurry or artificial fertiliser.

ASI95082/CWB /NM

5. The application of herbicides, fungicides or other chemicals deployed to kill any form of wild plant, other than plants listed as being noxious in the Noxious Weeds (Northern Ireland) Order 1977.

6. The storage or dumping, spreading or discharge of any material not specified under paragraphs 4 or 5 above.

7. The destruction, displacement, removal or cutting of any plant, seed or plant remains, other than for

   (i) plants listed as noxious in the Noxious Weeds (Northern Ireland) Order 1977;

   (ii) normal cutting or mowing regimes for which a consent is not required under paragraph 3 above.

8. The release into the area of any animal (other than in connection with normal grazing practice) or plant. 'Animal' includes birds, mammals, fish, reptiles, amphibians and invertebrates; 'Plant' includes seed, fruit or spore.

9. Burning.

10. Changes in tree or woodland management, including afforestation, planting, clearing, selective felling and coppicing.

11. Construction, removal or disturbance of any permanent or temporary structure including building, engineering or other operations.

12. Alteration of natural or man-made features, the clearance of boulders or large stones and grading of rock faces.

13. Excessive sampling of rocks, minerals, fossils or any other material forming a part of the site.

14. Operations or activities which would affect wetlands (including marsh, fen, rivers, streams and open water), e.g.

   (i) change in the methods or frequency of routine drainage maintenance;

   (ii) modification to the structure of any watercourse;

   (iii) lowering of the water-table, permanently or temporarily;

   (iv) change in the management of bank-side vegetation.

15. The killing or taking of any animal in a manner likely to affect the continued existence of the species within the area except as provided for under the terms of the Wildlife (Northern Ireland) Order 1985, e.g.

   (i) collection of marine organisms such as shellfish.

   (ii) bait digging in intertidal areas.

16. The following activities undertaken in a manner likely to damage or disturb the wildlife of the area:

(i) educational activities;

(ii) research activities;

(iii) recreational activities;

(iv) exercising of animals.

17. Changes in game, waterfowl or fisheries management or fishing or hunting practices.

18. Use of vehicles or craft likely to damage or disturb the wildlife of the area.

Sealed with the Official Seal of the
Department of the Environment for
Northern Ireland on 25 MARCH 1996

J CROWTHER
Assistant Secretary

H. Spratt
CIVIL SERVANT
CLARENCE COURT
BELFAST

FOOTNOTES

(a) Please note that consent by the Department to any of the above operations or activities does not constitute planning permission. Where required, planning permission must be applied for in the usual manner to the Department under Part IV of the Planning (Northern Ireland) Order 1991. Operations or activities covered by planning permission are not normally covered in the list of Notifiable Operations.

(b) Also note that many of the operations and activities listed above are capable of being carried out either on a large scale or in a very small way. While it is impossible to define exactly what is "large" and what is "small", the Department would intend to approach each case in a common sense and practical way. It is very unlikely that small scale operations would give rise for concern and if this was the case the Department would normally give consent, particularly if there is a long history of the operation being undertaken in that precise location.

ASI95082/CWB

/JBB

Area of Special Scientific Interest

Portmuck

Site No: ASSI177

Area (ha): 20.18

Declared Date: 10/23/1997

Confirmed Date: 3/23/1998

County: Co. Antrim

Council(s): Larne BC

Habitat Types: H813, H814, H816, H824

Keywords: Earth Science

Portmuck contains the best exposure of the Cretaceous Hibernian Formation in Northern Ireland, the only occurrence of the mineral sodalite in Ireland and the international type locality of Gobbinsite. A range of other minerals and basalt related features are also present.

The tombolo between Isle of Muck and the mainland is the only such feature on the open coast of Northern Ireland. A range of features associated with formerly higher sealevels are also present.

A range of typical seacliff communities are present together with limited saltmarsh and calcareous grassland.

A notable population of breeding seabirds including Razorbill, Guillemot, Puffin, Kittiwake and Fulmar.

ASSI NAME: The Gobbins

COUNTY: Antrim

LOCAL GOVERNMENT DISTRICT: Larne District Council

IRISH GRID REFERENCE: J484983

AREA: 23.18 ha.

OS MAPS: **1:50,000** 17
1:10,000 71 and 84

DESCRIPTION OF INTEREST:

BIOLOGICAL:

FAUNA: Species: Kittiwake (breeding)
Razorbill (breeding)

HABITAT: Maritime cliff and slope
Intertidal rock

GEOLOGICAL**:** Amygdaloidal basalt containing rare zeolite minerals. Site type locality for 'gobbinsite'

References:

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Mitchell, I.P., Newton, S., Ratcliffe, N. & Dunn, T.E. (2004) *Seabird Populations of Britain and Ireland*. Poyser, London.

Walker, G.P.L. 1960. The amygdale minerals in the Tertiary lavas of Ireland – III. Regional distribution. Mineralogical Magazine, 32, 503-527.

Walker, G.P.L. and Carmichael, I.S.E. 1962A. Garronite, a new zeolite, from Ireland and Iceland. Mineralogical Magazine, 33, 173-186.


Farm
Portmuck Bay
FC
Isle of Muck
CG Lookout
CG Sta
Portmuck
Portmuck Castle
South Head
Two Mouthed Cave
Drumgurland
B 90
Ballyprior
Grave Yard
Mullaghboy
Ashvale Park
Sch
Four Corners
Carnspindle
WHITISH HILL
Chapmans Rock
Ballymoney
PH
Millbay
Mill Bay
Ballytober
ISLAND MAGEE
Ballyhoe Port
Sch
Kilcoan
Barney's Point
Balloo
B 150
Trump Cove
The Gobbins
Hunter's Rock
Seven Caves
Gordon's Leap
DONALDS CARN
Ballyharry
Man-o-War
Drumnadreagh
Loughview
Garage
Cemetery
B 90
Hill's Port

DEPARTMENT OF THE ENVIRONMENT

DECLARATION OF AREA OF SPECIAL SCIENTIFIC INTEREST AT THE GOBBINS, COUNTY ANTRIM. ARTICLE 28 OF THE ENVIRONMENT (NORTHERN IRELAND) ORDER 2002.

The Department of the Environment (the Department), having consulted the Council for Nature Conservation and the Countryside and being satisfied that the area delineated and described on the attached map (the area) is of special scientific interest by reason of the flora and fauna and accordingly needs to be specially protected, hereby declares the area to be an area of special scientific interest to be known as the 'The Gobbins Area of Special Scientific Interest'.

The Gobbins cliffs are of importance for their geological interest, breeding seabird colony and a range of maritime plant communities and notable species. The Gobbins is an area of basalt sea-cliffs, up to 60m in height, on the eastern coast of Island Magee, Co. Antrim.

The basalts at Hill's Port at the south end of The Gobbins cliffs are amygdaloidal (bubbles, or vesicles, in lava that have been filled with minerals) and contain various zeolite minerals; analcime, chabazite, cowlesite, gmelinite, gobbinsite, gonnardite, heulandite, levyne and mesolite have been found here. Some vesicles also contain calcite and travertine. Of particular note is the occurrence of gobbinsite and gonnardite; both are restricted in their occurrence elsewhere and the former actually takes its name from The Gobbins cliffs.

At the time of the Seabird 2000 survey The Gobbins held 791 pairs of Kittiwakes (*Rissa tridactyla*) and 552 Razorbills (*Alca torda)* respectively 1.6% and 1.1% of the all-Ireland populations for these species. The site also supports the only mainland nesting Atlantic Puffins (*Fratercula arctica*) in Northern Ireland and significant populations of Fulmar (*Fulmarus glacialis*), Cormorant (*Phalacrocorax carbo*), Shag (*Phalacrocorax aristotelis*) and Common Guillemot (*Uria aalge*). Peregrine Falcons (*Falco peregrinus*) also breed within the designated area.

The Gobbins is also notable for its maritime cliff plant communities. The diversity of these communities is influenced by a number of factors, including exposure to salt spray, soil depth, aspect, slope and degree of water-logging, in addition to nutrient enrichment from breeding sea-birds.

Much of the area consists of steep vertical cliffs, where the vegetation is restricted to rock ledges. Less vertical slopes include occasional scree deposits and tend to have a more continuous vegetation cover.

The most common species over much of the area is the grass Red Fescue *Festuca rubra*, which achieves high cover values. Some of the less steep slopes are dominated by Bracken *Pteridium aquilinum*. Other prominent components in the sward include Thrift *Armeria maritima*, Common Bird's-foot-trefoil *Lotus corniculatus*, Sea Campion *Silene uniflora* and Kidney Vetch *Anthyllis vulneraria*.

To the south of the area, the cliff vegetation is influenced by the presence of the nesting seabirds, which provide enrichment to the soils through their guano. Additional species such as Hogweed *Heracleum sphondylium*, Sea Mayweed *Tripleurospermum maritimum* and Sea Campion *Silene uniflora* occur here.

Notable plant species include Sea Spleenwort *Asplenium marinum*.

The intertidal area is generally rather narrow, and is dominated by bedrock with wave-cut platforms. Most of the site is very exposed with reduced species diversity, but there are some localised pockets of shelter with high fucoid cover (Spiral Wrack *Fucus spiralis* and Toothed Wrack *Fucus serratus*) and Channelled Wrack *Pelvetia canaliculata* is present in the more sheltered areas. The area is characterised by an upper splash zone dominated by the lichen *Verrucaria maura*. Occasional upper shore rock pools contain ephemeral species of green algae, including *Enteromorpha* spp. and *Cladophora* spp and the brown alga *Chorda filum*. Shallow eulittoral rock pools are characterised by the red alga *Corallina officinalis*.

Many of the exposed mid-shore rocks are dominated by the Acorn barnacle *Semibalanus balanoides* and the Common limpet *Patella vulgata* and there is a zone in the lower eulittoral zone dominated by the red algae *Mastocarpus stellatus*. Common invertebrates include the Periwinkles *Littorina* spp., the Dog Whelk *Nucella lapillus* and the Beadlet Anemone *Actina equina*. The brown algae Oarweed *Laminaria digitata*, Dabberlocks *Alaria esculenta*, Thongweed *Himanthalia elongata* and Cuvie *Laminaria hyperborea* typify lower shores.

SCHEDULE

The following operations and activities appear to the Department to be likely to damage the seabird colonies:

1. Any activity or operation which involves the damage or disturbance by any means of the surface and subsurface of the land, including ploughing, rotovating, harrowing, reclamation and extraction of minerals, including sand, gravel and peat.

2. Any change in the present annual pattern and intensity of grazing, including any change in the type of livestock used or in supplementary feeding practice.

3. The application of manure, slurry or artificial fertiliser.

4. The application of herbicides, fungicides or other chemicals deployed to kill any form of wild plant, other than plants listed as being noxious in the Noxious Weeds (Northern Ireland) Order 1977.

5. The storage or dumping, spreading or discharge of any material not specified under paragraph 5 above.

6. The destruction, displacement, removal or cutting of any plant, seed or plant remains, other than for:

    i. plants listed as noxious in the Noxious Weeds (Northern Ireland) Order 1977;

    ii. normal cutting or mowing regimes for which consent is not required under paragraph 3 above.

7. The release into the area of any animal (other than in connection with normal grazing practice) or plant. 'Animal' includes birds, mammals, fish, reptiles, amphibians and invertebrates; 'Plant' includes seed, fruit or spore.

8. Burning.

9. Construction, removal or disturbance of any permanent or temporary structure including building, engineering or other operations.

10. Alteration of natural or man-made features, the clearance of boulders or large stones and grading of rock faces.

11. The killing or taking of any wild animal except where such killing or taking is treated as an exception in Articles 5, 6, 11, 17, 20, 21 and 22 of the Wildlife (Northern Ireland) Order 1985.

12. The following activities undertaken in a manner likely to damage or disturb the wildlife of the area:

    i. Educational activities;

    ii. Research activities;

    iii. Recreational activities;

    iv. Exercising of animals.

13. Changes in game, waterfowl or fisheries management or fishing or hunting practices.

14. Use of vehicles or craft likely to damage or disturb the wildlife of the area.

15. Sampling of rocks, minerals, fossils or any other material forming a part of the site, undertaken in a manner likely to damage the scientific interest.

FOOTNOTES

(a) Please note that consent by the Department to any of the operations or activities listed in the Schedule does not constitute planning permission. Where required, planning permission must be applied for in the usual manner to the Department under Part IV of the Planning (Northern Ireland) Order 1991.

(b) Also note that many of the operations and activities listed in the Schedule are capable of being carried out either on a large scale or in a very small way. While it is impossible to define exactly what is large and what is small, the Department would intend to approach each case in a common sense and practical way. It is very unlikely that small scale operations would give rise for concern and if this was the case the Department would normally give consent, particularly if there is a long history of the operation being undertaken in that precise location.

THE GOBBINS

Views About Management
The Environment (Northern Ireland) Order 2002 Article 28(2)

A statement of Environment and Heritage Service's views about the management of The Gobbins Area of Special Scientific Interest ("the ASSI")

This statement represents the views of Environment and Heritage Service about the management of the ASSI for nature conservation. This statement sets out, in principle, our views on how the area's special conservation interest can be conserved and enhanced. Environment and Heritage Service has a duty to notify the owners and occupiers of the ASSI of its views about the management of the land.

Not all of the management principles will be equally appropriate to all parts of the ASSI and there may be other management activities, additional to our current views, which can be beneficial to the conservation and enhancement of the features of interest. It is also very important to recognise that management may need to change with time.

The management views set out below do not constitute consent for any operation or activity. The written consent of Environment and Heritage Service is still required before carrying out any operation or activity likely to damage the features of special interest (see the Schedule on pages 3 – 4 for a list of these operations and activities). Environment and Heritage Service welcomes consultation with owners, occupiers and users of the ASSI to ensure that the management of this area maintains and enhances the features of interest, and to ensure that all necessary prior consents are obtained.

MANAGEMENT PRINCIPLES

Areas of coastline holding important colonies of breeding seabirds are scarce in Northern Ireland. Environment and Heritage Service would seek to ensure appropriate management of the area for breeding seabirds, together with the geological and the habitat interests.

