

**Ornithology Report**  
**Winter Ornithological Survey for Lot No.1: Moundillon,**  
**Derryarogue, Derryadd, Derraghan (Winter 2014/15)**  
**Bord na Móna**





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## 1 INTRODUCTION

Malachy Walsh and Partners was commissioned by Bord na Móna, to conduct winter 2014/15 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 winter period of 2014/15. The bog groups that are covered in Lot No.1 consists of eight individual bogs, namely Moundillon, 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 2014/15. 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. Bird surveys were carried out from October 2014 through to March 2015 inclusive. Methodology

#### 1.1.1 Winter Birds

The survey methods used were designed to record the winter bird community within, and in the immediate vicinity of the study area. Methodologies employed throughout the site included vantage point surveys and transect surveys.

Surveys were carried out in accordance with the new guidelines produced by Scottish Natural Heritage in May 2014 (*Recommended bird survey methods to inform impact assessment of onshore windfarms*). Surveyors utilised the methodology proposed by Gilbert *et al.* (1998), NPWS guidelines (Anon, 2003), Percival (2003) and Madders (2002).

##### 1.1.1.1 Winter Bird Survey

The objective of the winter bird survey was to:

- Locate and identify all wintering birds present within the development area; and
- Record any species of conservation concern and assess their status within the site.

##### 1.1.1.2 Winter Raptor Vantage Point Survey

Winter raptor vantage point surveys were conducted in the winter of 2014/15. The objective of the winter vantage point surveys was, primarily to record usage of the site by focusing in particular on wintering 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).

### **1.1.1.3 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 winter 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 winter bird survey period, one early in the season, in November 2014 and one late in the season, in March 2015. Transects can be viewed in Appendix 1.

## **1.2 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.
- Fox, A.D., Norriss, D.W., Stroud, D.A. & Wilson, H.J. (1994). Greenland White-fronted Geese in Ireland and Britain, 1982/83-1993/94. The first twelve years of international conservation monitoring. Greenland White-fronted Goose Study and National Parks & Wildlife Service, Dublin.
- Documented 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 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 Derraghan/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 contain 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> </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>• Goldeneye (<i>Bucephala clangula</i>) [A067]</li> <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	<ul style="list-style-type: none"> <li>• Degraded raised bogs still capable of natural regeneration [7120]</li> </ul>	6.3km north east of Mounddillon

Site Name (Site Code)	Features of Interest	Proximity to the study at its closest point
(002348)	<ul style="list-style-type: none"> <li>•Depressions on peat substrates of the <i>Rhynchosporion</i> [7150]</li> <li>•Bog woodland [91D0]</li> </ul>	
Forthill Bog NHA (001448)	<ul style="list-style-type: none"> <li>•Raised bog</li> </ul>	710m south west of Derraghan
Mount Jessop Bog NHA (001450)	<ul style="list-style-type: none"> <li>•Raised bog</li> </ul>	3.8km north east of Derryadd
Lisnarrigh 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

Site Name (Site Code)	Features of Interest	Proximity to the study 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 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 winter 2014/15 survey period, where six hour survey time was conducted for each vantage point for the months of October through to March, inclusive. Consequently, a total of 540 hours of vantage point survey effort was carried out. Winter Vantage Point surveys were undertaken on the following dates:

- October 14<sup>th</sup>, 20<sup>th</sup>, 21<sup>st</sup>, 22<sup>nd</sup>, 23<sup>rd</sup>, 24<sup>th</sup>, 25<sup>th</sup>, 26<sup>th</sup>, 29<sup>th</sup>, 30<sup>th</sup>, and 31<sup>st</sup>, 2014
- November 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup>, 8<sup>th</sup>, 11<sup>th</sup>, 14<sup>th</sup>, 18<sup>th</sup>, 20<sup>th</sup>, 21<sup>st</sup>, 22<sup>nd</sup>, 23<sup>rd</sup>, 27<sup>th</sup>, 28<sup>th</sup>, 29<sup>th</sup>, and 30<sup>th</sup>, 2014
- December 5<sup>th</sup>, 7<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup>, 11<sup>th</sup>, 13<sup>th</sup>, 14<sup>th</sup>, 15<sup>th</sup>, 16<sup>th</sup>, 18<sup>th</sup>, 19<sup>th</sup>, 29<sup>th</sup>, 30<sup>th</sup>, and 31<sup>st</sup>, 2104
- January 2<sup>nd</sup>, 14<sup>th</sup>, 15<sup>th</sup>, 16<sup>th</sup>, 21<sup>st</sup>, 22<sup>nd</sup>, 23<sup>rd</sup>, 24<sup>th</sup>, 25<sup>th</sup>, 28<sup>th</sup>, and 29<sup>th</sup>, 2015
- February 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup>, 8<sup>th</sup>, 17<sup>th</sup>, 18<sup>th</sup>, 19<sup>th</sup>, 20<sup>th</sup>, 21<sup>st</sup>, 25<sup>th</sup>, and 26<sup>th</sup>, 2015
- March 4<sup>th</sup>, 5<sup>th</sup>, 6<sup>th</sup>, 7<sup>th</sup>, 8<sup>th</sup>, 16<sup>th</sup>, 17<sup>th</sup>, 18<sup>th</sup>, 19<sup>th</sup>, 23<sup>rd</sup>, 24<sup>th</sup> and 25<sup>th</sup>, 2015

##### 3.1.1 Surveyors

- Joe Adamson (B.Sc., M.Sc., MCIEEM Senior Ecologist);
- John Murphy (Senior Ecologist/Ornithologist);
- Caroline Hurley (B.Sc., M.Sc., MCIEEM Senior Ecologist);
- Caoimhin O'Neill (B.Sc. Ecologist).

#### 3.2 WINTER 2014/2015 VANTAGE POINT SURVEY RESULTS

A total of 56 species were recorded during the winter (2014/2015) vantage point survey. Table 2 below provides details of all birds recorded during the winter 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 2014/15**

Common Name	Scientific Name	OCT	NOV	DEC	JAN	FEB	MAR	Peak Count	Mean Counts
Blackbird	<i>Turdus merula</i>	18	57	64	45	49	21	64	42
Black-headed gull	<i>Chroicocephalus ridibundus</i>	0	0	13	2	0	0	13	3
Blue tit	<i>Cyanistes caeruleus</i>	9	27	15	9	10	6	27	13
Bullfinch	<i>Pyrrhula pyrrhula</i>	4	3	8	23	4	0	23	7

Common Name	Scientific Name	OCT	NOV	DEC	JAN	FEB	MAR	Peak Count	Mean Counts
Buzzard	<i>Buteo buteo</i>	2	5	2	2	3	3	5	3
Chaffinch	<i>Fringilla coelebs</i>	31	44	35	12	39	20	44	30
Chiffchaff	<i>Phylloscopus collybita</i>	1	0	0	0	0	0	1	0
Coal tit	<i>Periparus ater</i>	1	4	2	4	10	3	10	4
Cormorant	<i>Phalacrocorax carbo</i>	0	0	0	2	0	1	2	1
Crossbill	<i>Loxia curvirostra</i>	2	0	2	0	0	0	2	1
Curlew	<i>Numenius arquata</i>	2	0	0	0	0	0	2	0
Dunnock	<i>Prunella modularis</i>	11	20	24	13	13	7	24	15
Fieldfare	<i>Turdus pilaris</i>	0	180	27	6	39	0	180	42
Goldcrest	<i>Regulus regulus</i>	14	6	3	0	3	5	14	5
Golden plover	<i>Pluvialis apricaria</i>	211	26	7	76	0	81	211	67
Goldfinch	<i>Carduelis carduelis</i>	18	11	19	5	17	1	19	12
Great black-backed gull	<i>Larus marinus</i>	0	0	0	1	0	0	1	0
Great tit	<i>Parus major</i>	0	3	1	4	6	3	6	3
Greenfinch	<i>Carduelis chloris</i>	0	1	5	1	5	3	5	3
Grey heron	<i>Ardea cinerea</i>	2	2	2	2	1	0	2	2
Grey Wagtail	<i>Motacilla cinerea</i>	0	1	1	0	1	0	1	1
Hen Harrier	<i>Circus cyaneus</i>	1	0	1	5	0	0	5	1
Herring Gull	<i>Larus argentatus</i>	0	0	0	0	1	0	1	0
Hooded crow	<i>Corvus cornix</i>	79	71	36	45	62	28	79	54
House Sparrow	<i>Passer domesticus</i>	0	6	1	0	9	6	9	4
Jackdaw	<i>Corvus monedula</i>	162	109	93	156	156	63	162	123
Jay	<i>Garrulus glandarius</i>	0	0	0	0	1	0	1	0
Kestrel	<i>Falco tinnunculus</i>	15	8	7	3	0	4	15	6
Lapwing	<i>Vanellus vanellus</i>	3	0	0	14	0	0	14	3
Linnet	<i>Carduelis cannabina</i>	15	28	13	0	0	3	28	10
Long tailed tit	<i>Aegithalos caudatus</i>	23	54	40	1	10	2	54	22
Magpie	<i>Pica pica</i>	7	15	30	20	8	5	30	14
Mallard	<i>Anas platyrhynchos</i>	45	11	10	2	5	4	45	13

Common Name	Scientific Name	OCT	NOV	DEC	JAN	FEB	MAR	Peak Count	Mean Counts
Merlin	<i>Falco columbarius</i>	0	0	0	0	0	1	1	0
Meadow pipit	<i>Anthus pratensis</i>	42	59	1	5	10	18	59	23
Mistle thrush	<i>Turdus viscivorus</i>	12	3	3	15	9	13	15	9
Peregrine falcon	<i>Falco peregrinus</i>	1	1	0	0	0	0	1	0
Pheasant	<i>Phasianus colchicus</i>	1	7	3	4	4	4	7	4
Pied wagtail	<i>Motacilla alba</i>	23	19	12	2	10	3	23	12
Raven	<i>Corvus corax</i>	3	5	5	17	12	1	17	7
Redpoll	<i>Carduelis flammea</i>	56	38	15	32	63	21	63	38
Redwing	<i>Turdus iliacus</i>	45	13	5	76	69	4	76	35
Reed bunting	<i>Emberzia schoenichus</i>	37	54	69	59	36	12	69	45
Robin	<i>Erithacus rubecula</i>	39	72	49	34	61	33	72	48
Rook	<i>Corvus frugilegus</i>	107	84	62	48	63	76	107	73
Siskin	<i>Carduelis spinus</i>	0	2	13	0	4	4	13	4
Skylark	<i>Alauda arvensis</i>	3	0	1	0	4	6	6	2
Snipe	<i>Gallinago gallinago</i>	3	6	2	2	5	1	6	3
Song thrush	<i>Turdus philomelos</i>	2	3	5	7	15	12	15	7
Sparrowhawk	<i>Accipiter nisus</i>	1	0	3	2	0	2	3	1
Starling	<i>Sturnus vulgaris</i>	108	224	80	72	563	261	563	218
Stonechat	<i>Saxicola torquatus</i>	0	0	3	3	0	3	3	2
Teal	<i>Anas crecca</i>	4	0	0	0	0	0	4	1
Whooper swan	<i>Cygnus cygnus</i>	63	10	44	2	13	36	63	28
Woodpigeon	<i>Columba palumbus</i>	24	18	27	28	67	15	67	30
Wren	<i>Troglodytes troglodytes</i>	32	70	65	34	35	35	70	45
<b>Total No of Species</b>		<b>43</b>	<b>41</b>	<b>47</b>	<b>42</b>	<b>40</b>	<b>42</b>	<b>56</b>	

In total, 56 species were observed during winter 2014/15 vantage point surveys. Bird species recorded during the winter vantage point survey are typical of the habitats present within and adjacent to the site. Of the 56 species, there were six raptor species, namely buzzard (*Buteo buteo*), hen harrier (*Circus cyaneus*), kestrel (*Falco tinnunculus*), merlin (*Falco columbarius*), peregrine falcon (*Falco peregrinus*) and sparrowhawk (*Accipiter nisus*). There were seven red listed species and eighteen amber listed species observed. Five Annex I species protected under the Birds Directive were observed during vantage point surveys. These included three raptor species hen harrier, merlin

and peregrine falcon along with whooper swan (*Cygnus Cygnus*) and golden plover (*Pluvialis apricaria*).

The most abundant species recorded were the amber listed starling (*Sturnus vulgaris*), with a peak count of 563 in February, 2015. The average monthly count for starlings was also the highest for all observed species, at 218 sightings. Starling is amber listed in Ireland due to a moderate recent decline in large parts of its European population. The Irish population is currently stable<sup>1</sup>. The next most abundant species observed was the Annex I and red listed golden plover, with a peak count of 211 in October, and a monthly average count of 67. On the 20<sup>th</sup> of October at vantage point 7 a flock of approximately 70 golden plover was observed flying low and landing on cutover bog. This was the largest golden plover flock observed during the course of the survey. 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>.

### 3.2.1 Raptor Vantage Point Observations (Winter 2014/15)

Five raptor species were observed while carrying out winter 2014/15 vantage point surveys, namely hen harrier, kestrel, sparrowhawk, peregrine falcon and buzzard. 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 Hen harrier

Five observations of hen harrier were made while carrying out the winter 2014/15 vantage point survey. On the 21<sup>st</sup> of October 2014, an adult female bird was observed near VP1 (outside of the VP watch, as the observer was driving past the vantage point), flying in a south-westerly direction, commuting over birch/willow woodland. The bird was observed for 15 seconds at between 10-100m in height.

On the 7<sup>th</sup> of December 2014, an adult female bird was observed flying at 1 metre in height for 10 seconds over cutover bog, with willow/birch/*juncus* scrub near VP1, before diving down, either to catch prey or to roost. The bird remained on the ground for the duration of the vantage point watch.

On the 14<sup>th</sup> of January 2015, a male was observed off-site to the west of VP 12, commuting in a southerly direction above a treeline. The bird was observed for 3 minutes flying at a height of approximately 20 metres.

Two females were observed hunting together from VP7, on the 14<sup>th</sup> of January 2015. When first observed, the birds were over cutover bog to the east of VP7. They then proceeded to hunt in a southerly direction following a hedgerow, before circling towards willow scrub, and then returning to continue their southerly course along the hedgerow. The observation lasted for 220 seconds, and the birds flew at less than 10 metres in height.

On the 15<sup>th</sup> of January 2015, two males were observed from VP6, commuting from east to west below 10 metres in height (for 80 seconds), before disappearing from view. The birds then flew back from the west at a height greater than 10 metres (for 30 seconds), in a north-easterly direction until they again disappeared from view.

<sup>1</sup> <http://www.birdwatchireland.ie/IrelandsBirds/Starling/tabid/446/Default.aspx>

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



In total there were 5 observations of 7 individual hen harriers. The longest observation lasted for 3 minutes. The highest number of sightings (two) were in the vicinity of VP1, with the three others being in the vicinities of VPs 6, 7 and 12.

### 3.2.2.1 Summary of hen harrier observations

In total these was five observations of hen harrier, the majority of which appeared to relate to hunting/foraging behaviour, sometimes involving two birds (See table 3 below).

**Table 3: Duration and flight height of hen harrier observations**

Survey Time Analysis	Group	Time (sec)	%
Percentage of Total Survey Time	Male	300	0.015
	Female	235	0.012
	Total	535	0.028
Percentage Time Observed at 0-10m Height	Male	90	0.005
	Female	220	0.011
	Total	310	0.016
Percentage Time Observed at 10-100m Height	Male	210	0.011
	Female	15	0.001
	<b>Total</b>	<b>225</b>	<b>0.016</b>

### 3.2.3 Merlin

There were two observations of merlin over the course of the six months of surveys. The two observations were made within two days of each other, during the month of March 2015. The first sighting was on the 16<sup>th</sup> of March 2015 from VP8. A merlin (female or 2<sup>nd</sup> calendar year bird) flew across the cutaway bog and quickly out of sight at a height of <10m. The total time of the observation was 5 seconds. The second sighting was on the 18<sup>th</sup> of March 2015 from VP15. A merlin

perched on a small telegraph pole adjacent to the VP before flying over the cutaway bog and out of sight, in a southerly direction. The sighting lasted for approximately 10 seconds.

