

**Ornithology Report**  
**Lot No.1: Mountdillon, Derryarogue, Derryadd, Derraghan**  
**(Summer 2015)**  
**Bord na Móna**





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Document checked by	Joe Adamson (Ornithologist-Oct-2015) John Murphy (MWP-Oct-2015);



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## 1 INTRODUCTION

Malachy Walsh and Partners was commissioned by Bord na Móna, to conduct summer 2015 avifaunal surveys at a number of sites on Bord na Móna lands, in Counties Longford and Roscommon. Malachy Walsh and Partners conducted ornithological surveys at Lot 1 during the summer period of 2015. The bog groups that are covered in Lot No.1 consists of eight individual bogs, namely Mountdillon, Derrycashel, Derryarogue, Derryadd, Lough Bannow, Derraghan, Derryshanoge, Derrycolumb.

The following report gives a detailed account of the avifaunal surveys at Lot No.1 on Bord na Móna lands.

### 1.1 SCOPE OF ASSESSMENT

This report describes the birds that were frequenting the Lot No. 1 site during the winter of 2015. Lot No.1 comprises of four sites/sections of Bord na Móna lands. The report contains information from targeted bird, as well as other data sources. Initially, bird surveys were carried out from April 2015 through to July 2015 inclusive. Following discussions with the client, it was decided to include the month of August as part of the summer 2015 surveys.

### 1.2 METHODOLOGY

#### 1.2.1 Breeding Birds

##### 1.2.1.1 Summer Bird Survey

A summer bird survey was undertaken in late Spring/Summer 2015. The aims of the summer bird survey were:

- To record all breeding birds within the development area; and
- To record any species of conservation concern and assess their status within the site.

The breeding status of birds was determined using the criteria set out in Gilbert et al.(1998). Birds were considered to be breeding if they were apparently holding territory, giving alarm calls or if young birds or nests were observed. The weather conditions on the site visits were excellent for the most part, for the summer (2015) survey work.

#### 1.2.2 Summer Raptor Vantage Point Survey

The objective of the summer 2015 vantage point surveys was, primarily to record usage of the site by focusing in particular on the summer usage of the site by raptors, waders, wildfowl, Annex 1 species and other birds of conservation interest. Fifteen vantage points were selected. The vantage point locations are illustrated in Appendix 1. Each vantage point was watched for a period of six hours duration per monthly site visit. Once a bird of prey/species of conservation interest was detected, the bird was observed until it was lost from view. During an observation the following information was recorded:

- The time that the bird was located and the duration of the observation
- Sex and age of the bird(s), if possible
- Behaviour observed, such as foraging, commuting or displaying
- Estimation of flight height. Flight height was classified as X<10m, 10 - 100m and X>100m

- Habitats used during flight observation period
- Weather conditions at time of sighting

Vantage point observations were carried out in accordance with NPWS guidelines (Appendix 4). Also methodologies used followed those recommended by Scottish Natural Heritage (May 2014).

### 1.2.3 Summer Transect Survey Methodology

Twenty eight transects were carried out at the site, in total. A transect survey is a walk through a specific area of the site, along a defined route. This could be one single route through a part of the site, or it could be a number of routes, depending on the habitats on-site and the topography of the site. Birds heard and/or observed are recorded within a 100m band along each transect. The transect survey is carried out on two site visits over the summer bird survey period. Methodology follows that of the Countryside Bird Survey, devised and carried out by BirdWatch Ireland. Two transect survey were carried out over the summer (2015) bird survey period, one early in the season, in May 2015, and one late in the season, in July 2015. Transects can be viewed in Appendix 1.

## 1.3 DESK STUDY

In addition to the bird survey work carried out on site, relevant bird records for the preceding twenty years were obtained. The main sources of information were:

- Irish Bird Reports and the journal Irish Birds, published by BirdWatch Ireland,
- Birds in Central Ireland – Mid Shannon Bird Report, by Stephen Heery. Reports are available for the following periods: 1992-1995, 1996-1999, 2000-2003, 2004-2007 and 2008-2011.
- Crowe, O. (2005) Ireland's Wetlands and their Waterbirds, Status and Distribution. BirdWatch Ireland, Newcastle, Co. Wicklow.
- Birds on Cutaway Peatlands: Baseline Breeding Bird Population Survey, Project Report, 2011. Dr. Alex. Copland, Senior Conservation Officer, Birdwatch Ireland.
- Records obtained from the NPWS web site ([www.npws.ie](http://www.npws.ie)),
- Documented Records from the online National Biodiversity Data Centre website ([www.biodiversityireland.ie](http://www.biodiversityireland.ie)).

## 2 EXISTING ENVIRONMENT

### 2.1 CHARACTERISTICS OF THE PROPOSAL

The study area under consideration in this ornithological report consists of the 4 sites on Bord na Móna lands, which comprise of Lot No.1. Bord na Móna commissioned Winter Bird Surveys relating to the potential development of wind energy projects across a range of 8 lots in total. MWP conducted the surveys at Lot No.1.

### 2.2 SITE LOCATION/DESCRIPTION

#### 2.2.1 Lot No.1: Mountdillon, Derryarogue, Derryadd, Derraghan.

Lot No.1 consists of eight individual bogs, namely, Mountdillon, Derrycashel, Derryarogue, Derryadd, Lough Bannow, Derraghan, Derryshanoge, Derrycolumb. The sites are located in the counties of Roscommon and Longford. See Appendix 1 for location map of bog groups.

##### 2.2.1.1 Mountdillon/Derrycashel

This group is located in County Roscommon, approximately 2 ½ km north of Lanesborough and to the west of the river Shannon. Large areas of the site are out of production and a degree of recolonisation is evident, in the form of (willow *Salix* sp.) and birch (*Betula pubescens*) scrub. The site exhibits a mosaic of bare peat, scrub and cutaway habitats. Vantage point 1 covers the Derrycashel Bog, which has an approximate area of 380 hectares. Vantage points, VP2 and VP3 cover Mountdillon Bog, which has an approximate area of 580 hectares.

##### 2.2.1.2 Derryarogue

This site is located in County Longford and is northeast of Lanesborough. It is mostly bordered by farmland, with a Coillte forest at northwest boundary of the site. The River Shannon runs approximately 400m (at its closest point) from the northern and western boundaries. The site is to the east of the Shannon and to the north of the N63. There are significant areas of bare peat within the site boundary. Vantage points, VP4, VP5 and VP6 cover the Derryarogue Bog, which has an approximate area of 840 hectares.

##### 2.2.1.3 Derryadd/Lough Bannow

These sites are located in County Longford, to the southeast of Lanesborough. The area is located to the south of the N63 and to the north of the R392. The site consists of large areas of bare peat and a mixture of scrub and conifer woodland. Vantage points, VP7 and VP8 are located in the Derryadd Bog. Vantage points VP8, VP12 and VP15 are situated in the Lough Bannow Bog. Towards the centre of the Derryadd bog there are two sections (totalling approximately 41 hectares), that are not included in Bord na Móna land. Towards the west and north parts of the Lough Bannow bog there are two sections (totalling approximately 50 hectares) that are not included in Bord na Móna lands. These sections include farmland and associated dwellings.

##### 2.2.1.4 Derryaghan/Derryshanoge/Derrycolumb

The Derraghan/Derryshanoge/Derrycolumb complex is located to the south of the R392, in County Longford. The site is predominantly bare peat with birch woodland. Scrub, hedgerows and woodland often bound the bare peat bogs. It is located between 4km and 5km to the east of Lough Ree. Newtowncashel is located approximately 2km to the west of the site. Derryshanoge Bog is covered



by vantage points VP9, VP10, VP11 and VP13. The Derryshanoge site has an approximate area of 440 hectares. Derraghan Bog is covered by vantage point VP13 and has an approximate area of 300 hectares. Derrycolumb Bog is situated as the most southern extremity of the study area, and has an approximate area of 360 hectares. Vantage point VP14 is situated within this bog.

## 2.3 SITE DESCRIPTION

The dominant habitat type at the site is cutover bog, occurring in vast sections throughout the survey site. Most areas of the site are in constant peat production offering little in the way of habitat diversity. Sections of woodland (broadleaf and conifer) occur at the site, particularly at the edge of cutaway areas. Many cut-over areas that have been out of production for some time contains linear strips of willow along drainage ditches. The margins of the cutaway bogs often contain remnant raised bog vegetation, dominated by ling heather (*Calluna vulgaris*).

## 2.4 DESIGNATED SITES

### 2.4.1.1 Sites of International Importance

#### 2.4.1.1.1 Special Areas of Conservation

Candidate Special Areas of Conservation are protected under the European Union (EU) 'Habitats Directive' (92/43/EEC), as implemented in Ireland by the European Communities (Natural Habitats) Regulations, 1997. There are six SACs within 10km of the project site. See Table 1 below.

#### 2.4.1.1.2 Special Protection Areas

Special Protection Areas were initially designated under Directive 79/409/EEC, The Directive on the Conservation of Wild Birds ('The Birds Directive'), and are now protected as Natura 2000 Sites under the EU 'Habitats Directive'. There are two SPAs within 10km of the project site; Lough Ree SPA (004064) 330m to the south of Derraghan Bog at its closest point and Ballykenny-Fisherstown Bog SPA (004101) 3.15km east of Mountdillon. See Table 1 below.

### 2.4.1.2 Sites of National Importance

Sites of National Importance in the Republic of Ireland are termed Natural Heritage Areas (NHA) and proposed Natural Heritage Areas (pNHA). While the Wildlife (Amendment) Act 2000 has been passed into law, pNHAs will not have legal protection until the consultative process with landowners has been completed; this process is currently ongoing. Seven NHA sites and thirteen pNHA sites are situated within 10 km of the proposal site boundary. Six of the thirteen pNHA sites are collocated with a similarly named SAC site.

**Table 1: Designated sites within 10km of the study area.**

Site Name (Site Code)	Features of Interest	Proximity to the study at its closest point
Lough Ree SPA (004064)	<ul style="list-style-type: none"> <li>• Little Grebe (<i>Tachybaptus ruficollis</i>) [A004]</li> <li>• Whooper Swan (<i>Cygnus cygnus</i>) [A038]</li> <li>• Wigeon (<i>Anas penelope</i>) [A050]</li> <li>• Teal (<i>Anas crecca</i>) [A052]</li> <li>• Mallard (<i>Anas platyrhynchos</i>) [A053]</li> <li>• Shoveler (<i>Anas clypeata</i>) [A056]</li> <li>• Tufted Duck (<i>Aythya fuligula</i>) [A061]</li> <li>• Common Scoter (<i>Melanitta nigra</i>) [A065]</li> <li>• Goldeneye (<i>Bucephala clangula</i>) [A067]</li> </ul>	330m to the south of Derraghan Bog at its closest point 540m south west of the study area (Lanesborough)

Site Name (Site Code)	Features of Interest	Proximity to the study at its closest point
	<ul style="list-style-type: none"> <li>• Coot (<i>Fulica atra</i>) [A125]</li> <li>• Golden Plover (<i>Pluvialis apricaria</i>) [A140]</li> <li>• Lapwing (<i>Vanellus vanellus</i>) [A142]</li> <li>• Common Tern (<i>Sterna hirundo</i>) [A193]</li> <li>• Wetland and Waterbirds [A999]</li> </ul>	
Ballykenny-Fisherstown Bog SPA (004101)	<ul style="list-style-type: none"> <li>• Greenland White-fronted Goose (<i>Anser albifrons flavirostris</i>) [A395]</li> </ul>	3.15km east of Mounddillon
Fortwilliam Turlough SAC and pNHA (000448)	<ul style="list-style-type: none"> <li>• Turloughs [3180]</li> </ul>	1.88km west of the site
Lough Ree SAC and pNHA (000440)	<ul style="list-style-type: none"> <li>• Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150]</li> <li>• Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>Festuco-Brometalia</i>) (* important orchid sites) [6210]</li> <li>• Degraded raised bogs still capable of natural regeneration [7120]</li> <li>• Alkaline fens [7230]</li> <li>• Limestone pavements [8240]</li> <li>• Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles [91A0]</li> <li>• Bog woodland [91D0]</li> <li>• <i>Lutra lutra</i> (Otter) [1355]</li> </ul>	330m to the south of Derraghan Bog at its closest point 540m south west of the study area (Lanesborough)
Corbo Bog SAC and pNHA (002349)	<ul style="list-style-type: none"> <li>• Active raised bogs [7110]</li> <li>• Degraded raised bogs still capable of natural regeneration [7120]</li> <li>• Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]</li> </ul>	4.9km south west of Mounddillon
Brown Bog SAC and pNHA (002348)	<ul style="list-style-type: none"> <li>• Active raised bogs [7110]</li> <li>• Degraded raised bogs still capable of natural regeneration [7120]</li> <li>• Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]</li> </ul>	5.9km east of Mounddillon
Lough Forbes Bog complex SAC and pNHA (001818)	<ul style="list-style-type: none"> <li>• Natural eutrophic lakes with Magnopotamion or Hydrocharition - type vegetation [3150]</li> <li>• Active raised bogs [7110]</li> <li>• Degraded raised bogs still capable of natural regeneration [7120]</li> <li>• Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]</li> <li>• Alluvial forests with <i>Alnus glutinosa</i> and <i>Fraxinus excelsior</i> (<i>Alno-Padion</i>, <i>Alnion incanae</i>, <i>Salicion albae</i>) [91E0]</li> </ul>	3.15km east of Mounddillon
Clooneen Bog SAC and pNHA (002348)	<ul style="list-style-type: none"> <li>• Degraded raised bogs still capable of natural regeneration [7120]</li> <li>• Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]</li> <li>• Bog woodland [91D0]</li> </ul>	6.3km north east of Mounddillon
Forthill Bog NHA (001448)	<ul style="list-style-type: none"> <li>• Raised bog</li> </ul>	710m south west of Derraghan
Mount Jessop Bog	<ul style="list-style-type: none"> <li>• Raised bog</li> </ul>	3.8km north east of

Site Name (Site Code)	Features of Interest	Proximity to the study at its closest point
NHA (001450)		Derryadd
Lisnannaugh Bog NHA (002072)	<ul style="list-style-type: none"> <li>• Raised bog</li> </ul>	5.65km west of Derryarogue
Derrycanan Bog NHA (000605)	<ul style="list-style-type: none"> <li>• Raised bog</li> </ul>	7.2km west of Mountdillon
Rinn River NHA (000691)	<ul style="list-style-type: none"> <li>• The close proximity to the River Shannon Callows and Lough Forbes Complex SACs increases the ecological interest and scientific value of the site.</li> <li>• The Rinn River provides a corridor for the movement of plants and animals between Lough Rinn (also an NHA) and Lough Forbes.</li> <li>• Flooding callows</li> <li>• Raised bog</li> <li>• There is also a semi-natural margin between Rinn River and Ballageeher Bog, which is of ecological importance.</li> </ul>	7.6km north east of Mountdillon
Aghnamona Bog NHA (000422)	<ul style="list-style-type: none"> <li>• Raised bog</li> </ul>	8.35km north east of Mountdillon
Cloonageeher Bog NHA (001423)	<ul style="list-style-type: none"> <li>• Raised bog</li> </ul>	9.6km north east of Mountdillon
Derrymore Bog pNHA (000447)	<ul style="list-style-type: none"> <li>• Bogs</li> </ul>	6.7km east of Derryadd
Lough Bannow pNHA (000449)	<ul style="list-style-type: none"> <li>• Lake / reed / wetland / marshes and wet, inundated grasslands / waterbirds / plant sps</li> </ul>	Adjacent to Derryarogue 100 m south of the site at its nearest point
Kilglass and Grange Loughs pNHA (000608)	<ul style="list-style-type: none"> <li>• Group of lakes / calcareous / reedswamps / fw marshes / very wet grassland on peat / winter Waterfowl / birds / remote reedbeds</li> </ul>	7.1km north of Mountdillon
Cordara Turlough pNHA (001821)	<ul style="list-style-type: none"> <li>• Turlough / carboniferous limestone / rare habitats / wildfowl</li> </ul>	850m west of Derraghan
Lough Bawn pNHA (001819)	<ul style="list-style-type: none"> <li>• Lake / bog, fen, wet and dry woodland / freshwater marsh habitats / birds</li> </ul>	Partially within in the study area at Derryadd
Royal Canal pNHA (002103)	<ul style="list-style-type: none"> <li>• Hedgerow / calcareous grassland / reed fringe / open water / scrub / woodland</li> </ul>	Flows along the eastern boundary of the site 220m at its closest point
Derry Lough pNHA (001444)	<ul style="list-style-type: none"> <li>• Wet grassland / fen / fen woodland / open water</li> </ul>	Adjacent to Derraghan

#### 2.4.1.2.1 Ramsar Sites

There are no Ramsar sites within 10km of the study area.

#### 2.4.1.2.2 International Bird Areas

Lough Ree IE128 is located 330m to the south of Derraghan Bog at its closest point and 540m south west of the study area near the town of Lanesborough. 10,788 ha of this IBA is covered by a Special Protection Area (Lough Ree, 10,788 ha). Lough Ree is the third-largest lake in Ireland, and is situated on the River Shannon system between Lanesborough and Athlone. The shoreline, with many indented bays, has extensive reedbeds, callow and lowland wet grassland. Land-uses include low-intensity grazing on the grasslands, angling and other recreational uses.