Seabird colony

The suitability of the site for breeding seabirds is largely dependent on its physical structure. This determines the availability of nest sites and may reduce the vulnerability of nests to predators. It is therefore important that the physical integrity of the site is maintained as far as is possible, taking into account natural processes.

Environment and Heritage Service would encourage the maintenance and enhancement of the seabird colony through sensitive management of the cliff habitat. Disturbance is another consideration with eggs or young birds on ledges being particularly vulnerable to being accidentally dislodged if adults are startled. Disturbance may affect the breeding success of seabirds, particularly those nesting near the top and base of the cliffs. The source of such disturbance can originate both from the land and the sea. Exceptional activities near the top of the cliffs, including particularly noisy activities, should be avoided during the breeding season (April – July) – routine agricultural activities are unlikely to cause problems.

Material dumped over the cliff top also has the potential to destroy adults, eggs and young and can make nest ledges unusable. Activities which could result in the cliff top being destabilized will have a similar impact. Environment and Heritage Service would hope that these activities could be avoided.

Specific objectives for the breeding seabird include:

1. No rock or mineral extraction should be carried out within the site.

2. Do not undertake exceptional activities near the cliff top which could disturb the birds during the breeding season

3. Avoid inappropriate use of heavy machinery or persistent overgrazing which may weaken the underlying structure and cause collapse.

4. Dumping of waste materials over the cliff edge should not take place

Geology

Earth science features such as those at Hill's Port may require occasional management intervention, this to maintain access to, and fresh exposures of, the geology. This could include selectively removing vegetation.

Specific objectives for the earth science interest include:

1. Maintain the geological series in an undamaged state including slipped material.

2. Maintain access to the geological series.

Habitat

Habitat varies from vertical and near-vertical cliff where vegetation is generally limited, to ledges through less steep slopes which support better soils and more extensive vegetation. Habitat is more varied towards the bottom of the cliff series with vegetated scree and sparsely vegetated cobble and boulder beach heads. The intertidal area comprises either intact rock and/or boulder and cobble beaches. The pattern of all these habitats is determined by the angle and competence of the cliff and slopes, natural rock and debris slippage, storm and tidal effects and the distribution of the seabirds and their droppings.

Care should be taken regarding any activities which affect cliff and slope stability and the naturalness of the various vegetation communities.

Specific objectives for the habitat interest include:

1. No rock or mineral extraction should be carried out within the site.

2. Avoid inappropriate use of heavy machinery or persistent overgrazing which may weaken the underlying structure and cause collapse.

3. Dumping of waste materials over the cliff edge should not take place

4. Ensure that disturbance to the site and its wildlife is minimised.

5. Discourage non-native species, especially those that tend to spread at the expense of native wildlife.

Sealed with the Official Seal of the
Department of the Environment
hereunto affixed is authenticated
by

Mr G R Seymour
Senior Officer of the
Department of the Environment

Dated the of 2007

The Gobbins pASSI – location & extent

APPENDIX 5.6 RPS Open Coast Bird Survey Data (December 20008-August 2009)
BTO Species Codes

Date	AE	BH	CA	CM	CN	CU	EI	FU	LB	GU	GX	HG	OC	ND	RA	RH	RK	RP	SA	SN	SU	TE	TT	TY	WM	Total
02/12/2008	0	3	1	15	0	0	0	0	0	0	0	0	3	2	0	1	2	0	1	0	0	0	1	0	0	29
05/02/2009	0	0	0	4	0	1	0	0	0	0	0	0	2	1	0	3	0	0	2	0	0	0	0	0	0	13
20/02/2009	0	0	2	1	0	2	0	0	0	1	0	3	3	0	0	1	1	0	6	0	2	0	1	2	0	23
09/05/2009	1	0	2	1	2	0	1	0	0	0	1	0	5	1	1	1	0	0	2	1	0	13	0	3	11	31
20/06/2009	2	0	1	1	5	0	0	2	0	4	3	1	2	0	1	0	0	1	9	0	0	10	0	1	0	40
10/08/2009	0	4	2	16	0	1	0	0	3	2	0	0	2	0	5	0	0	0	2	0	0	0	0	0	0	37
Peak Count	2	4	2	16	5	2	1	2	3	4	3	3	5	2	5	3	2	1	10	1	2	13	1	3	11	90
Mean	3	6	5	27	6	3	1	2	3	6	4	4	11	3	6	5	3	1	16	1	2	18	2	5	11	132

Note: This Table should be read with the BTO Species Codes in Appendix 5.8

BTO Species Codes

AX	Alexandrine Parakeet	*Psittacula eupatria*	UG	Budgerigar	*Melopsittacus undulatus*
AC	Arctic Skua	*Stercorarius parasiticus*	BF	Bullfinch	*Pyrrhula pyrrhula*
AE	Arctic Tern	*Sterna paradisaea*	BZ	Buzzard	*Buteo buteo*
AV	Avocet	*Recurvirostra avosetta*	CG	Canada Goose	*Branta canadensis*
HD	Bar-headed Goose	*Anser indicus*	CP	Capercaillie	*Tetrao urogallus*
BO	Barn Owl	*Tyto alba*	C.	Carrion Crow	*Corvus corone corone*
BY	Barnacle Goose	*Branta leucopsis*	CW	Cetti's Warbler	*Cettia cetti*
BA	Bar-tailed Godwit	*Limosa lapponica*	CH	Chaffinch	*Fringilla coelebs*
BE	Bean Goose	*Anser fabalis*	CC	Chiffchaff	*Phylloscopus collybita*
BR	Bearded Tit	*Panurus biarmicus*	HL	Chiloe Wigeon	*Anas sibilatrix*
MZ	Bee-Eater	*Merops apiaster*	CF	Chough	*Pyrrhocorax pyrrhocorax*
BS	Bewick's Swan	*Cygnus columbianus*	KR	Chukar	*Alectoris chukar*
BI	Bittern	*Botaurus stellaris*	CL	Cirl Bunting	*Emberiza cirlus*
BK	Black Grouse	*Tetrao tetrix*	CT	Coal Tit	*Parus ater*
TY	Black Guillemot	*Cepphus grylle*	QL	Cockatiel	*Nymphicus hollandicus*
KB	Black Kite	*Milvus migrans*	CD	Collared Dove	*Streptopelia decaocto*
BX	Black Redstart	*Phoenicurus ochruros*	CM	Common Gull	*Larus canus*
OS	Black Stork	*Ciconia nigra*	SQ	Common Rosefinch	*Carpodacus erythrinus*
AS	Black Swan	*Cygnus atratus*	CS	Common Sandpiper	*Actitis hypoleucos*
BJ	Black Tern	*Chlidonias niger*	CX	Common Scoter	*Melanitta nigra*
B.	Blackbird	*Turdus merula*	CN	Common Tern	*Sterna hirundo*
BC	Blackcap	*Sylvia atricapilla*	CO	Coot	*Fulica atra*
BH	Black-headed Gull	*Larus ridibundus*	CA	Cormorant	*Phalacrocorax carbo*
BN	Black-necked Grebe	*Podiceps nigricollis*	CB	Corn Bunting	*Miliaria calandra*
BW	Black-tailed Godwit	*Limosa limosa*	CE	Corncrake	*Crex crex*
BV	Black-throated Diver	*Gavia arctica*	CQ	Cory's Shearwater	*Calonectris diomedea*
BT	Blue Tit	*Parus caeruleus*	AN	Crane	*Grus grus*
BU	Bluethroat	*Luscinia svecica*	CI	Crested Tit	*Parus cristatus*
OQ	Bobwhite	*Colinus virginianus*	CR	Crossbill	*Loxia curvirostra*
BL	Brambling	*Fringilla montifringilla*	CK	Cuckoo	*Cuculus canorus*
BG	Brent Goose	*Branta bernicla*	CU	Curlew	*Numenius arquata*

CV	Curlew Sandpiper	*Calidris ferruginea*	GQ	Great Shearwater	*Puffinus gravis*
DW	Dartford Warbler	*Sylvia undata*	NX	Great Skua	*Stercorarius skua*
DI	Dipper	*Cinclus cinclus*	GS	Great Spotted Woodpecker	*Dendrocopos major*
DO	Dotterel	*Charadrius morinellus*	GT	Great Tit	*Parus major*
DN	Dunlin	*Calidris alpina*	GE	Green Sandpiper	*Tringa ochropus*
D.	Dunnock	*Prunella modularis*	G.	Green Woodpecker	*Picus viridis*
EG	Egyptian Goose	*Alopochen aegyptiacus*	GR	Greenfinch	*Carduelis chloris*
E.	Eider	*Somateria mollissima*	GK	Greenshank	*Tringa nebularia*
EM	Emperor Goose	*Anser canagica*	H.	Grey Heron	*Ardea cinerea*
FP	Feral Pigeon	*Columba livia*	P.	Grey Partridge	*Perdix perdix*
ZL	Feral/hybrid Goose	*Anser sp*	PL	Grey Phalarope	*Phalaropus fulicarius*
ZF	Feral/hybrid mallard type		GV	Grey Plover	*Pluvialis squatarola*
FD	Ferruginous Duck	*Aythya nyroca*	GL	Grey Wagtail	*Motacilla cinerea*
FF	Fieldfare	*Turdus pilaris*	GJ	Greylag Goose	*Anser anser*
FC	Firecrest	*Regulus ignicapillus*	GU	Guillemot	*Uria aalge*
F.	Fulmar	*Fulmarus glacialis*	HA	Harris Hawk	*Parabuteo unicinctus*
GA	Gadwall	*Anas strepera*	HF	Hawfinch	*Coccothraustes coccothraustes*
GX	Gannet	*Morus bassanus*	FW	Helmetted Guineafowl	*Numidia meleagris*
GW	Garden Warbler	*Sylvia borin*	HH	Hen Harrier	*Circus cyaneus*
GY	Garganey	*Anas querquedula*	HG	Herring Gull	*Larus argentatus*
GZ	Glaucous Gull	*Larus hyperboreus*	HY	Hobby	*Falco subbuteo*
GC	Goldcrest	*Regulus regulus*	HZ	Honey Buzzard	*Pernis apivorus*
EA	Golden Eagle	*Aquila chrysaetos*	HC	Hooded Crow	*Corvus corone cornix*
OL	Golden Oriole	*Oriolus oriolus*	HP	Hoopoe	*Upupa epops*
GF	Golden Pheasant	*Chrysolophus pictus*	HM	House Martin	*Delichon urbica*
GP	Golden Plover	*Pluvialis apricaria*	HS	House Sparrow	*Passer domesticus*
GN	Goldeneye	*Bucephala clangula*	IG	Iceland Gull	*Larus glaucoides*
GO	Goldfinch	*Carduelis carduelis*	IC	Icterine Warbler	*Hippolais icterina*
GD	Goosander	*Mergus merganser*	JS	Jack Snipe	*Lymnocryptes minimus*
GI	Goshawk	*Accipiter gentilis*	JD	Jackdaw	*Corvus monedula*
GH	Grasshopper Warbler	*Locustella naevia*	J.	Jay	*Garrulus glandarius*
GB	Great Black-backed Gull	*Larus marinus*	KP	Kentish Plover	*Charadrius alexandrinus*
GG	Great Crested Grebe	*Podiceps cristatus*	K.	Kestrel	*Falco tinnunculus*

SR	Great Grey Shrike	*Lanius excubitor*	KF	Kingfisher	*Alcedo atthis*
ND	Great Northern Diver	*Gavia immer*	KI	Kittiwake	*Rissa tridactyla*
QW	Great Reed Warbler	*Acrocephalus arundinaceus*	KN	Knot	*Calidris canutus*
LM	Lady Amherst's Pheasant	*Chrysolophus amherstiae*	MY	Muscovy Duck	*Cairina moschata*
FB	Lanner Falcon	*Falco biarmicus*	MS	Mute Swan	*Cygnus olor*
LA	Lapland Bunting	*Calcarius lapponicus*	NT	Night Heron	*Nycticorax nycticorax*
L.	Lapwing	*Vanellus vanellus*	N.	Nightingale	*Luscinia megarhynchos*
TL	Leach's Petrel	*Oceanodroma leucorhoa*	NJ	Nightjar	*Caprimulgus europaeus*
LB	Lesser Black-backed Gull	*Larus fuscus*	NH	Nuthatch	*Sitta europaea*
LR	Lesser Redpoll	*Carduelis cabaret*	OP	Osprey	*Pandion haliaetus*
LS	Lesser Spotted Woodpecker	*Dendrocopos minor*	X.	Other cage bird species	
LW	Lesser Whitethroat	*Sylvia curruca*	OC	Oystercatcher	*Haematopus ostralegus*
LI	Linnet	*Carduelis cannabina*	PC	Parrot Crossbill	*Loxia pytyopsittacus*
LK	Little Auk	*Alle alle*	PX	Peacock	*Parvo cristatus*
ET	Little Egret	*Egretta garzetta*	PP	Pectoral Sandpiper	*Calidris melanotos*
LG	Little Grebe	*Tachybaptus ruficollis*	PE	Peregrine	*Falco peregrinus*
LU	Little Gull	*Larus minutus*	PH	Pheasant	*Phasianus colchicus*
LO	Little Owl	*Athene noctua*	PF	Pied Flycatcher	*Ficedula hypoleuca*
LP	Little Ringed Plover	*Charadrius dubius*	PW	Pied Wagtail	*Motacilla alba*
LX	Little Stint	*Calidris minuta*	PG	Pink-footed Goose	*Anser brachyrhynchus*
AF	Little Tern	*Sterna albifrons*	PT	Pintail	*Anas acuta*
LE	Long-eared Owl	*Asio otus*	PO	Pochard	*Aythya ferina*
LN	Long-tailed Duck	*Clangula hyemalis*	PK	Pomarine Skua	*Stercorarius pomarinus*
OG	Long-tailed Skua	*Stercorarius longicaudus*	PM	Ptarmigan	*Lagopus mutus*
LT	Long-tailed Tit	*Aegithalos caudatus*	PU	Puffin	*Fratercula arctica*
MG	Magpie	*Pica pica*	UR	Purple Heron	*Ardea purpurea*
MA	Mallard	*Anas platyrhynchos*	PS	Purple Sandpiper	*Calidris maritima*
MN	Mandarin	*Aix galericulata*	Q.	Quail	*Coturnix coturnix*
MX	Manx Shearwater	*Puffinus puffinus*	RN	Raven	*Corvus corax*
MR	Marsh Harrier	*Circus aeruginosus*	RA	Razorbill	*Alca torda*
MT	Marsh Tit	*Parus palustris*	RG	Red Grouse	*Lagopus lagopus*
MW	Marsh Warbler	*Acrocephalus palustris*	KT	Red Kite	*Milvus milvus*
MP	Meadow Pipit	*Anthus pratensis*	ED	Red-backed Shrike	*Lanius collurio*
FR	Mealy Redpoll	*Carduelis flammea*	EB	Red-breasted Goose	*Branta ruficollis*