### 3.2.3.1 Summary of merlin observations

Only two observations of merlin were made during surveying, both of short duration (<10s) and both occurring over cutover bog (See table 4 below).

**Table 4: Duration and flight height of merlin observations**

Survey Time Analysis	Time (sec)	%
Percentage of Total Survey Time	15	0.001
Percentage Time Observed at 0-10m Height	15	0.001

### 3.2.4 Peregrine falcon

Three observations of peregrine falcon were made during the winter 2014/15 survey, all at VP4. The first observation, made on the 25<sup>th</sup> of October 2014, concerned an adult bird flying initially, approximately 1 metre above the ground, before gaining height, circling, and flying off over birch woodland in south-easterly direction. On the 27<sup>th</sup> of November 2014, a peregrine falcon was observed mobbing a buzzard over cutover bog, before both disappeared into birch woodland. Several minutes later, the same peregrine was observed mobbing a second buzzard over cutover bog, calling in a manner similar to a bird holding territory.

#### 3.2.4.1 Summary of peregrine falcon observations

During winter 2014/15 surveys there were three observations of peregrine falcon. Observations suggest a potential established territory as evidenced by calling and mobbing behaviour of corvids.

**Table 5: Duration and flight height of peregrine falcon observations**

Survey Time Analysis	Time (sec)	%
Percentage of Total Survey Time	100	0.005
Percentage Time Observed at 0-10m Height	100	0.005

### 3.2.5 Kestrel

In total, thirty five individual observations of kestrel were made over the course of the winter 2014/15 survey. An adult male bird, presumed to be the same individual was observed on four

separate occasions near VP3, over the course of two watches (three times on the 28<sup>th</sup> of November 2014 and once on 30<sup>th</sup> of November 2014); another adult male bird, also presumed to be the same individual, was observed twice near VP4 on the 8<sup>th</sup> of December 2014. Another adult male was sighted twice near VP4 on the 24<sup>th</sup> of October 2014. There were eight observations at VP4 during October – December 2014, and two during January – February 2015. There were eight observations in total at VP15 during the winter 2014/15 survey.

### 3.2.5.1 Summary of kestrel observations

A total of 38 kestrel observations were made during surveying (winter 2014/15). The majority of the observations involved hunting, mainly over scrub, heath and vegetated cutover bog habitats. Surveys suggest a healthy population of kestrel within the study area and adjoining lands (See table 6 below).

**Table 6: Duration and flight heights of kestrel**

Survey Time Analysis	Group	Time (sec)	%
Percentage of Total Survey Time	Male	1,005	0.052
	Female	220	0.011
	Total	3,170	0.163
Percentage Time Observed at 0-10m Height	Male	855	0.044
	Female	50	0.003
	Total	1,235	0.064
Percentage Time Observed at 10-100m Height	Male	930	0.048
	Female	50	0.003
	Total	1,945	0.100

### 3.2.6 Sparrowhawk

Seven separate observations of sparrowhawk were made during the winter 2014/15 survey, one of which was made while driving past VP1, outside of the VP watch time, on the 21<sup>st</sup> of October 2014. A male bird was observed mobbing two hooded crows (*Corvus cornix*) intermittently for sixteen minutes over agricultural land and cutover bog before flying off over cutover bog, on the 15<sup>th</sup> of December 2014, at VP5. A 2<sup>nd</sup> calendar year male was observed chasing passerines at VP13 on the 16<sup>th</sup> of January 2015; a female bird was observed during the same watch, chasing blackbirds (*Turdus merula*) for two minutes.

#### 3.2.6.1 Summary of sparrowhawk observations

A total of eight sparrowhawk observations were made while conducting winter 2014/15 surveys. The observations were mainly relating to birds hunting small passerines. Mobbing of hooded crows was also observed for a relatively extended period of time (See table 7 below).

**Table 7: Duration and flight heights of sparrowhawk**

Survey Time Analysis	Group	Time (sec)	%
Percentage of Total Survey Time	Male	1,145	0.059
	Female	150	0.008
	Total	1,362	0.070
Percentage Time Observed at 0-10m Height	Male	185	0.010
	Female	5	0.001
	Total	197	0.010
Percentage Time Observed at 10-100m Height	Male	960	0.049
	Female	140	0.007
	Total	1,160	0.060

### 3.2.7 Buzzard

A total of twenty three observations of buzzard were made during the winter 2014/15 survey. Two of these observations, on the 27<sup>th</sup> of November 2014 at VP4, involved the two birds being mobbed by the same peregrine falcon. Three observations involved buzzards being mobbed by corvids. These observations were made at VP 13 on the 28<sup>th</sup> of November 2014, VP14 on the 31<sup>st</sup> of December 2014, and VP15 on the 18<sup>th</sup> of November 2014, respectively. On the 18<sup>th</sup> of March 2015 four buzzards were observed soaring over cutover bog and scrub within the site, from VP 15. At least one pair was observed displaying in a tumbling flight manner. They were visible for approximately 17 minutes at various heights, but mainly at less than 100m in height. On the 1<sup>st</sup> of April 2015 a pair of buzzards was observed soaring and displaying over the woodland to the south of VP8. They were not always in view, but it is likely they remained within the site boundary during the observation period of 18 minutes.

#### 3.2.7.1 Summary of buzzard observations

There were a total of 23 observations of buzzard during winter 2014/15 vantage point surveys. The birds were mainly observed hunting and commuting. There were several observations of buzzard being mobbed by other species, namely hooded crows and peregrine falcon. Displaying behaviour was also observed on several occasions (See table 8 for flight times and observation heights).

**Table 8: Duration and flight height of buzzard**

Survey Time Analysis	Time (sec)	%
Percentage of Total Survey Time	9,037	0.465
Percentage Time Observed at 0-10m Height	1,732	0.089
Percentage Time Observed at 10-100m Height	7,305	0.376

### 3.3 WILDFOWL/SWANS/WADERS/GULLS OBSERVED DURING WINTER 2014/45 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 Whooper Swan

Whooper swan is listed as an Annex I species under the Birds Directive and classified as amber-listed in Ireland due to Ireland being home to >20% of the wintering European population at ten sites or less, as well as its very small breeding population. However the European population is considered

secure<sup>3</sup>. Whooper swans were commonly recorded on the site, with a mean number of 28 individuals recorded per month. The counts had a peak value of 63 in October with 44 observed in December. The month of least activity was January when 2 individuals were recorded. A flock of 36 whooper swans was noted during the final month of the winter survey in March.

There were 27 separate observations of whooper swan over the course of the winter bird Vantage Point surveys. There were 13 observations of whooper swan during the month of October 2014, between the 20<sup>th</sup> and the 25<sup>th</sup> of the month. Five separate observations were recorded on both the 20<sup>th</sup> of October and the 21<sup>st</sup> of the October. Low numbers ranging from 3 to 8 individuals were noted. The largest flock observed during the month was recorded on the 24<sup>th</sup> of October 2014. A flock of 15 adults was observed commuting south along the banks of the Shannon River at a height of between 10 and 100m, gradually descending in V-formation for 10 seconds. One observation was recorded during Vantage Point surveys in November, on the 11<sup>th</sup> of the month. A flock of 10 individuals was recorded commuting in a south easterly direction for 60 seconds at a height of between 10 and 100m over Derryadd. There were six observations during the month of December 2014. There was one observation daily during vantage point surveys on the 7<sup>th</sup>, 9<sup>th</sup>, 14<sup>th</sup>, 15<sup>th</sup>, 16<sup>th</sup> and 19<sup>th</sup> of the month, made while conducting the watch at vantage points VP1, VP2, VP6, VP7, VP11 and VP15. On the 8<sup>th</sup> of December 2014 an unknown number was heard but not observed in the general vicinity of VP 2 (Mountdillon). The largest flock of birds was recorded on the 15<sup>th</sup> of December, 2014, at VP15, when 11 individuals were observed commuting in a southerly direction over cutover bog (south of Derryadd) for 20 seconds at a height of <10m and 60 seconds at a height of between 10-100m. On the 14<sup>th</sup> of December 2014, 1 juvenile and 6 adult birds were observed roosting on a peat bank in Derryarogue, beside standing water, for the duration of the survey, at VP6.

There were two observations of the species in January 2015. On the 15<sup>th</sup> of January 2015 at VP4, two birds were observed flying from east to west at Derryarogue, just south of the main power lines at the same height 50 feet for 60 seconds. The only observations of the species during the month of February were made on the 19<sup>th</sup> of the month, all from VP2 in Mountdillon. There were five separate observations of the same flock of 4 whooper swans, recorded landing and feeding on standing water in a section of cutover bog and recolonising birch woodland, within the site at Mountdillon. The four individual remained within the site for over an hour until all four birds flew off to the north east, at a height of approximately 3-4m for 75 seconds. Two other adults flew over VP1 and VP2, commuting in a north easterly direction, and then a northerly direction, at a height of approximately 30-40m for 56 seconds. A group of 3 adult birds were also observed commuting in the general direction of the River Shannon, at a height of between 10-100m, before disappearing out of view, after approximately 180 seconds. There was a single sighting of whooper swan during the month of March 2015. On the 25<sup>th</sup> of March 2015 a flock of 36 birds was observed while travelling to VP1, flying in a tight pack at leisurely speed. The flock was observed for 65 seconds at a height of approximately 30m.

<sup>3</sup> <http://www.birdwatchireland.ie/IrelandsBirds/Swans/WhooperSwan/tabid/151/Default.aspx>

### 3.3.1.1 Summary of whooper swan observations

During winter 2014/15 vantage point surveys there was a total of 26 observations of whooper swan, mainly observed commuting between locations. Group sizes observed ranged from 2-36 individuals with many groups containing juveniles.

**Table 9: Duration and flight heights of whooper swan**

Survey Time Analysis	Time (sec)	%
Percentage of Total Survey Time	25,091	1.291
Percentage of survey time on ground	10,800	0.556
Percentage Time Observed at 0-10m Height	3,435	0.1767
Percentage Time Observed at 10-100m Height	1,486	0.0764

### 3.3.2 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 (Calhoun and Cummins, 2013). Golden plover was commonly recorded during October, November and December 2014, with 13 sightings. The counts peaked in October with 211 birds recorded. While there were only two sightings during January and March 2015, these were flocks of 76 and 81 birds respectively.

There were 8 separate observations of golden plover during the month of October, three from VP 7 and 3 from VP 12, with one each from VPs 3 and 14. The largest flock during the month was recorded on the 20<sup>th</sup> of October 2014. On this date, three observations were made from VP 7 in Derryadd, the first at 11:12 and the last at 12:25. At 11.12 a flock of 33 were observed circling in a tight flock and flew west over cutover bog, then veered south over the road at VP7 (Height  $X > 10m < 100m$ ). At 12.02, a flock of c. 70 individuals was noted flying low ( $< 10m$ ) in a tight flock circling an area of cutover bog and landing in Derryadd. The final observation a VP 7 was recorded at 12.25 when the same flock previously observed (c. 70) returned, 50 commuting in a southerly direction and 20 travelling to the east. There was one observation from VP 14 on the same day when 64 individuals were recorded flying at a height of  $X > 10m$  for 3 minutes. The flock subsequently split into groups of 34 and 30 respectively. 30 individuals flew to the north and 34 landed within Derrycolumb, remaining until the end of the VP watch. A flock was hearing calling within the cutover bog from VP 7 on the morning of the 21<sup>st</sup> October 2014. There were three further observations on the same day from VP 12, with observations of 1, 4 and 8 individuals commuting across, but not

landing within the bog, in Derrycolumb. The last sighting during the month of October was a flock of 30 individuals observed from VP 3 on the 23<sup>rd</sup> of October 2014, along the southern edge of the site, at Mountdillon. The flock was observed commuting and flew first in a northerly direction, then doubled back south over cutover bog and along the edge of more intact raised bog. The flock gradually gained height ( $X > 10\text{m} < 100\text{m}$ ) flying for a total time of 25 seconds.

There were three observations of golden plover during the month of November, all from VP 12 and within the study area at Derryadd. The largest flock totalling 22 individuals was recorded commuting within the site, at a height of between 10 and 100m for 30 seconds. There was one observation each month during surveys in December 2014 and January 2015. On the 31<sup>st</sup> of December 2014, 6 golden plover flew in and landed on cutover bog in Derrycolumb (10 sec < 10m) and were presumed to have remained present throughout the VP survey period at VP 14. The only observation during the month of January (2015) was on the 14<sup>th</sup> of the month at VP 12, in Derryadd. This was the second largest number of golden plover recorded during surveys when a flock of 75 flew south to south west, low through the site (< 15m for 30 sec). There were no sightings of golden plover during the month of February 2015.

Three observations of golden plover were recorded during the month of March. On the 5<sup>th</sup> of March 2015, while carrying out the watch at VP5, 31 birds were observed intermittently over 360 seconds, in a tight flock in Derryarogue. Circling, alighting, taking off and calling. There were two observations on the 16<sup>th</sup> of March 2015, both from VP12 in Derryadd, concerning a flock of 22, and a flock of 16. March surveys extended into the month of April with two VPs survey on the 1<sup>st</sup> of April 2015. There were eight separate observations made in total on that day, four each from VPs 8 and 12. Large flocks were recorded at VP8 over woodland and agricultural grassland in the bogland of Derryadd when the largest flock recorded over the entire survey period was recorded on the morning of the 1<sup>st</sup> April when a flock totalling 110 golden plover was recorded, with further flocks of 55 and 80 recorded later in the day, from the same VP. All golden plover observed were flying and commuting to the south of the VP. The four observations from VP12 were within cutover bog at Derryadd. While conducting the watch at VP12 on the 1<sup>st</sup> of April, 2015, a flock of 50 golden plover were observed flying south over cutover bog at between 10-100m in height for 40 sec. Also in the 1<sup>st</sup> of April, 2014 at the same vantage point a flock of 11 individuals remained within the cutover bog for the duration of the VP and were present when the observer left at 17:31.

### ***3.3.2.1 Summary of golden plover observations***

A total of 24 observations of golden plover were made during winter 2014/15 surveys. The observations were mainly of birds commuting and roosting. The maximum group number of golden plover recorded was 75 (See table 10 below).



**Table 10: Duration and flight heights of golden plover**

Survey Time Analysis	Time (sec)	%
Percentage of Total Survey Time	6,214	0.3197
Percentage Time Observed at 0-10m Height	3,018	0.1552
Percentage Time Observed at 10-100m Height	1,970	0.1013

### 3.3.3 Lapwing

Lapwing (*Vanellus vanellus*) occurs as residents, as well as both winter and summer visitors from France/Iberia, and central/western Europe, respectively. Wintering flocks are regularly recorded on wetlands, and pasture and rough land adjacent to bogs. The species is Red-listed due to large declines in both breeding and non-breeding populations (Calhoun and Cummins, 2013). Seventeen individuals in total were recorded during the winter 2014/15 survey (three in October, 2014 and fourteen in March, 2015 with a peak count of 14 in January, 2015).

### 3.3.4 Curlew

Curlew (*Numenius arquata*) occurs as winter visitors 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). Two individuals were heard calling on the 30<sup>th</sup> of October 2014 near VP11 in Derryshanoge.

### 3.3.5 Snipe

Snipe (*Gallinago gallinago*) occurs as both a winter visitor (from the Faroe 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 fourteen observations of snipe during October through to December 2014. Thirteen individuals were flushed by the surveyor during a transect survey at VP10 on 5<sup>th</sup> November 2014. One was observed commuting. There were three further sightings for the remainder of the survey; one on the 22<sup>nd</sup> of January 2015 at VP14, and two in February, 2015 (02/02/2015 25/02/2015), both made while conducting the vantage point watch at VP8.

### 3.3.6 Grey heron

Seven observations of grey heron (*Ardea cinerea*) were made during the winter 2014/15 survey; most commonly flushed, or commuting.

### 3.3.7 Gull Species

Over the duration of the survey, three gull species were observed, two red listed, namely black-headed gull (*Chroicocephalus ridibundus*) and herring gull (*Larus argentatus*). The other was the amber-listed great black-backed gull (*Larus marinus*). There was only one sighting of great black-backed gull and herring gull, with one individual of each species observed. In December 2014, a flock of 13 black-headed gulls were observed from VP6, commuting towards the River Shannon. A further two were observed in January 2015 from vantage point 4.