### 3 RESULTS

#### 3.1 VANTAGE POINT SURVEYS

Fifteen vantage points were selected for the summer 2015 survey period, where six hour survey time was conducted for each vantage point for the months of April through to August, inclusive. Consequently, a total of 450 hours of vantage point survey effort was carried out. Summer (2015) Vantage Point surveys were undertaken on the following dates:

- April 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup>, 12<sup>th</sup>, 20<sup>th</sup>, 21<sup>st</sup>, 22<sup>nd</sup> and 23<sup>rd</sup>, 2015
- May 8<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup>, 13<sup>th</sup>, 14<sup>th</sup>, 15<sup>th</sup>, 16<sup>th</sup>, 17<sup>th</sup>, 18<sup>th</sup>, 19<sup>th</sup>, 20<sup>th</sup>, 21<sup>st</sup>, 22<sup>nd</sup> and 23<sup>rd</sup>, 2015
- June 4<sup>th</sup>, 5<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup>, 12<sup>th</sup>, 13<sup>th</sup>, 24<sup>th</sup>, 25<sup>th</sup>, 28<sup>th</sup> and 29<sup>th</sup>, 2015
- July 8<sup>th</sup>, 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup>, 13<sup>th</sup>, 25<sup>th</sup>, 26<sup>th</sup>, 27<sup>th</sup>, 28<sup>th</sup>, 29<sup>th</sup> and 30<sup>th</sup>, 2015
- August 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup>, 12<sup>th</sup>, 13<sup>th</sup>, 16<sup>th</sup>, 17<sup>th</sup>, 26<sup>th</sup>, 27<sup>th</sup>, 28<sup>th</sup>, 29<sup>th</sup> and 30<sup>th</sup>, 2015

##### 3.1.1 Surveyors

- Joe Adamson (B.Sc., M.Sc., MCIEEM Senior Ecologist);
- John Murphy (Senior Ecologist/Ornithologist);
- Austin Cooney (Ornithologist);
- Caoimhin O’Neill (B.Sc. Ecologist).

#### 3.2 SUMMER 2015 VANTAGE POINT SURVEY RESULTS

A total of 59 species were recorded during the summer (2015) vantage point survey. Table 2 below provides details of all birds recorded during the summer vantage point bird surveys. Species highlighted in red represent species that are red listed. They are red listed because they are of Global Conservation Concern. Species highlighted in orange represent species that are of European Conservation Concern. They are amber listed because of their unfavourable conservation status but not concentrated in Europe. The remaining species are green listed, species of favourable conservation status (Calhoun and Cummins, 2013). Annex I species listed under the Birds Directive (Directive 2009/147/EC), are highlighted in bold. The Birds Directive provides different levels of protection to different species. The species are in lists known as Annexes according to the level of protection they are given. Some species can appear on more than one Annex. Annex I species require the greatest protection and must have SPAs (Special Protection Areas) designated for them.

**Table 2: Results of monthly vantage point surveys for winter 2015**

Common Name	Scientific Name	April	May	June	July	Aug	Peak Count	Mean Counts
Blackbird	<i>Turdus merula</i>	84	78	39	31	25	84	51
Blackcap	<i>Sylvia atricapilla</i>	20	30	29	13	10	30	23
Black-headed gull	<i>Chroicocephalus ridibundus</i>	-	2	22	6	-	22	6
Blue tit	<i>Cyanistes caeruleus</i>	10	3	3	2	6	10	5
Bullfinch	<i>Pyrrhula pyrrhula</i>	5	4	4	10	8	10	6
Buzzard	<i>Buteo buteo</i>	17	5	7	4	2	17	7
Carrion crow	<i>Corvus corone</i>	2	-	-	-	-	2	2
Chaffinch	<i>Fringilla coelebs</i>	66	43	42	32	28	66	42

Common Name	Scientific Name	April	May	June	July	Aug	Peak Count	Mean Counts
Chiffchaff	<i>Phylloscopus collybita</i>	9	8	7	-	-	9	5
Coal tit	<i>Periparus ater</i>	20	3	6	-	6	20	7
Cormorant	<i>Phalacrocorax carbo</i>	-	1	-	-	-	1	-
Cuckoo	<i>Cuculus canorus</i>	1	19	7	-	-	19	5
Curlew	<i>Numenius arquata</i>	3	-	-	3	-	3	1
Dunnock	<i>Prunella modularis</i>	22	8	3	6	4	22	9
Goldcrest	<i>Regulus regulus</i>	3	3	3	2	6	6	3
Golden plover	<i>Pluvialis apricaria</i>	180	-	-	-	-	180	-
Goldfinch	<i>Carduelis carduelis</i>	20	6	15	19	23	23	17
Great black-backed gull	<i>Larus marinus</i>	-	-	-	1	-	1	-
Great tit	<i>Parus major</i>	14	3	1	4	2	14	5
Greenfinch	<i>Carduelis chloris</i>	6	7	1	-	1	7	3
Grey heron	<i>Ardea cinerea</i>	4	-	1	1	3	4	2
Hooded crow	<i>Corvus cornix</i>	91	60	22	32	35	91	48
House martin	<i>Delichon urbicum</i>	-	5	3	4	24	24	7
Jackdaw	<i>Corvus monedula</i>	86	78	41	42	49	86	59
Jay	<i>Garrulus glandarius</i>	1	-	-	-	-	1	-
Kestrel	<i>Falco tinnunculus</i>	3	4	4	-	3	4	3
Lesser black-backed gull	<i>Larus fuscus</i>	153	106	101	70	14	153	89
Linnet	<i>Carduelis cannabina</i>	72	16	38	28	40	72	39
Magpie	<i>Pica pica</i>	30	35	27	11	27	35	26
Mallard	<i>Anas platyrhynchos</i>	15	16	1	-	3	16	7
Merlin	<i>Falco columbarius</i>	1	1	-	-	-	1	-
Meadow pipit	<i>Anthus pratensis</i>	116	74	82	70	60	116	80
Mistle thrush	<i>Turdus viscivorus</i>	8	1	2	4	4	8	4
Peregrine falcon	<i>Falco peregrinus</i>	1	-	-	-	-	1	-
Pheasant	<i>Phasianus colchicus</i>	25	20	19	6	1	25	14
Pied wagtail	<i>Motacilla alba</i>	35	22	20	14	14	35	21
Raven	<i>Corvus corax</i>	21	21	14	13	24	24	19

Common Name	Scientific Name	April	May	June	July	Aug	Peak Count	Mean Counts
Redpoll	<i>Carduelis flammea</i>	158	38	32	64	47	158	68
Reed bunting	<i>Emberzia schoenichus</i>	15	12	24	10	2	24	13
Ringed plover	<i>Charadrius hiaticula</i>	1	-	-	-	-	1	-
Robin	<i>Erithacus rubecula</i>	58	33	13	18	36	58	32
Rook	<i>Corvus frugilegus</i>	91	133	81	52	54	133	82
Sand martin	<i>Riparia riparia</i>	71	92	72	37	7	92	56
Sedge warbler	<i>Acrocephalus schoenobaenus</i>	-	1	1	-	-	1	-
Siskin	<i>Carduelis spinus</i>	-	7	2	4	16	16	6
Skylark	<i>Alauda arvensis</i>	22	46	53	18	1	53	28
Snipe	<i>Gallinago gallinago</i>	2	-	-	-	-	2	-
Song thrush	<i>Turdus philomelos</i>	17	38	21	6	14	38	19
Sparrowhawk	<i>Accipiter nisus</i>	3	1	-	-	2	1	1
Starling	<i>Sturnus vulgaris</i>	21	4	104	63	34	104	45
Stonechat	<i>Saxicola torquatus</i>	12	4	5	-	4	12	7
Swallow	<i>Hirundo rustica</i>	37	150	121	135	531	531	195
Swift	<i>Apus apus</i>	-	-	3	5	7	7	3
Wheatear	<i>Oenanthe oenanthe</i>	14	-	-	-	3	14	3
Whitethroat	<i>Sylvia communis</i>	2	30	25	15	1	30	15
Willow warbler	<i>Phylloscopus trochilus</i>	120	93	50	15	11	120	58
Woodpigeon	<i>Columba palumbus</i>	79	57	46	23	33	79	48
Wren	<i>Troglodytes troglodytes</i>	50	31	37	30	35	50	37
<b>Total No of Species</b>		<b>51</b>	<b>47</b>	<b>33</b>	<b>40</b>	<b>45</b>	<b>59</b>	

In total, 59 species were observed during summer 2015 vantage point surveys. Bird species observed during the summer vantage point survey are typical of the habitats present within and adjacent to the site. Of the 59 species, there were five raptor species, namely buzzard (*Buteo buteo*), kestrel (*Falco tinnunculus*), merlin (*Falco columbarius*), peregrine falcon (*Falco peregrinus*) and sparrowhawk (*Accipiter nisus*). There were four red listed species and twenty one amber listed species observed. Three Annex I species protected under the Birds Directive were observed during summer vantage point surveys. These included two raptor species, merlin and peregrine falcon and golden plover (*Pluvialis apricaria*) a medium sized wader.

The assemblage of species recorded is typical for the habitats present, and the location of the study area. Peat harvesting is the dominant land use. The study area is also influenced by agriculture, with the combination of silage harvesting and grazing observed. The most abundant species recorded were the amber listed swallow (*Hirundo rustica*), with a peak count of 531 during August, 2015 vantage point surveys (see Table 2 above). The average monthly count for swallow was also the highest for all observed species, at 195 (see Table 2 above). There was a large influx of this species during the month of August, of birds predominantly moving south, in preparation for return journey to southern Africa. Swallow is amber listed in Ireland, due to large historical decline and has been evaluated as depleted, and is still declining in several countries<sup>1</sup>. The next most abundant species observed was the Annex I and red listed golden plover, with a peak count of 180 (see Table 2 above), with all the observations made during the month of April 2015. Golden plover is red listed in Ireland, due to a decline in breeding populations of at least 50%, but its European status is considered to be secure<sup>2</sup>. A peak count of 153 lesser black backed gulls (*Larus fuscus*) was made during the summer 2015 vantage point survey (see Table 2 above). Observations of this species were mostly of small flocks, of birds commuting over the site at a high altitude. Lesser black-backed gull is amber listed in Ireland due to its localised breeding population. The European population is regarded as 'Secure' by BirdLife International<sup>3</sup>. Redpoll (*Carduelis flammea*), willow warbler (*Phylloscopus trochilus*), and meadow pipit (*Anthus pratensis*), were the most frequently observed field birds, with monthly peak counts of 158, 120 and 116 respectively (see Table 2 above). In Ireland, meadow pipit was recently downgraded from green listed to red listed, due to short-term decline in breeding population (>50%) (Calhoun and Cummins, 2013). The presence of hedgerow/tree line scrub and woodland habitats fringing the open, bare peat areas throughout the survey site would be suitable habitat for a number of bird species. Blackbird (*Turdus merula*), robin (*Erithacus rubecula*) and wren (*Troglodytes troglodytes*), with peak counts of 84, 58 and 50 respectively (see Table 2 above), were often observed utilising these habitat types. Robin, was recently downgraded from green Listed to amber listed, due to the short-term decline in breeding population (> 25%) (Calhoun and Cummins, 2013). Numbers of starling (*Sturnus vulgaris*) peaked at 104 in June, 2015 (see Table 2 above). Starling is amber listed in Ireland due to moderate recent decline in large parts of its European population. The Irish population is currently stable<sup>4</sup>. During the survey period, corvids were typically present in flocks particularly rook (*Corvus frugilegus*), hooded crow (*Corvus cornix*), and jackdaw (*Corvus monedula*).

### 3.2.1 Raptor Vantage Point Observations (Summer 2015)

Five raptor species were observed while carrying out summer 2015 vantage point surveys, namely kestrel, buzzard, sparrowhawk, merlin and peregrine falcon. Tabulated summaries of all observations of these species are available in Appendix 2. Flight paths for each species are available in Appendix 3.

### 3.2.2 Buzzard

A total of twenty seven observations of buzzard were made during the summer 2015 vantage point surveys. Buzzard is green listed in Ireland. The European population is considered to be Secure<sup>5</sup>.

<sup>1</sup> <http://www.birdwatchireland.ie/IrelandsBirds/SwallowMartins/Swallow/tabid/1034/Default.aspx>

<sup>2</sup> <http://www.birdwatchireland.ie/IrelandsBirds/Waders/GoldenPlover/tabid/317/Default.aspx>

<sup>3</sup> <http://www.birdwatchireland.ie/IrelandsBirds/GullsTerns/LesserBlackbackedGull/tabid/349/Default.aspx>

<sup>4</sup> <http://www.birdwatchireland.ie/IrelandsBirds/Starling/tabid/446/Default.aspx>

<sup>5</sup> <http://www.birdwatchireland.ie/IrelandsBirds/Raptors/Buzzard/tabid/396/Default.aspx>

Buzzard feeds on a wide variety of prey items including small mammals, birds, rabbits, insects, earthworms and amphibians. Breeding buzzards are found mainly in the north and east of country, north of a line from Sligo to Wexford. The stronghold of the species is in County Donegal, County Monaghan and County Louth. Birds nest in trees and sometimes on cliffs, usually with access to open land, including farmland, moorland and wetland. Buzzards were persecuted by farmers and gamekeepers in the 1800s, and became extinct in Ireland over a century ago. However, they re-colonised, without human help<sup>6</sup>.

For the most part the observations of buzzard were of birds commuting, foraging and soaring. On the 20<sup>th</sup> of April 2015 a pair of adult birds was observed, while carrying out the vantage point watch at VP15. The birds were soaring over woodland north of VP in a westerly direction, at a height in excess of 400m, for 160 seconds.

During the vantage point watch at VP13 on the 22<sup>nd</sup> of April 2015, one bird was observed for 5 minutes, soaring over the bog (10m-30m high) at the southwest corner of the site near the railway line. The bird was harassed by hooded crows as it circled, and the bird drifted off, out of sight, to the southeast.

On the 18<sup>th</sup> of May 2015, during the watch at VP13, an observation of buzzard involved three birds. At 11.50, two buzzards entered the field of view, at approximately 10m above ground level, over woodland and cutover bog. A third bird came up from the trees as if it was holding territory, and followed the two other birds. The pair of birds that initially came into view departed the site together. This observation lasted for 900 seconds.

On the 28<sup>th</sup> of July 2015 while carrying out the survey effort from VP13, three buzzards (two adult and one juvenile), were observed commuting approximately 3m to 5m over the woodland, to the southeast of the vantage point. This observation lasted for 8 seconds.

### **3.2.2.1 Summary of buzzard observations**

There were a total of 27 observations of buzzard during summer 2015 vantage point surveys. The birds were observed hunting, commuting and soaring. There were a number of observations of buzzard being mobbed by other species, namely hooded crows and sand martins (*Riparia riparia*). There was no evidence of buzzard breeding within the survey sites, however displaying behaviour and juveniles were observed during the summer 2015 vantage point surveys. See Table 3 below for flight times and observation heights. Tabulated summaries of all observations of these species are available in Appendix 2.

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<sup>6</sup>

<http://www.birdwatchireland.ie/Publications/eWings/eWingsIssue23August2011/BuzzardsfoundpoisonednearRoscrea/tabid/1194/Default.aspx>



**Table 3: Duration and flight height of buzzard**

Observation Analysis	Time (sec)	Percentage of Total Survey Time (%)
Total Time Observed	6,105	0.38
Total Time Observed (0-10m height)	1,388	0.09
Total Time Observed (10-100m height)	1,780	0.11
Total Time Observed (>100m height)	2,937	0.18

### 3.2.3 Kestrel

In total, fifteen individual observations of kestrel were made over the course of the summer 2015 survey. Kestrel is amber listed in Ireland due to concerns over the European population, which has undergone a moderate continuing decline<sup>7</sup>. This species is widespread breeder/resident throughout Ireland, where it nests in trees, buildings or in cracks in cliffs. Kestrel will also use old crow nests, and is found in wide variety of open habitats including coasts, bogs, farmland, wetlands, roadside verges and town parks. Kestrel mainly feeds on small mammals, but will also take insects and invertebrates, and sometimes birds. During this survey period, the observations of kestrel were mainly of birds hunting for the most part, at a height of between 10m and 100m; hovering over scrub/bogland and edge habitats (including roadside/grassy verges). One such observation was made while carrying out the vantage point watch at VP9, on the 9<sup>th</sup> of April 2015. At 1204 an adult kestrel was observed hunting, as it hovered over the bog and access track for 310 seconds. The bird went out of view to the southeast, maintaining a flight height of 10m-15m. The longest observation of kestrel was made while carrying out the survey effort at VP11, on the 27<sup>th</sup> of August 2015. The bird was perched on peat mound, for almost 31 minutes, then flew off to the east, at a height of approximately 1m above ground level (observation 14 (kestrel) Appendix 2). The bird was lost out of view as it followed the peat mound.

#### 3.2.3.1 Summary of kestrel observations

A total of 15 kestrel observations were made during surveying (winter 2014/15). The majority of the observations involved hunting, mainly over scrub, vegetated cutover bog habitats and the edge of woodland habitats. There was no evidence of this species breeding within the site during the summer 2015 vantage point survey. The 2015 summer surveys suggest a healthy population of kestrel within the study area and adjoining lands. See Table 4 below, for flight height and duration of

<sup>7</sup> <http://www.birdwatchireland.ie/Default.aspx?tabid=397>

kestrel, for the summer 2015, vantage point survey. Tabulated summaries of all observations of these species are available in Appendix 2.

**Table 4: Duration and flight heights of kestrel**

Observation Analysis	Time (sec)	Percentage of Total Survey Time (%)
Total Time Observed	3,189	0.20
Total Time Observed (0-10m height)	2,247	0.14
Total Time Observed (10-100m height)	942	0.06
Total Time Observed (>100m height)	0	0

### 3.2.4 Sparrowhawk

Seven separate observations of sparrowhawk were made during the summer 2015 survey. This species is green listed in Ireland. The European population has been evaluated as Secure<sup>8</sup>. Sparrowhawk is one of the most common birds of prey in Ireland. This species is widespread in woodland, farmland with woods, larger parks and gardens, nesting in trees. Sparrowhawk breeds throughout Ireland, but is scarcer in the west, where tree cover is low. Formally a bird of woodland, it is now also found extensively in wooded farmland and will venture into urban gardens, where small birds attracted to bird feeders are taken. For the most part, the observations of sparrowhawk during the summer 2015 vantage point surveys were of birds commuting, foraging and soaring over the site. One of which was made on the 10<sup>th</sup> of April 2015, as the survey effort at VP9 was almost complete. The bird flew quickly across the road, hunting low, approximately 1m above ground level. This observation lasted for 10 seconds.