MU	Mediterranean Gull	*Larus melanocephalus*	RM	Red-breasted Merganser	*Mergus serrator*
ML	Merlin	*Falco columbarius*	RQ	Red-crested Pochard	*Marmaronetta angustirostris*
M.	Mistle Thrush	*Turdus viscivorus*	RL	Red-legged Partridge	*Alectoris rufa*
MO	Montagu's Harrier	*Circus pygargus*	RX	Red-necked Grebe	*Podiceps grisegena*
MH	Moorhen	*Gallinula chloropus*	NK	Red-necked Phalarope	*Phalaropus lobatus*
RK	Redshank	*Tringa totanus*	SK	Siskin	*Carduelis spinus*
RT	Redstart	*Phoenicurus phoenicurus*	S.	Skylark	*Alauda arvensis*
RH	Red-throated Diver	*Gavia stellata*	SZ	Slavonian Grebe	*Podiceps auritus*
RE	Redwing	*Turdus iliacus*	SY	Smew	*Mergus albellus*
RB	Reed Bunting	*Emberiza schoeniclus*	SN	Snipe	*Gallinago gallinago*
RW	Reed Warbler	*Acrocephalus scirpaceus*	SB	Snow Bunting	*Plectrophenax nivalis*
RV	Reeve's Pheasant	*Syrmaticus reevesi*	SJ	Snow Goose	*Anser caerulescens*
RZ	Ring Ouzel	*Turdus torquatus*	ST	Song Thrush	*Turdus philomelos*
IN	Ring-billed Gull	*Larus delawarensis*	OT	Sooty Shearwater	*Puffinus griseus*
RP	Ringed Plover	*Charadrius hiaticula*	SH	Sparrowhawk	*Accipiter nisus*
RI	Ring-necked Parakeet	*Psittacula krameri*	NB	Spoonbill	*Platalea leucorodia*
R.	Robin	*Erithacus rubecula*	AK	Spotted Crake	*Porzana porzana*
DV	Rock Dove	*Columba livia*	SF	Spotted Flycatcher	*Muscicapa striata*
RC	Rock Pipit	*Anthus petrosus petrosus*	DR	Spotted Redshank	*Tringa erythropus*
RO	Rook	*Corvus frugilegus*	SG	Starling	*Sturnus vulgaris*
RS	Roseate Tern	*Sterna dougallii*	SD	Stock Dove	*Columba oenas*
RF	Rough-legged Buzzard	*Buteo lagopus*	SC	Stonechat	*Saxicola torquata*
RY	Ruddy Duck	*Oxyura jamaicensis*	TN	Stone-curlew	*Burhinus oedicnemus*
UD	Ruddy Shelduck	*Tadorna ferruginea*	TM	Storm Petrel	*Hydrobates pelagicus*
RU	Ruff	*Philomachus pugnax*	SL	Swallow	*Hirundo rustica*
JF	Saker	*Falco cherrug*	SI	Swift	*Apus apus*
SM	Sand Martin	*Riparia riparia*	TO	Tawny Owl	*Strix aluco*
SS	Sanderling	*Calidris alba*	T.	Teal	*Anas crecca*
TE	Sandwich Tern	*Sterna sandvicensis*	TK	Temminck's Stint	*Calidris temminckii*
VI	Savi's Warbler	*Locustella luscinioides*	TP	Tree Pipit	*Anthus trivialis*
SP	Scaup	*Aythya marila*	TS	Tree Sparrow	*Passer montanus*
CY	Scottish Crossbill	*Loxia scotica*	TC	Treecreeper	*Certhia familiaris*
SW	Sedge Warbler	*Acrocephalus schoenobaenus*	TU	Tufted Duck	*Aythya fuligula*
NS	Serin	*Serinus serinus*	TT	Turnstone	*Arenaria interpres*

SA	Shag	*Phalacrocorax aristotelis*	TD	Turtle Dove	*Streptopelia turtur*
SU	Shelduck	*Tadorna tadorna*	TW	Twite	*Carduelis flavirostris*
SX	Shorelark	*Eremophila alpestris*	VS	Velvet Scoter	*Melanitta fusca*
SE	Short-eared Owl	*Asio flammeus*	WI	Water Pipit	*Anthus petrosus spinoletta*
TH	Short-toed Treecreeper	*Certhia brachydactyla*	WA	Water Rail	*Rallus aquaticus*
SV	Shoveler	*Anas clypeata*	WX	Waxwing	*Bombycilla garrulus*
PV	Silver Pheasant	*Lophura nycthemera*	W.	Wheatear	*Oenanthe oenanthe*
WM	Whimbrel	*Numenius phaeopus*			
WC	Whinchat	*Saxicola rubetra*			
OR	White Stork	*Ciconia ciconia*			
WG	White-fronted Goose	*Anser albifrons*			
WE	White-tailed Eagle	*Haliaeetus albicilla*			
WH	Whitethroat	*Sylvia communis*			
WS	Whooper Swan	*Cygnus Cygnus*			
WN	Wigeon	*Anas penelope*			
WT	Willow Tit	*Parus montanus*			
WW	Willow Warbler	*Phylloscopus trochilus*			
DC	Wood Duck	*Aix sponsa*			
WP	Wood Pigeon	*Columba palumbus*			
OD	Wood Sandpiper	*Tringa glareola*			
WO	Wood Warbler	*Phylloscopus sibilatrix*			
WK	Woodcock	*Scolopax rusticola*			
WL	Woodlark	*Lullula arborea*			
WR	Wren	*Troglodytes troglodytes*			
WY	Wryneck	*Jynx torquilla*			
YW	Yellow Wagtail	*Motacilla flava*			
Y.	Yellowhammer	*Emberiza citrinella*			
YG	Yellow-legged Gull	*Larus arg. michahellis*			
FI	Zebra Finch	*Taeniopygia guttata*			

APPENDIX 5.7 BTO WeBS, BTO NEWS, & JNCC Seabird Data sets for Scheme Area

Five year summary for Inner Larne Lough

Table1: Total Counts - All Species Combined.

Peak monthly total = maximum of the sum of the counts of all species within each month.
Seasonal peaks = sum of the maximum counts of all species within each season.

Year	Peak Monthly Total	Autumn Peak	Winter Peak	Spring Peak
01/02	2202 (MAR)	1886	3243	N/C
02/03	2352 (FEB)	2248	3193	N/C
03/04	3273 (DEC)	1287	3714	N/C
04/05	2243 (DEC)	994	3655	N/C
05/06	3151 (DEC)	1411	3981	N/C
MEAN		1565	3557	N/C

Table2: Five-year average monthly counts of each species.

Figure in parentheses give number of complete and incomplete counts upon which the average is based.
Incomplete counts are excluded from calculation where, if included, they would depress the mean.

Species	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Mute Swan			7(5,.)	11(5,.)	14(4,1)	17(4,1)	13(5,.)	4(5,.)	7(3,1)			
Whooper Swan			0(5,.)	8(5,.)	1(4,1)	0(4,1)	0(5,.)	0(5,.)	1(3,1)			
Chinese Goose			0(5,.)	0(5,.)	1(4,1)	0(4,1)	0(5,.)	0(5,.)	0(4,.)			
Pink-footed Goose			0(5,.)	0(5,.)	0(4,1)	0(5,.)	0(5,.)	1(5,.)	0(3,1)			
Greylag Goose (re-established)			0(5,.)	0(5,.)	4(4,1)	19(4,1)	15(5,.)	18(5,.)	6(3,1)			
Snow Goose			0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(5,.)	1(3,1)			
Light-bellied Brent Goose (East Canadian high Arctic population)			1(5,.)	12(5,.)	69(4,1)	158(4,1)	135(5,.)	158(5,.)	90(3,1)			
Shelduck			6(5,.)	105(5,.)	172(4,1)	384(4,1)	532(5,.)	588(5,.)	423(3,1)			
Wigeon			17(5,.)	134(5,.)	197(4,1)	327(4,1)	238(5,.)	127(5,.)	70(3,1)			
Teal			17(5,.)	97(5,.)	46(4,1)	358(4,1)	218(5,.)	153(5,.)	76(3,1)			
Green-winged Teal			0(5,.)	0(5,.)	0(5,.)	0(4,1)	0(5,.)	0(5,.)	0(3,1)			
Mallard			51(5,.)	37(5,.)	68(4,1)	97(4,1)	51(5,.)	46(5,.)	27(3,1)			
Pintail			0(5,.)	22(5,.)	0(4,1)	0(5,.)	0(5,.)	0(5,.)	0(4,.)			
Eider			9(5,.)	2(5,.)	3(4,1)	0(4,1)	0(5,.)	0(5,.)	4(3,1)			
Goldeneye			0(5,.)	4(5,.)	14(4,1)	18(4,1)	6(5,.)	16(5,.)	10(3,1)			
Red-breasted Merganser			32(5,.)	28(5,.)	33(4,1)	26(4,1)	17(5,.)	14(5,.)	6(3,1)			
Goosander			0(5,.)	0(5,.)	0(4,1)	0(4,1)	0(5,.)	0(5,.)	0(4,.)			
Red-throated Diver			0(5,.)	0(5,.)	0(4,1)	0(4,1)	0(5,.)	0(5,.)	0(3,1)			
Little Grebe			0(5,.)	1(5,.)	3(4,1)	2(4,1)	3(5,.)	3(5,.)	2(3,1)			
Great Crested Grebe			7(5,.)	6(5,.)	12(4,1)	7(4,1)	10(5,.)	2(5,.)	10(3,1)			
Cormorant			10(5,.)	5(5,.)	2(4,1)	6(4,1)	1(5,.)	0(5,.)	0(3,1)			
Shag			4(5,.)	11(5,.)	9(4,1)	11(4,1)	3(5,.)	3(5,.)	0(3,1)			
Little Egret			1(5,.)	0(5,.)	1(4,1)	1(4,1)	0(5,.)	0(5,.)	0(3,1)			
Grey Heron			7(5,.)	8(5,.)	7(4,1)	6(4,1)	4(5,.)	2(5,.)	3(3,1)			
Moorhen			0(5,.)	0(5,.)	1(4,1)	0(4,1)	0(5,.)	0(5,.)	0(3,1)			
Oystercatcher			70(5,.)	96(5,.)	43(4,1)	69(4,1)	63(5,.)	69(5,.)	72(3,1)			
Golden Plover			0(5,.)	10(5,.)	0(4,1)	0(4,1)	7(5,.)	0(5,.)	8(3,1)			
Lapwing			4(5,.)	34(5,.)	170(4,1)	222(4,1)	124(5,.)	167(5,.)	14(3,1)			
Knot			2(5,.)	0(5,.)	17(4,1)	1(4,1)	0(5,.)	0(5,.)	0(3,1)			
Curlew Sandpiper			0(5,.)	0(5,.)	0(4,1)	0(5,.)	0(5,.)	0(5,.)	0(4,.)			
Dunlin			5(5,.)	34(5,.)	84(4,1)	444(4,1)	228(5,.)	224(5,.)	52(3,1)			
Jack Snipe			0(5,.)	1(5,.)	0(4,1)	1(4,1)	0(5,.)	0(5,.)	0(3,1)			
Snipe			1(5,.)	8(5,.)	2(4,1)	20(4,1)	10(5,.)	3(5,.)	10(3,1)			
Black-tailed Godwit			0(5,.)	1(5,.)	0(4,1)	0(4,1)	0(5,.)	0(5,.)	0(3,1)			
Bar-tailed Godwit			2(5,.)	2(5,.)	0(4,1)	0(4,1)	0(5,.)	0(5,.)	0(3,1)			
Whimbrel			0(5,.)	0(5,.)	0(4,1)	1(4,1)	0(5,.)	0(5,.)	0(4,.)			
Curlew			112(5,.)	161(5,.)	165(4,1)	176(4,1)	85(5,.)	115(5,.)	110(3,1)			
Redshank			61(5,.)	167(5,.)	182(4,1)	269(4,1)	98(5,.)	109(5,.)	130(3,1)			
Greenshank			3(5,.)	2(5,.)	4(4,1)	3(4,1)	2(5,.)	1(5,.)	1(3,1)			
Turnstone			0(5,.)	0(5,.)	0(5,.)	0(4,1)	6(5,.)	0(5,.)	0(4,.)			
Black-headed Gull			336(5,.)	118(5,.)	36(4,1)	86(4,1)	70(5,.)	110(5,.)	263(3,1)			
Common Gull			82(5,.)	58(5,.)	15(4,1)	29(4,1)	45(5,.)	39(5,.)	19(3,1)			
Lesser Black-backed Gull			4(5,.)	1(5,.)	0(4,1)	0(4,1)	0(5,.)	0(5,.)	0(3,1)			

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For some species (e.g. wintering geese) data collected by other surveys may be more appropriate for the purpose of site assessment.
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Table2: Five-year average monthly counts of each species.

Figure in parentheses give number of complete and incomplete counts upon which the average is based.
Incomplete counts are excluded from calculation where, if included, they would depress the mean.

Species	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Herring Gull			53(5,.)	22(5,.)	8(4,1)	8(4,1)	23(5,.)	10(5,.)	5(3,1)			
Iceland Gull			0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(5,.)	1(5,.)	0(3,1)			
Glaucous Gull			0(5,.)	0(5,.)	0(5,.)	0(4,1)	0(5,.)	0(5,.)	0(3,1)			
Great Black-backed Gull			6(5,.)	2(5,.)	2(4,1)	0(4,1)	3(5,.)	0(5,.)	0(3,1)			
Sandwich Tern			0(5,.)	0(5,.)	0(4,1)	0(5,.)	0(5,.)	0(5,.)	0(4,.)			
Kingfisher			0(5,.)	0(5,.)	0(4,1)	0(4,1)	0(5,.)	0(5,.)	0(4,.)			