### 3.3.8 Other Species of Conservation Interest observed during vantage point surveys

#### 3.3.8.1 Grey Wagtail

Grey wagtail (*Motacilla cinerea*) was one time a widespread resident, frequenting fast flowing streams and rivers throughout Ireland. In Ireland this species has been recently downgraded from green-listed to red-listed status due to a short-term decline in breeding population (>50%) (Colhoun and Cummins, 2013). Over the course of the winter survey, there were three sightings of the species, with only one individual observed on each occasion. On the 27<sup>th</sup> of November, 2014 a bird was observed feeding on invertebrates on the ground adjacent to a drainage ditch at VP4. On the 14<sup>th</sup> of December, 2014 a grey wagtail was again observed at this vantage point (VP4). On the 20<sup>th</sup> of February 2014, a grey wagtail was observed throughout the watch at VP3.

#### 3.3.8.2 Meadow Pipit

Meadow pipit (*Anthus pratensis*) was at one time one of the commonest bird species in Ireland, its preferred habitat being rough pastures and uplands. This species was recently been downgraded from Green-listed to red-listed due to a short-term decline in breeding population (>50%) (Colhoun and Cummins, 2013). Meadow Pipit was most commonly recorded during the October and November 2014 surveys, the counts peaked in November, 2014, with a peak count for the month of at 59, and declined after that. Only one sighting was recorded in December 2014 and three sightings of 1-2 birds in January, 2015, six sightings of 1-3 birds in February 2015 and eleven sightings of 1-3 birds in March 2015. Vantage points VP2, VP9 and VP10 had the most observations of this species, with a count of 11 meadow pipit, while carrying out the watch at VP9, on the 8<sup>th</sup> of November, 2014.

### 3.3.9 Winter 2014/2015 Transect Survey

Transect surveys were carried out in November 2014 and March 2015. A total of 46 species were recorded during the winter (2014/2015) transect surveys. Table 11 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 11: Winter Transect Totals from March 2014 and November 2015**

Common Name	Scientific Name	Nov	Mar	Peak Count
Blackbird	<i>Turdus merula</i>	39	25	39
Blue tit	<i>Cyanistes caeruleus</i>	9	6	9
Bullfinch	<i>Pyrrhula pyrrhula</i>	5	2	5

Common Name	Scientific Name	Nov	Mar	Peak
Buzzard	<i>Buteo buteo</i>	1	2	2
Chaffinch	<i>Fringilla coelebs</i>	39	14	39
Coal tit	<i>Periparus ater</i>	1	4	4
Cormorant	<i>Phalacrocorax carbo</i>	0	3	3
Dunnock	<i>Prunella modularis</i>	13	8	13
Fieldfare	<i>Turdus pilaris</i>	17	5	17
Goldcrest	<i>Regulus regulus</i>	2	5	5
Golden plover	<i>Pluvialis apricaria</i>	0	70	70
Goldfinch	<i>Carduelis carduelis</i>	6	3	6
Great tit	<i>Parus major</i>	0	2	2
Greenfinch	<i>Carduelis chloris</i>	1	0	1
House Sparrow	<i>Passer domesticus</i>	0	4	4
Hooded crow	<i>Corvus cornix</i>	32	16	32
Jackdaw	<i>Corvus monedula</i>	20	26	26
Jay	<i>Garrulus glandarius</i>	2	0	2
Kestrel	<i>Falco tinnunculus</i>	1	0	1
Lapwing	<i>Vanellus vanellus</i>	7	0	7
Linnet	<i>Carduelis cannabina</i>	18	6	18
Long tailed tit	<i>Aegithalos caudatus</i>	15	0	15
Magpie	<i>Pica pica</i>	9	8	9
Mallard	<i>Anas platyrhynchos</i>	0	11	11
Meadow pipit	<i>Anthus pratensis</i>	23	46	46
Mistle thrush	<i>Turdus viscivorus</i>	0	9	9
Pheasant	<i>Phasianus colchicus</i>	1	1	1
Pied wagtail	<i>Motacilla alba</i>	14	5	14
Raven	<i>Corvus corax</i>	0	1	1
Redpoll	<i>Carduelis flammea</i>	27	4	27
Redwing	<i>Turdus iliacus</i>	0	17	17
Reed bunting	<i>Emberzia schoenichus</i>	48	9	48
Robin	<i>Erithacus rubecula</i>	56	46	56
Rook	<i>Corvus frugilegus</i>	27	56	56
Siskin	<i>Carduelis spinus</i>	2	25	25
Skylark	<i>Alauda arvensis</i>	0	3	3
Snipe	<i>Gallinago gallinago</i>	16	1	16
Song thrush	<i>Turdus philomelos</i>	1	7	7
Sparrowhawk	<i>Accipiter nisus</i>	1	0	1
Starling	<i>Sturnus vulgaris</i>	73	95	95
Stonechat	<i>Saxicola torquatus</i>	1	2	2
Wheatear	<i>Oenanthe oenanthe</i>	0	1	1
Whooper Swan	<i>Cygnus cygnus</i>	4	0	4
Woodcock	<i>Scolopax rusticola</i>	0	1	1
Woodpigeon	<i>Columba palumbus</i>	16	15	16
Wren	<i>Troglodytes troglodytes</i>	57	36	57
<b>Total No of Species</b>		<b>35</b>	<b>39</b>	<b>46</b>



A total of 46 species were recorded during the winter 2014/15 transect survey. There were a total of 35 species recorded in November 2014 and 39 species observed in March 2015. Of these, three were red-listed and fifteen were amber-listed. Two Annex I-listed species were recorded during surveys, namely whooper swan and golden plover. Three raptor species were recorded, namely buzzard, kestrel and sparrowhawk. There was two Annex I-listed species, namely golden plover, which is also red-listed, and whooper swan, which is also amber-listed. The most abundant species recorded was starling (*Sturnus vulgaris*), with 73 observed in November 2014 and 95 in March 2015. Starling is amber-listed in Ireland due to a moderate recent decline in large parts of its European population. The Irish population is currently stable<sup>4</sup>. Golden plover is red-listed in Ireland due to a decline in breeding population of at least 50%, but its European status is considered to be secure<sup>5</sup>. The next most abundant species was robin (*Erithacus rubecula*), with 56 observations in November 2014 and 46 in March 2015. In total seventy golden plover were recorded for transects in March, 2015, but none were observed in November 2014 transects. On the 6<sup>th</sup> of March, 2015, 54 golden plover was observed roosting to the northwest of VP4, while conducting transect 4 (2). A peak count of 56 robin was observed during transects carried out in November, 2014. Robin was downgraded from green-listed to amber-listed in the latest revision of the population studies of bird species in Ireland, due to a decline in abundance of at least 25% (Colhoun and Cummins, 2013).

### 3.3.10 Raptor Transect Observations

#### 3.3.10.1 Buzzard

There was a total of three buzzard observations during the winter transect surveys. One buzzard was observed 27<sup>th</sup> of November 2014 at transect 14, to the south of the site at Derraghan. The two observations from the March 2015 transect survey were both recorded outside of the site boundary. The first observed on the 4<sup>th</sup> of March 2015 perched on a conifer tree, while the second was on the 27<sup>th</sup> of March 2015, after completion of the transect survey. Buzzards are green-listed and the European population is considered secure.

#### 3.3.10.2 Sparrowhawk

Sparrowhawk has been downgraded from green to amber-listed status, due to a decline in abundance of at least 25% (Colhoun and Cummins, 2013). There was one sparrowhawk observed, which occurred on the 7<sup>th</sup> of November 2014, along transect 7, towards the north end of Derryadd. The bird was viewed briefly, hunting low along a hedgeline.

#### 3.3.10.3 Kestrel

One kestrel was recorded along transect 8 on the 14<sup>th</sup> of November 2014.

### 3.3.11 Other Species of Conservation Concern along Transects

#### 3.3.11.1 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 (Colhoun and Cummins, 2013). On the 6<sup>th</sup> March 2015, during the transect survey near vantage point 4 (Derryarogue, a flock of fifty four golden plover was

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

<sup>5</sup> <http://www.birdwatchireland.ie/IrelandsBirds/Waders/GoldenPlover/tabid/317/Default.aspx>

observed roosting on dry cutover bog. Seventy were observed in total during the transect survey in March 2015. None were recorded in November 2015.

#### 3.3.11.2 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). Meadow pipits were recorded commonly along the transect routes. The peak count of 46 was recorded during transects carried out in March 2015. Overall, the highest numbers of meadow pipit observed while carrying out the March, 2015 transects at the site, was 17 birds, observed while conducting transect 4 (1), on the 6<sup>th</sup> of March 2015.

#### 3.3.11.3 Lapwing

Lapwing is red-listed in Ireland due to a significant decline in breeding population (Colhoun and Cummins, 2013). On the 27<sup>th</sup> of November 2014 seven lapwings were observed along transect 14.

#### 3.3.11.4 Whooper Swan

Whooper swans is listed as an Annex I species under the Birds Directive, and classified as amber-listed in Ireland due to Ireland being home to >20% of the wintering European population, at ten sites or less, as well as its very small breeding population. However the European population is considered secure. There was one observation of whooper swan during the transect surveys. On the 28<sup>th</sup> of November 2014, four birds were observed, from VP-3, flying at a leisurely pace towards the River Shannon, at a height of approximately 10m.

### 3.3.12 Other surveys

Infrequent visits were made to the Lough Ree lakeshore at Lanesborough (jetty at the closest point to the site). Whooper swans were observed feeding at the lakeshore infrequently. A max count of 12 whooper swan was made at this location on the 7<sup>th</sup> of November, 2014.

The River Shannon was visited frequently while travelling to VP5, where the site abuts the River Shannon. No whooper swans were observed, however small numbers of mute swans (*Cygnus olor*) were frequent. Other parts of the River Shannon to the west of Mountdillon (VP1 and VP2) were also frequently visited. Small numbers of cormorant were infrequently observed preening on tree stumps.

## 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 winter 2014/15 survey period 58 species were observed, six of which were raptor species. These included hen harrier, merlin, peregrine falcon, kestrel, buzzard and sparrowhawk.

### 4.1 RAPTORS

From the results of the winter 2014/15 survey, there appears to be minimal usage of the site by hen harriers, despite the fact that there is ample foraging habitat throughout the area. No winter hen harrier roost sites were found during the period of survey.

There were three observations of peregrine falcon, all from VP4. There was one observation of peregrine in October, 2014 and two sightings in November 2014. It is possible that the sightings in October and November were of the same individual. VP4 is the closest vantage point to Lanesborough Power Station, which would appear to be a possible optimal breeding/roosting site for this species. However no more observations of peregrine falcon were made after November, 2014.

There were two observations of merlin over the course of the six months of winter 2014/15 surveys. The results of the winter survey show that the site is used infrequently by merlin during the winter months. This species are much more widely distributed in the winter, than in the breeding season. Merlins are proven to move away from high ground and upland sites at this time of the year, and can often be seen on the coast, where concentrations of other birds are attractive as prey species.

Buzzards were observed throughout the site and there is ample foraging/breeding habitat for them at the site. A total of 23 buzzard observations were made while carrying out winter 2014/15 surveys indicating that buzzard is resident in this region.

Kestrel was the commonest bird of prey observed at the site throughout the survey period. This bird of prey is largely a resident within its breeding territory. The results of the winter 2014/15 survey show that the study area and adjacent habitats support a healthy population of kestrel.

In total, eight separate observations of sparrowhawk were made during the winter 2014/15 vantage point surveys and transects at the site. The birch woodland (1<sup>st</sup> and 2<sup>nd</sup> rotation), scrub, woodland edges, rides, provide optimal foraging habitat for sparrowhawk.

#### 4.1.1 Summary/Recommendations

Following winter 2014/15 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>6</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. It is likely that buzzards are breeding in 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. Summer 2015 surveys indicate that stonechat, an amber listed species, is more abundant at the northern part of the site, rather than the southern part of the study area. 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 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. It must be noted that the results highlighted in this report follow only one survey period (winter 2014/15).

#### 4.2 WILDFOWL/WADERS/GULLS

Wildfowl, wader and gull species observed during the winter 2014/15 survey period included whooper swan, teal, golden plover, lapwing, curlew, snipe, black-headed gull, herring 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. This movement was observed frequently at vantage points VP1, VP2, VP3, VP4, VP5, and VP6 as these are the closest VP's to the River Shannon.

Lough Ree SPA (004064) is situated 330m to the south of Derraghan Bog at its closest point and 540m south west of the Lanesborough study area. Lough Ree is of high ornithological importance for both wintering and breeding birds. It 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 population of common tern (90 pairs in 1990). It 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 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

<sup>6</sup> <http://www.birdwatchireland.ie/LinkClick.aspx?fileticket=C8vd4RLtsnc%3D&tabid=1165>

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 winter 2014/15 survey period. Of the aforementioned species, Greenland white-fronted goose, mute swan, wigeon, pintail, tufted duck, goldeneye, coot, shoveler, great crested grebe, common tern, little grebe, common gull, common scoter, lesser black-backed gull were not observed during winter 2014/15 surveys.

The following table (table 12) lists the waterfowl species (species of conservation interest/waterfowl survey target species), observed during winter 2014/15 surveys (with regards to windfarm proposals). The table also shows the estimated wintering counts within the Lough Ree SPA site and National/all Ireland estimated populations.



Table 12: Waterbird species of conservation interest which were observed during winter 2014/15 surveys, with regard to windfarm developments

Species of conservation interest which were observed during winter 2014/15 surveys						
Species	Counts during winter 2014/15 survey		Counts within Lough Ree SPA site <sup>7</sup>	Wintering National population estimate <sup>8</sup>	All Ireland wintering population estimate <sup>9</sup>	Comments as per winter 2014/15 results
	Monthly Peak counts	Monthly Mean counts				
Whooper swan ( <i>Cygnus Cygnus</i> )	63	28	89 wintering individuals	14,530 (w)	12,700	The peak count is 0.43% of the national overall wintering population. The only regular movements of this species, was over the northern part of the site.
Golden plover ( <i>Pluvialis apricaria</i> )	211	67	2035 winter individuals	N/A	150,000	The peak count is 0.14% of the all Ireland wintering population.
Curlew ( <i>Numenius arquata</i> )	2	0	167 wintering individuals	35,250 (w)	65,820	Two calls. Winter 2014/15 surveys indicate that this species will not be significantly impacted by any proposed

<sup>7</sup> <http://www.npws.ie/sites/default/files/protected-sites/natura2000/NF004064.pdf>

<sup>8</sup> Birds of Conservation Concern in Ireland Kendrew Colhoun and Sinéad Cummins (2014–2019)

<sup>9</sup> Irelands Wetlands and their Waterbirds: Status and Distribution. Birdwatch Ireland, Newcastle, Co. Wicklow (Crowe, 2005)

Species of conservation interest which were observed during winter 2014/15 surveys						
Species	Counts during winter 2014/15 survey		Counts within Lough Ree	Wintering National	All Ireland wintering population estimate <sup>9</sup>	Comments as per winter 2014/15 results
						development.
Lapwing ( <i>Vanellus vanellus</i> )	14	3	3870 wintering individuals	N/A	200,000	The peak count of 14 is 0.01% of the all Ireland wintering population. Considered a scarce winter visitor to the site.
Teal ( <i>Anas crecca</i> )	4	1	912 wintering individuals	N/A	56,800	One observation of 4 birds. Winter survey results (2014/15) indicate that any proposed development will not significantly impact on this species.
Cormorant ( <i>Phalacrocorax carbo</i> )	2	1	64 wintering individuals	5,211	3,405	During the winter 2014/15 surveys, the only movements of this species were at the northern part of the study area. It is not likely that any proposed development would have a significant impact on this species.
Black-headed gull ( <i>Chroicocephalus</i> )	13	3	N/A	1,617	34,739	For the most part the gull movements observed during winter and summer

Species of conservation interest which were observed during winter 2014/15 surveys						
Species	Counts during winter 2014/15 survey		Counts within Lough Ree	Wintering National	All Ireland wintering population estimate <sup>9</sup>	Comments as per winter 2014/15 results
<i>ridibundus</i> )						surveys were to the north of the site, between Lough Rea and the River Shannon.
Herring Gull ( <i>Larus argentatus</i> )	1	0	N/A	N/A	5,595	Following winter 2014/15 surveys any proposed development will not have significant impacts on this species
Great black-backed gull ( <i>Larus marinus</i> )	1	0	N/A	N/A	2,183	Following winter 2014/15 surveys any proposed development will not have significant impacts on this specie

The majority of whooper swan observations were of birds traversing over the study area, with some birds occasionally using wet flashes on-site. The flood plains and grassland areas adjacent to the River Shannon provide optimal foraging/roosting habitat for whooper swan in winter. The largest numbers of whooper swan were observed in the early and late months of the survey period, with birds arriving in from Iceland in October (2014) and of birds departing in March (2015). The peak count of 63 includes monthly peak counts for this species. Birds included in this number were from a number of vantage points. The highest single observation was of 36 birds (see section 3.3.1 above). Any proposed development should consider using sites to the south of vantage points VP1, VP2, VP3, VP4, VP5 and VP6.