On the 10<sup>th</sup> of May 2015, an adult male was observed from VP15. At 1018 the bird was observed hunting in easterly direction, approximately 2m above scrub at the edge of the bog. The bird was in view for 8 seconds, before out being lost out of sight, into the cover of trees.

#### 3.2.4.1 Summary of sparrowhawk observations

A total of seven sparrowhawk observations were made while conducting summer 2015 surveys. The observations were mainly of birds hunting and commuting/soaring. There was no evidence of sparrowhawk breeding within the site during the summer 2015 survey effort. Summer 2015 surveys suggest that the site is used infrequently by sparrowhawk. See Table 5 below for duration/flight

<sup>8</sup> <http://www.birdwatchireland.ie/IrelandsBirds/Raptors/Sparrowhawk/tabid/395/Default.aspx>

height of sparrowhawk during summer 2015 vantage point surveys. Tabulated summaries of all observations of this species are available in Appendix 2.

**Table 5: Duration and flight heights of sparrowhawk**

Observation Analysis	Time (sec)	Percentage of Total Survey Time (%)
Total Time Observed	649	0.04
Total Time Observed (0-10m height)	324	0.02
Total Time Observed (10-100m height)	110	0.007
Total Time Observed (>100m height)	300	0.02

### 3.2.5 Merlin

There were two observations of merlin over the course of the five months of summer vantage point surveys. Merlin is amber listed in Ireland due to its small breeding population. The European population is considered to be Secure<sup>9</sup>. Merlin is included as Annex I species, protected under the Birds Directive<sup>10</sup>. The main threats to this species are; loss of habitats, contamination of birds with organochlorines from agriculture, human disturbance and nest-robbing by falconers<sup>11</sup>. Merlin is a rare breeding bird in Ireland. This species nests on the ground on moorland, mountain and blanket bog. Merlin also nests in woodland, and has taken to nesting in forestry plantations adjacent to moorland. Merlin feeds on small birds, such as meadow pipits and skylarks. The prey is caught by a surprise attack from a low gliding flight, close to the ground, by persistence pursuit, or from a vertical dive.

In total there were two observations of merlin during the summer 2015 summer vantage point survey. Both were observations of individual birds, and both were made during survey effort at VP15. On the 20<sup>th</sup> of April at 12.45 an adult was observed hunting low, in front of the vantage point, in a northeast direction. The bird was then lost out of sight, in the cover of hedgerow. The observation lasted for duration of 10 seconds.

<sup>9</sup> <http://www.birdwatchireland.ie/IrelandsBirds/Raptors/Merlin/tabid/398/Default.aspx>

<sup>10</sup> [http://www.npws.ie/sites/default/files/general/Listed\\_species\\_checklist\\_Dec12.pdf](http://www.npws.ie/sites/default/files/general/Listed_species_checklist_Dec12.pdf)

<sup>11</sup> [http://ec.europa.eu/environment/nature/conservation/wildbirds/threatened/f/falco\\_columbarius\\_en.htm](http://ec.europa.eu/environment/nature/conservation/wildbirds/threatened/f/falco_columbarius_en.htm)

On the 10<sup>th</sup> of May, 2015 a merlin was observed hunting low to the east, approximately 2m above the bare peat. The sighting began at 1006 and lasted for 6 seconds, with the bird lost out of sight in the cover of the conifer trees.

### 3.2.5.1 Summary of merlin observations

Two observations of merlin were made during summer 2015 vantage point surveys. Both of short duration ( $\leq 10$ s), and both occurred over cutover bog at VP15. There were no observations of this species breeding within the study area during the summer survey period. Summer 2015 observations suggest that the study area is used infrequently by merlin. See Table 6 below, for merlin flight heights and flight durations. Tabulated summaries of all observations of this species are available in Appendix 2.

**Table 6: Duration and flight height of merlin observations**

Observation Analysis	Time (sec)	Percentage of Total Survey Time (%)
Total Time Observed	16	0.0009
Total Time Observed (0-10m height)	16	0.0009
Total Time Observed (10-100m height)	0	0
Total Time Observed (>100m height)	0	0

### 3.2.6 Peregrine falcon

Summer 2015 vantage point resulted in a single observation peregrine falcon. Peregrine falcon is green listed in Ireland<sup>12</sup>. Peregrine falcon is included as Annex I species, protected by the Birds Directive<sup>13</sup>. The reason for protection is due to the widespread, post-1960 decline in peregrine numbers, caused by food-chain contamination, with persistent toxic chemical residues, mainly from agricultural organochlorines insecticides<sup>14</sup>. Most inland birds breed on mountain cliffs but will also breed at lower levels. The species is still recovering from a dramatic and well documented decline in the 1950s and 60s due to the effects of pesticide poisoning. Peregrine falcon mainly takes birds that are in the air, and sometimes hunt birds on the ground, or on water.

<sup>12</sup> <http://www.birdwatchireland.ie/IrelandsBirds/Raptors/Peregrine/tabid/399/Default.aspx>

<sup>13</sup> [http://www.npws.ie/sites/default/files/general/Listed\\_species\\_checklist\\_Dec12.pdf](http://www.npws.ie/sites/default/files/general/Listed_species_checklist_Dec12.pdf)

<sup>14</sup> [http://ec.europa.eu/environment/nature/conservation/wildbirds/threatened/f/falco\\_peregrinus\\_en.htm](http://ec.europa.eu/environment/nature/conservation/wildbirds/threatened/f/falco_peregrinus_en.htm)

The single observation of peregrine falcon concerned a single bird, observed while carrying out the watch at VP11, on the 9<sup>th</sup> of April 2015. At 1102, an adult bird was perched on a peat mound for 60 seconds. The bird was lost out of sight as the bird lifted and commuted (<10m) behind the peat mound.

### 3.2.6.1 Summary of peregrine falcon observations

During summer 2015 vantage point surveys there was one observation of peregrine falcon. There was no evidence of this species breeding within the site during the summer 2015 vantage point surveys. See Table 7 below, for peregrine falcon flight heights and flight durations. Tabulated summary for the observation of this species is available in Appendix 2.

**Table 7: Duration and flight height of peregrine falcon observations**

Observation Analysis	Time (sec)	Percentage of Total Survey Time (%)
Total Time Observed	60	0.004
Total Time Observed (0-10m height)	60	0.004
Total Time Observed (10-100m height)	0	0
Total Time Observed (>100m height)	0	0

## 3.3 WILDFOWL/WADERS/GULLS OBSERVED DURING SUMMER WINTER 2015 VANTAGE POINT SURVEYS

Tabulated summaries of all observations of these species are available in Appendix 2. Flight paths for each species are available in Appendix 3.

### 3.3.1 Golden Plover

Golden plover is listed as an Annex I species under the Birds Directive and classified as a red listed species of high conservation concern in Ireland (Calhoun and Cummins, 2013). Golden plover feed on a variety of soil and surface-living invertebrates, mostly beetles and earthworms, but also on plant material such as berries, seeds and grasses. This species breeds in heather moors, blanket bogs and acidic grasslands.

During the summer 2015 survey period, the observations of golden plover were confined to the month of April. In total there were seven observations of golden plover involving sightings of individual birds, and larger flocks (peak count for April 2015 was 83) for the most part, perched/sitting on the ground.

On the 10<sup>th</sup> of April 2015 there were two observations of golden plover, made while carrying out the watch at VP10. The first sighting was of a single bird commuting directly to the north over farmland and bogland, approximately 100m above ground level. The sighting began at 930 and lasted for 60 seconds. During the same vantage point, eight golden plover were observed sitting on bare peat, towards the western end of this bog site, approximately half way down the site.

While carrying out the vantage point watch at VP7, on the 21<sup>st</sup> of April 2015, a flock of 83 golden plover were observed on the ground in the middle of the bog, at the edge of standing water. Occasionally the birds lifted and circled at a height of just less than 10m before settling down on the bog, next to the standing water. This observation lasted for the duration of the watch (1400-1700). The flight time at this location was noted at 180 seconds.

### 3.3.1.1 Summary of golden plover observations

A total of seven observations of golden plover were made during summer 2015 surveys. The observations were confined to the month of April, mainly of birds on the ground. During summer 2015 vantage point surveys there was no evidence of golden plover breeding at the study area. Following surveys at the site, it is considered that the observations of golden plover at the site were of wintering birds, which left the site for their breeding grounds in late April. See Table 8 below, for golden plover flight heights and flight durations. Tabulated summaries of all observations of this species are available in Appendix 2.

**Table 8: Duration and flight heights of golden plover**

Observation Analysis	Time (sec)	Percentage of Total Survey Time (%)
Total Time Observed	25,693	1.60
Total Time Observed (0-10m height)	4,203	0.23
Total Time Observed (10-100m height)	0	0
Total Time Observed (>100m height)	70	0.004

### 3.3.2 Curlew

Curlew (*Numenius arquata*) occurs as a winter visitor on wetlands around Ireland, as well as small breeding populations on floodplains and bog. They are red listed due to large declines in breeding and non-breeding populations, as well as a decline in breeding range (Calhoun and Cummins, 2013). This species feeds mostly on invertebrates, particularly ragworms, crabs and molluscs. During the

breeding season, curlew nests on the ground in rough pastures, meadows and heather. This species is not a common breeder, but can be found in most parts of Ireland<sup>15</sup>.

During the summer 2015 vantage point surveys there were three observations of curlew. While carrying out the watch at vantage point VP15 (Derryadd) on the 21<sup>st</sup> of April 2015, two curlew were observed displaying to the northeast of the VP. This observation was made over wet grassland/rough grassland, and partially over woodland/scrub, outside of the bog site/site boundary. The birds came into view, calling circling at 1030 and at a height between 10m and 30m, and were in view for 20 seconds.

During the vantage point watch at VP1 on the same day (21/04/2015), one curlew was observed feeding in the ponds, to the north of the vantage point. The bird exited the site to the northeast at a flight height of under 10m. The duration of this observation, was 30 seconds.

On the 13<sup>th</sup> of July 2015, while carrying out the watch at VP12, 3 curlews were observed commuting to the west, at a flight height between 10m and 100m. The observation began at 11.45 and lasted for 4 seconds.

While no nest/breeding site was observed, a pair of curlew could be potentially using this location as a breeding site. Suitable curlew breeding habitat occurs underneath the display and vocal breeding courtship that was observed to the northeast of VP15. Summer 2015 survey results indicate that curlew infrequently use the study area. However a pair of curlew may potentially use the suitable breeding habitat, outside the site, to the northeast of VP15. During surveys carried out in 2010 (Copland, 2011), there was no evidence observed of breeding curlew at Lough Bannow, with the only observation of a bird, presumed to be commuting through the site. With regard to curlew, the results of the surveys carried out in 2010 (Copland report), and results of summer 2015 (Surveys described in this report), are somewhat similar, in that the results indicate that that curlew infrequently use the study site.

Potential suitable breeding habitat for curlew occurs at the location of VP10. This area is one of the most intact bogland areas at the site. At this location there is some reminiscent cutting by hand/small scale historic peat harvesting, but for the most part the bog is intact, or hasn't been touched for quite some time. Also, locations at the northern part of the site, along with the fringes of the bog sites, and some of the grassland habitats bounding the site, could potentially offer breeding habitat for curlew. During summer/breeding surveys at the site, these locations would have been intensively surveyed, which included bog walks/transects and vantage point surveys, with no observations of breeding curlew at these locations.

### **3.3.2.1 Summary of curlew observations**

A total of 3 observations of curlew were made during summer 2015 surveys (involving six birds). The observations were birds displaying, commuting and feeding. The observation of displaying was outside the site boundary, to the northeast of VP15. While no nest/breeding site was observed, curlew could be potentially using this location as a breeding site. Suitable curlew breeding habitat occurs to the northeast of VP15. Summer 2015 survey results indicate that curlew infrequently use the study area. However a pair of curlew may potentially use the suitable breeding habitat, outside

<sup>15</sup> <http://www.birdwatchireland.ie/IrelandsBirds/Waders/Curlew/tabid/334/Default.aspx>

the site, to the northeast of VP15. It must be noted that only one summer survey has been carried out at the site. See Table 9 below, for curlew flight heights and flight durations. Tabulated summaries of all observations of this species are available in Appendix 2.

**Table 9: Duration and flight heights of curlew**

Observation Analysis	Time (sec)	Percentage of Total Survey Time (%)
Total Time Observed	54	0.003
Total Time Observed (0-10m height)	30	0.002
Total Time Observed (10-100m height)	24	0.001
Total Time Observed (>100m height)	0	0

### 3.3.3 Ringed plover

Ringed Plover was recently upgraded from amber-listed to green-listed in Ireland, due to 50% of the wintering population, at > 10 sites (Colhoun & Cummins, 2013). Ringed Plover are found widely on the coasts and some in inland, on wetlands in Ireland. Ringed Plover has mostly coastal breeding distribution, preferring to nest on exposed wide sandy or shingle or shell beaches. Some breed inland, particularly in the west of Ireland, where their preferred nesting habitat is on short-grazed pasture beside rivers and along lakes. Ringed Plovers can also be found in reservoirs, gravel pits, and other places modified by human activities. Nest sites are on the ground, in an open area with little or no plant growth.

In Ireland ringed plover (*Charadrius hiaticula*) are a resident and winter visitor from areas/countries further north, where this species also breeds (Iceland, the Baltic and southern Scandinavia). In Ireland peak numbers occur between August and early October, and then numbers decline slightly (passage birds move further south) and stabilise between November and January.

During summer 2015 vantage point surveys there was one observation of ringed plover. On the 22<sup>nd</sup> of April 2015, while carrying out the watch at VP 7, a single bird was observed feeding on bare peat, adjacent to bog pool/standing water. The observation lasted 4,600 seconds. During surveys at the Derrycashel bog site in 2010 (Copland, 2011), there were 3 observations of this species, with a pair observed in suitable breeding habitat.

Previous surveys/reports have shown the number of breeding waders on the cutaway bogs, which further emphasises their importance for this group of bird species, some of which are of



conservation concern in Ireland, due to loss of suitable breeding habitat. The open landscape, and wetland areas are considered to be particularly important for the success of wader species. Surveys carried out on the Oweninny Boglands in Mayo, by BirdWatch Ireland in 2009, highlighted the first record of breeding Ringed Plover on western cutaway bogs (Copland, 2011).

Potentially suitable breeding habitat for Ringed Plover within the study area, includes locations that have been cut away and where gravel is exposed, such as to the northeast of VP1, the disturbed area of ground to the south east of VP13 in the Derraghan Bog, and the areas of exposed gravel to the northeast of VP15, in the Derryadd/Lough Bannow Bog. During the summer 2015 survey period these locations and other potentially suitable Ringed Plover breeding habitat locations would have been intensively surveyed, with no breeding Ringed Plover ne observed. Summer 2015 surveys, and results of surveys carried out in 2010 (Copland, 2011), suggest that there is little, to no usage of the site by ringed plover during the breeding season. Even though no observations were made of this species breeding within the site, potentially small populations of this species could potentially be breeding in the greater area. The results of the summer 2015 vantage point surveys suggest that the site is used infrequently by this species. A second summer breeding survey would confirm the 2015 survey results.

Tabulated summary for the observation of this species is available in Appendix 2.

#### 3.3.4 Lapwing

Lapwing is red-listed in Ireland, due to large (>50%) in breeding and wintering population declines. Lapwings are ground nesting birds' laying clutches of approximately four eggs, from about late March to early June. To help against predation, they tend to nest in areas, with a good all round view (to spot for predators). For camouflage of the nest, lapwing often chooses either bare ground, or short vegetation (up to 8cm in height at the start of nesting). Grazed pastures, especially wet grassland, wetlands on moorland/bogland, and upland grasslands, and spring sown arable lands are most suitable. Lapwings often to avoid enclosed fields, areas close to trees or other features which obscure an all-round view. In the breeding season, lapwings need a mosaic of habitats. This is because they need different conditions for nesting, and for rearing chicks. Shortly after hatching, lapwing chicks move to suitable feeding areas, where the supply of surface invertebrates is good and the vegetation is low, e.g. pastures, especially if it contains flood pools and damp patches. They feed mainly on earthworms, leatherjackets, insects and their larvae. They stay in this habitat until the young are ready to fly at 5 - 6 weeks old. During the winter, lapwings can be found in grazed pasture, winter stubbles and newly ploughed fields.

During breeding/summer 2015 surveys there were no observations of this species. However, while travelling to the study area breeding lapwing were observed in a wasteland area at an industrial estate at the location of the railway bridge at Longford Town. These observations were not included in the report as they occurred a considerable distance from the study area. During surveys in 2010, there were 3 observations of lapwing at the Derrycashel bog site, with lapwing showing signs of probable presence of nesting site, or young nearby Copland, 2011).

During winter 2014/15 surveys, seventeen individual Lapwing in total were recorded, (three in October, 2014 and fourteen in March, 2015 with a peak count of 14 in January, 2015). Following

completion of survey days at the Lot No 1 study area, surveyors often travel to other locations outside the study area, to get a better understanding of the bird usage in the greater area, and the activity of the same. During winter surveys in 2014 the western shore of Lough Ree was visited, with large amounts of golden plover and some lapwing observed. Potentially lapwing could be nesting on the islands and on the shores of Lough Ree. Lough Ree, and the shores of Lough Ree is a vast area. One area in particular, near the GAA pitch, approximately 8km to the south of VP3/VP5, was noted as potentially suitable breeding grounds for lapwing. Within the study area there are a number of potentially suitable locations for breeding lapwing, however the lack of grain/stubble fields is noted. Areas towards the northern part of the site, and re-vegetating areas on cutover bog potentially could provide breeding habitat for lapwing. These locations would have been monitored during the summer 2015 surveys at the site. Some areas are hot spots for this species, and others are not. Potentially there could be small populations/nesting sites in the greater area, however none were observed during summer 2015 surveys at the site. A second summer survey season would confirm these results.