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Table3: Five-year peak monthly counts of each species.

Species	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Mute Swan			18	25	25	22	26	17	10			
Whooper Swan			0	36	3	0	1	0	2			
Chinese Goose			0	0	2	0	2	0	0			
Pink-footed Goose			0	0	0	0	0	2	0			
Greylag Goose (re-established)			0	0	9	41	28	57	9			
Snow Goose			0	0	0	0	0	2	2			
Light-bellied Brent Goose (East Canadian high Arctic population)			5	43	140	235	248	215	202			
Shelduck			11	280	430	646	662	864	776			
Wigeon			61	182	323	549	407	236	89			
Teal			47	280	87	569	406	296	111			
Green-winged Teal			0	0	0	0	0	0	1			
Mallard			74	76	96	173	95	58	49			
Pintail			0	110	0	0	0	0	0			
Eider			15	11	12	0	0	0	10			
Goldeneye			0	11	30	32	14	36	19			
Red-breasted Merganser			60	37	43	30	21	24	15			
Goosander			0	0	1	1	1	0	0			
Red-throated Diver			0	1	0	0	0	0	0			
Little Grebe			1	3	7	3	5	6	3			
Great Crested Grebe			19	28	26	12	23	7	14			
Cormorant			15	17	5	20	2	1	1			
Shag			13	31	20	42	17	17	0			
Little Egret			4	1	2	2	1	1	0			
Grey Heron			10	18	10	8	13	4	5			
Moorhen			0	0	2	0	0	0	0			
Oystercatcher			132	183	89	86	117	127	135			
Golden Plover			0	37	1	0	36	0	25			
Lapwing			12	123	225	472	214	389	34			
Knot			5	0	69	2	1	0	0			
Curlew Sandpiper			2	1	0	0	0	0	0			
Dunlin			22	100	285	906	321	343	112			
Jack Snipe			0	3	0	2	1	0	0			
Snipe			4	18	6	48	48	14	18			
Black-tailed Godwit			1	1	0	0	0	0	0			
Bar-tailed Godwit			8	8	1	0	0	0	0			
Whimbrel			1	0	0	1	0	0	0			
Curlew			148	206	254	227	108	215	171			
Redshank			94	267	275	548	134	151	131			
Greenshank			6	4	9	5	3	2	2			
Turnstone			0	0	0	0	30	0	0			
Black-headed Gull			525	236	54	170	136	207	436			
Common Gull			155	129	37	100	143	127	28			
Lesser Black-backed Gull			19	2	0	0	0	0	0			
Herring Gull			130	38	14	17	42	30	10			

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Table3: Five-year peak monthly counts of each species.

Species	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Iceland Gull			0	0	0	0	0	3	0			
Glaucous Gull			0	0	0	0	0	1	0			
Great Black-backed Gull			14	5	2	0	4	0	0			
Sandwich Tern			2	2	0	0	0	0	0			
Kingfisher			0	1	1	0	0	0	0			

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For some species (e.g. wintering geese) data collected by other surveys may be more appropriate for the purpose of site assessment.
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Table4a: Five-year autumn peak counts, and month in which this was recorded, of each species.

Where a count is enclosed by parentheses this indicates that it was considered incomplete i.e. those parts of the site not visited typically holds at least 25% of the species in question. Incomplete counts are excluded from calculation where, if included, they would depress the mean. When all counts are considered to be incomplete the maximum replaces the mean.

Species	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006	Mean Peak
Mute Swan	10 (OCT)	4 (SEP)	25 (OCT)	18 (SEP)	7 (OCT)	13
Whooper Swan	0	0	36 (OCT)	1 (OCT)	1 (OCT)	8
Light-bellied Brent Goose (East Canadian high Arctic population)	0	43 (OCT)	5 (SEP)	12 (OCT)	6 (OCT)	13
Shelduck	95 (OCT)	280 (OCT)	80 (OCT)	47 (OCT)	25 (OCT)	105
Wigeon	182 (OCT)	154 (OCT)	143 (OCT)	108 (OCT)	83 (OCT)	134
Teal	105 (OCT)	280 (OCT)	18 (SEP)	36 (OCT)	65 (OCT)	101
Mallard	38 (SEP)	74 (SEP)	76 (OCT)	43 (SEP)	47 (SEP)	56
Pintail	110 (OCT)	0	0	0	0	22
Eider	1 (OCT)	15 (SEP)	15 (SEP)	15 (SEP)	1 (SEP)	9
Goldeneye	7 (OCT)	3 (OCT)	11 (OCT)	0	0	4
Red-breasted Merganser	60 (SEP)	26 (OCT)	37 (OCT)	34 (SEP)	37 (SEP)	39
Red-throated Diver	0	1 (OCT)	0	0	0	0
Little Grebe	0	2 (OCT)	3 (OCT)	0	0	1
Great Crested Grebe	28 (OCT)	1 (OCT)	0	9 (SEP)	19 (SEP)	11
Cormorant	15 (SEP)	17 (OCT)	3 (SEP)	8 (SEP)	15 (SEP)	12
Shag	0	31 (OCT)	22 (OCT)	1 (SEP)	0	11
Little Egret	0	0	0	2 (SEP)	4 (SEP)	1
Grey Heron	18 (OCT)	3 (OCT)	9 (SEP)	9 (SEP)	4 (SEP)	9
Oystercatcher	136 (OCT)	183 (OCT)	87 (OCT)	29 (SEP)	53 (SEP)	98
Golden Plover	37 (OCT)	0	13 (OCT)	1 (OCT)	0	10
Lapwing	0	123 (OCT)	26 (OCT)	22 (OCT)	12 (SEP)	37
Knot	0	5 (SEP)	0	3 (SEP)	0	2
Curlew Sandpiper	1 (OCT)	0	2 (SEP)	0	0	1
Dunlin	12 (OCT)	40 (OCT)	22 (SEP)	100 (OCT)	19 (OCT)	39
Jack Snipe	3 (OCT)	0	0	0	0	1
Snipe	18 (OCT)	9 (OCT)	11 (OCT)	0	1 (SEP)	8
Black-tailed Godwit	0	1 (OCT)	1 (OCT)	1 (SEP)	0	1
Bar-tailed Godwit	1 (SEP)	8 (SEP)	0	0	0	2
Whimbrel	0	0	0	1 (SEP)	0	0
Curlew	206 (OCT)	203 (OCT)	169 (OCT)	95 (SEP)	149 (OCT)	164
Redshank	267 (OCT)	127 (OCT)	109 (OCT)	147 (OCT)	187 (OCT)	167
Greenshank	5 (SEP)	3 (OCT)	6 (SEP)	3 (SEP)	0	3
Black-headed Gull	356 (SEP)	385 (SEP)	262 (SEP)	151 (SEP)	525 (SEP)	336
Common Gull	126 (SEP)	155 (SEP)	86 (SEP)	35 (OCT)	19 (SEP)	84
Lesser Black-backed Gull	19 (SEP)	1 (OCT)	1 (SEP)	2 (SEP)	0	5
Herring Gull	18 (SEP)	65 (SEP)	6 (OCT)	47 (SEP)	130 (SEP)	53
Great Black-backed Gull	10 (SEP)	5 (OCT)	1 (SEP)	14 (SEP)	2 (SEP)	6
Sandwich Tern	2 (OCT)	0	2 (SEP)	0	0	1
Kingfisher	0	1 (OCT)	0	0	0	0

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Table4b: Five-year winter peak counts, and month in which this was recorded, of each species.

Where a count is enclosed by parentheses this indicates that it was considered incomplete i.e. those parts of the site not visited typically holds at least 25% of the species in question. Incomplete counts are excluded from calculation where, if included, they would depress the mean. When all counts are considered to be incomplete the maximum replaces the mean.

Species	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006	Mean Peak
Mute Swan	26 (JAN)	25 (NOV)	17 (DEC)	(15) (DEC)	22 (DEC)	23
Whooper Swan	(0)	1 (NOV)	1 (NOV)	2 (MAR)	3 (NOV)	2
Chinese Goose	(0)	2 (NOV)	0	0	0	1
Pink-footed Goose	1 (FEB)	2 (FEB)	0	0	0	1
Greylag Goose (re-established)	57 (FEB)	16 (JAN)	25 (JAN)	8 (NOV)	(9) (MAR)	27
Snow Goose	2 (FEB)	0	0	0	0	0
Light-bellied Brent Goose (East Canadian high Arctic population)	235 (DEC)	125 (FEB)	235 (DEC)	248 (JAN)	215 (FEB)	212
Shelduck	776 (MAR)	592 (FEB)	553 (JAN)	756 (FEB)	864 (FEB)	708
Wigeon	147 (DEC)	251 (DEC)	361 (DEC)	267 (JAN)	549 (DEC)	315
Teal	256 (DEC)	406 (JAN)	569 (DEC)	206 (FEB)	354 (DEC)	358
Green-winged Teal	0	0	0	1 (MAR)	0	0
Mallard	83 (DEC)	63 (DEC)	173 (DEC)	65 (NOV)	96 (NOV)	96
Eider	(0)	0	2 (MAR)	10 (MAR)	12 (NOV)	6
Goldeneye	28 (DEC)	36 (FEB)	32 (DEC)	7 (FEB)	10 (FEB)	23
Red-breasted Merganser	30 (DEC)	37 (NOV)	32 (NOV)	43 (NOV)	24 (FEB)	33
Goosander	(0)	0	0	1 (NOV)	1 (JAN)	1
Little Grebe	6 (FEB)	5 (FEB)	7 (NOV)	5 (JAN)	2 (DEC)	5
Great Crested Grebe	23 (JAN)	8 (JAN)	14 (MAR)	4 (NOV)	26 (NOV)	15
Cormorant	(4) (NOV)	20 (DEC)	1 (NOV)	2 (NOV)	4 (DEC)	7
Shag	(0)	42 (DEC)	17 (FEB)	3 (NOV)	0	16
Little Egret	(0)	0	0	0	2 (NOV)	1
Grey Heron	7 (DEC)	10 (NOV)	4 (DEC)	13 (JAN)	8 (DEC)	8
Moorhen	(0)	0	0	2 (NOV)	0	1
Oystercatcher	135 (MAR)	127 (FEB)	86 (DEC)	(67) (DEC)	117 (JAN)	116
Golden Plover	36 (JAN)	0	0	25 (MAR)	0	12
Lapwing	178 (JAN)	347 (FEB)	472 (DEC)	168 (NOV)	389 (FEB)	311
Knot	(0)	0	69 (NOV)	0	0	17
Dunlin	287 (DEC)	370 (DEC)	326 (DEC)	(906) (DEC)	329 (DEC)	444
Jack Snipe	2 (DEC)	0	1 (DEC)	0	0	1
Snipe	48 (JAN)	2 (NOV)	48 (DEC)	1 (JAN)	0	20
Bar-tailed Godwit	(1) (NOV)	0	0	0	0	0
Whimbrel	1 (DEC)	0	1 (DEC)	0	0	0
Curlew	171 (MAR)	254 (NOV)	171 (DEC)	215 (FEB)	227 (DEC)	208
Redshank	141 (DEC)	275 (NOV)	232 (DEC)	(261) (DEC)	548 (DEC)	299
Greenshank	(2) (NOV)	9 (NOV)	5 (DEC)	2 (NOV)	2 (NOV)	5
Turnstone	30 (JAN)	0	0	0	0	6
Black-headed Gull	436 (MAR)	115 (FEB)	98 (FEB)	276 (MAR)	120 (FEB)	209
Common Gull	54 (JAN)	19 (FEB)	143 (JAN)	26 (JAN)	16 (FEB)	52
Herring Gull	35 (JAN)	30 (JAN)	17 (DEC)	42 (JAN)	30 (FEB)	31
Iceland Gull	0	0	0	3 (FEB)	0	1

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Table4b: Five-year winter peak counts, and month in which this was recorded, of each species.

Where a count is enclosed by parentheses this indicates that it was considered incomplete i.e. those parts of the site not visited typically holds at least 25% of the species in question. Incomplete counts are excluded from calculation where, if included, they would depress the mean. When all counts are considered to be incomplete the maximum replaces the mean.

Species	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006	Mean Peak
Glaucous Gull	0	0	0	1 (FEB)	0	0
Great Black-backed Gull	4 (JAN)	4 (JAN)	2 (NOV)	4 (JAN)	2 (NOV)	3
Kingfisher	(1) (NOV)	0	0	0	0	0

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Table5: National and International importance of the site for each species.

Figures given indicate the percentage of the relevant qualifying level represented by the five year mean peak count for the species in question e.g. 50% indicates that the five year mean peak count is half that required for the site to qualify as nationally or internationally important as appropriate for the species in question. Where a count is enclosed by parentheses this indicates that it was considered incomplete i.e. those parts of the site not visited typically holds at least 25% of the species in question. Asterisks indicate that the percentage presented has been derived using a value of 1% of the national population that is less than 50 (50 is normally used as a minimum threshold for designation of sites).