From the winter 2014/15 observations of golden plover, it is considered that this species uses the site to roost on, rather than forage, with foraging taking place on surrounding farmland. The majority of the sightings of golden plover were in the Derryarogue region and to the west of Derryadd.

Snipe were observed at vantage points VP8, VP9, VP10, VP12 and VP14. There were seventeen observations in all, predominantly of birds flushed from the edges of cutover bog. It is considered that this species is a scarce winter resident at the site.

The winter 2014/15 results indicated minimal usage of the study area by cormorant, curlew, lapwing and teal during this winter survey period. Mallard was the most observed species of duck (eight observations, with a peak count of 45 for the month of October, 2014). For the most part, mallard were observed commuting and birds used drains and standing water to roost at 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, and observations of this species at the site will be discussed in the 2015 summer survey report.

#### **4.2.1 Summary/Recommendations**

The main pattern of movement of wetland and water birds was at the northern end of the study area, of birds commuting between Lough Rea and the River Shannon, along with migrating species. The only regular pattern of movement of whooper swan was at the north of the study area, to the north of VP1, VP2, VP3, VP4, VP5 and VP6 and to the east of the man made ponds. Following the winter 2014/15, it is recommended that any proposed developments stay to the south of VP1, VP2, VP3, VP4, VP5 and VP6. The Shannon River at this location is a flyway for wildfowl and waders. Also the man made ponds installed towards the northern part of the study areas will bring in water birds to the site. The avoidance of any future works at the vicinity of the River Shannon will avoid any potential water quality impacts to the River Shannon itself and any downstream sensitive sites. It must be noted that the results highlighted in this report follow only one survey period (winter 2014/15).

#### **4.3 PASSERINES**

Passerines using the study area observed during winter 2014/15 surveys were typical of habitats present. Meadow pipit and skylark (*Alauda avensis*) were more frequent in autumn and late winter, when birds left the site to forage in coastal areas and returned to breed in summer. This was

particularly true for skylark, less so for meadow pipit. This pattern of abundance mirrors many other inland sites, particularly upland areas.

#### 4.3.1 Summary/Recommendations

Any proposed development should consider potential impact on passerines using the site. A reduction in the numbers of on passerines could result in the lack of prey items for species such as buzzard and sparrowhawk. It is considered that any proposed development at the study area will not have significant impacts on passerine species. 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. 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.

As a result of surveys carried out at the site, it is considered that the open, bare peat areas at the locations of VP8, VP9, VP10, VP11 and VP13 are the most suitable areas for any future developments. These area areas of vast open, bare peat and are the considered the least ecologically sensitive areas at the study area.

#### 4.4 ALL SPECIES OBSERVED DURING WINTER 2014/15 SURVEY PERIOD

The following table (table 13), lists all species observed during the winter 2014/15 survey period, along with their conservation status and general comments.

**Table 13: All species observed during winter 2014/15 vantage point and transect surveys**

Common Name	Scientific Name	Comments
Blackbird	<i>Turdus merula</i>	Resident.
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.
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 Mountdillon.
Crossbill	<i>Loxia curvirostra</i>	Resident
Curlew	<i>Numenius arquata</i>	Scarce winter visitor
Dunnock	<i>Prunella</i>	Resident

Common Name	Scientific Name	Comments
	<i>modularis</i>	
Fieldfare	<i>Turdus pilaris</i>	Winter visitor
Goldcrest	<i>Regulus regulus</i>	Resident
Golden plover	<i>Pluvialis apricaria</i>	Winter visitor
Goldfinch	<i>Carduelis carduelis</i>	Resident
Great black-backed gull	<i>Larus marinus</i>	Scarce winter visitor
Great tit	<i>Parus major</i>	Resident
Greenfinch	<i>Carduelis chloris</i>	Resident
Grey heron	<i>Ardea cinerea</i>	Resident
Grey Wagtail	<i>Motacilla cinerea</i>	Resident, but infrequent.
Hen Harrier	<i>Circus cyaneus</i>	Scarce visitor
Herring Gull	<i>Larus argentatus</i>	Scarce winter visitor
Hooded crow	<i>Corvus cornix</i>	Resident
House Sparrow	<i>Passer domesticus</i>	Resident where buildings about VP,s, particularly at VP7
Jackdaw	<i>Corvus monedula</i>	Resident
Jay	<i>Garrulus glandarius</i>	Scarce resident
Kestrel	<i>Falco tinnunculus</i>	Resident
Lapwing	<i>Vanellus vanellus</i>	Scarce winter visitor
Linnet	<i>Carduelis cannabina</i>	Resident
Long tailed tit	<i>Aegithalos caudatus</i>	Resident
Magpie	<i>Pica pica</i>	Resident
Mallard	<i>Anas platyrhynchos</i>	Resident
Merlin	<i>Falco columbarius</i>	Scarce passage migrant
Meadow pipit	<i>Anthus pratensis</i>	Resident. More frequent in autumn and late winter.
Mistle thrush	<i>Turdus viscivorus</i>	Resident
Peregrine falcon	<i>Falco peregrinus</i>	Scarce winter visitor
Pheasant	<i>Phasianus colchicus</i>	Resident
Pied wagtail	<i>Motacilla alba</i>	Resident
Raven	<i>Corvus corax</i>	Resident
Redpoll	<i>Carduelis</i>	Resident

Common Name	Scientific Name	Comments
	<i>flammea</i>	
Redwing	<i>Turdus iliacus</i>	Winter visitor
Reed bunting	<i>Emberzia shoenichus</i>	Resident
Robin	<i>Erithacus rubecula</i>	Resident
Rook	<i>Corvus frugilegus</i>	Resident
Siskin	<i>Carduelis spinus</i>	Resident and winter visitor
Skylark	<i>Alauda arvensis</i>	Scarce resident. More frequent in autumn and late winter, as breeding birds leave and return.
Snipe	<i>Gallinago gallinago</i>	Scarce resident and winter visitor
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
Teal	<i>Anas crecca</i>	Winter visitor
Wheatear	<i>Oenanthe oenanthe</i>	Summer visitor/passage migrant
Whooper swan	<i>Cygnus cygnus</i>	Winter visitor
Woodcock	<i>Scolopax rusticola</i>	Scarce winter visitor at the site
Woodpigeon	<i>Columba palumbus</i>	Resident
Wren	<i>Troglodytes troglodytes</i>	Resident
<b>Total No of Species</b>		<b>58</b>

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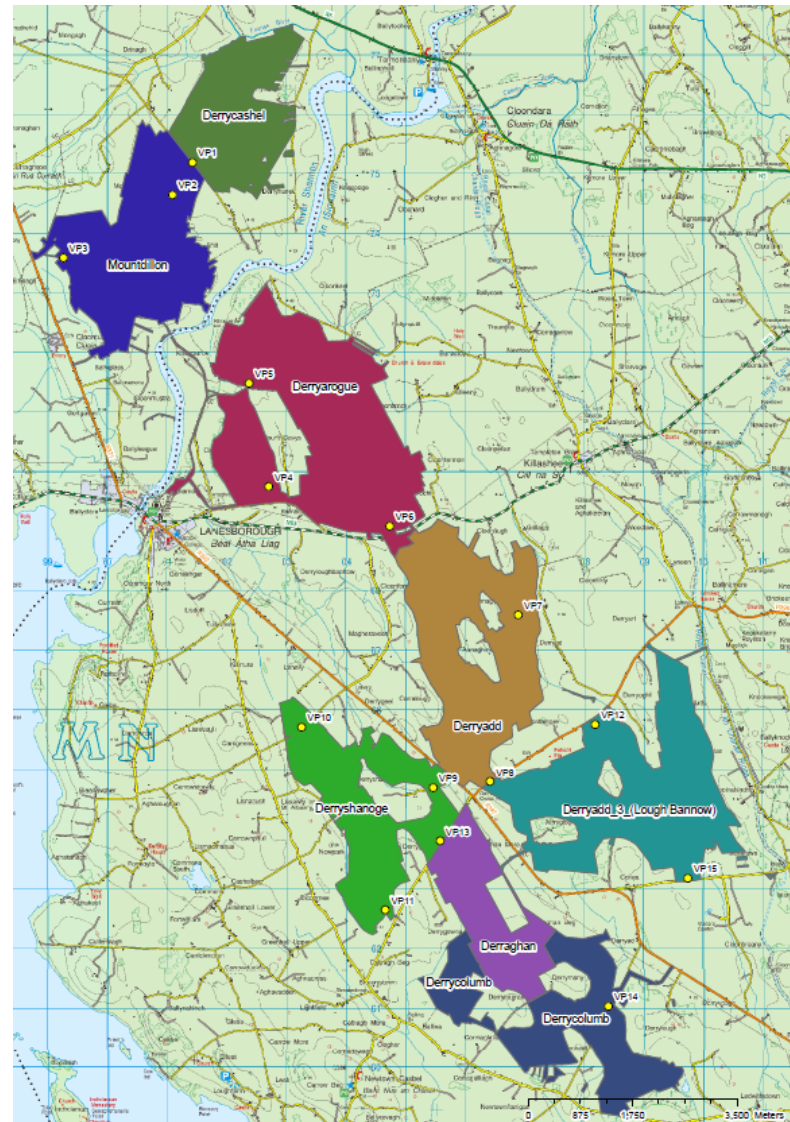
Scottish Natural Heritage in May 2014 (*Recommended bird survey methods to inform impact assessment of onshore windfarms*).



# Appendix 1

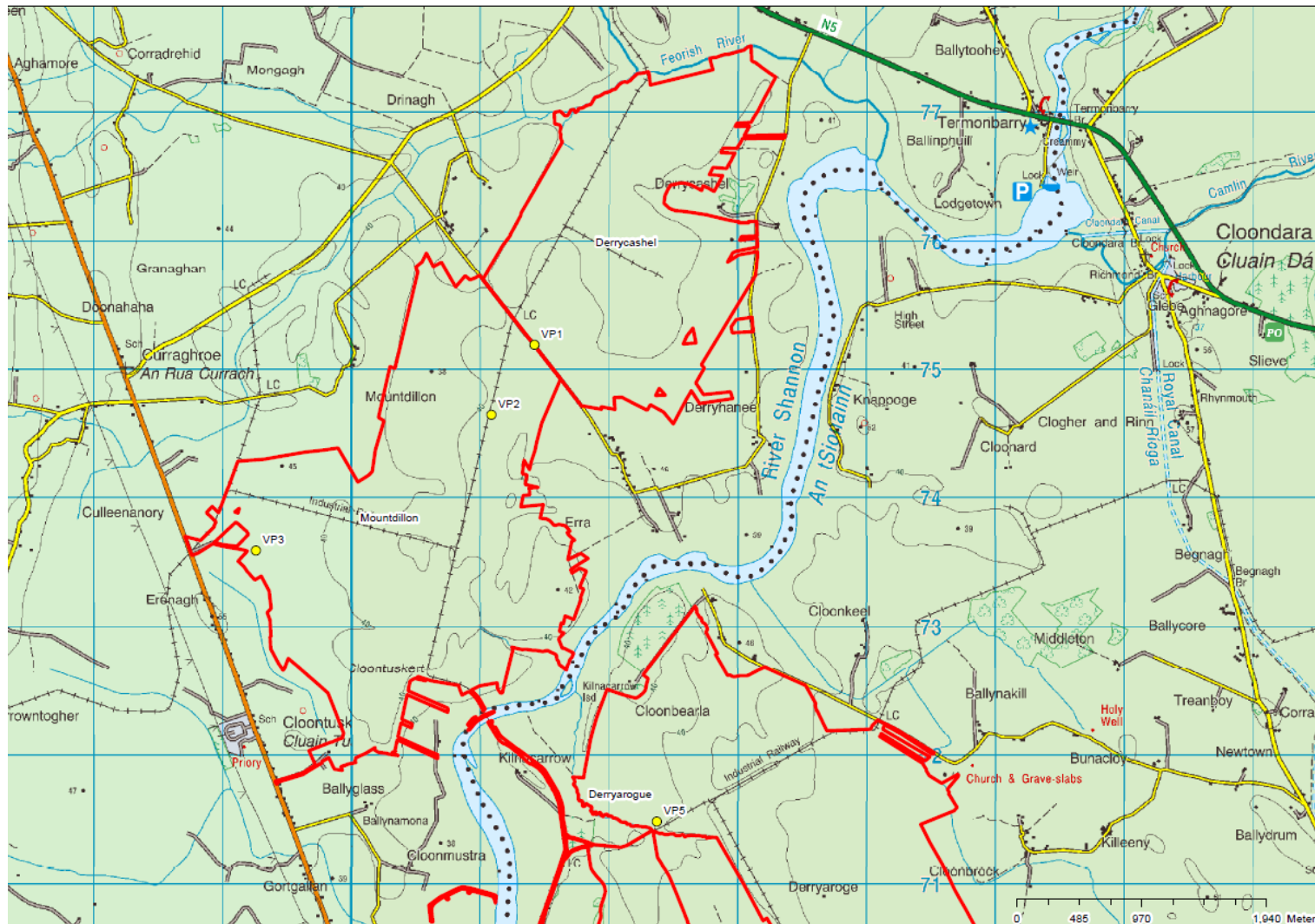
## Figures (Vantage points-Transects)





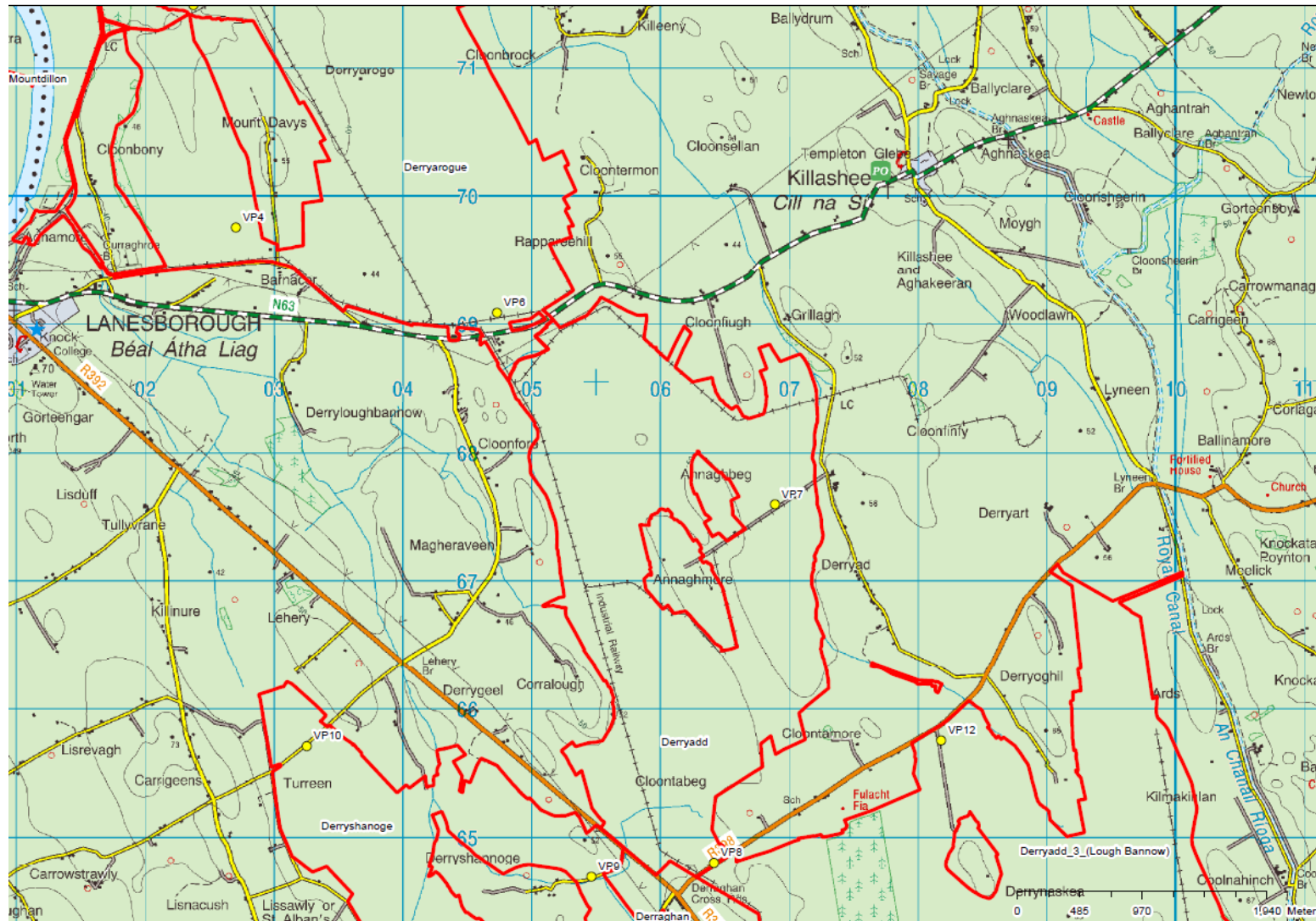
Overall bog Boundaries and Vantage Points