### 3.3.5 Snipe

Snipe (*Gallinago gallinago*) occurs as both a winter visitor (from the Faeroe islands, Iceland, and Scotland) and a summer visitor (from Europe and West Africa), and also breeds in Ireland. It is amber-listed due to a decline in European population. There were two single observations of snipe during summer vantage point surveys. The observations were confined to the month of April. On the 12<sup>th</sup> of April 2015 a snipe was heard calling distantly, while carrying out the survey effort at VP2. On the 7<sup>th</sup> of April 2015 a single snipe was flushed from a vegetated linear strip at the location of VP4.

### 3.3.6 Cormorant

Cormorant (*Phalacrocorax carbo*) is amber-listed in Ireland due to its localised breeding population. The European population has been evaluated as Secure<sup>16</sup>. This species breeds in colonies mainly around the coast of Ireland, with some birds breeding inland. There was one observation of this species during summer 2015 vantage point surveys. During the watch at VP1 on the 22<sup>nd</sup> of May 2015, a bird was observed commuting at a flight height between 20m-30m, over cutover raised bog. The observation lasted 180 seconds.

The results of the summer 2015 vantage point surveys suggest that the site is used infrequently by this species. Tabulated summary for the observation of this species is available in Appendix 2.

### 3.3.7 Grey heron

Nine observations of grey heron (*Ardea cinerea*) were made during the summer 2015 survey. The observations of this species were of birds perched, or of birds commuting at a leisurely speed at flight heights mainly less than 10m above ground level. Tabulated summaries of all observations of this species are available in Appendix 2.

### 3.3.8 Gull Species

Over the duration of the survey, three gull species were observed, including black-headed gull (*Chroicocephalus ridibundus*) which is red listed. The other two are amber-listed, namely lesser black-backed gull and great black-backed gull (*Larus marinus*).

<sup>16</sup> <http://www.birdwatchireland.ie/IrelandsBirds/Cormorants/Cormorant/tabid/145/Default.aspx>

### 3.3.8.1 *Black-headed gull*

Black-headed gull is red-listed in Ireland due to its rapidly declining and localised breeding population. The European population is regarded as 'Secure', despite declines in several countries<sup>17</sup>. This gull species breeds both on the coast, and inland, where they will often nest in colonies. Usually, black-headed gulls nest on the ground in wetland areas, such as bogs and marshes and will also use man-made lakes. Numbers breeding inland have declined dramatically, probably due to predation by the American mink. Black-headed gull feeds on insects, especially in arable fields and will also exploit domestic and fisheries waste.

There were fifteen observations of black-headed gulls, involving a total 30 gulls. The number of black-headed gulls peaked in June, with a count of 22. All the observations were of birds commuting over the site, mainly at between 10m and 100m in height. The observations were spread throughout the study area. For the most part, the observations were of single birds, with the largest number observed at one sighting was of four birds. There were no observations of black-headed gull in the months of April and August.

On the 18<sup>th</sup> of May 2015, an adult bird was observed while carrying out the watch at VP8. The bird was commuting to the west, over the vantage point, at a flight height of approximately 40m for a duration of 8 seconds.

While carrying out the survey effort at VP12 on the 25<sup>th</sup> of June 2015, 2 birds were observed commuting to the east, at a flight height of approximately 50m. The observation lasted 5 seconds.

Again on the 25<sup>th</sup> of June, 3 black-headed gulls were observed from VP8. At 1324 the gulls were observed flying at a height of approximately 40m, with the observation lasting for 5 seconds.

On the 29<sup>th</sup> of June while carrying out the watch at VP13, two adults were observed commuting to the northeast for 9 seconds, at a flight height of approximately 50m.

### 3.3.8.2 *Summary of black-headed gull observations*

A total of 15 observations, involving 30 birds were made during summer 2015 surveys. The observations were of birds commuting over the site. There were no observations of this species breeding within the site. See Table 10 below, for black-headed gull flight heights and flight durations. Tabulated summaries of all observations of this species are available in Appendix 2.

**Table 10: Duration and flight heights of black-headed gull**

Observation Analysis	Time (sec)	Percentage of Total Survey Time (%)
Total Time Observed	216	0.01
Total Time Observed (0-10m height)	0	0

<sup>17</sup> <http://www.birdwatchireland.ie/IrelandsBirds/GullsTerns/BlackheadedGull/tabid/344/Default.aspx>

Observation Analysis	Time (sec)	Percentage of Total Survey Time (%)
Total Time Observed (10-100m height)	174	0.01
Total Time Observed (>100m height)	42	0.003

### 3.3.8.3 Lesser black-backed gull

Lesser black-backed gull is amber listed in Ireland due to its localised breeding population. The European population is regarded as 'Secure' by BirdLife International<sup>18</sup>. This species breeds colonially, often with other gull species, especially herring gull. They nest on the ground and will use a variety of sites, including off shore islands, islands in inland lakes, sand dunes and coastal cliffs. Lesser black-backed gull feeds on a wide variety of prey, including fish from the sea, waste from fisheries, rubbish from landfill sites, insects in flight, young birds and food from other birds.

In total there were 61 observations of lesser black-backed gull during summer 2015 vantage point surveys. The numbers of lesser black-backed gulls peaked in April, with a count of 153. The numbers decreased as the survey period progressed, with the count remaining over 100, for the months of May and June, decreasing to a count of 70 in July, and falling to a count of 14 in August. Observations were spread across the study area, with no observations of this species while carrying out surveys at vantage points VP1, VP2 and VP3. A large number of the observations were of birds commuting over the site/study area, at a flight height greater than 100m. The number of gulls ranged from single birds, small flocks (3-17 individuals), to the largest flock observed; 48 birds. The larger flocks tended to be observed over the more northerly part of the site (north of VP8).

On the 8<sup>th</sup> of April, while carrying out the vantage point watch at VP4 (1300-1600), large flocks of lesser black-backed gulls were observed flying high in a west to northwest direction at a flight height of between 100m and 300m, towards Lough Ree, where there is breeding colony. Approximately 70 birds were observed throughout the count, with the maximum flock count being 14 birds. During the vantage point watch at VP7 on the 22<sup>nd</sup> of April 2015, 48 gulls were observed commuting in a northwest direction, high over the site. The flight height was noted at greater than 100m. The observation lasted 2,540 seconds.

On the 10<sup>th</sup> of May 2015, 7 gulls were observed commuting to the northwest from 15. The gulls were commuting to the northwest at a flight height of approximately 250m. The duration of the observation was for 13 seconds.

On the 29<sup>th</sup> of June 2015, 2 gulls were observed commuting to the south from VP13. The observation lasted for 5 seconds, with a flight height of approximately 200m.

<sup>18</sup> <http://www.birdwatchireland.ie/IrelandsBirds/GullsTerns/LesserBlackbackedGull/tabid/349/Default.aspx>

On the 9<sup>th</sup> of August while carrying out the watch at VP5, 2 adult lesser black-backed gulls and 1 juvenile were observed commuting to the northwest. The birds were heard calling, while soaring high up in the sky. The observation lasted 75 seconds.

During the survey effort at VP15, on the 10<sup>th</sup> of August 2015, a single gull was observed commuting to the west, at a flight height of greater than 100m. The observation lasted 10 seconds.

#### 3.3.8.4 Summary of lesser black-backed gull observations

During the summer 2015 vantage point surveys, there were a total of 61 observations of lesser black-backed gull, with a peak count of 153, during the April count. For the most part, the observations were of birds commuting high over the site. The larger flocks tended to be over the more northerly part of the site (north of VP8). Numbers fell, (gradually at first) as the survey period progressed. The higher number of birds per flock also tended to be over the more northerly part of the site. There was no evidence of lesser black-backed gull breeding within the study area. See Table 11 below, for lesser black-backed gull flight heights and flight durations. Tabulated summaries of all observations of this species are available in Appendix 2.

**Table 11: Duration and flight heights of lesser black-backed gull**

Observation Analysis	Time (sec)	Percentage of Total Survey Time (%)
Total Time Observed	20,231	1.25
Total Time Observed (0-10m height)	355	0.02
Total Time Observed (10-100m height)	11,642	0.72
Total Time Observed (>100m height)	8,234	0.51

#### 3.3.8.5 Great black-backed gull

Great black-backed gull is amber-listed in Ireland due to a decline in the breeding population. The European population is regarded as 'Secure'. Greater black-backed gull breeds on the ground in colonies all around the coast of Ireland. Most colonies are on well-vegetated off-shore islands, or in other areas difficult to access by predators. A few birds breed inland where they associate with freshwater lakes, more over in Co. Mayo and Co. Galway<sup>19</sup>.

<sup>19</sup> <http://www.birdwatchireland.ie/IrelandsBirds/GullsTerns/GreatBlackbackedGull/tabid/353/Default.aspx>

There was one observation of great black-backed gull during the summer 2015 vantage point surveys. On the 13<sup>th</sup> of July while carrying out the watch at VP8 a single gull was observed commuting to the east, at a height of greater than 100m. The observation began at 15.10, and lasted for 8 seconds.

### 3.3.8.6 Summary of Great black-backed gull observations

During the summer 2015 vantage point surveys, there was one observation of this species. The observation was of a single bird commuting at height. There were no evidence of great black-backed gull breeding within the study area. Results of the summer 2015 vantage point surveys suggest that the study is used infrequently by this species during the summer months. It must be noted that only one summer survey has been carried out at the site. See Table 12 below, for great black-backed gull flight height and flight duration. Tabulated summaries of all observations of this species are available in Appendix 2.

**Table 12: Duration and flight heights of great black-backed gull**

Observation Analysis	Time (sec)	Percentage of Total Survey Time (%)
Total Time Observed	8	0.0004
Total Time Observed (0-10m height)	0	0
Total Time Observed (10-100m height)	0	0
Total Time Observed (>100m height)	8	0.0004

### 3.3.9 Summer 2015 Transect Survey

Transect surveys were carried out in May and July 2015. A total of 42 species were recorded during the summer transect surveys. Table 13 below provides details of all birds recorded during the winter transect bird surveys. Appendix 1 illustrates the locations of the transect routes. Species highlighted in red represent species that are red-listed. They are red-listed because they are of Global Conservation Concern. Species highlighted in orange represent species that are of European Conservation Concern. They are amber-listed because of their unfavourable conservation status, but not concentrated in Europe. The remaining species are green-listed, species of favourable conservation status (Calhoun and Cummins, 2013).

Table 13: Summer Transect Totals from May and July 2015

Common Name	Scientific Name	May	July	Peak Count
Blackbird	<i>Turdus merula</i>	29	11	29
Blackcap	<i>Sylvia atricapilla</i>	8	7	8
Blue tit	<i>Cyanistes caeruleus</i>	1	-	1
Bullfinch	<i>Pyrrhula pyrrhula</i>	2	5	5
Buzzard	<i>Buteo buteo</i>	1	-	1
Chaffinch	<i>Fringilla coelebs</i>	19	25	25
Chiffchaff	<i>Phylloscopus collybita</i>	2	2	2
Coal tit	<i>Periparus ater</i>	-	2	2
Cuckoo	<i>Cuculus canorus</i>	2	-	2
Dunnock	<i>Prunella modularis</i>	1	3	3
Goldcrest	<i>Regulus regulus</i>	-	1	1
Goldfinch	<i>Carduelis carduelis</i>	1	6	6
Great tit	<i>Parus major</i>	-	1	1
Greenfinch	<i>Carduelis chloris</i>	1	-	1
Grey heron	<i>Ardea cinerea</i>	-	2	2
House martin	<i>Delichon urbicum</i>	-	5	5
Hooded crow	<i>Corvus cornix</i>	24	11	24
Jackdaw	<i>Corvus monedula</i>	8	21	21
Lesser black-back gull	<i>Larus fuscus</i>	8	6	8
Linnet	<i>Carduelis cannabina</i>	7	26	26
Magpie	<i>Pica pica</i>	7	7	7
Mallard	<i>Anas platyrhynchos</i>	3	-	3
Meadow pipit	<i>Anthus pratensis</i>	48	50	50
Mistle thrush	<i>Turdus viscivorus</i>	3	-	3
Pheasant	<i>Phasianus colchicus</i>	8	5	8
Pied wagtail	<i>Motacilla alba</i>	8	8	8
Raven	<i>Corvus corax</i>	4	5	5
Redpoll	<i>Carduelis flammea</i>	15	39	39
Reed bunting	<i>Emberzia schoenichus</i>	8	15	15
Robin	<i>Erithacus rubecula</i>	20	10	20
Rook	<i>Corvus frugilegus</i>	2	10	10
Siskin	<i>Carduelis spinus</i>	-	2	2
Sand martin	<i>Riparia riparia</i>	39	23	39
Skylark	<i>Alauda arvensis</i>	20	4	20
Snipe	<i>Gallinago gallinago</i>	1	-	1
Song thrush	<i>Turdus philomelos</i>	15	3	15
Starling	<i>Sturnus vulgaris</i>	11	-	11
Swallow	<i>Hirundo rustica</i>	28	92	92
Whitethroat	<i>Sylvia communis</i>	13	8	13
Willow warbler	<i>Phylloscopus trochilus</i>	48	7	48

Common Name	Scientific Name	May	July	Peak
Woodpigeon	<i>Columba palumbus</i>	11	13	13
Wren	<i>Troglodytes troglodytes</i>	19	34	34
<b>Total No of Species</b>		<b>36</b>	<b>34</b>	<b>42</b>

A total of 42 species was recorded during the summer 2015 transect survey. There was a total of 36 species observed during the May visit and, a total of 34 species observed during the July visit (see Table 13 above). Of these species, one was red-listed and eight were amber-listed. The most abundant species recorded was swallow, with 28 observed in May, and 92 in July. Swallow is amber-listed in Ireland, due to large historical decline, and has been evaluated as depleted, and is still declining in several countries<sup>20</sup>. The next most abundant species was meadow pipit. Meadow pipit was at one time, one of the commonest bird species in Ireland, its preferred habitat being rough pastures and uplands. This species was recently downgraded from green-listed to red-listed, due to a short-term decline in breeding population (>50%) (Colhoun and Cummins, 2013). It is likely that this species breeds within the vegetated bog areas and the scrub areas within the study area. There was a peak count of 39 sand martin during transects conducted in May.

Sand martin (*Riparia riparia*) is amber-listed in Ireland due to concerns over the European breeding population, which is regarded as 'Depleted'. Sand Martins had undergone a large historical decline, though the population is currently stable<sup>21</sup>. Sand martins breed in burrows dug into river banks or quarries. These breeding sites are vulnerable to predation by mink and red fox. Feeding birds disperse widely, favouring wetlands and rural areas.

There was a peak count of 26 linnet (*Carduelis cannabina*) during transects conducted in July. Linnet is amber-listed in Ireland due to concern over the European breeding population, which has undergone a moderate recent decline<sup>22</sup>. This species breed in a variety of habitats, including rough grassland, uplands and in coastal areas with gorse.

Skylark (*Alauda arvensis*) is amber-listed in Ireland and is evaluated as depleted in Europe, due to a large historical decline by BirdLife International<sup>23</sup>. This species breeds in a variety of habitats including cultivated areas, ungrazed grasslands and upland heaths. Skylark numbers peaked in May with a count of 20 during transects conducted in May, and decreased to 4, during transects conducted in July. Observations during vantage point surveys were similar to these numbers. During summer 2015 surveys the lack of activity/low numbers of skylark was noted.

There were single observations of greenfinch (*Carduelis chloris*) and goldcrest (*Regulus regulus*) during May and July transects respectively. Goldcrest is Ireland's smallest breeding bird species, favouring coniferous forests, hedgerows and suburban gardens for breeding sites. Greenfinch was recently downgraded from green-listed to amber-listed on the basis of short-term declines in abundance of at least 25% (Colhoun and Cummins, 2013). During summer 2015 transect surveys

<sup>20</sup> <http://www.birdwatchireland.ie/IrelandsBirds/SwallowMartins/Swallow/tabid/1034/Default.aspx>

<sup>21</sup> <http://www.birdwatchireland.ie/IrelandsBirds/SwallowMartins/SandMartin/tabid/1033/Default.aspx>

<sup>22</sup> <http://www.birdwatchireland.ie/IrelandsBirds/Sparrowsfinchesbuntings/Linnet/tabid/1055/Default.aspx>

<sup>23</sup> <http://www.birdwatchireland.ie/IrelandsBirds/Larks/Skylark/tabid/1100/Default.aspx>



other amber-listed species/species of conservation concern included, mistle thrush, robin, starling and snipe.



## 4 CONCLUSION

Based on the information from the bird surveys and desk survey, and the scale and size of the area surveyed, Lot No.1 has a bird assemblage, typical of the habitats present. Over the summer 2015 survey period 59 species were observed, five of which were raptor species. These include buzzard, kestrel, sparrowhawk, merlin, and peregrine falcon.

### 4.1 RAPTORS

The single observation of peregrine falcon was made from VP11, on the 9<sup>th</sup> of April 2015. The bird did not show any signs of breeding activity. During winter 2014/15 vantage point surveys there were 3 observations of peregrine falcon, all made from VP4. During the summer 2015 survey period there was no evidence of breeding peregrine falcon at the study area. The results of the summer 2015 survey period suggest the study area is used infrequently by peregrine falcon during the summer months.

There were two observations of merlin over the course of the summer 2015 survey period. Both observations were made at VP15, once in April and again in May. Merlin is a rare breeding bird in Ireland, nesting on the ground on moorland, mountain and blanket bog. This raptor also nests in woodland and has taken to nesting in forestry plantations adjacent to moorland. It is likely that both observations were of the same bird. There was no evidence of merlin breeding within the study area. The results of the summer survey (2015) show that the site is used infrequently by merlin during the summer months.

There were 15 observations of kestrel. This bird of prey is largely a resident within its breeding territory. The results of the winter 2015 survey show that the study area and adjacent habitats support a healthy population of kestrel.

In total, seven separate observations of sparrowhawk were made during the summer 2015 survey period. The birch woodland (1<sup>st</sup> and 2<sup>nd</sup> rotation), scrub, woodland edges, rides, provide optimal foraging habitat for sparrowhawk.

Buzzard was the commonest bird of prey observed during the summer 2015 survey period. In total there were 28 observations of buzzard. This species was observed throughout the site and there is ample foraging/breeding habitat for them at the site. Summer 2012 surveys indicate that buzzard is resident in this region. However during surveys there was no evidence of buzzards breeding within the study area.