Species	Autumn cf National Threshold	Winter cf National Threshold	Spring cf National Threshold	Autumn cf International Threshold	Winter cf International Threshold	Spring cf International Threshold	Autumn 5yr mean of peaks	Winter 5yr mean of peaks	Spring 5yr mean of peaks
Mute Swan	13%	23%	N/A	13%	23%	N/A	13	23	
Whooper Swan	8%	2%	N/A	4%	1%	N/A	8	2	
Chinese Goose	N/A	N/A	N/A	N/A	N/A	N/A	0	1	
Pink-footed Goose	N/A	N/A	N/A	0%	0%	N/A	0	1	
Greylag Goose (re-established)	N/A	N/A	N/A	N/A	N/A	N/A	0	27	
Light-bellied Brent Goose (East Canadian high Arctic population)	7%	106%	N/A	5%	82%	N/A	13	212	
Shelduck	150%	1011%	N/A	4%	24%	N/A	105	708	
Wigeon	11%	25%	N/A	1%	2%	N/A	134	315	
Teal	16%	55%	N/A	2%	7%	N/A	101	358	
Mallard	11%	19%	N/A	0%	0%	N/A	56	96	
Pintail	37%	0%	N/A	4%	0%	N/A	22	0	
Eider	*45%	*30%	N/A	0%	0%	N/A	9	6	
Goldeneye	4%	21%	N/A	0%	0%	N/A	4	23	
Red-breasted Merganser	*195%	*165%	N/A	2%	2%	N/A	39	33	
Goosander	N/A	N/A	N/A	0%	0%	N/A	0	1	
Little Grebe	N/A	N/A	N/A	0%	0%	N/A	1	5	
Great Crested Grebe	*37%	*50%	N/A	0%	0%	N/A	11	15	
Cormorant	N/A	N/A	N/A	1%	1%	N/A	12	7	
Shag	N/A	N/A	N/A	1%	1%	N/A	11	16	
Little Egret	N/A	N/A	N/A	0%	0%	N/A	1	1	
Grey Heron	N/A	N/A	N/A	0%	0%	N/A	9	8	
Moorhen	N/A	N/A	N/A	0%	0%	N/A	0	1	
Oystercatcher	20%	23%	N/A	1%	1%	N/A	98	116	
Golden Plover	1%	1%	N/A	0%	0%	N/A	10	12	
Lapwing	1%	12%	N/A	0%	2%	N/A	37	311	
Knot	1%	5%	N/A	0%	0%	N/A	2	17	
Curlew Sandpiper	N/A	N/A	N/A	0%	0%	N/A	1	0	
Dunlin	3%	36%	N/A	0%	3%	N/A	39	444	
Jack Snipe	N/A	0%	N/A	N/A	N/A	N/A	1	1	
Snipe	N/A	N/A	N/A	0%	0%	N/A	8	20	
Black-tailed Godwit	1%	0%	N/A	0%	0%	N/A	1	0	
Bar-tailed Godwit	1%	0%	N/A	0%	0%	N/A	2	0	
Curlew	19%	24%	N/A	2%	2%	N/A	164	208	
Redshank	68%	122%	N/A	6%	11%	N/A	167	299	
Greenshank	N/A	*56%	N/A	0%	0%	N/A	3	5	
Turnstone	0%	3%	N/A	0%	0%	N/A	0	6	

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Table5: National and International importance of the site for each species.

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Species	Autumn cf National Threshold	Winter cf National Threshold	Spring cf National Threshold	Autumn cf International Threshold	Winter cf International Threshold	Spring cf International Threshold	Autumn 5yr mean of peaks	Winter 5yr mean of peaks	Spring 5yr mean of peaks
Black-headed Gull	N/A	N/A	N/A	2%	1%	N/A	336	209	
Common Gull	N/A	N/A	N/A	0%	0%	N/A	84	52	
Lesser Black-backed Gull	N/A	N/A	N/A	0%	0%	N/A	5	0	
Herring Gull	N/A	N/A	N/A	1%	1%	N/A	53	31	
Iceland Gull	N/A	N/A	N/A	N/A	N/A	N/A	0	1	
Great Black-backed Gull	N/A	N/A	N/A	0%	0%	N/A	6	3	
Sandwich Tern	N/A	N/A	N/A	0%	0%	N/A	1	0	

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WeBS
The Wetland Bird Survey

Five year summary for Outer Larne Lough

Table1: Total Counts - All Species Combined.

Peak monthly total = maximum of the sum of the counts of all species within each month.
Seasonal peaks = sum of the maximum counts of all species within each season.

Year	Peak Monthly Total	Autumn Peak	Winter Peak	Spring Peak
01/02	4791 (MAR)	1664	5611	N/C
02/03	1945 (NOV)	1626	2859	N/C
03/04	2446 (FEB)	2067	3135	N/C
04/05	2519 (MAR)	2365	4010	N/C
05/06	1425 (FEB)	1320	2026	N/C
MEAN		1808	3528	N/C

Table2: Five-year average monthly counts of each species.

Figure in parentheses give number of complete and incomplete counts upon which the average is based.
Incomplete counts are excluded from calculation where, if included, they would depress the mean.

Species	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Mute Swan			17(5,.)	17(5,.)	12(4,1)	12(4,1)	10(5,.)	8(5,.)	17(3,1)			
Whooper Swan			0(5,.)	2(5,.)	5(4,1)	3(4,1)	1(5,.)	0(5,.)	0(3,1)			
Greylag Goose (re-established)			0(5,.)	0(5,.)	0(4,1)	0(4,1)	0(5,.)	0(5,.)	0(4,.)			
Bar-headed Goose			0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(4,.)			
Snow Goose			1(5,.)	0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(4,.)			
Light-bellied Brent Goose (East Canadian high Arctic population)			0(5,.)	0(5,.)	0(4,1)	1(4,1)	1(5,.)	4(5,.)	31(3,1)			
Shelduck			0(5,.)	1(5,.)	0(4,1)	4(4,1)	82(5,.)	18(5,.)	8(3,1)			
Wigeon			6(5,.)	42(5,.)	28(4,1)	46(4,1)	52(5,.)	72(5,.)	63(3,1)			
Gadwall			0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(4,.)			
Teal			5(5,.)	7(5,.)	9(4,1)	11(4,1)	16(5,.)	10(5,.)	14(3,1)			
Green-winged Teal			0(5,.)	0(5,.)	1(4,1)	0(4,1)	0(5,.)	0(5,.)	0(4,.)			
Mallard			65(5,.)	43(5,.)	96(4,1)	74(4,1)	60(5,.)	42(5,.)	30(3,1)			
Pochard			0(5,.)	0(5,.)	2(4,1)	5(4,1)	7(5,.)	6(5,.)	0(3,1)			
Tufted Duck			0(5,.)	0(5,.)	0(4,1)	0(4,1)	0(5,.)	0(5,.)	0(3,1)			
Scaup			0(5,.)	0(5,.)	0(4,1)	0(5,.)	0(5,.)	0(5,.)	1(3,1)			
Eider			74(5,.)	32(5,.)	3(4,1)	8(4,1)	6(5,.)	8(5,.)	19(3,1)			
Goldeneye			3(5,.)	6(5,.)	33(4,1)	50(4,1)	54(5,.)	99(5,.)	98(3,1)			
Red-breasted Merganser			76(5,.)	121(5,.)	75(4,1)	48(4,1)	52(5,.)	74(5,.)	120(3,1)			
Goosander			0(5,.)	0(5,.)	0(4,1)	0(4,1)	0(5,.)	0(5,.)	0(4,.)			
Red-throated Diver			0(5,.)	1(5,.)	2(4,1)	1(4,1)	1(5,.)	0(5,.)	1(3,1)			
Great Northern Diver			0(5,.)	0(5,.)	0(4,1)	0(4,1)	1(5,.)	0(5,.)	0(3,1)			
Little Grebe			24(5,.)	45(5,.)	45(4,1)	29(4,1)	21(5,.)	16(5,.)	11(3,1)			
Great Crested Grebe			53(5,.)	55(5,.)	31(4,1)	16(4,1)	15(5,.)	12(5,.)	35(3,1)			
Slavonian Grebe			0(5,.)	0(5,.)	0(4,1)	0(4,1)	1(5,.)	0(5,.)	0(3,1)			
Cormorant			95(5,.)	74(5,.)	72(4,1)	51(4,1)	27(5,.)	14(5,.)	16(3,1)			
Shag			20(5,.)	5(5,.)	20(4,1)	27(4,1)	4(5,.)	3(5,.)	2(3,1)			
Little Egret			0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(4,.)			
Grey Heron			15(5,.)	13(5,.)	18(4,1)	8(4,1)	7(5,.)	3(5,.)	1(3,1)			
Water Rail			0(5,.)	0(5,.)	0(4,1)	0(5,.)	0(5,.)	0(5,.)	0(4,.)			
Moorhen			2(5,.)	3(5,.)	4(4,1)	3(4,1)	0(5,.)	2(5,.)	1(3,1)			
Coot			4(5,.)	5(5,.)	6(4,1)	6(4,1)	1(5,.)	2(5,.)	1(3,1)			
Oystercatcher			192(5,.)	284(5,.)	276(4,1)	201(4,1)	218(5,.)	229(5,.)	176(3,1)			
Ringed Plover			5(5,.)	14(5,.)	0(4,1)	0(4,1)	0(5,.)	0(5,.)	0(3,1)			
Golden Plover			0(5,.)	0(5,.)	0(4,1)	1(4,1)	2(5,.)	0(5,.)	0(3,1)			
Lapwing			46(5,.)	28(5,.)	96(4,1)	215(4,1)	247(5,.)	134(5,.)	14(3,1)			
Knot			1(5,.)	0(5,.)	0(5,.)	0(4,1)	0(5,.)	0(5,.)	0(4,.)			
Sanderling			0(5,.)	0(5,.)	0(4,1)	0(4,1)	0(5,.)	0(5,.)	0(4,.)			
Curlew Sandpiper			0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(4,.)			
Purple Sandpiper			0(5,.)	0(5,.)	0(5,.)	0(4,1)	0(5,.)	1(5,.)	0(3,1)			
Dunlin			5(5,.)	13(5,.)	11(4,1)	20(4,1)	5(5,.)	0(5,.)	2(3,1)			
Snipe			0(5,.)	0(5,.)	13(4,1)	2(4,1)	4(5,.)	6(5,.)	1(3,1)			
Bar-tailed Godwit			1(5,.)	0(5,.)	0(4,1)	0(4,1)	0(5,.)	0(5,.)	0(3,1)			
Whimbrel			0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(4,.)			

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Table2: Five-year average monthly counts of each species.

Figure in parentheses give number of complete and incomplete counts upon which the average is based.
Incomplete counts are excluded from calculation where, if included, they would depress the mean.

Species	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Curlew			110(5,.)	128(5,.)	132(4,1)	97(4,1)	103(5,.)	127(5,.)	103(3,1)			
Redshank			88(5,.)	95(5,.)	125(4,1)	117(4,1)	98(5,.)	209(5,.)	229(3,1)			
Greenshank			3(5,.)	12(5,.)	7(4,1)	4(4,1)	3(5,.)	4(5,.)	3(3,1)			
Turnstone			6(5,.)	8(5,.)	37(4,1)	20(4,1)	24(5,.)	13(5,.)	14(3,1)			
Little Gull			0(5,.)	0(5,.)	0(5,.)	0(4,1)	0(5,.)	0(5,.)	0(4,.)			
Black-headed Gull			326(5,.)	232(5,.)	293(4,1)	318(4,1)	257(5,.)	385(5,.)	1166(3,1)			
Common Gull			84(5,.)	104(5,.)	147(4,1)	228(4,1)	90(5,.)	243(5,.)	778(3,1)			
Lesser Black-backed Gull			0(5,.)	0(5,.)	2(4,1)	0(4,1)	0(5,.)	0(5,.)	1(3,1)			
Herring Gull			38(5,.)	33(5,.)	40(4,1)	62(4,1)	52(5,.)	68(5,.)	81(3,1)			
Iceland Gull			0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(3,1)			
Great Black-backed Gull			5(5,.)	4(5,.)	4(4,1)	4(4,1)	7(5,.)	5(5,.)	2(3,1)			
Kittiwake			4(5,.)	0(5,.)	3(4,1)	0(4,1)	0(5,.)	0(5,.)	0(4,.)			
Sandwich Tern			28(5,.)	2(5,.)	0(4,1)	0(5,.)	0(5,.)	0(5,.)	0(4,.)			
Common Tern			2(5,.)	0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(5,.)	0(4,.)			
Kingfisher			0(5,.)	0(5,.)	0(4,1)	0(4,1)	0(5,.)	0(5,.)	0(4,.)			

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Table3: Five-year peak monthly counts of each species.

Species	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Mute Swan			25	23	30	25	21	17	18			
Whooper Swan			0	9	7	10	6	0	0			
Greylag Goose (re-established)			1	1	0	0	0	0	0			
Bar-headed Goose			1	0	0	0	0	0	0			
Snow Goose			5	0	0	0	0	0	0			
Light-bellied Brent Goose (East Canadian high Arctic population)			0	1	0	4	6	14	48			
Shelduck			0	2	0	17	303	45	19			
Wigeon			18	114	74	93	85	107	79			
Gadwall			2	0	0	0	0	0	0			
Teal			24	16	19	17	26	16	24			
Green-winged Teal			0	0	2	0	0	0	0			
Mallard			126	59	154	117	117	61	45			
Pochard			0	1	3	8	25	13	1			
Tufted Duck			1	0	0	0	1	0	0			
Scaup			0	0	0	0	0	0	2			
Eider			107	52	4	17	17	10	22			
Goldeneye			7	12	91	63	72	145	170			
Red-breasted Merganser			121	199	120	68	60	107	140			
Goosander			0	0	0	1	0	0	0			
Red-throated Diver			1	2	4	2	2	2	3			
Great Northern Diver			0	0	0	0	2	0	1			
Little Grebe			39	77	54	55	37	21	13			
Great Crested Grebe			115	104	71	33	24	30	63			
Slavonian Grebe			1	0	0	0	3	0	0			
Cormorant			137	104	88	117	84	32	27			
Shag			42	17	39	98	11	10	5			
Little Egret			2	0	0	0	0	0	0			
Grey Heron			25	25	37	13	10	6	4			
Water Rail			0	1	0	0	0	0	0			
Moorhen			4	7	10	5	1	4	2			
Coot			12	9	10	8	4	6	2			
Oystercatcher			242	406	375	246	310	329	228			
Ringed Plover			17	37	0	0	0	0	0			
Golden Plover			0	0	0	4	10	0	0			
Lapwing			95	70	137	304	537	170	22			
Knot			3	0	0	0	0	0	0			
Sanderling			1	0	0	0	0	0	0			
Curlew Sandpiper			1	0	0	0	0	0	0			
Purple Sandpiper			0	0	0	0	0	4	0			
Dunlin			17	60	22	76	22	0	6			
Snipe			0	1	30	4	10	11	2			
Bar-tailed Godwit			2	1	0	0	0	0	0			
Whimbrel			2	0	0	0	0	0	0			
Curlew			146	174	180	173	132	188	153			

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Table3: Five-year peak monthly counts of each species.