Section 1 Discovery and Vantage Points

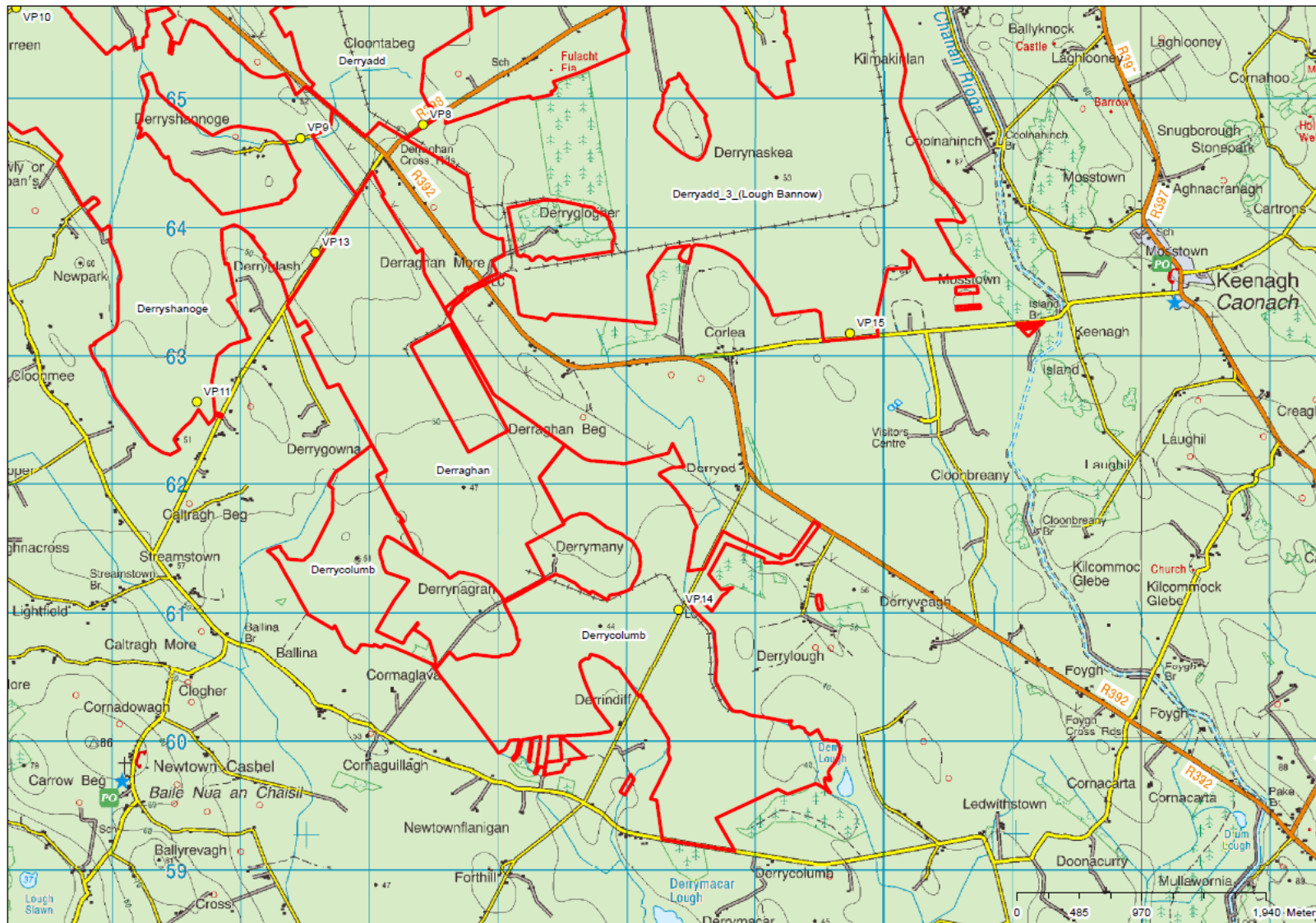




Section 2 Discovery and Vantage Points

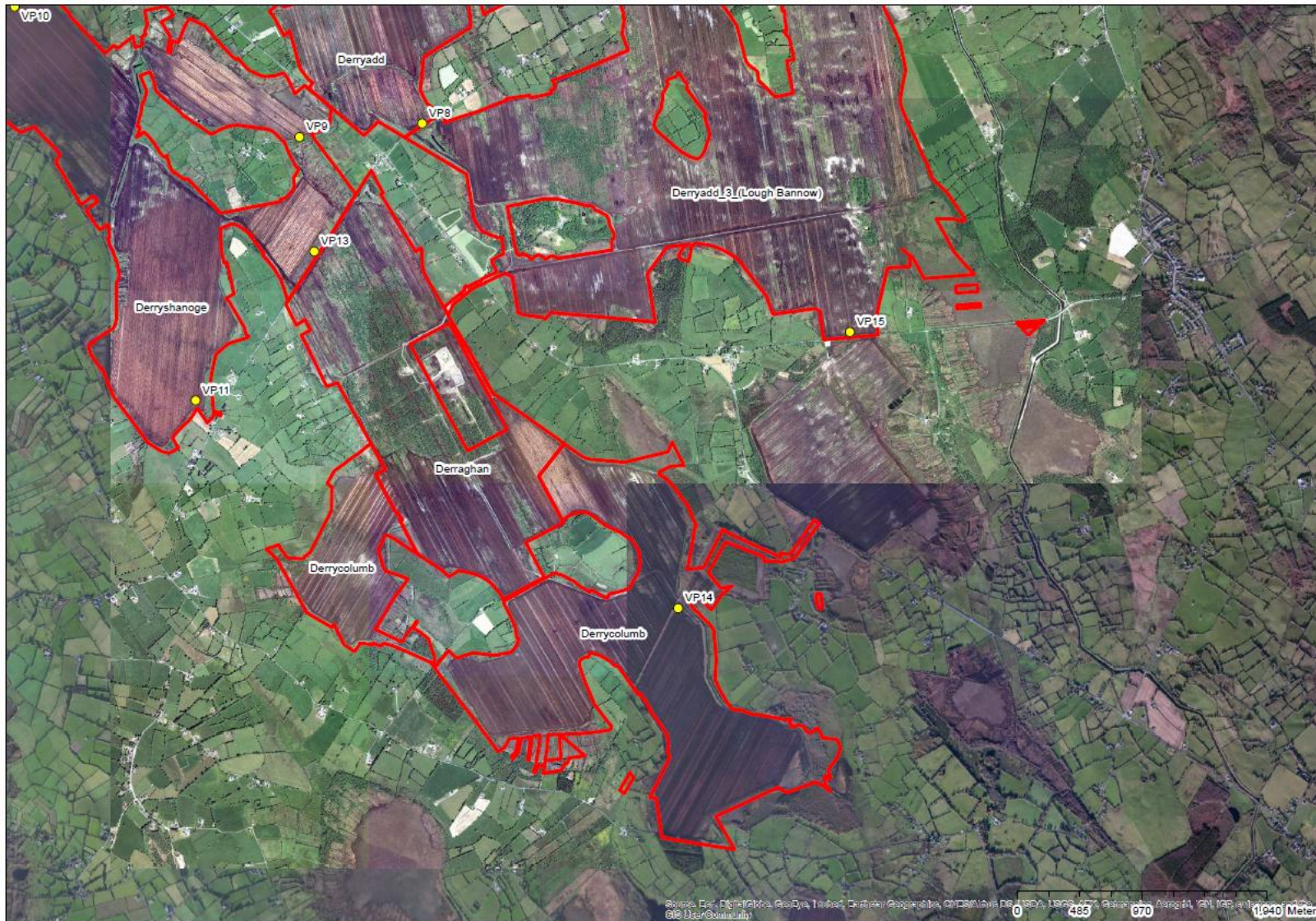


Section 2 Aerial and Vantage Points

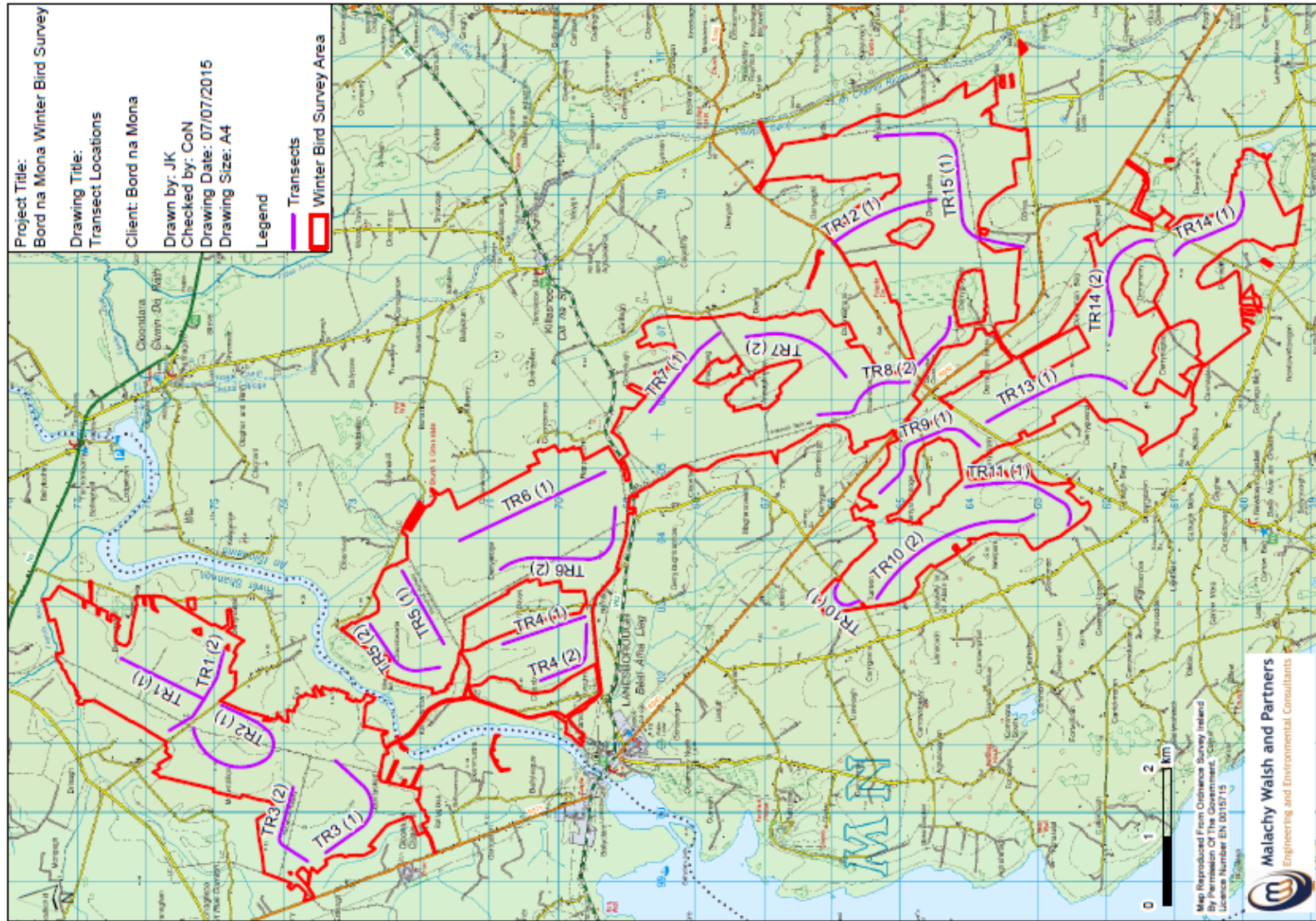




Section 3 Discovery and Vantage Points



Section 2 Aerial and Vantage Points



Transect locations

## Appendix 2

### Summary tables of observations for target species

Hen Harrier (*Circus cyaneus*) observations and comments

Hen harrier observations					
Date	VP	Time	Habitat	Notes	Obs.
21/10/2014	1	15.18	Birch/Willow succession woodland	Adult female observed while driving past VP (outside of watch), casually flying in hunting fashion in a south-westerly direction, foraging. Observed for 15 seconds at >10<100m altitude.	1
7/12/2014	1	15.05	Cutover bog with willow/birch/ <i>Juncus</i> scrub	Adult male; observed briefly flying 1m altitude before diving down. Possibly caught prey, or went to roost. Observed for 10 seconds.	2
14/01/2015	12	11:12	Cutover bog and woodland	Male off site to the west flying south just above the tree line. Observed for 180 sec, commuting at approx. 24m altitude.	3
14/01/2015	7	11:35	Hedgerow, bogland and scrub	Two females hunting together. Started over Eastern end of VP and bogland. Birds continued hunting south along hedgerow, circled towards <i>Salix</i> scrub. Birds continued foraging along hedgerow to the south. Observed for 220 seconds, at <10m altitude.	4
15/01/2015	6	10:59	Cutover bog/small sections of scrub	Two males, flew east to west, very low, went out of sight. Then flew back west to north-east out of sight. Observed for 80 seconds at <10m altitude, 30 seconds at >10m altitude.	5

**Merlin (*Falco columbarius*) observations and comments**

Merlin observations					
Date	VP	Time	Habitat	Notes	Obs No.
16/03/2015	8	17:04	PB4	A merlin (female or juvenile flew across the cutaway and quickly out of sight (5 sec) (<10m)	1
18/03/2015	15	13:10	PB4	<10m (10Secs) Perched and commuting. A merlin perched on a small telegraph pole adjacent to the VP before flying over the cutaway bog out of sight in a S direction	2

**Peregrine falcon (*Falco peregrines*) observations and comments**

Peregrine falcon observations					
Date	VP	Time	Habitat	Notes	Obs No.
25/10/2014	4	12.52	PB4, WS/WD	Adult, flying ~ 1m above ground at first, gained height & circled before flying off over woodland in SE direction (25 sec).	1
27/11/2014	4	15.00	PB4, Birch woodland	Observed mobbing buzzard, both then disappeared into birch forest (35 sec < 10m)	2
27/11/2014	4	15.04	PB4	Same bird as previous entry, observed mobbing second buzzard, calling in manner similar to bird on territory (40 sec<10m)	3