It must be noted that only one summer survey has been conducted at the site.

#### 4.1.1 Summary/Recommendations

Following summer 2015 surveys buzzard is considered the only raptor species which would potentially be impacted by any proposed development. Buzzards are green-listed in Ireland. The European population is considered to be secure (Colhoun and Cummins, 2013). The Buzzard population in Ireland is showing one of the greatest increases in distribution and abundance of any

bird species recorded by the Breeding Birds Atlas in Ireland over the past 30 years<sup>24</sup>. For the most part, the observations of buzzard and other birds of prey were of birds using the fringes of the study area, over treeline, scrub, re-vegetating/untouched raised bog and woodland habitats. There were a small number of observations of this species soaring over open cutover bog habitat. There was no evidence of this species breeding within the study area. Optimal breeding habitat at the site for buzzard includes the mature birch trees at VP6 and the mature trees to the south of VP13. The willow scrub and vegetated areas towards the northern part of the study area provide suitable foraging and breeding habitat, along with shelter for passerine species and mammals. The small mammals and passerines using the vegetated areas at the northern part of the site and the vegetated fringes of the bare peat areas throughout the study area would provide prey items for raptor species. Any proposed development should avoid excavations of treelines, hedgerows, scrub, and woodland habitats fringing the open, bare peat areas. These vegetated areas provide foraging, resting and commuting habitats for birds and mammal species. These vegetated areas would also act as buffer areas to any proposed developments in the open, bare peat areas. The vegetated areas would also help in the re-vegetating of bare areas around any proposed developments.

#### 4.2 WILDFOWL/WADERS/GULLS

Wildfowl, wader and gull species observed during the summer 2015 survey period included golden plover, curlew, snipe, black-headed gull, lesser black-backed gull and great black-backed gull. The Shannon River is a flyway for wildfowl and waders. This overall catchment area is important for species traversing over the site.

Lough Ree SPA (004064) is situated 330m to the south of Derraghan Bog at its closest point. Lough Ree is of high ornithological importance for both wintering and breeding birds. The following are included in the conservation objectives for this designated site.

- Little Grebe (*Tachybaptus ruficollis*) [A004]
- Whooper Swan (*Cygnus cygnus*) [A038]
- Wigeon (*Anas penelope*) [A050]
- Teal (*Anas crecca*) [A052]
- Mallard (*Anas platyrhynchos*) [A053]
- Shoveler (*Anas clypeata*) [A056]
- Tufted Duck (*Aythya fuligula*) [A061]
- Common Scoter (*Melanitta nigra*) [A065]
- Goldeneye (*Bucephala clangula*) [A067]
- Coot (*Fulica atra*) [A125]
- Golden Plover (*Pluvialis apricaria*) [A140]
- Lapwing (*Vanellus vanellus*) [A142]
- Common Tern (*Sterna hirundo*) [A193]
- Wetland and Waterbirds [A999]

Lough Ree is a traditional breeding site for black-headed gull and whilst a full survey has not been carried out in recent years, substantial numbers of nesting birds were present on at least one island in 2003. Lesser black-backed gull and common gull have bred in the past and the latter species may

<sup>24</sup> <http://www.birdwatchireland.ie/LinkClick.aspx?fileticket=C8vd4RLtsnc%3D&tabid=1165>

still breed. Lough Ree is an important site for breeding duck and grebes, with tufted duck (265 individuals in late May 1995) and great crested grebe (89 individuals in late May 1995) having populations of national importance. Of particular note is that Lough Ree is one of the two main sites in the country for breeding common scoter, a Red Data Book species. The most recent full census of the site for the species (in 1999) gave a population of c. 32 pairs. The above species were identified during desk study and were included as target species for the summer 2015 survey period.

For wintering birds the site supports nationally important populations of seven wintering waterfowl species, as well as other important species including whooper swan and Greenland white-fronted goose (both of which are listed on Annex I of E.U. Birds Directive).

Lough Ree is one of the most important Midland sites for wintering waterfowl, with nationally important populations of wigeon (1,475), teal (912), pintail (35), tufted Duck (661), goldeneye (137), golden plover (2,035) and lapwing (3,870) occurring at the SPA site (all figures are average peaks for the 5 seasons 1995/96-1999/00). Regionally important numbers of whooper swan (89) and greenland white-fronted goose (92) are found feeding in the vicinity of the lake, as are golden plover, lapwing and, to some extent, wigeon and teal. Other species which occur in winter include cormorant (64), mallard (675), coot (250), shoveler (40), curlew (167) and great crested grebe (23), as well as the resident little grebe (34) and mute swan (93). The site supports a nationally important breeding population of common tern (90 pairs in 1990).

Of the aforementioned species listed above, the following species were observed during summer 2015 surveys at the site; golden plover, curlew, black headed gull, lesser black-backed gull, cormorant and mallard.

Table 14 below shows the bird species of conservation interest breeding within the Lot No.1 site/ breeding in the local/greater area, and species considered passing through as per summer/breeding surveys 2015).

**Table 14: Wetland/species of conservation interest showing signs of breeding during summer (2015) breeding within the study area**

Summary of breeding/summer 2015 surveys (species of conservation interest)			
Confirmed wetland birds/species conservation interest breeding within site			
Mallard	Snipe	Meadow pipit	Skylark
Stonechat	Robin	Sand martin	-
Potentially Breeding in local area			
Buzzard	Grey heron	Linnet	Greenfinch
House martin	Starling	Swift	Wheatear
Swallow	Mistle thrush	Kestrel	Sparrowhawk
Potentially breeding in greater area			
Curlew	Lapwing	Ringed plover	Lesser black backed gull (L. Ree)
Gold crest	-	-	-
Species passing through			
Cormorant	Black headed gull	Lesser blacked backed gull	-

The following Table (Table 15) lists the waterfowl/wader species (species of conservation interest/waterfowl/wader survey target species), observed during summer 2015 surveys. The table also shows the estimated summer/wintering within the Lough Ree SPA site and National/all Ireland estimated populations.



Table 15: Waterbird species of conservation interest which were observed during summer 2015 surveys, with regard to windfarm developments

Species of conservation interest which were observed during summer 2015 surveys							
Species	Monthly Peak Counts during summer 2015 survey	Counts within Lough Ree SPA site(Winter) <sup>25</sup>	Counts within Lough Ree SPA (Summer/resident all year) <sup>26</sup>	Wintering National population estimate <sup>27</sup>	All Ireland wintering population estimate <sup>28</sup>	Ireland Breeding population Estimate	Comments as per summer 2015 results
Golden plover ( <i>Pluvialis apricaria</i> )	180 Observed in April Only	2035 winter individuals	N/A	N/A	150,000	Less than 200 breeding pairs <sup>29</sup>	All the observations were of birds in April, prior to their departure to breeding grounds in Iceland. No breeding observed during surveys. No expected significant impacts to summer birds (not present).
Curlew ( <i>Numenius arquata</i> )	3	167 wintering individuals	N/A	35,250 (w)	65,820	1700 birds (2002) <sup>30</sup>	Not observed breeding, but pair observed displaying, and very vocal. Pair potentially

<sup>25</sup> <http://www.npws.ie/sites/default/files/protected-sites/natura2000/NF004064.pdf>

<sup>26</sup> <http://www.npws.ie/sites/default/files/protected-sites/natura2000/NF004064.pdf>

<sup>27</sup> Birds of Conservation Concern in Ireland Kendrew Colhoun and Sinéad Cummins (2014–2019)

<sup>28</sup> Irelands Wetlands and their Waterbirds: Status and Distribution. Birdwatch Ireland, Newcastle, Co. Wicklow (Crowe, 2005)

<sup>29</sup> <http://www.birdwatchireland.ie/LinkClick.aspx?fileticket=b1V9%2buj6PKg%3d&tabid=540>

<sup>30</sup> <http://www.birdwatchireland.ie/LinkClick.aspx?fileticket=8wq1FvrXib0=&tabid=1457>

Species of conservation interest which were observed during summer 2015 surveys							
Species	Monthly Peak Counts during summer 2015 survey	Counts within Lough Ree SPA site(Winter) <sup>25</sup>	Counts within Lough Ree SPA (Summer/resident all year) <sup>26</sup>	Wintering National population estimate <sup>27</sup>	All Ireland wintering population estimate <sup>28</sup>	Ireland Breeding population Estimate	Comments as per summer 2015 results
							breeding to the northeast of VP15 outside the site boundary.
Cormorant ( <i>Phalacrocorax carbo</i> )	1	64 wintering individuals	N/A	5,211	3,405	4,500 pairs <sup>31</sup>	During the summer 2015 surveys, the only movements of this species were at the northern part of the study area (VP1, 1 observation in total).
Mallard	16	675	N/A	84,000	N/A	20,000 pairs <sup>32</sup>	Lough Ree only has winter population. None observed breeding within the site. No significant impacts expected to

<sup>31</sup> <http://ec.europa.eu/environment/nature/cormorants/breeding-distribution-2006.htm>

<sup>32</sup>

[https://books.google.ie/books?id=O\\_nUBAAAQBAJ&pg=PA74&lpg=PA74&dq=estimated+mallard+breeding+population+ireland&source=bl&ots=8XBVUUXz4B&sig=TUQwHsI5IMp8x7X-vi2SwJ0ld0I&hl=en&sa=X&ved=0CCgQ6AEwAmoVChMI3uWm8cblyAIVRhQsCh3--Qqb#v=onepage&q=estimated%20mallard%20breeding%20population%20ireland&f=false](https://books.google.ie/books?id=O_nUBAAAQBAJ&pg=PA74&lpg=PA74&dq=estimated+mallard+breeding+population+ireland&source=bl&ots=8XBVUUXz4B&sig=TUQwHsI5IMp8x7X-vi2SwJ0ld0I&hl=en&sa=X&ved=0CCgQ6AEwAmoVChMI3uWm8cblyAIVRhQsCh3--Qqb#v=onepage&q=estimated%20mallard%20breeding%20population%20ireland&f=false)

Species of conservation interest which were observed during summer 2015 surveys							
Species	Monthly Peak Counts during summer 2015 survey	Counts within Lough Ree SPA site(Winter) <sup>25</sup>	Counts within Lough Ree SPA (Summer/resident all year) <sup>26</sup>	Wintering National population estimate <sup>27</sup>	All Ireland wintering population estimate <sup>28</sup>	Ireland Breeding population Estimate	Comments as per summer 2015 results
							summer birds.
Black-headed gull ( <i>Chroicocephalus ridibundus</i> )	22	N/A	N/A  traditional breeding site for black-headed gull (NPWS survey 2003)	1,617	34, 739	14,000 pairs <sup>33</sup>	For the most part, the gull movements observed during winter, and to some extent summer surveys, were to the north of the site, between Lough Ree and the River Shannon.
Lesser black-backed gull	153 (majority flyovers at high altitude)	N/A	N/A  have bred in the past and may still breed	N/A	5,595	48,00 pairs (all Ireland) <sup>34</sup>	Following summer 2015 surveys any proposed development will not have significant impacts on this species during summer months. Majority of birds commuting over the site at high altitude.

<sup>33</sup> [http://jncc.defra.gov.uk/PDF/S2000\\_11\\_bhg\\_tabs\\_and\\_figs\\_web.pdf](http://jncc.defra.gov.uk/PDF/S2000_11_bhg_tabs_and_figs_web.pdf)

<sup>34</sup> [http://jncc.defra.gov.uk/PDF/S2000\\_13\\_lbbg\\_tabs\\_and\\_figs\\_web.pdf](http://jncc.defra.gov.uk/PDF/S2000_13_lbbg_tabs_and_figs_web.pdf)



Species of conservation interest which were observed during summer 2015 surveys							
Species	Monthly Peak Counts during summer 2015 survey	Counts within Lough Ree SPA site(Winter) <sup>25</sup>	Counts within Lough Ree SPA (Summer/resident all year) <sup>26</sup>	Wintering National population estimate <sup>27</sup>	All Ireland wintering population estimate <sup>28</sup>	Ireland Breeding population Estimate	Comments as per summer 2015 results
Great black-backed gull ( <i>Larus marinus</i> )	1	N/A	N/A	N/A	2,183	23,000 pairs <sup>35</sup>	Following summer 2015 surveys, any proposed development will not have significant impacts on this species

<sup>35</sup> [http://jncc.defra.gov.uk/PDF/S2000\\_15\\_gbbg\\_tabs\\_and\\_figs\\_web.pdf](http://jncc.defra.gov.uk/PDF/S2000_15_gbbg_tabs_and_figs_web.pdf)

From the summer 2015 observations of golden plover, it is considered that this species does not breed at the site. The April observations were of late wintering birds, prior to their departure to breeding grounds in Iceland. Only wintering birds are listed for the nearby designated site (Lough Ree SPA). The majority of the sightings of golden plover in summer were of birds on the ground.

In total there were 3 observations of curlew, involving 6 birds. One of the observations concerned a pair of curlew displaying outside of the site boundary, to the northeast of VP15. Overall, the results of the summer 2015 surveys suggest that curlew do not use the site in significant numbers during the summer months.

Following surveys carried out by experienced ornithologists at Malachy Walsh and Partners during the summer/breeding 2015 survey period, results would indicate that there was little to no breeding of species, such as curlew, golden plover, lapwing and ringed plover. It must be noted that the study site covers a vast area, and the surveys were carried out for only one survey season. A second survey season would confirm these results. Potentially, the greater area could be used for small populations of breeding species such as curlew, lapwing and ringed plover. Nearby designated sites (Lough Ree) do not highlight that these species are breeding in any significant numbers within these sites, describing only significant wintering populations, with Ringed Plover not included in the conservation objectives, within any nearby designated site. Potentially, these species could be breeding within small populations in the greater area; however summer 2015 surveys suggest that they are not breeding within the site in significant numbers.

The results are the results, with the surveys at the site carried out by ornithological team with vast survey experience at windfarm sites. The survey team, ecologists and ornithologists conducting the surveys at the Bord na Móna site, have vast experience in ornithological survey work. The team has been conducting bird survey work for the past 7 years at windfarm sites, including pre and post construction planning stages, and has built up a credible and strong relationship with NPWS Rangers and Regional Ecologists around the country. Additionally, the survey team has strong ties with Bird Watch Ireland and with the ornithological community across the country.

In total there were 15 black-headed gull observations scattered throughout the study area. For the most part the birds were observed commuting. No breeding sites/behaviour was observed. The summer 2015 results indicated minimal usage of the study area by great black-backed gull, cormorant, snipe and ringed plover during this summer survey period. Mallard was the most observed species of duck, with a peak count of 16 (for the month of May). For the most part, mallard were observed commuting and birds used drains and standing water to roost at the site. There were no observations of this species breeding within the site.

Interestingly, there were no records of lesser black-backed gull (*Larus fuscus*) during the winter 2014/15 survey. However, the species became more frequent during the summer 2015 survey. A peak count of 153 birds was observed during the month of April, and decreased over the season. The larger flocks tended to be over the northern part of the site (to the north of VP8). For the most part the birds were commuting at a high altitude. There were no observations of this species breeding within the study area.

#### 4.2.1 Summary/Recommendations

During the summer 2015 survey period there were no observations of breeding raptors within the study area. During the summer 2015 survey there was no regular pattern of movement of the waterbirds/waders observed over the study area. The only evidence of breeding activity for target species during the survey was of a pair of curlew to the northeast of VP15, outside the site boundary. Lesser black-backed gull was observed commuting over the site, for the most part at high altitude throughout the study area. Larger flocks tended to be north of VP8.

Any proposed development within the study area should avoid excavations of the treelines, hedgerows, scrub, and woodland habitats fringing the open, bare peat areas. These vegetated areas provide foraging, resting and commuting habitats for birds and mammal species. Potentially the woodland habitats within the site could offer breeding habitat for species such as buzzard. In addition the vegetated areas occurring at the study area would act as buffer zones for any proposed developments in the open, bare peat areas. The vegetated areas would also help in the re-vegetating of bare areas around any proposed developments.

#### 4.3 ALL SPECIES OBSERVED DURING SUMMER 2015 SURVEY PERIOD

The following Table (Table 16) lists all species observed during the summer 2015 survey period, along with their conservation status, and general comments.

**Table 16: All species observed during summer 2015 vantage point and transect surveys**

Common Name	Scientific Name	Comments
Blackbird	<i>Turdus merula</i>	Resident.
Blackcap	<i>Sylvia atricapilla</i>	Summer visitor.
Black-headed gull	<i>Chroicocephalus ridibundus</i>	Resident on Lough Ree.
Blue tit	<i>Cyanistes caeruleus</i>	Resident.
Bullfinch	<i>Pyrrhula pyrrhula</i>	Resident.
Buzzard	<i>Buteo buteo</i>	Resident.
Carrion crow	<i>Corvus corone</i>	Flyover.
Chaffinch	<i>Fringilla coelebs</i>	Resident.
Chiffchaff	<i>Phylloscopus collybita</i>	Rare winter visitor at the site. Summer visitor.
Coal tit	<i>Periparus ater</i>	Resident.
Cormorant	<i>Phalacrocorax carbo</i>	Resident on Lough Ree. Frequently congregates along the Shannon, northeast of Moundillon.
Cuckoo	<i>Cuculus carorus</i>	Summer visitor.
Curlew	<i>Numenius arquata</i>	Scarce winter/summer.
Dunnock	<i>Prunella modularis</i>	Resident.
Goldcrest	<i>Regulus regulus</i>	Resident.
Golden plover	<i>Pluvialis apricaria</i>	Winter visitor.
Goldfinch	<i>Carduelis carduelis</i>	Resident.