Species	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Redshank			153	131	152	189	153	304	333			
Greenshank			8	19	13	6	7	8	5			
Turnstone			14	16	66	28	58	39	40			
Little Gull			0	0	0	0	1	0	0			
Black-headed Gull			641	349	385	582	408	621	1624			
Common Gull			157	174	320	644	224	487	1918			
Lesser Black-backed Gull			1	1	7	0	0	1	2			
Herring Gull			56	44	77	161	99	168	189			
Iceland Gull			0	0	0	0	0	1	0			
Great Black-backed Gull			9	6	8	7	14	12	4			
Kittiwake			15	0	12	0	0	0	0			
Sandwich Tern			67	6	0	0	0	0	0			
Common Tern			10	0	0	0	0	0	0			
Kingfisher			1	1	1	0	0	0	0			

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Table4a: Five-year autumn peak counts, and month in which this was recorded, of each species.

Where a count is enclosed by parentheses this indicates that it was considered incomplete i.e. those parts of the site not visited typically holds at least 25% of the species in question. Incomplete counts are excluded from calculation where, if included, they would depress the mean. When all counts are considered to be incomplete the maximum replaces the mean.

Species	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006	Mean Peak
Mute Swan	23 (OCT)	23 (SEP)	25 (SEP)	9 (SEP)	22 (OCT)	20
Whooper Swan	0	0	0	9 (OCT)	0	2
Greylag Goose (re-established)	0	0	0	1 (SEP)	0	0
Bar-headed Goose	1 (SEP)	0	0	0	0	0
Snow Goose	5 (SEP)	0	0	0	0	1
Light-bellied Brent Goose (East Canadian high Arctic population)	0	1 (OCT)	0	0	0	0
Shelduck	0	0	0	2 (OCT)	2 (OCT)	1
Wigeon	6 (SEP)	114 (OCT)	22 (OCT)	65 (OCT)	11 (OCT)	44
Gadwall	2 (SEP)	0	0	0	0	0
Teal	4 (OCT)	0	24 (SEP)	10 (OCT)	16 (OCT)	11
Mallard	126 (SEP)	27 (OCT)	90 (SEP)	73 (SEP)	54 (OCT)	74
Pochard	0	0	0	1 (OCT)	0	0
Tufted Duck	0	0	0	0	1 (SEP)	0
Eider	107 (SEP)	105 (SEP)	40 (SEP)	54 (SEP)	66 (SEP)	74
Goldeneye	4 (OCT)	1 (SEP)	6 (OCT)	12 (OCT)	10 (OCT)	7
Red-breasted Merganser	141 (OCT)	72 (SEP)	98 (OCT)	199 (OCT)	122 (OCT)	126
Red-throated Diver	0	2 (OCT)	0	2 (OCT)	0	1
Little Grebe	16 (SEP)	24 (OCT)	62 (OCT)	77 (OCT)	52 (OCT)	46
Great Crested Grebe	52 (OCT)	104 (OCT)	115 (SEP)	41 (SEP)	47 (OCT)	72
Slavonian Grebe	0	0	1 (SEP)	0	0	0
Cormorant	66 (SEP)	94 (OCT)	137 (SEP)	80 (OCT)	120 (SEP)	99
Shag	0	0	42 (SEP)	21 (SEP)	37 (SEP)	20
Little Egret	0	0	0	2 (SEP)	0	0
Grey Heron	18 (SEP)	3 (SEP)	25 (SEP)	24 (OCT)	9 (SEP)	16
Water Rail	0	1 (OCT)	0	0	0	0
Moorhen	2 (SEP)	1 (OCT)	1 (OCT)	7 (OCT)	3 (SEP)	3
Coot	12 (SEP)	6 (OCT)	0	8 (SEP)	9 (OCT)	7
Oystercatcher	225 (OCT)	142 (OCT)	405 (OCT)	406 (OCT)	242 (SEP)	284
Ringed Plover	37 (OCT)	35 (OCT)	6 (SEP)	2 (SEP)	0	16
Lapwing	77 (SEP)	70 (OCT)	95 (SEP)	43 (SEP)	3 (OCT)	58
Knot	0	2 (SEP)	3 (SEP)	0	0	1
Sanderling	0	0	0	1 (SEP)	0	0
Curlew Sandpiper	0	1 (SEP)	0	0	0	0
Dunlin	60 (OCT)	7 (SEP)	0	17 (SEP)	0	17
Snipe	0	0	0	1 (OCT)	0	0
Bar-tailed Godwit	1 (OCT)	2 (SEP)	0	2 (SEP)	0	1
Whimbrel	0	0	2 (SEP)	0	0	0
Curlew	89 (OCT)	146 (SEP)	117 (OCT)	124 (SEP)	174 (OCT)	130
Redshank	80 (OCT)	131 (OCT)	153 (SEP)	134 (SEP)	30 (SEP)	106
Greenshank	11 (OCT)	5 (OCT)	16 (OCT)	19 (OCT)	7 (OCT)	12

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Table4a: Five-year autumn peak counts, and month in which this was recorded, of each species.

Where a count is enclosed by parentheses this indicates that it was considered incomplete i.e. those parts of the site not visited typically holds at least 25% of the species in question. Incomplete counts are excluded from calculation where, if included, they would depress the mean. When all counts are considered to be incomplete the maximum replaces the mean.

Species	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006	Mean Peak
Turnstone	14 (SEP)	16 (OCT)	2 (SEP)	2 (SEP)	11 (OCT)	9
Black-headed Gull	362 (SEP)	348 (SEP)	289 (OCT)	641 (SEP)	153 (OCT)	359
Common Gull	78 (SEP)	70 (OCT)	174 (OCT)	155 (OCT)	69 (OCT)	109
Lesser Black-backed Gull	1 (SEP)	0	1 (SEP)	0	0	0
Herring Gull	33 (OCT)	41 (OCT)	56 (SEP)	32 (SEP)	38 (SEP)	40
Great Black-backed Gull	9 (SEP)	6 (SEP)	5 (SEP)	4 (SEP)	5 (OCT)	6
Kittiwake	0	0	15 (SEP)	7 (SEP)	0	4
Sandwich Tern	2 (OCT)	25 (SEP)	40 (SEP)	67 (SEP)	7 (SEP)	28
Common Tern	0	0	0	10 (SEP)	0	2
Kingfisher	0	1 (SEP)	0	1 (OCT)	0	0

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Table4b: Five-year winter peak counts, and month in which this was recorded, of each species.

Where a count is enclosed by parentheses this indicates that it was considered incomplete i.e. those parts of the site not visited typically holds at least 25% of the species in question. Incomplete counts are excluded from calculation where, if included, they would depress the mean. When all counts are considered to be incomplete the maximum replaces the mean.

Species	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006	Mean Peak
Mute Swan	(30) (NOV)	12 (NOV)	21 (JAN)	18 (JAN)	10 (DEC)	18
Whooper Swan	(2) (NOV)	6 (NOV)	2 (NOV)	7 (NOV)	10 (DEC)	6
Light-bellied Brent Goose (East Canadian high Arctic population)	30 (MAR)	14 (FEB)	48 (MAR)	15 (MAR)	3 (DEC)	22
Shelduck	(0)	45 (FEB)	80 (JAN)	303 (JAN)	26 (JAN)	114
Wigeon	62 (MAR)	60 (FEB)	79 (FEB)	85 (JAN)	107 (FEB)	79
Teal	20 (JAN)	26 (JAN)	17 (DEC)	22 (JAN)	(24) (MAR)	22
Green-winged Teal	(0)	0	0	2 (NOV)	0	1
Mallard	(154) (NOV)	117 (DEC)	72 (NOV)	102 (JAN)	140 (NOV)	117
Pochard	1 (DEC)	25 (JAN)	13 (FEB)	3 (NOV)	6 (DEC)	10
Tufted Duck	(0)	1 (JAN)	0	0	0	0
Scaup	(0)	0	2 (MAR)	0	0	1
Eider	20 (MAR)	10 (FEB)	22 (MAR)	14 (MAR)	17 (JAN)	17
Goldeneye	170 (MAR)	94 (FEB)	84 (MAR)	72 (JAN)	145 (FEB)	113
Red-breasted Merganser	140 (MAR)	107 (FEB)	125 (MAR)	120 (NOV)	(71) (MAR)	123
Goosander	(0)	0	0	(1) (DEC)	0	0
Red-throated Diver	(0)	2 (NOV)	0	(1) (DEC)	4 (NOV)	2
Great Northern Diver	(0)	2 (JAN)	0	1 (JAN)	0	1
Little Grebe	21 (JAN)	29 (NOV)	55 (DEC)	45 (NOV)	50 (NOV)	40
Great Crested Grebe	63 (MAR)	71 (NOV)	26 (FEB)	33 (NOV)	33 (DEC)	45
Slavonian Grebe	(0)	0	0	3 (JAN)	0	1
Cormorant	84 (JAN)	117 (DEC)	63 (NOV)	86 (NOV)	52 (NOV)	80
Shag	(0)	0	39 (NOV)	11 (NOV)	98 (DEC)	37
Grey Heron	13 (DEC)	10 (JAN)	19 (NOV)	37 (NOV)	11 (DEC)	18
Moorhen	2 (DEC)	10 (NOV)	5 (DEC)	2 (FEB)	5 (DEC)	5
Coot	(9) (NOV)	8 (DEC)	5 (NOV)	6 (FEB)	10 (NOV)	8
Oystercatcher	212 (JAN)	323 (NOV)	298 (FEB)	375 (NOV)	329 (FEB)	307
Golden Plover	4 (DEC)	10 (JAN)	0	0	0	3
Lapwing	304 (DEC)	537 (JAN)	238 (DEC)	209 (JAN)	162 (JAN)	290
Purple Sandpiper	0	0	0	4 (FEB)	0	1
Dunlin	76 (DEC)	22 (JAN)	22 (NOV)	6 (MAR)	2 (DEC)	26
Snipe	9 (JAN)	14 (NOV)	30 (NOV)	2 (NOV)	11 (FEB)	13
Curlew	153 (MAR)	182 (FEB)	188 (FEB)	175 (NOV)	128 (FEB)	165
Redshank	258 (FEB)	152 (NOV)	222 (FEB)	333 (MAR)	189 (DEC)	231
Greenshank	(13) (NOV)	6 (NOV)	6 (DEC)	9 (NOV)	5 (NOV)	8
Turnstone	23 (DEC)	66 (NOV)	28 (DEC)	31 (NOV)	58 (JAN)	41
Little Gull	0	0	0	1 (JAN)	0	0
Black-headed Gull	1624 (MAR)	408 (JAN)	755 (MAR)	1120 (MAR)	(158) (MAR)	977
Common Gull	1918 (MAR)	320 (NOV)	387 (FEB)	(644) (DEC)	73 (NOV)	675
Lesser Black-backed Gull	(0)	0	7 (NOV)	0	0	2
Herring Gull	189 (MAR)	39 (JAN)	168 (FEB)	99 (JAN)	71 (FEB)	113

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Table4b: Five-year winter peak counts, and month in which this was recorded, of each species.

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Species	2001/2002	2002/2003	2003/2004	2004/2005	2005/2006	Mean Peak
Iceland Gull	0	0	0	1 (FEB)	0	0
Great Black-backed Gull	7 (JAN)	14 (JAN)	8 (NOV)	12 (FEB)	6 (JAN)	9
Kittiwake	(0)	0	0	0	12 (NOV)	3
Kingfisher	(0)	0	1 (NOV)	0	0	0

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Table5: National and International importance of the site for each species.

Figures given indicate the percentage of the relevant qualifying level represented by the five year mean peak count for the species in question e.g. 50% indicates that the five year mean peak count is half that required for the site to qualify as nationally or internationally important as appropriate for the species in question. Where a count is enclosed by parentheses this indicates that it was considered incomplete i.e. those parts of the site not visited typically holds at least 25% of the species in question. Asterisks indicate that the percentage presented has been derived using a value of 1% of the national population that is less than 50 (50 is normally used as a minimum threshold for designation of sites).