**Kestrel (*Falco tinnunculus*) observations and comments**

Kestrel Observations					
Date	VP	Time	Habitat	Notes	Obs No.
20/10/2014	14	13.59	PB4	Commuting, >10<100m, 30 sec	1
20/10/2014	15	11.40	WS1	Hunting, 20 sec <10m	2
20/10/2014	15	11.02	PB4, WS1, HH on PB4	2 min on ground (PB4) resting on polythene covered turf, hunting for 90 sec over WS1 and HH on PB4, >10<100m, mobbed by hooded crow, retreated to birch tree	3
20/10/2014	15	12.22	WS1 (willow), WS1 (willow)/PB4	60 sec hunting over WS1 (willow) >10<100m, 20 sec commuting over WS1 (willow)/PB4 <10m	4
20/10/2014	15	11.40	PB4, HH	20 sec commuting over PB4 <10m, 20sec hunting over HH >10<100m, 10 sec commuting & landing, HH/PB4	5
21/10/2014	8	9.00	PB4/drain w/scrub	Hooded crow seemed to cause Kestrel to fly up and land again soon after (30 sec <10m)	6
21/10/2014	12	15.45	Rough grassland at edge of PB4	Commuting & hunting, approx. 20-40m (20 sec)	7
22/10/2014	14	13.43	WD	Commuting, flew in over WD in east, then proceeded NW, >10<100m, 20 sec	8
22/10/2014	15	11.22	WL2, rough grassland	Perched on tree for 4 min, hunting at ~ 20m 10 sec	9
24/10/2014	4	14.51	PB4	Adult male Flew in from N to SE corner of site, hovered for 40 sec then flew S. Foraging.	10
24/10/2014	4	15.23	PB4 adjacent to WS1	Adult male hunting in N direction, Foraging. Returned at SE of site, and	11

Kestrel Observations					
Date	VP	Time	Habitat	Notes	Obs No.
			(Willow)	hunted in N direction, same fashion as 1 <sup>st</sup> sighting. >10<100m, 10 sec	
25/10/2014	4	15.35	PB4 adjacent to WS1 (Willow)	Hunting, >10<100m , same area as previous obs (20 sec).	12
25/10/2014	4	15.38	PB4 adjacent to WS1 (Willow)	Pair, chased by hooded crows & rooks, same area as obs. 14 & 16 (FP 99), >10<100m, 120 sec	13
25/10/2014	4	15.45	PB4 adjacent to WS1 (Willow)	Same area as previous obs, >10<100m, 10 sec No map	14
8/11/2014	6	10.57	PB4, railway track	Male commuting leisurely in NE dir. 10 sec >10<100m	15
18/11/2014	14	15.01	WD	Hunting 60 sec >10<100m	16
27/11/2014	4	15.01	PB4	Commuting west, 15 sec <10m	17
27/11/2014	15	15.09	WN7	Hunting >10<100m 240 sec	18
27/11/2014	15	15.41	PB4	Hunting over vegetated PB4, <10m , 10sec, descended onto surface	19
27/11/2014	15	15.48	HH3 on PB4	Flew out from trees, hovered over heath growing on PB4; hunting; <10m m, 5sec	20
28/11/2014	3	9.30, 10.12, 11.37	WS1 (Willow)	Adult male 9.30: hovering by car park <10m 35 sec; 10.12: hovering same area <10m 20 sec; 11.37: hovering same area >10<100m 20 sec	21

Kestrel Observations					
Date	VP	Time	Habitat	Notes	Obs No.
30/11/2014	3	10.34	WS1 (Willow)	Adult male commuting with prey, 20 sec <10m. Observed in same area as previous entry, likely to be same bird	22
5/12/2015	8	11.46	WD4	Hunting, 120 sec >10<100m	23
7/12/2014	1	14.00	Ditch separating PB1 from PB4	Foraging. Stopped 11 times to hover, before doubling back and disappearing. 420 sec, ~30m avg.	24
8/12/2014	2	11.31	PB4 with <i>Juncus</i> & some <i>Calluna</i> (transforming into heath?)	Adult male foraging to N of VP, then flying N, 70 sec ~20m	25
8/12/2014	4	13.05	Edge of PB4 and Birch forest	Adult foraging at edge of PB4 near birch woodland, >10<100m , 45 sec	26
8/12/2014	4	13.27	Edge of PB4 and Birch forest	Adult foraging at edge of PB4 near birch woodland, >10<100m , 25 sec. Same bird as previous observation	27
11/12/2014	8	10.15	GA1/GS	Hunting, 60 sec >10<100m	28
11/12/2014	12	14.25	PB4	Commuting, 30 sec >10<100m	29
14/12/2014	6	13.35	Railway track, PB4	Adult female descended, caught & carried off prey near VP. Returned 300 sec later & continued hunting (same area), then hunted over bog, returned to hunt over track, then flew W	30
14/01/2015	7	10:35	Grassland	Male, hunting north over grassland. 10-100m, went out of sight behind trees	31
15/01/2015	4	10:15	Bogland	Feeding low along the east side of the site throughout the day. At 14:45 to the	32



Kestrel Observations					
Date	VP	Time	Habitat	Notes	Obs No.
				north east.	
27/01/2015	14	14:38	PB4/WD	10-100m for 60 sec foraging	33
06/03/2015	4	12:39	Bogland	>10 <100m 30Secs	34
16/03/2015	3	15:40	Willow Scrub at edge of cutover bog	Foraging - Hovering at c. 30-35m, then flew N towards farmland. 10-100m (45Secs)	35
16/03/2015	12	11:00	PB4/GS/WS	10-100m (10secs) hunting over rough grassland/scrub on edge of cutaway bog	36
18/03/2015	14	17:50	WL2	<10m (13mins) a male kestrel observed perched on top of a tree on edge of PB1/GA1. After 6mins, a female flew in, they switched positions and mated briefly. The male then flew off to a nearby tree where he remained until the surveyor left the site.	37
18/03/2015	14	17:56	GA1, WL2, PB4	<10m (10secs) commuting, <10m (1min) mating/perching, <10m (1min) commuting.	38

**Buzzard (*Buteo buteo*) observations and comments**

Buzzard Observations					
Date	VP	Time	Habitat	Notes	Obs No.
10/10/2014	6	13.00	Over disturbed bog/cutover bog	Flew from trees eastwards, < 30m (180sec)	1
21/10/2014	8	11.06	WD4	Soaring at approx. 100m (140 sec)	2
18/11/2014	15	11.08	WD 2	Being mobbed by flock of crows, >10<100m, 50 sec	3
27/11/2014	4	15.00	PB4, Birch woodland	Being mobbed by peregrine falcon, <10m (35 sec)	4
27/11/2014	4	15.04	PB4	Came over tracks calling, flew into birch forest, where it was mobbed by same peregrine as previous. <10m (20 sec)	5
27/11/2014	14	12.59	PB4	Soaring, 5 sec >10<100m	6
27/11/2014	14	12.00	-	Observation during transect walk; > 100m in distance away from transect.	N/A
28/11/2014	13	12.40	"depleted bog" (PB4), Birch forest	Adult mobbed by hooded crows over bog 25 sec <10m, commuting leisurely over birch forest 15 sec <10m	7
14/12/2014	5	9.35	Access track/scrub	Disturbed along track leading to VP, landed on tree stump (120 sec).	8
31/12/2014	14	14.12	PB4, GS2	Commuting, mobbed by hooded crow, 30 sec >10<100m	9
15/01/2015	4	10:25	Bogland/grassland	Bird came into the SE corner near communications mast, flew low. Sat in a tree & flew off	10

Buzzard Observations					
Date	VP	Time	Habitat	Notes	Obs No.
				over a field to the NE (780 sec).	
16/01/2015	13	13:55	Cutover bog deciduous woodland mix)	Bird soaring from E to W over the trees at the southern most end of the sight. Height 100m. (300 sec).	11
27/02/2015	14	16:29	PB4	<10m (2secs) Commuting, 10-100m (28secs) commuting	12
27/02/2015	15	12:16	PB4	10-100m (1min) commuting	13
02/03/2015	14	14:41	WD4/PB4	Hovering for 25Secs <10m, and 3mins 35secs 10-100m	14
02/03/2015	14	14:48	PB4	10-100m for 1min, commuting	15
02/03/2015	14	14:49	Pine Tree	Perched for 28mins	N/A
02/03/2015	14	15:17	PB4/WD4	10-100m Commuting (2mins) and soaring (50secs), then >100m Commuting (10secs)	16
02/03/2015	14	14:41	WD4/PB	Perched 6mins <10m	17
02/03/2015	14	14:41	WD4/PB	12Secs Commuting and Perched	17
05/03/2015	6	12:42	Cutover bog	Adult, foraging (240Secs 10-100m). Hunting along the face bank containing birch and willow. Wings held similar to the hen harrier, circling occasionally, moving quite fast at times.	18

Buzzard Observations					
Date	VP	Time	Habitat	Notes	Obs No.
06/03/2015	6	10:26	Cutover bog and mixed conifer/deciduous	Foraging (<10m 40Secs and 10-100m 255Secs). Observed flying over cutover bog. Alighted on a Sitka Spruce for 30Secs, then flew SE in the same direction as bird observed on 05/03/2015. Flight manner also the same, as Hen Harrier.	19
18/03/2015	14	14:53	WD4, WD4/PB, GA1/WD1, PB4	7 min perched in spruce tree (present on arrival at VP), 2 min soaring, both <10m. Soaring/hovering, 3 min, 2 min commuting, 3 min soaring, all >10<100m.	20
18/03/2015	14	14:53	WD4	<10m (7mins) A single buzzard was observed perched on a spruce tree on arrival to the site	21
18/03/2015	14	15:06	WD4/PB	<10m (120 sec) soaring, 10-100m (180 sec) soaring/hovering	21
18/03/2015	14	15:15	GA1/WD1	10-100m (120 sec) commuting	21
18/03/2015	14	15:17	PB4	10-100m (180 sec) soaring	21
18/03/2015	15	12:31	PB4/WS1	<10m (10secs) flying 4 buzzards observed soaring over the site. At least one pair were displaying tumbling flight. They were visible from 12:31-12:48 at various heights, but mainly less than 100m. Some soaring >100m was observed	22

Buzzard Observations					
Date	VP	Time	Habitat	Notes	Obs No.
01/04/2015	8	12:45	WD	A pair of Buzzards, soaring and displaying over the woodland to the S. They were not always in view but it is likely they remained on site during 12:45-13:03 (1080 sec)	23

### Sparrowhawk (*Accipiter nisus*) observations and comments

Sparrowhawk observations					
Date	VP	Time	Habitat	Notes	Obs No.
21/10/2014	1	15.22	PB/secondary growth	Observed from car outside VP watch, chasing passerine	1
20/11/2014	7	15.35	WL1	Observation during transect walk; brief glimpse (2 sec) of bird hunting low along hedgerow (<10m)	N/A
8/12/2014	4	14.48	PB4, Birch forest	Adult female flew in casually from N, then dived partly. Flew up and repeated dive (>10<100m 75 sec), then flew W over Birch forest >10<100m 10sec	2
15/12/2014	5	12.50	Drain beside agricultural land, PB4	Male mobbing 2 hooded crows intermittently for 16 min, eventually gave up and gained height, flying in direction of Birch woodland	3
2/01/2015	14	14.07	PB4	Commuting, 5 sec <10m	4
16/01/2015	13	11:30	Scrub/woodland	Juvenile male, flew in low from the west, next to the road. Chased some buntings and flew south over birch trees (3mins) (<10m)	5

Sparrowhawk observations					
Date	VP	Time	Habitat	Notes	Obs No.
16/01/2015	13	13:35	Road/hedgerow and bogland	Female flew over the road in the middle of the site from south to north chasing blackbirds (60 sec) Hunting (<10m for 5Secs), rest of observation just above 10m	6
05/03/2015	5	11:22	Cutover bog, near standing water	Male bird, flew low and fast over standing water (5 sec < 10m)	7
27/03/2015	15	15:32	PB4/WS1	10-100m (60Secs) flying and soaring	8

### Whooper swan (*Cygnus cygnus*) observations and comments

Whooper swan					
Date	VP	Time	Habitat	Notes	OBS No.
20/10/2014	7	12.13	Willow scrub at edge of PB4	8 adults & 2 juveniles, flying in towards W, then NW direction, >10<100m (35 sec)	1
20/10/2014	7	12.40	PB4	3 adults flew in and landed in standing water, remained until end of VP (12.40-13.00)	2
20/10/2014	14	14.10	PB4, Birch woodland	3 commuting, calling, flying in SSW direction, 10-100m (60 sec)	3
20/10/2014	14	14.50	PB4	Commuting in NNW direction (10-100m)	4
20/10/2014	15	11.50	PB4	3 commuting in S direction, 1 min >10<100m	5
21/10/2014	7	10.40	PB4	2 flew in from NW at 10.40, flew off W at 11.00.	6
21/10/2014	8	10.31	PB4	8 flew in from E, crossed over PB4 (approx 15m in height 60 sec)	7
21/10/2014	8	10.59	WS1	2 commuting westwards, 10-100m (60 sec)	8
21/10/2014	8	14.30	Not known	6 adults commuting, high on horizon E→W direction, possibly over VP6 approx 30m (80 sec)	
21/10/2014	12	11.15	GA1, PB4	Commuting, crossed N of section, flying E → W, approx.20-30m (80 sec)	9

Whooper swan					
Date	VP	Time	Habitat	Notes	OBS No.
23/10/2014	1	14.25	PB4	3 adults commuting, calling while flying over VP, 10-100m (30 sec)	10
24/10/2014	5	11.35	FW2	15 adults commuting south along the banks of the Shannon River, height >10<100m, gradually descending in V-formation (10 sec)	11
25/10/2014	4	12.13	PB4, Birch/Willow woodland	6 adults commuting, calling while flying NNW through site, then veered NW towards Shannon. >10<100m (90 sec)	12
11/11/2014	12	9.40	PB4	10 commuting SE, 60 sec 10-100m	13
28/11/2014	3	10.42	PB, WD	Observation during transect walk; 4 birds flew across bog at leisurely pace towards Shannon ~10m, gained height to clear trees (15 sec)	N/A
7/12/2014	1	14.14	PB4 with Birch	7 adults flew across bog from E before disappearing (possibly landing) behind birch stand. 10m, 35 sec	14
8/12/2014	2	11.39	In general location of VP	Unknown number heard, not seen	N/A
9/12/2014	1	10.05	PB4/Birch woodland	5 adults commuting, NW, then veered N and flew NE, gradually losing height, disappeared behind birch wood. 150 sec, 10-100m	15
14/12/2014	6	12.30	Standing water, PB4	1 juvenile & 6 adults roosted on peat bank beside standing water for duration of VP	16
15/12/2014	15	12.39	PB4	11 commuting in S direction over PB4, 20 sec <10m, 60 sec 10-100m	17
16/12/2014	7	9.14	PB4, Birch forest	4 adults commuting, SSE, then veered SW <10m, lost from view over birch forest (280 sec)	18
19/12/2014	11	10.06	PB4, GA1	4 juveniles & 4 adults commuting leisurely, changed direction over GA1, >10<100m (260 sec)	19

Whooper swan					
Date	VP	Time	Habitat	Notes	OBS No.
25/01/2015	10	11.16	PB4, GA1	2 commuted NW over PB4, then veered NE over GA1, 10-100m (30 sec)	20
15/01/2015	4	14:30	Bogland	Two birds flew east to west at the top end of the site just south of the main power lines. Same height 15m (60 sec).	21
19/02/2015	2	09:12	Birch and secondary growth on cutover raised bog	Two birds observed flying and landing out of view behind birch (5 sec <10m).	22
19/02/2015	2	09:22	Birch and cutover raised bog	Two more birds arrived and landed in the same area as the previous two (5 sec <10m).	22
19/02/2015	2	09:39	Cutover raised bog	Two adults flew over VP1 and VP2, commuting NE gradually N. Approx 30-40m (56secs).	23
19/02/2015	2	10:38	Cutover raised bog and birch woodland	Three birds commuting in the general direction of the River Shannon (180secs 10-100m).	24
19/02/2015	2	10:57	Cutover raised bog	The four birds that had landed behind the birch (obs 3+4) flew off to the NE ~3-4m (75Secs).	25
25/03/2015	1	08:50	Cutover bog	Observed on the way to VP1, a flock of 36 birds, flying in a tight pack, at leisurely speed (65Secs) (10-100m)	26

#### Golden plover (*Pluvialis apricaria*) observations and comments

Golden plover observations					
Date	VP	Time	Habitat	Notes	OBS No.
20/10/2014	7	11.12	PB4	33 circling in tight flock, flew W over bog, then veered S over road at VP7, >10m<100m (20sec)	1
20/10/2014	7	12.02	PB4	C.70 flying low in tight flock. Circled area of cutover bog & landed, <10m (40sec)	2