Common Name	Scientific Name	Comments
Great black-backed gull	<i>Larus marinus</i>	Scarce winter/summer visitor.
Great tit	<i>Parus major</i>	Resident.
Greenfinch	<i>Carduelis chloris</i>	Resident.
Grey heron	<i>Ardea cinerea</i>	Resident.
Hooded crow	<i>Corvus cornix</i>	Resident.
House martin	<i>Delichon urbicum</i>	Summer visitor.
Jackdaw	<i>Corvus monedula</i>	Resident.
Jay	<i>Garrulus glandarius</i>	Scarce resident.
Kestrel	<i>Falco tinnunculus</i>	Resident.
Lesser black-backed gull	<i>Larus fuscus</i>	Fly over. Breeds at Lough Ree
Linnet	<i>Carduelis cannabina</i>	Resident.
Magpie	<i>Pica pica</i>	Resident.
Mallard	<i>Anas platyrhynchos</i>	Resident.
Merlin	<i>Falco columbarius</i>	Scarce passage migrant/scarce resident.
Meadow pipit	<i>Anthus pratensis</i>	Resident.
Mistle thrush	<i>Turdus viscivorus</i>	Resident.
Peregrine falcon	<i>Falco peregrinus</i>	Scarce summer visitor.
Pheasant	<i>Phasianus colchicus</i>	Resident.
Pied wagtail	<i>Motacilla alba</i>	Resident.
Raven	<i>Corvus corax</i>	Resident.
Redpoll	<i>Carduelis flammea</i>	Resident.
Reed bunting	<i>Emberzia schoenichus</i>	Resident.
Ringed plover	<i>Charadrius hiaticula</i>	Scarce visitor.
Robin	<i>Erithacus rubecula</i>	Resident.
Rook	<i>Corvus frugilegus</i>	Resident.
Sand martin	<i>Riparia riparia</i>	Summer visitor.
Sedge warbler	<i>Acrocephalus schoenobaenus</i>	Summer visitor.
Siskin	<i>Carduelis spinus</i>	Resident .
Skylark	<i>Alauda arvensis</i>	Scarce resident.
Snipe	<i>Gallinago gallinago</i>	Scarce summer breeder.
Song thrush	<i>Turdus philomelos</i>	Resident.
Sparrowhawk	<i>Accipiter nisus</i>	Resident.
Starling	<i>Sturnus vulgaris</i>	Resident.
Stonechat	<i>Saxicola torquatus</i>	Resident.
Swallow	<i>Hirundo rustica</i>	Summer visitor.
Swift	<i>Apus apus</i>	Scarce summer visitor.
Wheatear	<i>Oenanthe oenanthe</i>	Summer visitor/passage migrant.

Common Name	Scientific Name	Comments
Whitethroat	<i>Sylvia communis</i>	Summer visitor.
Willow warbler	<i>Phylloscopus trochilus</i>	Summer visitor.
Woodpigeon	<i>Columba palumbus</i>	Resident.
Wren	<i>Troglodytes troglodytes</i>	Resident.
<b>Total No of Species</b>		<b>59</b>