Species	Autumn cf National Threshold	Winter cf National Threshold	Spring cf National Threshold	Autumn cf International Threshold	Winter cf International Threshold	Spring cf International Threshold	Autumn 5yr mean of peaks	Winter 5yr mean of peaks	Spring 5yr mean of peaks
Mute Swan	20%	18%	N/A	20%	18%	N/A	20	18	
Whooper Swan	2%	6%	N/A	1%	3%	N/A	2	6	
Snow Goose	N/A	N/A	N/A	N/A	N/A	N/A	1	0	
Light-bellied Brent Goose (East Canadian high Arctic population)	0%	11%	N/A	0%	8%	N/A	0	22	
Shelduck	1%	163%	N/A	0%	4%	N/A	1	114	
Wigeon	4%	6%	N/A	0%	1%	N/A	44	79	
Teal	2%	3%	N/A	0%	0%	N/A	11	22	
Green-winged Teal	N/A	N/A	N/A	N/A	N/A	N/A	0	1	
Mallard	15%	23%	N/A	0%	1%	N/A	74	117	
Pochard	0%	3%	N/A	0%	0%	N/A	0	10	
Scaup	*0%	*3%	N/A	0%	0%	N/A	0	1	
Eider	*370%	*85%	N/A	1%	0%	N/A	74	17	
Goldeneye	6%	103%	N/A	0%	1%	N/A	7	113	
Red-breasted Merganser	*630%	*615%	N/A	7%	7%	N/A	126	123	
Red-throated Diver	*10%	*20%	N/A	0%	0%	N/A	1	2	
Great Northern Diver	N/A	N/A	N/A	0%	2%	N/A	0	1	
Little Grebe	N/A	N/A	N/A	1%	1%	N/A	46	40	
Great Crested Grebe	*240%	*150%	N/A	2%	1%	N/A	72	45	
Slavonian Grebe	N/A	N/A	N/A	0%	2%	N/A	0	1	
Cormorant	N/A	N/A	N/A	8%	7%	N/A	99	80	
Shag	N/A	N/A	N/A	1%	2%	N/A	20	37	
Grey Heron	N/A	N/A	N/A	1%	1%	N/A	16	18	
Moorhen	N/A	N/A	N/A	0%	0%	N/A	3	5	
Coot	3%	3%	N/A	0%	0%	N/A	7	8	
Oystercatcher	57%	61%	N/A	3%	3%	N/A	284	307	
Ringed Plover	13%	0%	N/A	2%	0%	N/A	16	0	
Golden Plover	0%	0%	N/A	0%	0%	N/A	0	3	
Lapwing	2%	12%	N/A	0%	1%	N/A	58	290	
Knot	0%	0%	N/A	0%	0%	N/A	1	0	
Purple Sandpiper	*0%	*10%	N/A	0%	0%	N/A	0	1	
Dunlin	1%	2%	N/A	0%	0%	N/A	17	26	
Snipe	N/A	N/A	N/A	0%	0%	N/A	0	13	
Bar-tailed Godwit	1%	0%	N/A	0%	0%	N/A	1	0	
Curlew	15%	19%	N/A	2%	2%	N/A	130	165	
Redshank	43%	94%	N/A	4%	8%	N/A	106	231	
Greenshank	N/A	*89%	N/A	1%	0%	N/A	12	8	

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Species	Autumn cf National Threshold	Winter cf National Threshold	Spring cf National Threshold	Autumn cf International Threshold	Winter cf International Threshold	Spring cf International Threshold	Autumn 5yr mean of peaks	Winter 5yr mean of peaks	Spring 5yr mean of peaks
Turnstone	4%	18%	N/A	1%	3%	N/A	9	41	
Black-headed Gull	N/A	N/A	N/A	2%	5%	N/A	359	977	
Common Gull	N/A	N/A	N/A	1%	3%	N/A	109	675	
Lesser Black-backed Gull	N/A	N/A	N/A	0%	0%	N/A	0	2	
Herring Gull	N/A	N/A	N/A	1%	2%	N/A	40	113	
Great Black-backed Gull	N/A	N/A	N/A	0%	0%	N/A	6	9	
Kittiwake	N/A	N/A	N/A	0%	0%	N/A	4	3	
Sandwich Tern	N/A	N/A	N/A	2%	0%	N/A	28	0	
Common Tern	N/A	N/A	N/A	0%	0%	N/A	2	0	

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SiteCode	Survey	Species Code	Species Name	Count	Habitat	Reg||Area	Approximate Location	Region Code	Admin Region
L$$450604	**1998**	**OC**	**Oystercatcher**	**9**	**Land**	**4506**	**Northern Ireland**	**45**	**Antrim**
S$$450604	**1998**	**CA**	**Cormorant**	**3**	**Sea**	**4506**	**Northern Ireland**	**45**	**Antrim**
T$$450604	**1998**	**OC**	**Oystercatcher**	**12**	**Intertidal**	**4506**	**Northern Ireland**	**45**	**Antrim**
T450604	**2007**	**CU**	**Curlew**	**16**	**Intertidal**	**4506**	**Northern Ireland**	**45**	**Antrim**
T450604	**2007**	**OC**	**Oystercatcher**	**31**	**Intertidal**	**4506**	**Northern Ireland**	**45**	**Antrim**
T450604	**2007**	**PS**	**Purple Sandpiper**	**5**	**Intertidal**	**4506**	**Northern Ireland**	**45**	**Antrim**
T450604	**2007**	**RK**	**Redshank**	**21**	**Intertidal**	**4506**	**Northern Ireland**	**45**	**Antrim**
T450604	**2007**	**RP**	**Ringed Plover**	**7**	**Intertidal**	**4506**	**Northern Ireland**	**45**	**Antrim**
T450604	**2007**	**TT**	**Turnstone**	**11**	**Intertidal**	**4506**	**Northern Ireland**	**45**	**Antrim**
S450604	**2007**	**E_**	**Eider**	**1**	**Sea**	**4506**	**Northern Ireland**	**45**	**Antrim**
S450604	**2007**	**ND**	**Great Northern Diver**	**1**	**Sea**	**4506**	**Northern Ireland**	**45**	**Antrim**
S450604	**2007**	**RH**	**Red-throated Diver**	**1**	**Sea**	**4506**	**Northern Ireland**	**45**	**Antrim**
S450604	**2007**	**SA**	**Shag**	**3**	**Sea**	**4506**	**Northern Ireland**	**45**	**Antrim**
T450601	1985	CU	Curlew	3	Intertidal	4506	Northern Ireland	45	Antrim
T450601	1985	DN	Dunlin	60	Intertidal	4506	Northern Ireland	45	Antrim
T450601	1985	OC	Oystercatcher	39	Intertidal	4506	Northern Ireland	45	Antrim
T450601	1985	RK	Redshank	3	Intertidal	4506	Northern Ireland	45	Antrim
T450601	1985	RP	Ringed Plover	44	Intertidal	4506	Northern Ireland	45	Antrim
T450601	1985	TT	Turnstone	3	Intertidal	4506	Northern Ireland	45	Antrim
T450602	1985	E_	Eider	1	Intertidal	4506	Northern Ireland	45	Antrim
T450603	1985	CU	Curlew	25	Intertidal	4506	Northern Ireland	45	Antrim
T450603	1985	L_	Lapwing	27	Intertidal	4506	Northern Ireland	45	Antrim
T450603	1985	OC	Oystercatcher	1	Intertidal	4506	Northern Ireland	45	Antrim
T450603	1985	RK	Redshank	8	Intertidal	4506	Northern Ireland	45	Antrim
T450603	1985	RP	Ringed Plover	1	Intertidal	4506	Northern Ireland	45	Antrim
T450603	1985	TT	Turnstone	14	Intertidal	4506	Northern Ireland	45	Antrim
T450605	1985	CU	Curlew	12	Intertidal	4506	Northern Ireland	45	Antrim
T450605	1985	OC	Oystercatcher	18	Intertidal	4506	Northern Ireland	45	Antrim
T450605	1985	RK	Redshank	2	Intertidal	4506	Northern Ireland	45	Antrim
L$$450601	1998	CU	Curlew	3	Land	4506	Northern Ireland	45	Antrim
L$$450601	1998	OC	Oystercatcher	3	Land	4506	Northern Ireland	45	Antrim
L$$450601	1998	RK	Redshank	2	Land	4506	Northern Ireland	45	Antrim
S$$450601	1998	CA	Cormorant	6	Sea	4506	Northern Ireland	45	Antrim
S$$450601	1998	ND	Great Northern Diver	1	Sea	4506	Northern Ireland	45	Antrim
T$$450601	1998	DN	Dunlin	100	Intertidal	4506	Northern Ireland	45	Antrim

T$$450601	1998	PS	Purple Sandpiper	1	Intertidal	4506	Northern Ireland	45	Antrim
T$$450601	1998	RK	Redshank	3	Intertidal	4506	Northern Ireland	45	Antrim
T$$450601	1998	RP	Ringed Plover	21	Intertidal	4506	Northern Ireland	45	Antrim
S450601	2007	CA	Cormorant	8	Sea	4506	Northern Ireland	45	Antrim
S450601	2007	E_	Eider	5	Sea	4506	Northern Ireland	45	Antrim
S450601	2007	GG	Great Crested Grebe	2	Sea	4506	Northern Ireland	45	Antrim
S450601	2007	RM	Red-breasted Merganser	2	Sea	4506	Northern Ireland	45	Antrim
S450601	2007	SA	Shag	26	Sea	4506	Northern Ireland	45	Antrim
S450602	2007	CA	Cormorant	2	Sea	4506	Northern Ireland	45	Antrim
S450602	2007	E_	Eider	5	Sea	4506	Northern Ireland	45	Antrim
S450602	2007	RH	Red-throated Diver	2	Sea	4506	Northern Ireland	45	Antrim
S450602	2007	SA	Shag	4	Sea	4506	Northern Ireland	45	Antrim
S450603	2007	E_	Eider	2	Sea	4506	Northern Ireland	45	Antrim
S450603	2007	GG	Great Crested Grebe	4	Sea	4506	Northern Ireland	45	Antrim
S450603	2007	GN	Goldeneye	5	Sea	4506	Northern Ireland	45	Antrim
S450603	2007	ND	Great Northern Diver	1	Sea	4506	Northern Ireland	45	Antrim
S450603	2007	RH	Red-throated Diver	3	Sea	4506	Northern Ireland	45	Antrim
S450603	2007	RM	Red-breasted Merganser	3	Sea	4506	Northern Ireland	45	Antrim
S450603	2007	SA	Shag	5	Sea	4506	Northern Ireland	45	Antrim
S450605	2007	CA	Cormorant	7	Sea	4506	Northern Ireland	45	Antrim
S450605	2007	E_	Eider	9	Sea	4506	Northern Ireland	45	Antrim
S450605	2007	ND	Great Northern Diver	2	Sea	4506	Northern Ireland	45	Antrim
S450605	2007	RH	Red-throated Diver	11	Sea	4506	Northern Ireland	45	Antrim
S450605	2007	RM	Red-breasted Merganser	3	Sea	4506	Northern Ireland	45	Antrim
S450605	2007	SA	Shag	18	Sea	4506	Northern Ireland	45	Antrim
S450606	2007	CA	Cormorant	1	Sea	4506	Northern Ireland	45	Antrim
S450606	2007	E_	Eider	2	Sea	4506	Northern Ireland	45	Antrim
S450606	2007	RH	Red-throated Diver	3	Sea	4506	Northern Ireland	45	Antrim
S450606	2007	SA	Shag	5	Sea	4506	Northern Ireland	45	Antrim
T450601	2007	CU	Curlew	5	Intertidal	4506	Northern Ireland	45	Antrim
T450601	2007	DN	Dunlin	3	Intertidal	4506	Northern Ireland	45	Antrim
T450601	2007	H_	Grey Heron	1	Intertidal	4506	Northern Ireland	45	Antrim
T450601	2007	OC	Oystercatcher	37	Intertidal	4506	Northern Ireland	45	Antrim
T450601	2007	RK	Redshank	17	Intertidal	4506	Northern Ireland	45	Antrim
T450601	2007	RP	Ringed Plover	4	Intertidal	4506	Northern Ireland	45	Antrim
T450601	2007	TT	Turnstone	8	Intertidal	4506	Northern Ireland	45	Antrim

T450602	2007	CU	Curlew	3	Intertidal	4506	Northern Ireland	45	Antrim
T450602	2007	OC	Oystercatcher	3	Intertidal	4506	Northern Ireland	45	Antrim
T450602	2007	PS	Purple Sandpiper	4	Intertidal	4506	Northern Ireland	45	Antrim
T450603	2007	BG	Brent Goose	9	Intertidal	4506	Northern Ireland	45	Antrim
T450603	2007	CU	Curlew	4	Intertidal	4506	Northern Ireland	45	Antrim
T450603	2007	OC	Oystercatcher	28	Intertidal	4506	Northern Ireland	45	Antrim
T450603	2007	RK	Redshank	2	Intertidal	4506	Northern Ireland	45	Antrim
T450603	2007	RP	Ringed Plover	1	Intertidal	4506	Northern Ireland	45	Antrim
T450603	2007	TT	Turnstone	17	Intertidal	4506	Northern Ireland	45	Antrim
T450605	2007	CU	Curlew	11	Intertidal	4506	Northern Ireland	45	Antrim
T450605	2007	OC	Oystercatcher	9	Intertidal	4506	Northern Ireland	45	Antrim
T450605	2007	RK	Redshank	5	Intertidal	4506	Northern Ireland	45	Antrim
T450605	2007	RP	Ringed Plover	1	Intertidal	4506	Northern Ireland	45	Antrim
T450605	2007	TT	Turnstone	9	Intertidal	4506	Northern Ireland	45	Antrim


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JNCC Seabird 2000 Land-based Counts of Larne Lough Black Guillemot *Cephhus Grylle* - Accurate within Ideal Survey Period

Subsite	StartDate	EndDate	Count	Qualifier	Habitat1	Habitat2	CountQuality
Barr's Head to Black Head	01/04/2000	30/04/2000	108	Individuals on land	H1	I1	3
Larne Lough	01/04/2000	30/04/2000	112	Individuals on land	H2		3

BTO Species Codes

AX	Alexandrine Parakeet	*Psittacula eupatria*	UG	Budgerigar	*Melopsittacus undulatus*
AC	Arctic Skua	*Stercorarius parasiticus*	BF	Bullfinch	*Pyrrhula pyrrhula*
AE	Arctic Tern	*Sterna paradisaea*	BZ	Buzzard	*Buteo buteo*
AV	Avocet	*Recurvirostra avosetta*	CG	Canada Goose	*Branta canadensis*
HD	Bar-headed Goose	*Anser indicus*	CP	Capercaillie	*Tetrao urogallus*
BO	Barn Owl	*Tyto alba*	C.	Carrion Crow	*Corvus corone corone*
BY	Barnacle Goose	*Branta leucopsis*	CW	Cetti's Warbler	*Cettia cetti*
BA	Bar-tailed Godwit	*Limosa lapponica*	CH	Chaffinch	*Fringilla coelebs*
BE	Bean Goose	*Anser fabalis*	CC	Chiffchaff	*Phylloscopus collybita*
BR	Bearded Tit	*Panurus biarmicus*	HL	Chiloe Wigeon	*Anas sibilatrix*
MZ	Bee-Eater	*Merops apiaster*	CF	Chough	*Pyrrhocorax pyrrhocorax*
BS	Bewick's Swan	*Cygnus columbianus*	KR	Chukar	*Alectoris chukar*
BI	Bittern	*Botaurus stellaris*	CL	Cirl Bunting	*Emberiza cirlus*
BK	Black Grouse	*Tetrao tetrix*	CT	Coal Tit	*Parus ater*
TY	Black Guillemot	*Cepphus grylle*	QL	Cockatiel	*Nymphicus hollandicus*
KB	Black Kite	*Milvus migrans*	CD	Collared Dove	*Streptopelia decaocto*
BX	Black Redstart	*Phoenicurus ochruros*	CM	Common Gull	*Larus canus*
OS	Black Stork	*Ciconia nigra*	SQ	Common Rosefinch	*Carpodacus erythrinus*
AS	Black Swan	*Cygnus atratus*	CS	Common Sandpiper	*Actitis hypoleucos*
BJ	Black Tern	*Chlidonias niger*	CX	Common Scoter	*Melanitta nigra*
B.	Blackbird	*Turdus merula*	CN	Common Tern	*Sterna hirundo*
BC	Blackcap	*Sylvia atricapilla*	CO	Coot	*Fulica atra*
BH	Black-headed Gull	*Larus ridibundus*	CA	Cormorant	*Phalacrocorax carbo*
BN	Black-necked Grebe	*Podiceps nigricollis*	CB	Corn Bunting	*Miliaria calandra*
BW	Black-tailed Godwit	*Limosa limosa*	CE	Corncrake	*Crex crex*
BV	Black-throated Diver	*Gavia arctica*	CQ	Cory's Shearwater	*Calonectris diomedea*
BT	Blue Tit	*Parus caeruleus*	AN	Crane	*Grus grus*
BU	Bluethroat	*Luscinia svecica*	CI	Crested Tit	*Parus cristatus*
OQ	Bobwhite	*Colinus virginianus*	CR	Crossbill	*Loxia curvirostra*
BL	Brambling	*Fringilla montifringilla*	CK	Cuckoo	*Cuculus canorus*
BG	Brent Goose	*Branta bernicla*	CU	Curlew	*Numenius arquata*