Golden plover observations					
Date	VP	Time	Habitat	Notes	OBS No.
20/10/2014	7	12.25	PB4	Flock from Obs.2 returning, 50 commuting S, 20 E. <10 (60sec) 10-100m (30sec)	3
20/10/2014	14	3.36-4.22	PB4	64 flying, >10m, 3 min, flock split in to 34 + 20, 20 flew N <10m(1min), 34 <10m (1min), 34 landed <10m and remained until end of watch (44min)	4
21/10/2014	7	10.15	PB4	Call from bogland	N/A
21/10/2014	12	12.38	PB4	1 commuting, 70-100m (5 sec)	5
21/10/2014	12	14.28	PB4	8 commuting, >10m>100m (10 sec)	6
21/10/2014	12	16.13	PB4	4 commuting W approx . 20m (30 sec)	7
23/10/2014	3	10.12	PB4, PB1	30 Commuting. Tight flock flew 1 <sup>st</sup> N, then doubled back S, over PB4/edge of PB1. <10 (8sec). Gradually gained height >10m<100m flying S (15 sec)	8
11/11/2014	12	10.40	PB4	4 commuted 30 sec >10m<100m over PB4, flew in and landed on PB4, 10 sec <10m	9
11/11/2014	12	-	PB4	Commuting 50secs 10-100m	10
14/11/2014	12	12.31	PB4	22 Flying/commuting 30 sec >10m<100m	11
31/12/2014	14	13.38	PB4	6 flew in & landed on PB4 (10 sec < 10m). Observed in same area at 14.31, presumably present throughout.	12
14/01/2015	12	10:20		A flock of 75 flew S to SW low through the site. < 50 feet (30 sec)	13
05/03/2015	5	11:37	PB4	31 birds, observed intermittently over 360 sec), in a tight flock. Circling, alighting, taking off and calling. (<10m 40Secs then	14

Golden plover observations					
Date	VP	Time	Habitat	Notes	OBS No.
				10-100m 65Secs) and (<10m 30Secs then 10-100m 125Secs)	
16/03/2015	12	13:15	PB4	<10m (60 sec), 10-100m (240 sec), a flock of 22GP observed flying over PB4 within the site. They circled the area for 240 sec before landing and settling on the cutaway	15
16/03/2015	12	14:06	PB4	>100m (10secs), a flock of 16GP flew in a N direction over the site before disappearing from sight	16
01/04/2015	8	11:14	WD2	110GP 10-100m (8mins) Flying, >100m (120 sec) flying	17
01/04/2015	8	11:24	GA1	55GP 10-100m (60 sec) commuting	18
01/04/2015	8	11:24	WD	55GP 10-100m (180 sec) flying	19
01/04/2015	8	11:32	WD	80GP >100m (180 sec) commuting	20
01/04/2015	12	15:12	PB4	A flock of 50GP were observed flying south over PB4 at 10-100m in height (just under 50 feet) 40 sec	21
01/04/2015	12	15:12	PB4	The flock in previous obs (obs 21) separated and 28 flew to the S out of sight (40 sec)	22
01/04/2015	12	15:12	PB4	The remaining 28 flew overhead to the N out of sight (40 sec)	23
01/04/2015	12	17:15	PB4	A flock of 11GP on PB4, probably there for the duration of the VP, when observer left at 17:31 the flock remained on the cutaway	24

**Lapwing (*Vanellus vanellus*) observations and comments**

Lapwing observations						
Date	VP		Time	Habitat	Notes	Obs No.
20/10/2014	7	11:40			3 Lapwing flew in low and landed NE of mallards	1
22/01/2015	14	15:41	GA1		14 lapwings observed (at intervals during survey) in agricultural field (deer form), among a flock of starling	2

**Black headed gull (*Chroicocephalus ridibundus*) observations and comments**

Black-headed Gull observations					
Date	VP	Time	Habitat	Notes	Obs No.
14/12/2015	6	13.08	PB4	13 adults commuting purposefully in tight flock towards R. Shannon (W), 45 sec >10<100m	1
15/01/2015	6	14.01	Cutover bog/scrub	Two birds commuting east to west against strong wind (F5-6). (45 sec <10m) over cutover bog and sections of scrub,	2
15/01/2015	5	14.15	Cutover bog/River	Two birds commuting east to west, probably birds seen in previous sighting (30 sec <10m). Commuted over cutover bog and river.	3

**Herring Gull (*Larus argentatus*) observations and comments**

Herring Gull observations					
Date	VP	Time	Habitat	Notes	OBS No.
18/02/2015	1	12.01	Cutover raised bog	First summer bird observed for 32 sec, commuting high approx 80-90m in direction of the River Shannon	1

**Great Black-back Gull (*Larus marinus*) observations and comments**

Great Black-back Gull observations					
Date	VP	Time	Habitat	Notes	Obs No.
15/01/2015	4	9.25	Bogland Cutover/scrub	1 bird at north end of site flying from east to west. ~100m (30 sec)	1

**Cormorant (*Phalacrocorax carbo*) observations and comments**

Cormorant observations					
Date	VP	Time	Habitat	Notes	Obs No.
15/01/2015	4	10.01	Cutover bog	At north of site flying from east to west. <100m (30 sec)	1
25/01/2015	1	10:08	Cutover raised bog & birch scrub	Immature, commuting, possibly from Shannon, high ~60-70m for 30secs.	2
25/03/2015	1	10:59	Cutover bog & birch woodland	Commuting fast at turbine height, occasional glides 10-100m (70Secs)	3

**Curlew (*Numenius arquata*) observations and comments**

Curlew observations					
Date	VP	Time	Habitat	Notes	Obs No.
30/10/2014	11	9:30		2 heard only, not observed	1

**Mallard (*Anas platyrhynchos*) observations and comments**

Mallard observations					
Date	VP	Time	Habitat	Notes	Obs No.
23/10/2014	1	15.50	PB4	2 males commuting in NW direction, then dropped down behind willow scrub (8 sec 10-100m)	1

Mallard observations					
Date	VP	Time	Habitat	Notes	Obs No.
7/11/2014	7	12.30-15.30	"Standing water" in bog pools	6 males, 4 females on standing water throughout entire watch	2
25/02/2015	8	15:59	PB4	<10m (15secs) flying 10-100m (2min 45secs) flying. 2 mallard disturbed by surveyor from small area of open water on site. They flew over area for 3 mins before disappearing from view	3
27/02/2015	15	12:08	PB4/WS1	<10m (50secs) flying, 10-100m (20secs) flying. 2 mallard flushed from drain. Flew over general area before disappearing from view.	4
16/03/2015	8	15:35	FL8, PB4	<10m (5secs) on water, 10-100m (10sec) commuting. 2 mallard (male and female) were on the waterbody within the site. They were disturbed by the fieldworker and flew away in a SE direction	5
27/03/2015	14	10:31	PB4/GS4	<10m (5secs) commuting. A single female mallard flew low over the site, seemed to land in drain.	6
18/03/2015	15	11:13	PB4	10-100m (40secs). One mallard flew over the site in a S direction	7
27/03/2015	15	17:16	Drain/PB4/WS1	<10m (10secs) disturbed/commuting. A pair of mallard disturbed from drain and flew over bog and scrub	8

### Snipe (*Gallinago gallinago*) observations and comments

Snipe observations					
Date	VP	Time	Habitat	Notes	Obs No.
21/10/2014	12	12.41	PB4 (incl. <i>Juncus</i> & heath)	Flushed by surveyor, 5 sec <10m, 5 sec >10<100m	1
22/10/2014	14	12.21	HH at edge of PB4 (at roadside)	Flushed by surveyor, 10 sec <10m	2

Snipe observations					
Date	VP	Time	Habitat	Notes	Obs No.
11/11/2014	12	12.15	PB4	On ground & flushed by surveyor, 10 sec <10m	3
11/11/2014	12	12.22	PB4	Flushed by surveyor, 5 sec <10m	4
14/11/2014	12	10.35	GA1/GS2	Flushed by surveyor, 5 sec <10m	5
14/11/2014	12	10.54	GA1/GS2	Flushed by surveyor, 2 sec <10m, 5 sec >10<100m	6
30/12/2014	9	11.21	PB4	Flushed by surveyor, 2 sec <10m, commuting 30 sec >10<100m	7
30/12/2014	9	11.55	PB4/GS4	Flushed by surveyor, 12 sec <10m	8
30/12/2014	9	11.57	PB4/GS4	Flushed by surveyor, 6 sec <10m, commuting 10 sec >10<100m	9
30/12/2014	9	14.25	PB1	Flushed by surveyor, 4 sec <10m, flying 5 sec >10<100m	10
30/12/2014	9	14.43	PB1	Flushed by surveyor, 5 sec <10m, flying 20 sec >10<100m	11
30/12/2014	9	14.45	PB1	Flushed by surveyor, 3 sec <10m, flying 10 sec >10<100m	12
31/12/2014	10	10.41	PB1	Commuting, 13 sec >10<100m	13
11/12/2014	12	15.13	PB4	Flushed by surveyor, 5 sec <10m, commuting 25 sec >10<100m	14
22/01/2015	14	14:27	PB4	2 snipe flew from PB4 along edge of track (5 sec <10m)	15
02/02/2015	8	15:31	GS2	<10m (5 sec) a snipe on grassy edge of PB4 near a railway, flushed by a fieldworker.	16
25/02/2015	8	15:57	PB4	<10m (3secs) one snipe flushed by surveyor	17

**Teal (*Anas crecca*) observations and comments**

Teal observations					
Date	VP	Time	Habitat	Notes	Obs No.
20/10/2014	6	16.10	PB4	4 flew low from W to E across site (over half way up the site) (<10m 10 sec)	1