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# Appendix 1

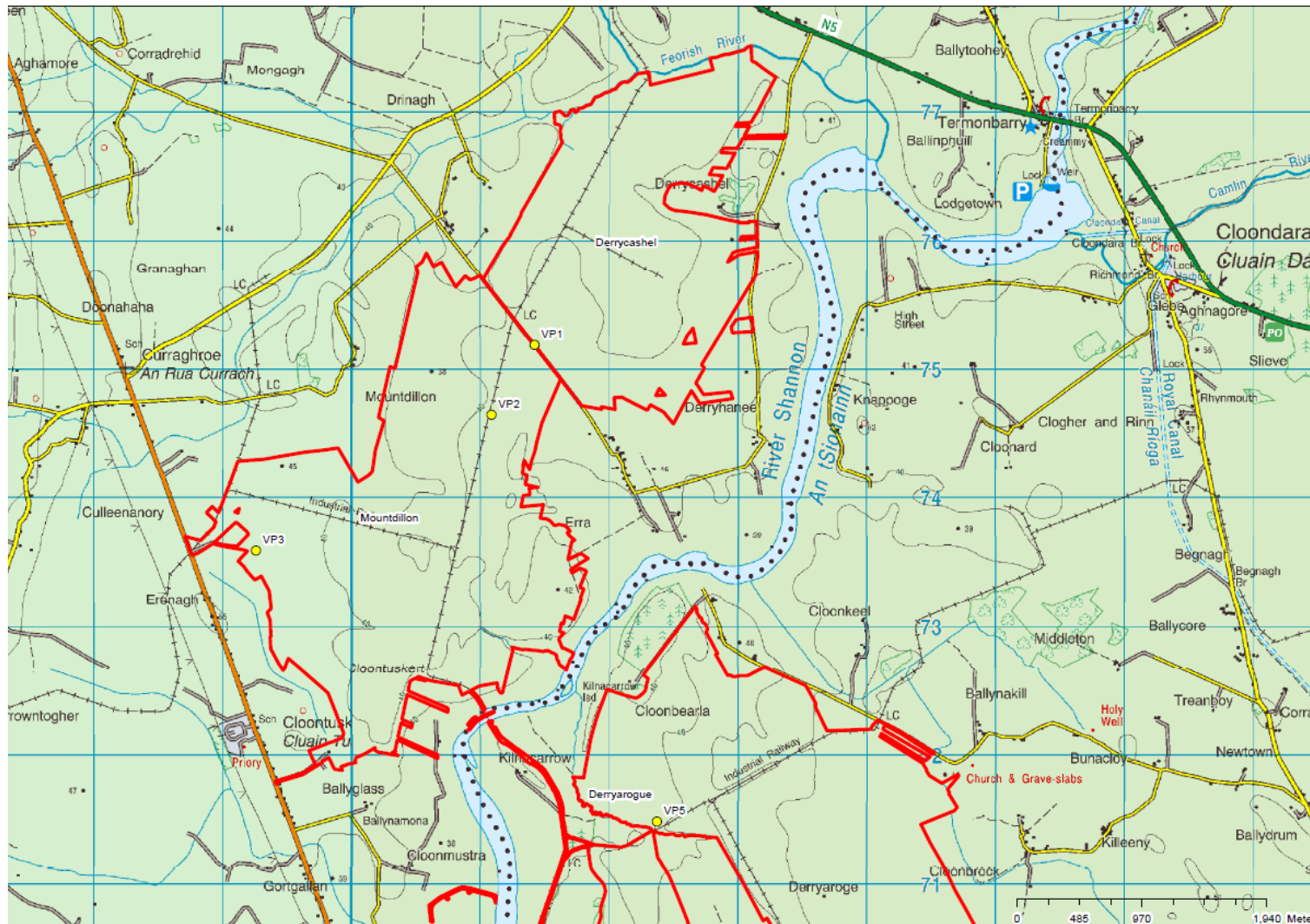
## Figures





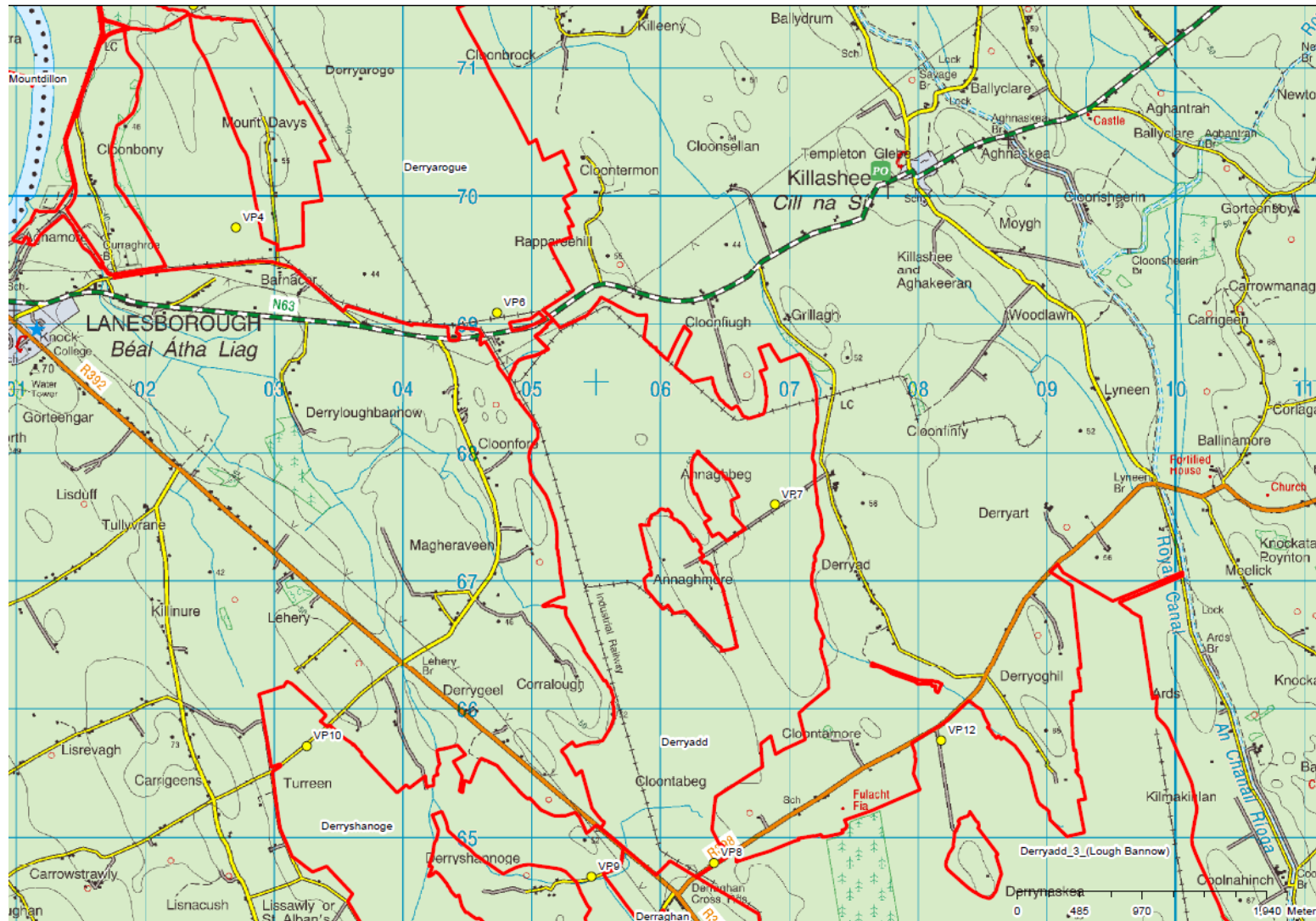






Section 1 Discovery and Vantage Points

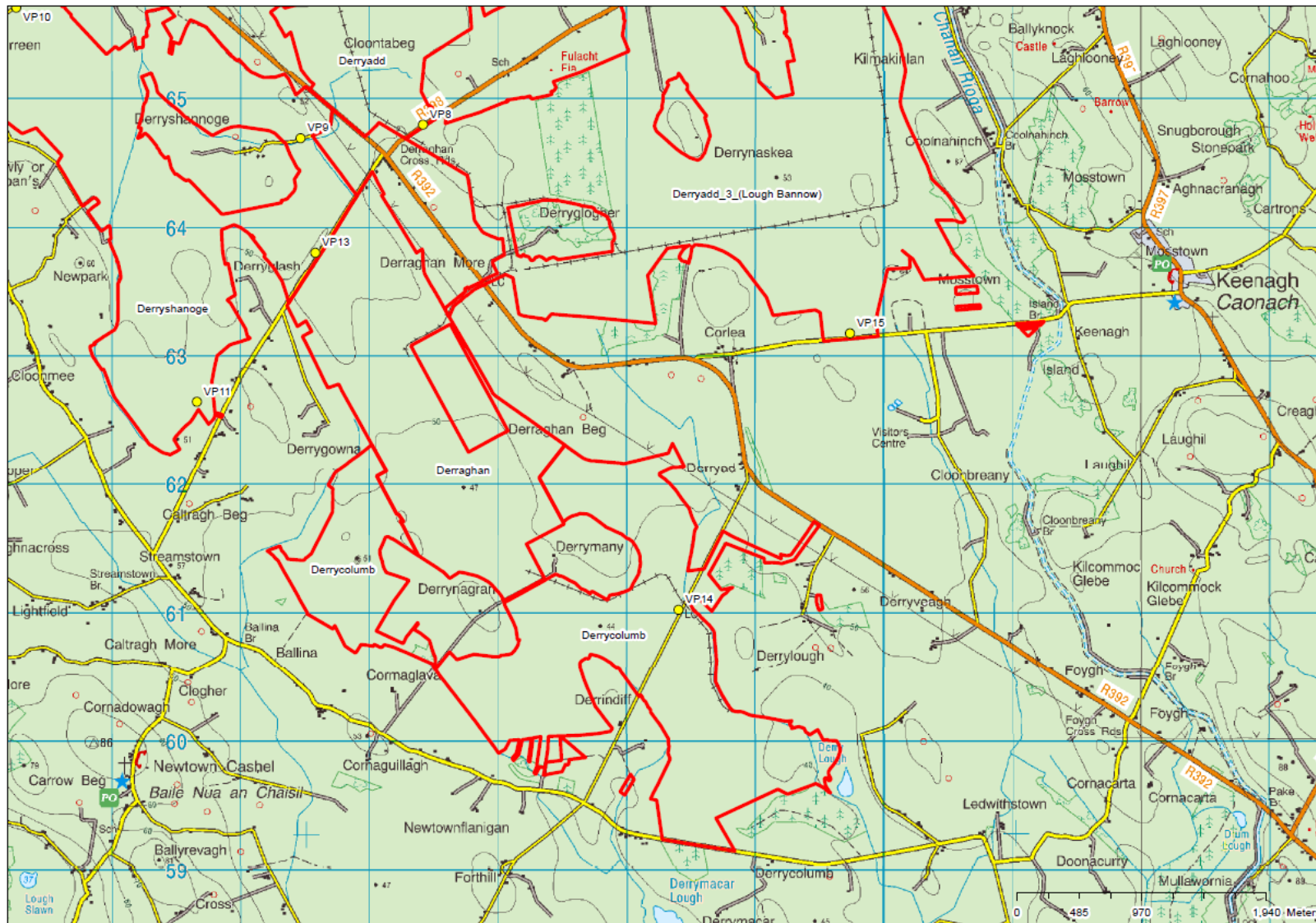




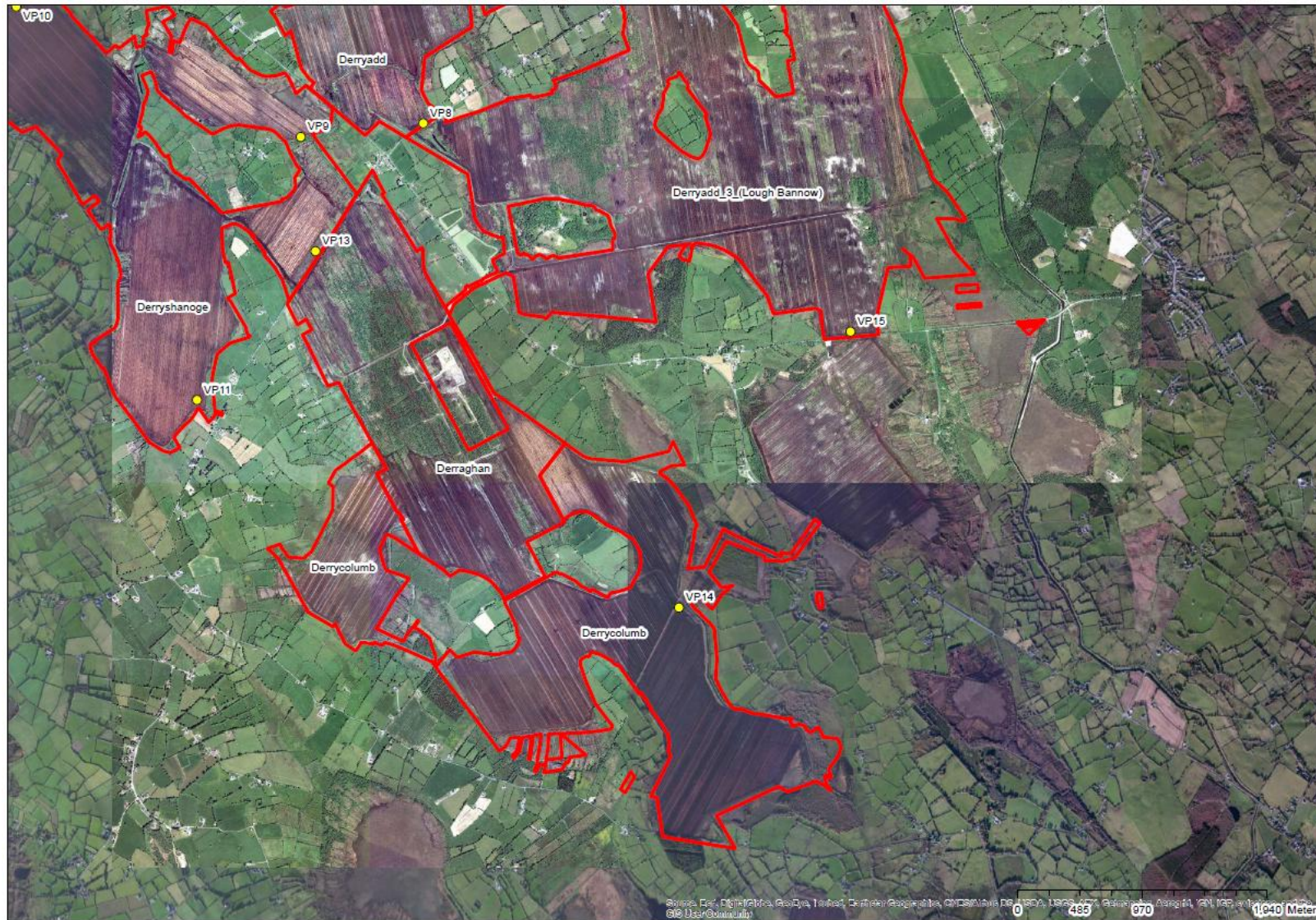
Section 2 Discovery and Vantage Points



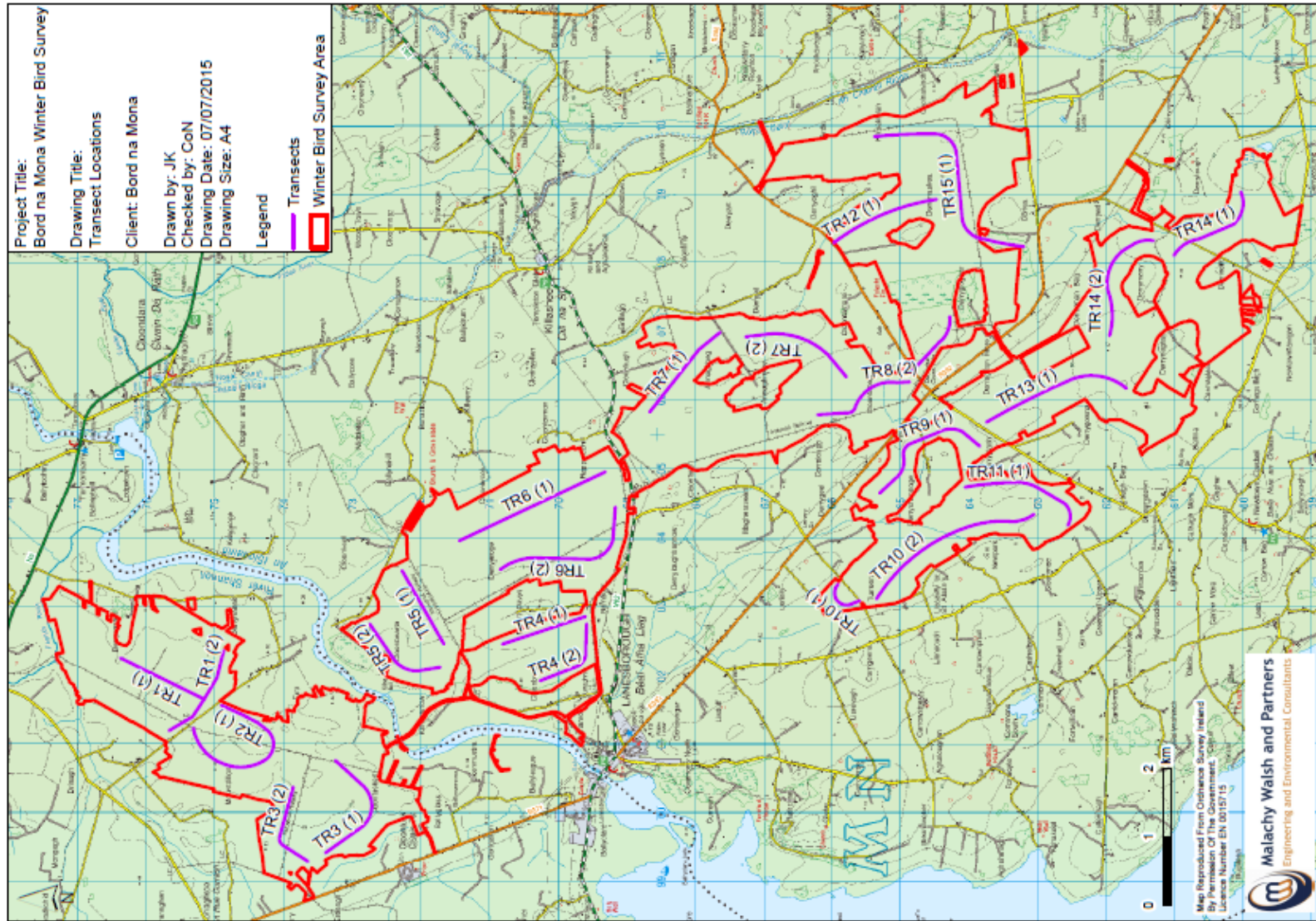
Section 2 Aerial and Vantage Points



Section 3 Discovery and Vantage Points



Section 2 Aerial and Vantage Points



Transect locations



## Appendix 2

### Summary tables of observations for target species

**Buzzard observations and comments**

Buzzard observations					
Date	VP	Time	Habitat	Notes	Obs.
07/04/2015	4	11:38	Scrub	Adult bird soaring at 100m in a SW direction then W out of view behind treeline. Approx.>100m m for 180Secs, foraging.	1
07/04/2015	4	12:48	Bog	Pair of adults soaring north of VP, increased in height to excess of 1000ft until they went out of sight.>100m for 120 seconds.	2
08/04/2015	6	13.30	Edge of raised bog/Agricultural farmland	Adult soaring very high, occasionally hovering and then soaring off to the northwest. >100m for 255 seconds.	3
09/04/2015	9	11:52	Bog/hedgerow/scrub	Soaring high (just over 100m) in a SW direction over VP10 to the W. Off site, over VP10 area. (240 seconds).	4
09/04/2015	8	14:43	Woodland/trees & Bog	10-100m, 120Secs & >100m, 120Secs. Foraging, bird flew southerly west of VP over trees, was mobbed by hooded crow. Flew E behind VP, again mobbed by hooded crow. Flew E and soared out of sight	5
09/04/2015	8	15.35	Bog/Scrub	Pair of adults soaring E of VP, at edge of VP boundary at a height of 800-1000feet, moved E out of sight	6
10/04/2015	9	12:15	Bog, Wasteland, Improved Grassland	Soaring, hunting, hovering. Soared in from W over area of wasteland adjacent to road on south side. Bird was harassed by sand martins and hooded crows. Was around for 15mins before soaring off south. (900 seconds at between 10m-100m). (40 seconds >100m).	7
20/04/2015	14	10:52	Trees	Adult, west of VP above trees. Soaring in a circular motion in a southerly direction over trees until out of sight. >100m for	8

Buzzard observations					
Date	VP	Time	Habitat	Notes	Obs.
				70Secs.	
20/04/2015	15	13:29	Trees & Plantation	Pair of adult birds soaring N of VP in a westerly direction at a height in excess of 400m. (>100 for 160Secs).	9
21/04/2015	14	14:19	Trees	Observed flying along tree line SW direction. Soared in a W direction until out of sight. 10-100m – 30Secs – Foraging <100m – 150Secs - Soaring	10
21/04/2015	7	14:30	Farmland/bog/road	1km off site to the NE. Bird was seen soaring high between 100m-150m, drifting to the NE on the wind (420 seconds).	11
21/04/2015	7	15:05	Edge of bog/farmland	Hunting the edge of the SE corner of the site, low (2-3m above the ground), being harassed by crows 180 seconds.	12
22/04/2015	13	14:32	Trees/bog	One bird was observed for 5mins, soaring over the bog (10-30m high) at the SW corner of the site near the railway line. Harassed by hooded crows as circled and drifted off to the southeast.	13
23/04/2015	12	11:15	Bog/farmland	5mins, soaring high off site NW about 200-300m in height, heading North (300 seconds).	14
11/05/2015	8	11.25	Woodland	2 birds soaring north of VP, outside site boundary.	15
16/05/2015	TR6(1)	14.32	Bog	At the start of the transect buzzard was observed being mobbed by 6 hooded crows. X>10m<100m for 180 seconds at approx turbine height.	16
18/05/2015	13	11.50	Trees	2 birds commuting northeast. Fly through. (300 seconds at <10m).	17

Buzzard observations					
Date	VP	Time	Habitat	Notes	Obs.
18/05/2015	13	11.50	Woodland/cutover bog	1 bird following other 2 birds. Also soaring (< 10m for 900 seconds). This bird came up from the trees as if it was resident holding territory and followed two other birds. Pair of birds departed together.	18
04/06/2015	14	12.47	Conifer plantation/pasture	Bird observed soaring outside the site boundary at least 100m above the woodland and grassland. 12 seconds at >100m in height.	19
04/06/2015	14	13.05	Pasture	Bird soaring to the northwest, outside site boundary. 120 seconds at >100m in height.	20
04/06/2015	14	14.41	Woodland	Bird soaring at between 200m-300m in height for 300 seconds. Outside site boundary.	21
05/06/2015	8	14.49	Woodland	Two birds observed soaring northeast of the VP. Outside site boundary. Birds soaring towards the north. Approx. 250m for 120 seconds.	22
08/06/2015	15	15.20	Woodland	1 adult soaring north of the vp, outside of the site boundary. Soaring in excess of 300m. (120 seconds).	23
28/06/2015	13	12.30	Woodland	1 bird commuting to the southeast over trees. Bird in vies for 10 seconds at between 10-100m. (foraging).	24
08/07/2015	14	12.12	Woodland	1 bird observed commuting over the trees to the west of the vp. Outside site boundary. Bird commuted to the southwest approx. 3-5m over the trees. Between 10-100m, 80 seconds). Foraging.	25
28/07/2015	13	14.59	Woodland	Three birds' adult and juvenile observed displaying 3/5m above trees to the southeast of the vp. (8 seconds <10m), commuting and displaying.	26

Buzzard observations					
Date	VP	Time	Habitat	Notes	Obs.
27/08/2015	11	10.59	Woodland	Soaring to the northeast at between 10-15m in height, over woodland. First to the north, then to the east, outside the bog site. Lost out of view behind treeline. (10-100m 120 seconds).	27
27/08/2015	11	11.05	Woodland	Bird observed soaring approx. 10-15m above the trees outside the site boundary. It likely this bird the same as previous obs. Bird in view for 40 second, soaring and displaying. (10-100m)	28



**Kestrel observations and comments**

Kestrel observations					
Date	VP	Time	Habitat	Notes	Obs.
8/04/2015	4	14:30	Farmland/grassland	Male observed hunting, approx. 80m in height for 120 seconds. (hovering and hunting).	1
9/04/2015	9	12.04	Bogland/access track	Adult kestrel hovered as it hunted over the bog and farm road and then flew off to the southeast, maintain flight height of 10-15m. (310 seconds).	2
10/04/2015	9	11:46 & 13:35	Bogland/grassland	Female bird hunting on both sightings, approx 10-15m high. First observation 120 seconds. Second observation 100 seconds.	3
21/04/2015	14	13:00	Scrub	Observed E of VP outside site boundary. Hovering and dived out of view. 4 seconds <10m in height.	4
13/05/2015	6	14.35	Cutover raised bog	Adult male kestrel observed north/northwest of the vp. Bird hunting for 2.5 minutes (150 seconds) and then the bird commuted off to the northeast. The bird landed on sitka spruce tree along embankment (10-100m)	5
19/05/2015	13	14.46	Scrub/woodland	Adult male observed hovering during heavy rain shower. Bird observed over scrub at edge of bog, and descended into trees and out of view to the northeast. (12 seconds at between 10m-100m.	6
20/05/2015	9	10.38	Peat/bog	Adult female foraging at approx 1.5m above peat bog. Turn and out of site towards the west (5 seconds).	7
20/05/2015	10	13.40	Cutover bog	Adult perched on peat mound for 30 seconds before being disturbed by hooded crows, bird out of sight behind mound.	8
04/06/2015	14	13.41	Bog	Bird commuting low over bog. Landed out of view. Returned in similar flight path. (8 seconds <10m).	9

08/06/2015	15	15.02	Scrub	Adult bird hovering south of the vp, outside the site boundary. Bird descended into scrub out of view. (20 seconds at 10-100m in height).	10
13/06/2015	2	10.38	Raised bog	Kestrel hovering over raised bog ( $x > 10m$ $< 100m$ ). (90 seconds).	11
25/06/2015	12	13.14	Cutover bog	Adult male perched on peat mound. Observed for 300 seconds, then commuted east and out of view behind mound. ( $< 10m$ for 30 seconds).	12
12/08/2015	13	11.21	Bog/scrub	Bird observed perched on ESB pole, then flew south over bog and out of view in the cover of scrub. (10 seconds- $< 10m$ ).	13
27/08/2015	11	09.57	Cutover bog	Bird observed perched on peat mound, for almost 31 minutes. Bird flew off to the east, at $< 1m$ .	14
27/08/2015	3	14.00	Willow scrub	Hovering over willow scrub at approx. 20m in height, for 20 seconds.	15

**Sparrowhawk observations and comments**

Sparrowhawk observations					
Date	VP	Time	Habitat	Notes	Obs.
08/04/2015	4	13:00	Bog	Female sparrowhawk observed on two occasions, hunting low over bog and edge of cutaway bog around mast at VP at 13:00-13:02 and again at 13:50-13:53 (<10m-300 seconds).	1
08/04/2015	11	13:12	Bog/Scrub	Adult, >100m for 60Secs. Soaring NE of VP at 100m, continued soaring away from VP out of sight	2
10/04/2015	9	14.30	Bog/Road	Bird flew quickly across the road as watch finished. The bird was hunting low <1m off the ground, for 10 seconds.	3
23/04/2015	12	11:00	Bog	Observed to the west side of the VP, soaring in circles 200-300m in height. Drifting off to the northeast, total observation 240 seconds.	4
10/05/2015	15	10.18	Scrub	Adult male hunting in easterly direction. Approx 2m above scrub at the edge of the bog. Bird in view for 8 seconds, before out of sight into trees.	5
10/08/2015	4	12.30	Conifer plantation/cutover bog	Male commuting at between 20-25m in height for 25 seconds over forestry and 85 seconds over cutover raised bog.	6
12/08/2015	13	10.52	Cutover bog	Bird observed foraging/commuting at a height of approx. 2m, in southerly direction. Bird lost out of view in cover of trees. (6 seconds, <10m).	7



**Merlin observations and comments**

Merlin observations					
Date	VP	Time	Habitat	Notes	Obs.
20/04/2015	15	12:45	Peat bog	Adult male, flew low/hunting in front of vp in a NE direction, flew low into the hedgerow out of sight. <10Secs - Foraging	1
10/05/2015	15	10.06	Cutover bog/trees	Bird hunting to the east approx 2m above the bare peat. In view for 6 seconds. Out of sight in conifer trees.	2



**Peregrine falcon observations and comments**

Peregrine falcon observations					
Date	VP	Time	Habitat	Notes	Obs.
09/04/2015	11	11:02	Bog	Adult bird perched on peat ridge, moved off out of sight <10m for 60Secs	1



**Golden plover observations and comments**

Golden plover observations					
Date	VP	Time	Habitat	Notes	Obs.
8/04/2015	11	15.50	Bare peat/bog	Six golden plover observed perched on bog to the west of the vp, 40 minutes (2400 seconds).	1
9/04/2015	11	11.58	Bogland	1 bird perched on bog for 32 minutes ((1020 seconds) west of the vp.	2
09/04/2015	8	16.14	Woodland	15 birds observed commuting to the west, over the vp (250m-300m)(10 seconds).	3
10/04/2015	10	9.30	Farmland/bog	1 Golden plover from the south of the site 100m high over farmland and bog. Commuting directly north. (60 seconds). During the VP 8 golden plover sitting in the bog on bare peat to the west of the site half way down the site. 600 seconds.	4
10/04/2015	12	14.18	Hedgerow	Birds observed commuting over hedgerow east of the VP. Birds in view for 3 seconds at <10m.	5
21/04/2015	7	14.00-17.00	Cutaway bog/bog pool/standing water	Flock of 83 golden plover down on the ground in the middle of the bog at the edge of a small pool. Occasionally the birds lifted and circling at height of <10m before settling down on the bog, next to the standing water. Duration of watch (3hours). Flight time at< 10m approx. 180 seconds.	6
22/04/2015	7	8.30-11.30	Bogland	64 golden plover spent the three hours sitting/roosting in the middle of the bog. Duration of 3 hours.	7

## Curlew observations and comments

Curlew observations					
Date	VP	Time	Habitat	Notes	Obs.
21/04/2015	15	10.30	Wet grassland/agricultural grassland reverting back/woodland/scrub.	Two Curlews were observed displaying and in full breeding vocal flight courtship in adjacent fields east to VP15 on 21st. Outside, but adjacent to the site boundary. Birds calling and flying (circling) at a height between 10m and 30m, over the woodland/scrub and rough grassland to the northeast of the VP. Birds in view for 20 seconds before going out of view.	1
21/04/2015	1	16.00	Cutover/ponds	Individual was observed feeding between the ponds north of VP 1 on the evening of 21 <sup>st</sup> . Duration of observation was 30 seconds and flew off at a height of <10m to the northeast.	2
13/07/2015	12	11.45	Cutover bog	3 birds observed commuting to the west. Between a height of 10-100m, for 4 seconds.	3

**Black-headed gull observations and comments**

Black-headed gull observations					
Date	VP	Time	Habitat	Notes	Obs.
13/05/2015	6	10.05	Bog	Black headed gull by the VP. Did not enter the site (10 seconds at 10-100m)	1
18/05/2015	8	14.40	Bog	Adult bird observed commuting to west over vp at approx. 40m in height. (8 seconds).	2
05/06/2015	12	11.03	Cutover bog	Adult bird commuting north over the bog at approx. 60m in height, for 6 seconds.	3
8/06/2015	7	16.15	Bog	1 Black-headed gull (35 seconds, approx. 70m in height).	4
25/06/2015	8	10.53	Cutover bog	1 gull commuting to the north at approx 80m in height for 10 seconds.	5
25/06/2015	12	09.30	Cutover bog	2 gulls commuting east at approx. 50m for 5 seconds.	6
25/06/2015	4	14.05	Cutover/woodland	2 Black-headed gull (45 seconds at between 80-90m in height).	7
25/06/2015	8	13.24	Woodland	3 black headed gulls commuting to the west at approx. 40m in height for 5 seconds.	8
28/06/2015	13	12.20	Cutover bog	2 adults commuting north, approx. 100m above ground for 10 seconds.	9
28/06/2015	11	14.35	Cutover bog	Adult bird commuting west. 80m-90m for 8 seconds.	10
29/06/2015	11	11.52	Cutover bog	1 gull commuting high over bog. (>200m for 7 seconds).	11
29/06/2015	13	13.00	Cutover bog	2 Adults commuting to the northeast for 9 seconds (50m in height).	12
08/07/2015	15	10.15	Cutover bog	4 black-headed gull (approx. 120m in height) (25 seconds)	13