CV	Curlew Sandpiper	*Calidris ferruginea*	GQ	Great Shearwater	*Puffinus gravis*
DW	Dartford Warbler	*Sylvia undata*	NX	Great Skua	*Stercorarius skua*
DI	Dipper	*Cinclus cinclus*	GS	Great Spotted Woodpecker	*Dendrocopos major*
DO	Dotterel	*Charadrius morinellus*	GT	Great Tit	*Parus major*
DN	Dunlin	*Calidris alpina*	GE	Green Sandpiper	*Tringa ochropus*
D.	Dunnock	*Prunella modularis*	G.	Green Woodpecker	*Picus viridis*
EG	Egyptian Goose	*Alopochen aegyptiacus*	GR	Greenfinch	*Carduelis chloris*
E.	Eider	*Somateria mollissima*	GK	Greenshank	*Tringa nebularia*
EM	Emperor Goose	*Anser canagica*	H.	Grey Heron	*Ardea cinerea*
FP	Feral Pigeon	*Columba livia*	P.	Grey Partridge	*Perdix perdix*
ZL	Feral/hybrid Goose	*Anser sp*	PL	Grey Phalarope	*Phalaropus fulicarius*
ZF	Feral/hybrid mallard type		GV	Grey Plover	*Pluvialis squatarola*
FD	Ferruginous Duck	*Aythya nyroca*	GL	Grey Wagtail	*Motacilla cinerea*
FF	Fieldfare	*Turdus pilaris*	GJ	Greylag Goose	*Anser anser*
FC	Firecrest	*Regulus ignicapillus*	GU	Guillemot	*Uria aalge*
F.	Fulmar	*Fulmarus glacialis*	HA	Harris Hawk	*Parabuteo unicinctus*
GA	Gadwall	*Anas strepera*	HF	Hawfinch	*Coccothraustes coccothraustes*
GX	Gannet	*Morus bassanus*	FW	Helmetted Guineafowl	*Numidia meleagris*
GW	Garden Warbler	*Sylvia borin*	HH	Hen Harrier	*Circus cyaneus*
GY	Garganey	*Anas querquedula*	HG	Herring Gull	*Larus argentatus*
GZ	Glaucous Gull	*Larus hyperboreus*	HY	Hobby	*Falco subbuteo*
GC	Goldcrest	*Regulus regulus*	HZ	Honey Buzzard	*Pernis apivorus*
EA	Golden Eagle	*Aquila chrysaetos*	HC	Hooded Crow	*Corvus corone cornix*
OL	Golden Oriole	*Oriolus oriolus*	HP	Hoopoe	*Upupa epops*
GF	Golden Pheasant	*Chrysolophus pictus*	HM	House Martin	*Delichon urbica*
GP	Golden Plover	*Pluvialis apricaria*	HS	House Sparrow	*Passer domesticus*
GN	Goldeneye	*Bucephala clangula*	IG	Iceland Gull	*Larus glaucoides*
GO	Goldfinch	*Carduelis carduelis*	IC	Icterine Warbler	*Hippolais icterina*
GD	Goosander	*Mergus merganser*	JS	Jack Snipe	*Lymnocryptes minimus*
GI	Goshawk	*Accipiter gentilis*	JD	Jackdaw	*Corvus monedula*
GH	Grasshopper Warbler	*Locustella naevia*	J.	Jay	*Garrulus glandarius*
GB	Great Black-backed Gull	*Larus marinus*	KP	Kentish Plover	*Charadrius alexandrinus*
GG	Great Crested Grebe	*Podiceps cristatus*	K.	Kestrel	*Falco tinnunculus*

SR	Great Grey Shrike	*Lanius excubitor*	KF	Kingfisher	*Alcedo atthis*
ND	Great Northern Diver	*Gavia immer*	KI	Kittiwake	*Rissa tridactyla*
QW	Great Reed Warbler	*Acrocephalus arundinaceus*	KN	Knot	*Calidris canutus*
LM	Lady Amherst's Pheasant	*Chrysolophus amherstiae*	MY	Muscovy Duck	*Cairina moschata*
FB	Lanner Falcon	*Falco biarmicus*	MS	Mute Swan	*Cygnus olor*
LA	Lapland Bunting	*Calcarius lapponicus*	NT	Night Heron	*Nycticorax nycticorax*
L.	Lapwing	*Vanellus vanellus*	N.	Nightingale	*Luscinia megarhynchos*
TL	Leach's Petrel	*Oceanodroma leucorhoa*	NJ	Nightjar	*Caprimulgus europaeus*
LB	Lesser Black-backed Gull	*Larus fuscus*	NH	Nuthatch	*Sitta europaea*
LR	Lesser Redpoll	*Carduelis cabaret*	OP	Osprey	*Pandion haliaetus*
LS	Lesser Spotted Woodpecker	*Dendrocopos minor*	X.	Other cage bird species	
LW	Lesser Whitethroat	*Sylvia curruca*	OC	Oystercatcher	*Haematopus ostralegus*
LI	Linnet	*Carduelis cannabina*	PC	Parrot Crossbill	*Loxia pytyopsittacus*
LK	Little Auk	*Alle alle*	PX	Peacock	*Parvo cristatus*
ET	Little Egret	*Egretta garzetta*	PP	Pectoral Sandpiper	*Calidris melanotos*
LG	Little Grebe	*Tachybaptus ruficollis*	PE	Peregrine	*Falco peregrinus*
LU	Little Gull	*Larus minutus*	PH	Pheasant	*Phasianus colchicus*
LO	Little Owl	*Athene noctua*	PF	Pied Flycatcher	*Ficedula hypoleuca*
LP	Little Ringed Plover	*Charadrius dubius*	PW	Pied Wagtail	*Motacilla alba*
LX	Little Stint	*Calidris minuta*	PG	Pink-footed Goose	*Anser brachyrhynchus*
AF	Little Tern	*Sterna albifrons*	PT	Pintail	*Anas acuta*
LE	Long-eared Owl	*Asio otus*	PO	Pochard	*Aythya ferina*
LN	Long-tailed Duck	*Clangula hyemalis*	PK	Pomarine Skua	*Stercorarius pomarinus*
OG	Long-tailed Skua	*Stercorarius longicaudus*	PM	Ptarmigan	*Lagopus mutus*
LT	Long-tailed Tit	*Aegithalos caudatus*	PU	Puffin	*Fratercula arctica*
MG	Magpie	*Pica pica*	UR	Purple Heron	*Ardea purpurea*
MA	Mallard	*Anas platyrhynchos*	PS	Purple Sandpiper	*Calidris maritima*
MN	Mandarin	*Aix galericulata*	Q.	Quail	*Coturnix coturnix*
MX	Manx Shearwater	*Puffinus puffinus*	RN	Raven	*Corvus corax*
MR	Marsh Harrier	*Circus aeruginosus*	RA	Razorbill	*Alca torda*
MT	Marsh Tit	*Parus palustris*	RG	Red Grouse	*Lagopus lagopus*
MW	Marsh Warbler	*Acrocephalus palustris*	KT	Red Kite	*Milvus milvus*
MP	Meadow Pipit	*Anthus pratensis*	ED	Red-backed Shrike	*Lanius collurio*
FR	Mealy Redpoll	*Carduelis flammea*	EB	Red-breasted Goose	*Branta ruficollis*

MU	Mediterranean Gull	*Larus melanocephalus*	RM	Red-breasted Merganser	*Mergus serrator*
ML	Merlin	*Falco columbarius*	RQ	Red-crested Pochard	*Marmaronetta angustirostris*
M.	Mistle Thrush	*Turdus viscivorus*	RL	Red-legged Partridge	*Alectoris rufa*
MO	Montagu's Harrier	*Circus pygargus*	RX	Red-necked Grebe	*Podiceps grisegena*
MH	Moorhen	*Gallinula chloropus*	NK	Red-necked Phalarope	*Phalaropus lobatus*
RK	Redshank	*Tringa totanus*	SK	Siskin	*Carduelis spinus*
RT	Redstart	*Phoenicurus phoenicurus*	S.	Skylark	*Alauda arvensis*
RH	Red-throated Diver	*Gavia stellata*	SZ	Slavonian Grebe	*Podiceps auritus*
RE	Redwing	*Turdus iliacus*	SY	Smew	*Mergus albellus*
RB	Reed Bunting	*Emberiza schoeniclus*	SN	Snipe	*Gallinago gallinago*
RW	Reed Warbler	*Acrocephalus scirpaceus*	SB	Snow Bunting	*Plectrophenax nivalis*
RV	Reeve's Pheasant	*Syrmaticus reevesi*	SJ	Snow Goose	*Anser caerulescens*
RZ	Ring Ouzel	*Turdus torquatus*	ST	Song Thrush	*Turdus philomelos*
IN	Ring-billed Gull	*Larus delawarensis*	OT	Sooty Shearwater	*Puffinus griseus*
RP	Ringed Plover	*Charadrius hiaticula*	SH	Sparrowhawk	*Accipiter nisus*
RI	Ring-necked Parakeet	*Psittacula krameri*	NB	Spoonbill	*Platalea leucorodia*
R.	Robin	*Erithacus rubecula*	AK	Spotted Crake	*Porzana porzana*
DV	Rock Dove	*Columba livia*	SF	Spotted Flycatcher	*Muscicapa striata*
RC	Rock Pipit	*Anthus petrosus petrosus*	DR	Spotted Redshank	*Tringa erythropus*
RO	Rook	*Corvus frugilegus*	SG	Starling	*Sturnus vulgaris*
RS	Roseate Tern	*Sterna dougallii*	SD	Stock Dove	*Columba oenas*
RF	Rough-legged Buzzard	*Buteo lagopus*	SC	Stonechat	*Saxicola torquata*
RY	Ruddy Duck	*Oxyura jamaicensis*	TN	Stone-curlew	*Burhinus oedicnemus*
UD	Ruddy Shelduck	*Tadorna ferruginea*	TM	Storm Petrel	*Hydrobates pelagicus*
RU	Ruff	*Philomachus pugnax*	SL	Swallow	*Hirundo rustica*
JF	Saker	*Falco cherrug*	SI	Swift	*Apus apus*
SM	Sand Martin	*Riparia riparia*	TO	Tawny Owl	*Strix aluco*
SS	Sanderling	*Calidris alba*	T.	Teal	*Anas crecca*
TE	Sandwich Tern	*Sterna sandvicensis*	TK	Temminck's Stint	*Calidris temminckii*
VI	Savi's Warbler	*Locustella luscinioides*	TP	Tree Pipit	*Anthus trivialis*
SP	Scaup	*Aythya marila*	TS	Tree Sparrow	*Passer montanus*
CY	Scottish Crossbill	*Loxia scotica*	TC	Treecreeper	*Certhia familiaris*
SW	Sedge Warbler	*Acrocephalus schoenobaenus*	TU	Tufted Duck	*Aythya fuligula*
NS	Serin	*Serinus serinus*	TT	Turnstone	*Arenaria interpres*

SA	Shag	*Phalacrocorax aristotelis*	TD	Turtle Dove	*Streptopelia turtur*
SU	Shelduck	*Tadorna tadorna*	TW	Twite	*Carduelis flavirostris*
SX	Shorelark	*Eremophila alpestris*	VS	Velvet Scoter	*Melanitta fusca*
SE	Short-eared Owl	*Asio flammeus*	WI	Water Pipit	*Anthus petrosus spinoletta*
TH	Short-toed Treecreeper	*Certhia brachydactyla*	WA	Water Rail	*Rallus aquaticus*
SV	Shoveler	*Anas clypeata*	WX	Waxwing	*Bombycilla garrulus*
PV	Silver Pheasant	*Lophura nycthemera*	W.	Wheatear	*Oenanthe oenanthe*
WM	Whimbrel	*Numenius phaeopus*			
WC	Whinchat	*Saxicola rubetra*			
OR	White Stork	*Ciconia ciconia*			
WG	White-fronted Goose	*Anser albifrons*			
WE	White-tailed Eagle	*Haliaeetus albicilla*			
WH	Whitethroat	*Sylvia communis*			
WS	Whooper Swan	*Cygnus Cygnus*			
WN	Wigeon	*Anas penelope*			
WT	Willow Tit	*Parus montanus*			
WW	Willow Warbler	*Phylloscopus trochilus*			
DC	Wood Duck	*Aix sponsa*			
WP	Wood Pigeon	*Columba palumbus*			
OD	Wood Sandpiper	*Tringa glareola*			
WO	Wood Warbler	*Phylloscopus sibilatrix*			
WK	Woodcock	*Scolopax rusticola*			
WL	Woodlark	*Lullula arborea*			
WR	Wren	*Troglodytes troglodytes*			
WY	Wryneck	*Jynx torquilla*			
YW	Yellow Wagtail	*Motacilla flava*			
Y.	Yellowhammer	*Emberiza citrinella*			
YG	Yellow-legged Gull	*Larus arg. michahellis*			
FI	Zebra Finch	*Taeniopygia guttata*			