Black-headed gull observations					
Date	VP	Time	Habitat	Notes	Obs.
10/07/2015	4	11.15	Cutover	1 black-headed gull 25 seconds at approx. 45m in height.	14
13/07/2015	12	9.56	Cutover bog	1 bird commuting to the southwest at approx. 50m in height for 8 seconds.	15



## Lesser black-back gull observations and comments

Lesser black-back gull observations					
Date	VP	Time	Habitat	Notes	Obs.
07/04/2015	6	10.05	Bogland	Flying/commuting high (>100m) in a NW direction	1
08/04/2015	4	13.00-16.00	Bogland	Large flocks of gulls flying high in a W-NW direction (100-300m high). 2 Carrion crows in with the second flock of 14 gulls. Approximately 70 birds in total throughout the count at this VP. These birds probably migrating to breeding grounds. Total flight time 3600 seconds.	2
08/04/2015	11	14.01	Bare peat/bog	6 gulls commuting southwest of vp at approx. 200m in height for 22 seconds.	3
9/04/2015	11	9.40	Bare peat/bog	2 gulls perched on peat mound to the north of the vp. Birds few off to the east over bog at a height of 10m and out of view behind treeline. (15 seconds).bog	4
9/04/2015	9	11.05	Bogland/Farmland	Five gulls commuting towards Lough Ree/Lanesbourough (180 seconds >100m).	5
9/04/2015	9	14.26	Bogland/Farmland	1 gull commuted over the site at approx. 100m in height. East west direction, towards L. Ree and River Shannon. (120 seconds at 100m in height).	6
10/04/2015	10	10.50	Bogland/farmland	One gull commuted high over the site towards the west/towards L. Ree. 120 seconds at almost 100m in height.	7
10/04/2015	8	11.06	Bare peat/bog	1 bird commuting to the north west over bog at approx. 200m (6 seconds).	8
10/04/2015	12	13.00	Peat/bog	3 gulls observed commuting west over VP at approx. 200m (8 seconds).	9
21/04/2015	14	14.30	Woodland	Gull observed flying in southwest direction, over woodland at approx. 200m in height. Gull out of view behind treeline. (12 seconds).	10

Lesser black-back gull observations					
Date	VP	Time	Habitat	Notes	Obs.
22/04/2015	7	9.15	Bogland	48 gulls observed commuting in northwest direction, high over the site. > 100m. Total time 2450 seconds.	11
22/04/2015	13	11.58	Bog/farmland	Four birds commuting over the site at a height of between 100-150m, in northwest direction. (120 seconds)	12
23/04/2015	12	10.30	Bogland/farmland	Sixteen gulls commuting high over the site, between 10.30 and 10.45. Commuting from east to west, all along the same route over the vp. (900 seconds) (>100m).	13
8/05/2015	14	11.00	Cutover bog	5 gulls commuting to south at approx. 200m for 13 seconds.	14
10/05/2015	15	10.28	Woodland	7 gulls observed commuting to the northwest at approx, 250m in height for 13 seconds.	15
10/05/2015	14	13.23	Woodland	8 gulls commuting northeast at approx. 200m for 13 seconds.	16
11/05/2015	8	9.15	Cut over bog	17 gulls commuting over cutover bog north of the vp at approx. 180m-200m (11 seconds).	17
11/05/2015	12	14.41	Cutover bog	7 gulls commuting north over woodland and bog at approx 120m in height. (17 seconds).	18
15/05/2015	7	16.00	cutover/bogland	4 birds preening on standing water 20 seconds, of to sw <10m	19
16/05/2015	6	11.21	Cutover/bogland	1, 1, 2, 1 gulls all flying west towards the River Shannon.	20
17/05/2015	TR6 (1)	14.15	Cutover/bogland	2 birds 12 seconds at approx. 140m in height.	21
18/05/2015	13	11.45	Cutover/bogland	7 gulls (5 seconds >100).	22



Lesser black-back gull observations					
Date	VP	Time	Habitat	Notes	Obs.
18/05/2015	12	11.55	Woodland	4 gulls commuting west over woodland at approx 200m for 15 seconds.	23
18/05/2015	Tr at VP12	13.10	Cutover bog	Single bird commuting to north at approx 80-90m for 12 seconds.	24
18/05/2015	8	16.50	Bog	Bird commuting to east over bog at approx 200m for 12 seconds.	25
19/05/2015	11	9.00	Cutover bog	6gulls commuting to the south at approx. 250m, for 20 seconds.	26
19/05/2015	13	14.35	Cutover bog	1 gull commuting to north at approx. 80m in height for 13 seconds.	27
20/05/2015	9	10.02	Woodland/bog	5 gulls observed commuting over bogland to southwest at approx 200m in height. (15 seconds).	28
20/05/2015	Tr at VP9	11.25	Bog	Bird commuting to north, just west of the vp. Approx 150m for 10 seconds.	29
20/05/2015	10	12.35	Bare peat/bog	7 birds observed commuting to south over bog at approx. 200m for 20 seconds.	30
20/05/2015	Tr at VP10	14.52	Woodland	1 bird commuting to west at approx 200m' for 16 seconds.	31
04/06/2015	15	9.15	Cutover bog	7 gulls commuting to the west. (11 seconds >100m).	32
04/06/2015	14	14.58	Cutover bog	11 gulls commuting to the west. (>100m for 4 seconds).	33
05/06/2015	12	09.50	Cutover bog	Adult birds (15) commuting west at approx. 100m for 15 seconds.	34
8/06/2015	7	11.35	Cutover bog	5 gulls commuting northwest. X>10m<100m (approx. 30-40m in height for 30 seconds.	35

Lesser black-back gull observations					
Date	VP	Time	Habitat	Notes	Obs.
08/06/2015	14	11.50	Cutover bog	2 birds commuting to the southwest. >100m for 18 seconds (approx 150m).	36
08/06/2015	15	15.00	Cutover bog	3 gull commuting to the northwest. Approx. 250m in height for 12 seconds.	37
24/06/2015	4	13.20	Habitats at site	14 gulls observed commuting towards L. Ree. X>10<100m. (approx 20m for 120 seconds.).	38
25/06/2015	8	10.40	Cutover bog	4 gulls commuting to the west at approx. 100m in height for 100 seconds.	39
25/06/2015	8	12.06	Cutover bog	4 gulls commuting to the west at between 100m-120m, for 16 seconds.	40
25/06/2015	12	14.38	Cutover bog	2 birds commuting to the east at approx. 100m in height, for 6 seconds.	41
28/06/2015	13	12.00	Woodland	3 adult gulls commuting west at approx. 150m for 10 seconds.	42
28/06/2015	11	15.20	Cutover bog	9 gulls commuting northwest at >100m 8 seconds.	43
29/06/2015	11	9.15	Cutover bog	17 gulls commuting south bat approx. 100m for 15 seconds.	44
29/06/2015	13	13.43	Woodland	2 gulls commuting south at approx. 200m in height for 5 seconds.	45
09/07/2015	8	10.30	Cutover	2 gulls commuting to the northwest. Approx. 100m in height, for 12 seconds.	46
09/07/2015	T at VP12	15.15	Cutover bog	1 gull observed commuting to the east at approx. 80m in height, for 4 seconds.	47
10/07/2015	14	9.36	Woodland	12 birds commuting west. (approx height 150m, for 18 seconds).	48
10/07/2015	4	12.15	Cutover	6 gulls (3,1,2) (>100m 15 seconds)	49

Lesser black-back gull observations					
Date	VP	Time	Habitat	Notes	Obs.
10/07/2015	T at VP14	15.25	Woodland	2 birds commuting to the south at approx. 80-90m in height for 6 seconds.	50
11/07/2015	6	12.45	Bogland/cutover	12 gulls commuting southwest over a 3 hour period. 4 gulls commuting to the northeast over a 3 hour period. ( $X > 10m < 100m$ ). Averaging 30m in height heading to and from L. Ree. (12.45-15.45) (10,800 seconds).	51
11/07/2015	7	16.05	Cutover	2 lesser black-backed gulls commuting over cutover bog, heading towards agricultural grassland. Approx. 30m in height for 40 seconds.	52
13/07/2015	8	13.16	Cutover	5 gulls commuting to the west at approx. 120m in height, for 12 seconds.	53
27/07/2015	13	10.38	Woodland	6 gulls commuting to the west at approx. 100m for 6 seconds.	54
27/07/2015	11	12.32	Bog	Two adults and 1 juvenile perched on peat mound. Rose up in the air, circled over the bog at 30m in height and flew off in southeastrely direction. (25 seconds < on the ground, 5 seconds at 30m).	55
27/07/2015	11	14.00	Cutover bog	5 birds commuting to the south ( $X > 100m$ 10 seconds).	56
27/07/2015	T at VP11	15.26	Cutover bog	3 birds commuting to the southwest. ( $> 100m$ for 6 seconds).	57
27/07/2015	4	11.05	Cutover bog	3 gulls sitting on peat bank. (20 seconds < 10m)	58
28/07/2015	11	9.05	Cutover bog	3 birds perched on peat mound. Birds exit site to the southeast. ( $X < 10m$ , 15 seconds).	59
28/07/2015	11	11.00	Cutover bog	5 Birds commuting to the southwest (12m-15m, 12 seconds).	60

Lesser black-back gull observations					
Date	VP	Time	Habitat	Notes	Obs.
28/07/2015	13	14.30	Woodland	3 gulls commuting to the southwest, >100m for 6 seconds.	61
29/07/2015	7	12.30	Cutover	A total of 3 lesser black-backed gulls commuting in general direction of L. Ree, throughout the VP watch. (X>10m<100m). 12.30-15.30)	62
09/08/2015	5	13.33	Cutover	2 adult 1 juvenile commuting to the NW (soaring/calling) at over 100m in height. 75 seconds.	63
10/08/2015	15	9.42	Cutover	1 gull commuting to the west at >100m, for 10 seconds.	64
10/08/2015	14	12.17	Cutover	2 gull commuting to the southwest, at >100m for 6 seconds.	65
11/08/2015	8	16.05	Cutover	7 gulls commuting to the west at approx. 250m in height, for 10 seconds.	66
16/08/2015	13	14.42	Cutover	1 gull commuting to the west at approx. 150m for 10 seconds.	67
16/08/2015	12	10.15	Cutover	6 gulls including 1 juvenile (approx 100m for 25 seconds).	68

**Great black-backed gull observations and comments**

Great black-backed gull observations					
Date	VP	Time	Habitat	Notes	Obs.
13/07/2015	8	15.10	Bog	1 gull commuting to east at height of > 100m, for 8 seconds.	1

**Cormorant observations and comments**

Cormorant observations					
Date	VP	Time	Habitat	Notes	Obs.
22/5/2015	1	10.13	Cutover bog	Bird commuting approx. 20m-30m in height, over cutover raised bog. (180seconds)	1

**Ringed plover observations and comments**

Ringed plover observations					
Date	VP	Time	Habitat	Notes	Obs.
22/04/2015	7	8.45	Bogland/bog pool/standing water	One bird feeding and sitting on the bog 4600 seconds.	1

**Grey heron observations and comments**

Grey heron observations					
Date	VP	Time	Habitat	Notes	Obs.
9/04/2015	1	13.48	Cutover Bog	Flying at turbine height at leisurely pace (70 sec, Between 10-100m in height).	1
21/04/2015	14	15:15	Bog	Flying S over VP. Flew out of sight behind tree line south of VP	2
22/04/2015	7	8.45	Bog/drain	Flew out of drain to the east of the vp. Commuted northeast flying over bog, at approx. 20m in height, for 40 seconds	3
29/06/2015	11	???? (AC)	Cutover Bog	Bird observed perched on peat mound. Flew off to the east out of sight. 20 seconds <10m.	4
27/07/2015	13	09.13	Woodland	Adult observed commuting to the east at <10m for 7 seconds.	5
13/08/2015	15	15.42	Cutover bog	Adult commuting low (<1m), over bare bog to the east. Turned to the south and out of sight behind peat mound. (<10m, for 5 seconds).	6
27/08/2015	2	11.43	Cutover bog	Commuting slowly to the south/southwest. Approx 15m, for 120 seconds.	7
27/08/2015	1	12.36	Drain/cutover bog	Birds came in from the south and landed in a ditch on cutaway bog. More than likely the same bird observed earlier at VP2. 20 seconds, at <10m in height.	8

## **Appendix 3**

### Flight paths of target species



## **Appendix 4**

### NPWS Hen Harrier Survey Methodology





## RECOMMENDED METHODOLOGY FOR ASSESSMENT OF IMPACTS OF PROPOSED WINDFARMS ON BREEDING HEN HARRIER WITHIN THE KNOWN RANGE OF THE SPECIES IN IRELAND

Of the two main threats to Hen Harriers from windfarms (collision and displacement), the possibility of indirect habitat loss, or displacement, if birds avoid a windfarm area is seen as the most immediate issue. Research to improve assessments of collision risk is ongoing in other countries; the proportion of the breeding population at risk from windfarms that have planning permission at present is small. Other proposed windfarms, within areas of importance for Hen Harrier, should be subject to Environmental Impact Assessment.

### RELEVANT SPECIES

Although these recommendations focus on the Hen Harrier as the species of concern, breeding Short-eared Owl may possibly occur at some sites, in which case an assessment of site importance should be made using the same methodology, at times of day appropriate to the species.

### ASSESSMENT OF SITE IMPORTANCE

Nine upland areas have been identified by Dúchas as being of national importance for Hen Harrier. All areas of heath/bog habitats within the indicative boundaries of these areas lie within 5km of known nest sites located during the 1998-2000 survey, i.e. within the normal foraging range of the male of each pair. Any proposed development, which may have impacts on such habitats, should be subject to a detailed survey, to determine Hen Harrier usage for hunting (foraging).

#### Important aspects to be considered in an assessment are:

The numbers and breeding success of Hen Harriers that may forage in the area, ideally within 5km of the proposed development site,

The time spent by Hen Harriers in all parts of the site,

The cumulative impact of other windfarms in the area that have been granted planning Permission.

#### Spatial variation in an area's importance to foraging Hen Harriers when:

Either occupancy or breeding success are below normal,

Fire, overgrazing or turbary temporarily reduce the vegetation cover and hence its value to foraging birds,

Nest locations change from year to year.

### METHODS

#### Survey of breeding occupancy:

An appropriate survey in good weather conditions, with at least two visits in April of breeding pairs within 5km of the site from outer turbines and a second series of visits in July to determine breeding success, would be necessary to interpret results from foraging observations. In years with a run of poor weather during April and May, an intermediate series of observations may be required in June

to confirm occupancy by breeding pairs or locate late arriving pairs. Useful information is given in Gilbert et al. (1998).

Methodology should be detailed giving dates of survey, map of area searched, and habitat types searched. Results should not include detailed nest locations in public documents (e.g. EIS), but should include minimum distance from the development site.

Data on the number and distance from the site of breeding pairs recorded in the 1998-2000 survey (Norriss et al. 2002), and in subsequent years where available, can be provided by Dúchas (contact [dnorriss@duchas.ie](mailto:dnorriss@duchas.ie)).

### **Survey of proposed development site**

#### Description of survey area:

The assessment area should include a strip at least 500m beyond the outermost turbines. A habitat map of the study area should be produced based on the habitat categories listed in Appendix 1. A more detailed habitat map (for example using the classification in Fossitt (2000) may be appropriate in some cases.

#### Use of the site:

Madders' (2002) methodology, using timed watches from fixed vantage points (VPs), suits well and can be adapted to local circumstances; those aspects of his procedures relevant to Hen Harriers are summarised below. The objective is to estimate the amount of time birds spend foraging per unit area of the site.

Two 3hour watches per VP per month are recommended for the duration of the breeding season (April – July). A gap of at least one hour between watches is advised.

Restrict observations to 0700-2000 hours and suspend observations during periods of poor visibility and rain.

Select the minimum number of VPs consistent with complete coverage of the site. VPs should be outside the site where feasible, or located so as to avoid disturbance within the site, but within 1km of the ground being observed. Choose inconspicuous locations, well away from nests, to minimise impact on the birds.

Foraging Harriers usually fly within 10m of the ground and characteristically change direction and height abruptly when searching for prey. Record duration of observation and activity of any Harriers observed according to habitat category.

Map the area of each habitat visible from each VP, either in the field, from photographs or using a GIS. If there is area overlap from different VPs, observation areas should be summed when calculating overall observation rates/unit area. Because fields of view can change substantially with even minor changes in VP location, exact relocation using a GPS and perhaps an inconspicuous marker on the ground is recommended if more than one observer is involved.

The Report should include a summary of the sections of the site used by foraging Hen Harriers, broken down by broad habitat category.

If successful breeding is demonstrated in or close to a site, then VP observations should be continued into August to identify areas used by recently fledged juveniles prior to dispersal.

### References

- Fossitt, J. A. (2000) A Guide to Habitats in Ireland. Heritage Council. Kilkenny.
- Gilbert, G., Gibbons, D.W. and Evans, J. (1998) Bird Monitoring Methods – a manual of techniques for key UK species. RSPB, Sandy.
- Madders, M. (2002) Method statement for Vantage Point watches. In: Survey methods to assess windfarm impacts on upland bird communities. Scottish Natural Heritage.
- Norriss, D.W., Marsh, J., McMahon, D. and Oliver, G.A. (2002) A national survey of breeding Hen Harriers *Circus cyaneus* in Ireland 1998-2000. Irish Birds 7: 1-10.

### APPENDIX 1A

Recommended classification of habitat types for use in assessments of wind farm sites for Hen Harrier

Habitat code

Description

NF

NF 2

New forestry plantation, trees 20-30 cm high

NF 3

New forestry plantation, trees c 1m in height

NF 4

New forestry plantation, trees >2m in height, patchy thickets

2nd F

2nd F 1 & 2

2nd rotation forestry plantation, trees 20-30 cm high

2nd F 3

New forestry plantation, trees c 1m in height

2nd F 4

New forestry plantation, trees >2m in height, patchy thickets

F

Post thicket plantation

G

Grazing

RG

Rough Grazing & rushy pasture

H/B

Heath / Bog

DE

Deciduous woodland & scrub

GO, Gorse