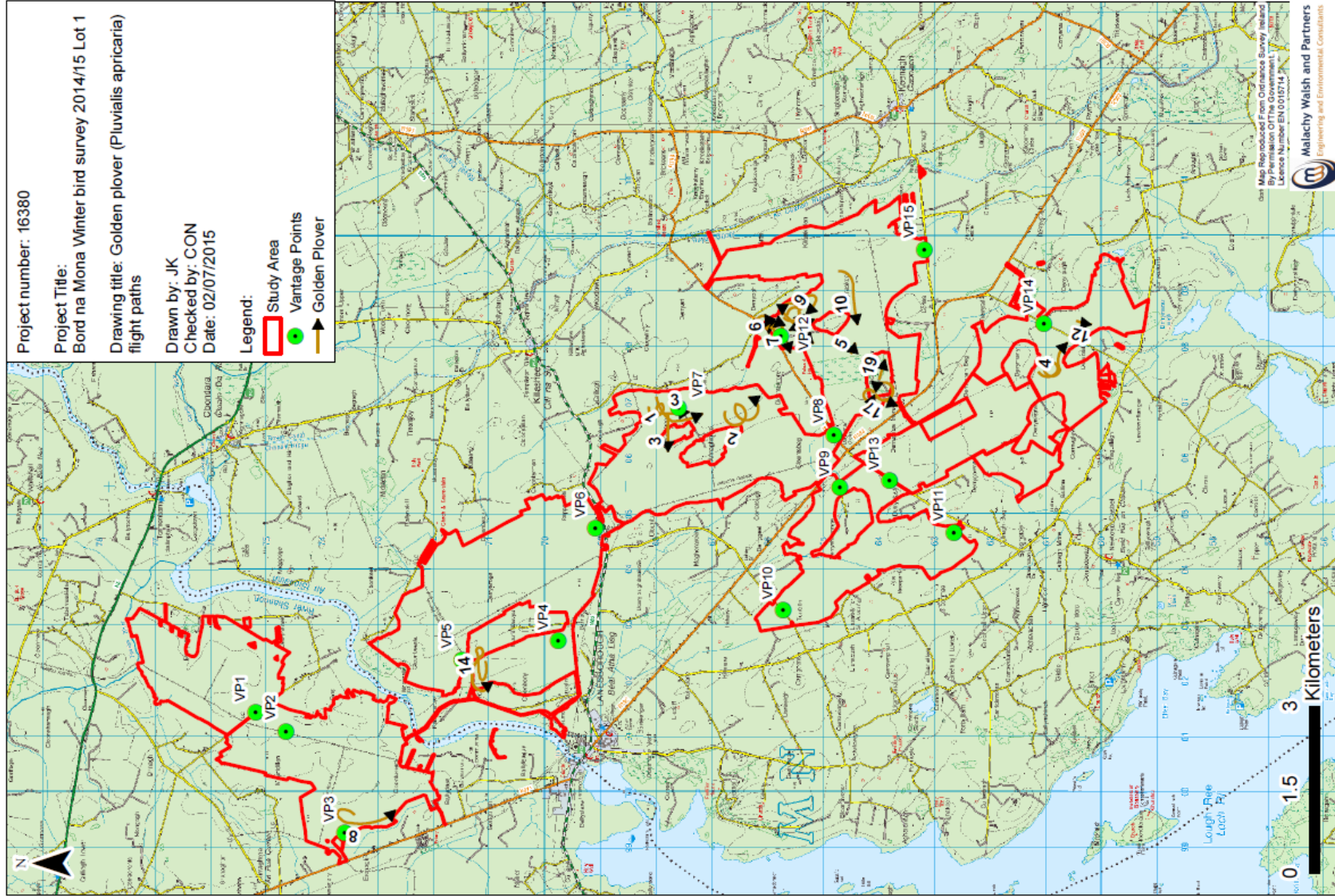


## Appendix 3

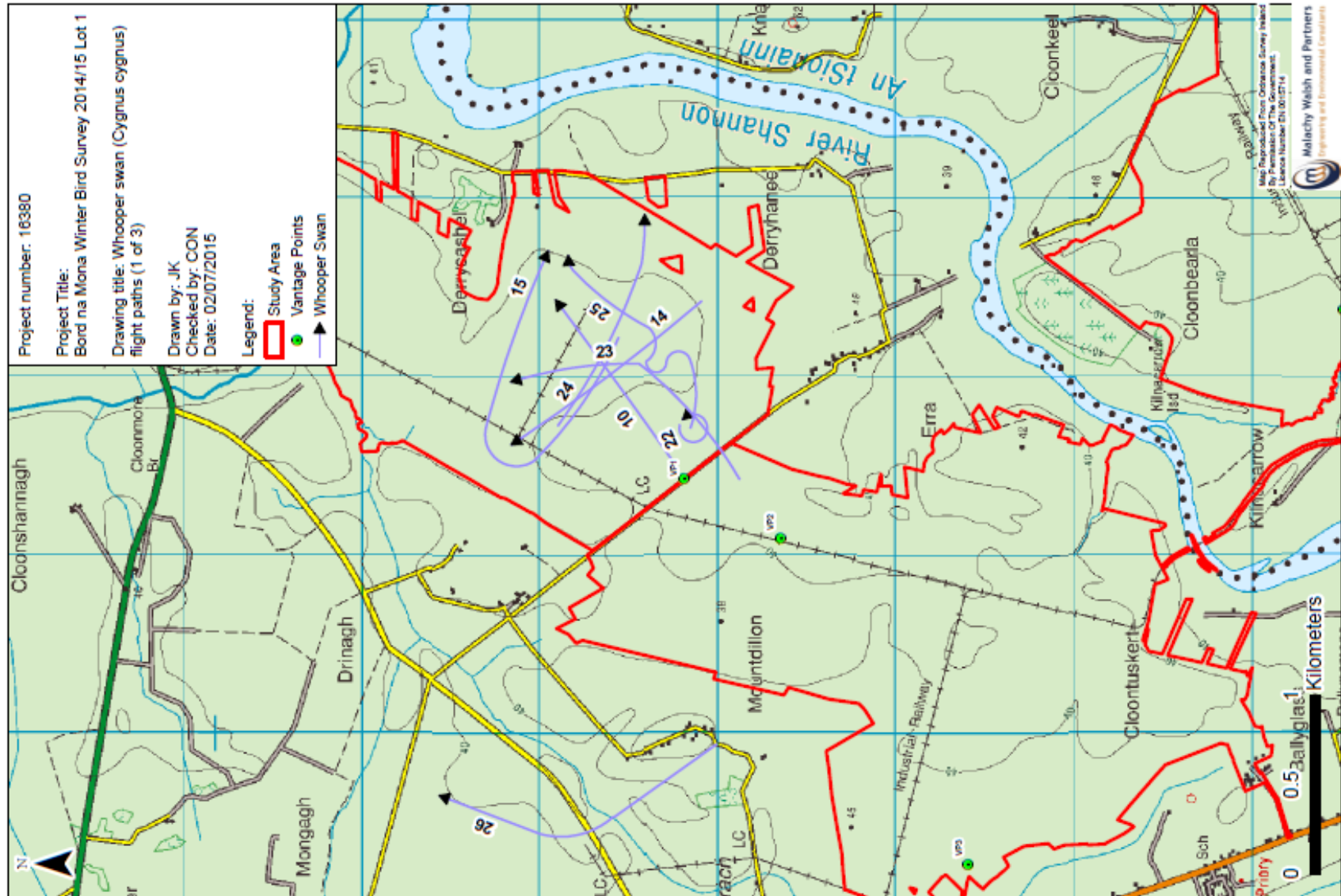
### Flight Paths of Target Species







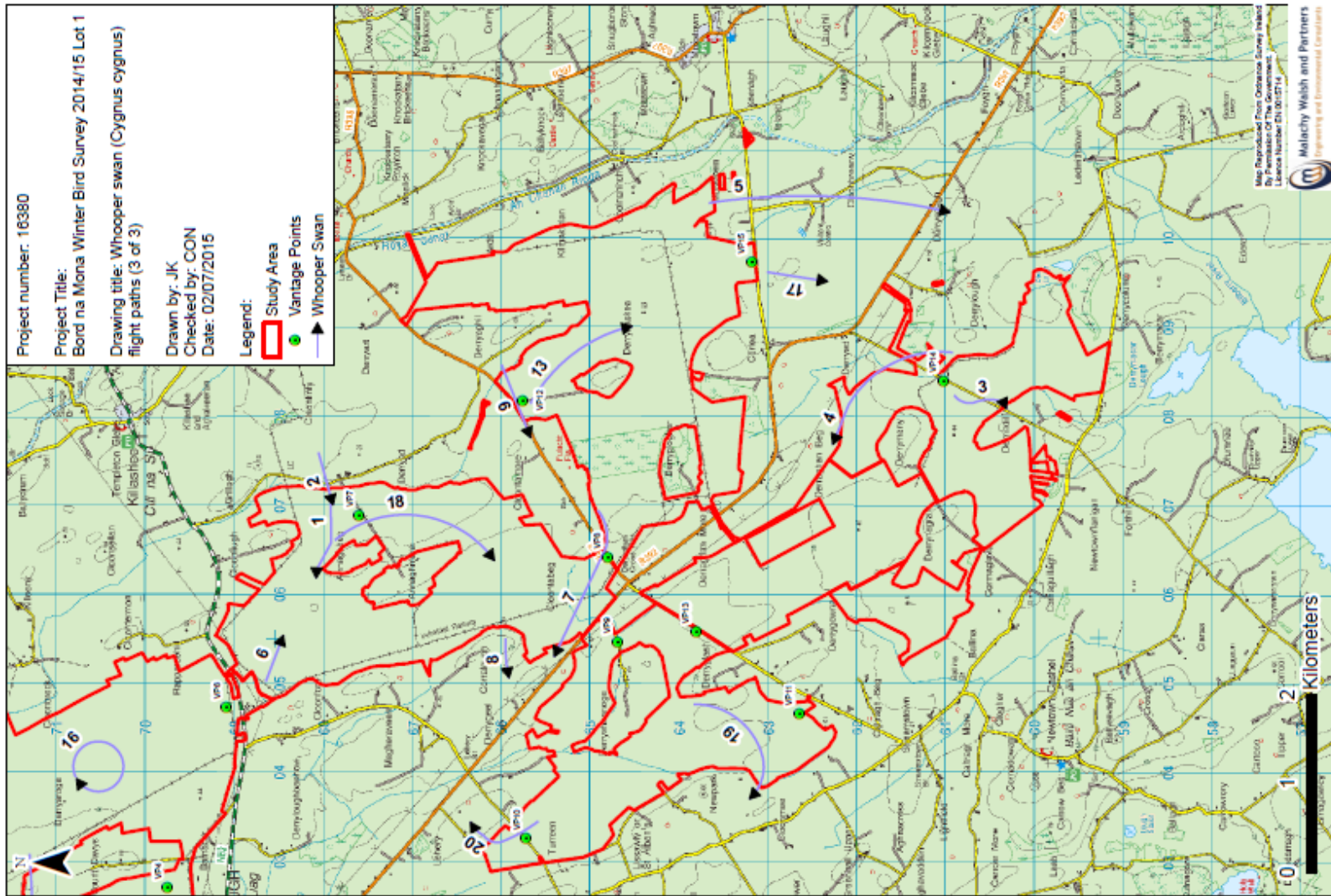
Golden Plover Flight paths



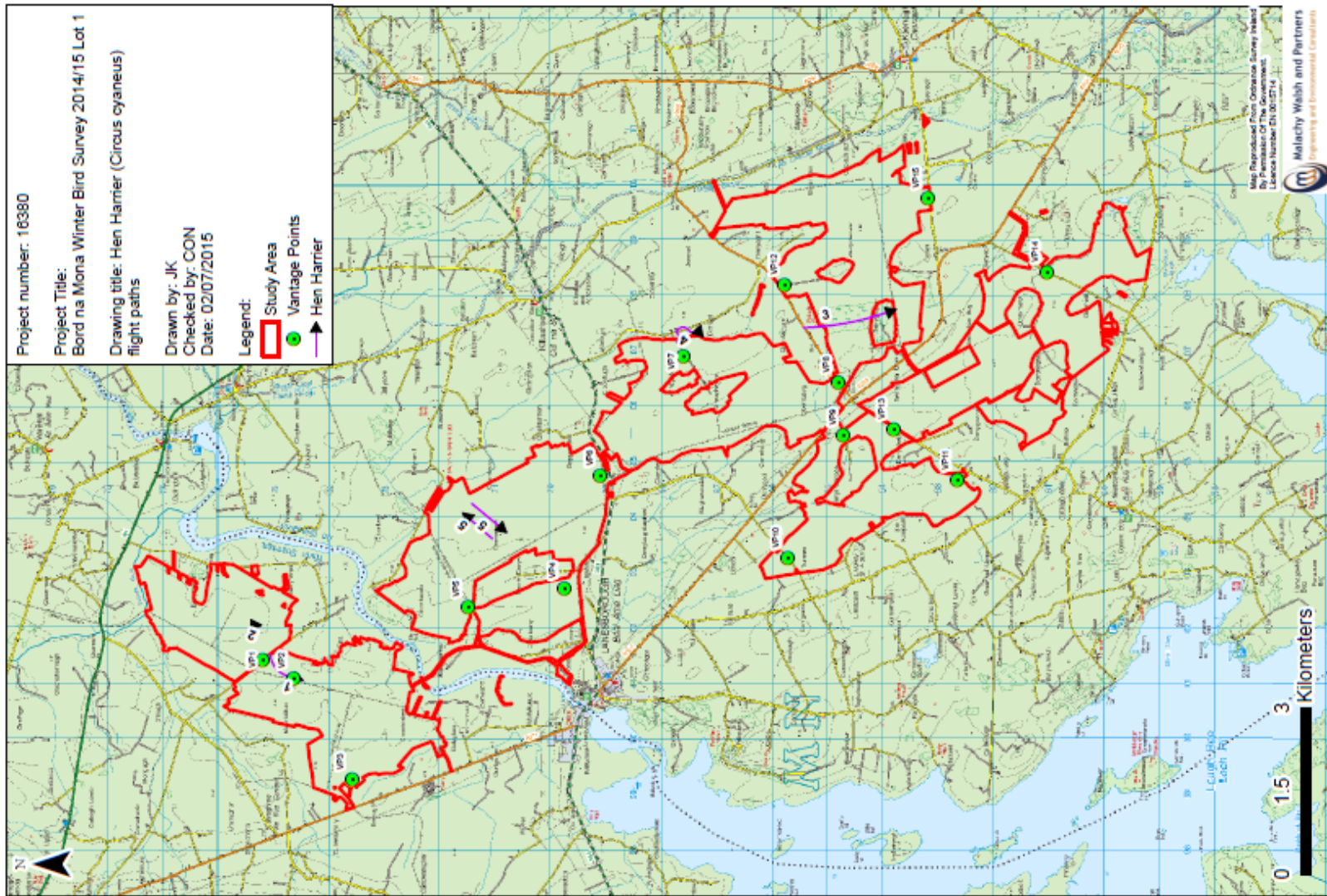
Whooper Swan Flight Paths (1/3)



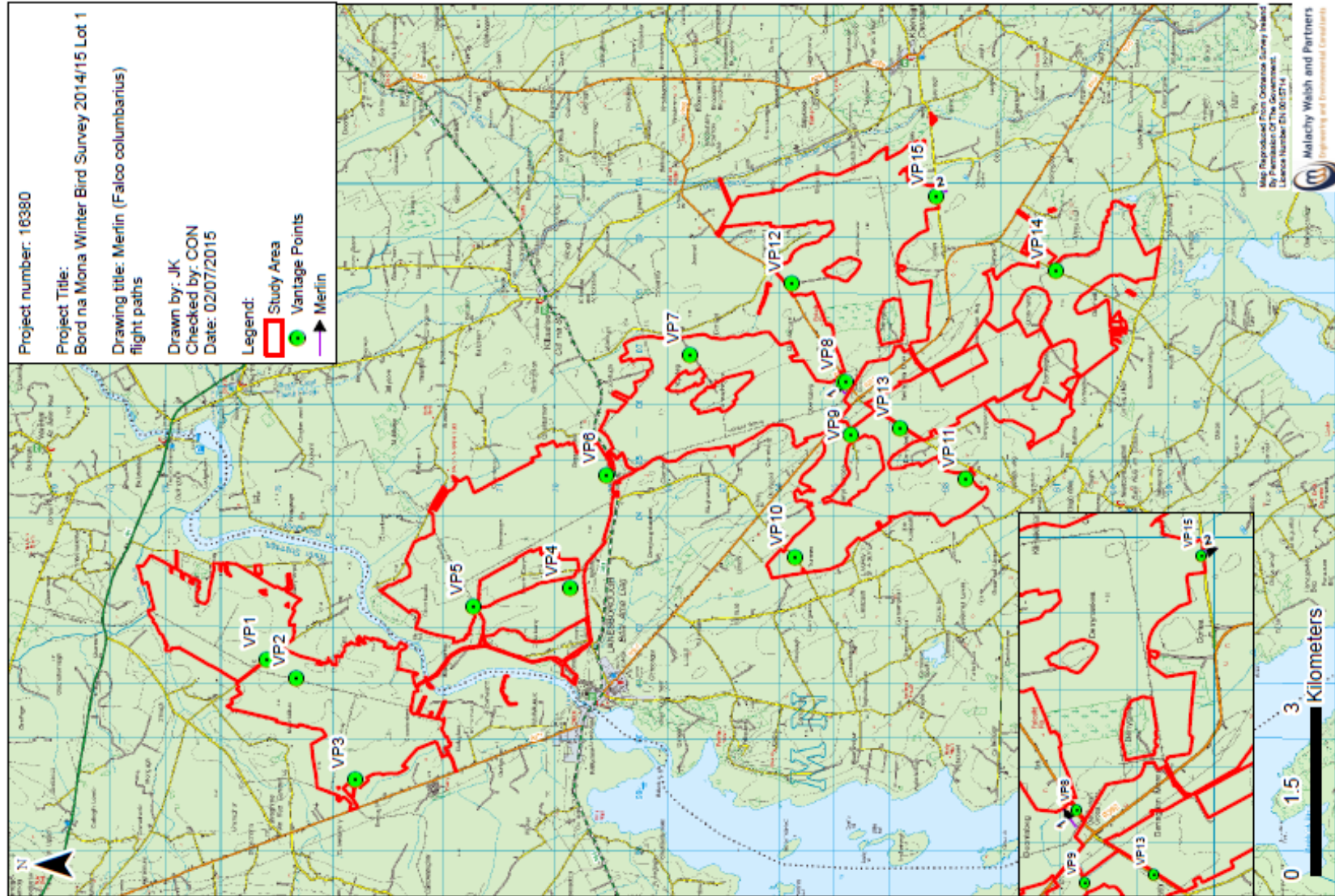
Whooper Swan Flight Paths (2/3)



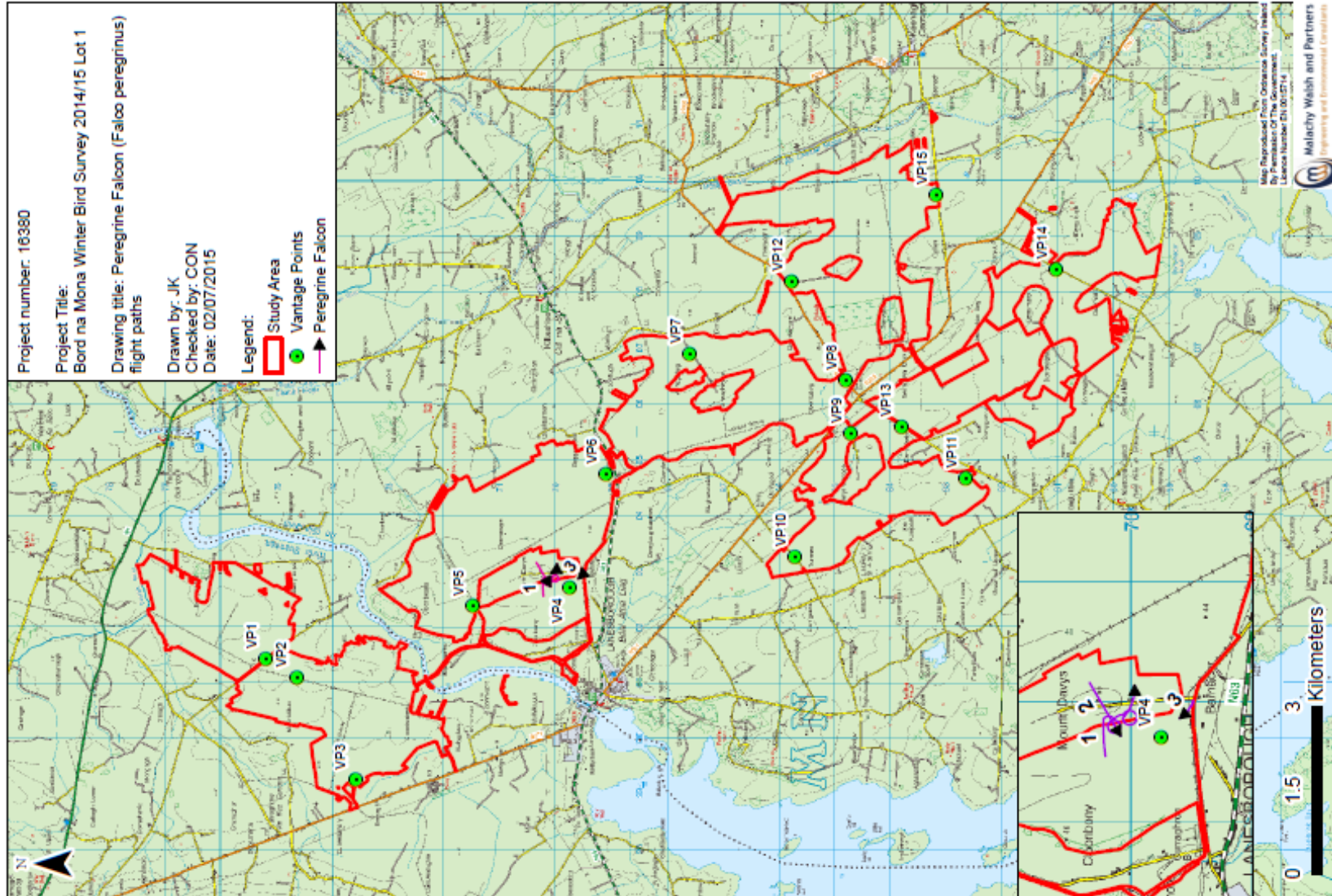
Whooper Swan Flights Paths (3/3)



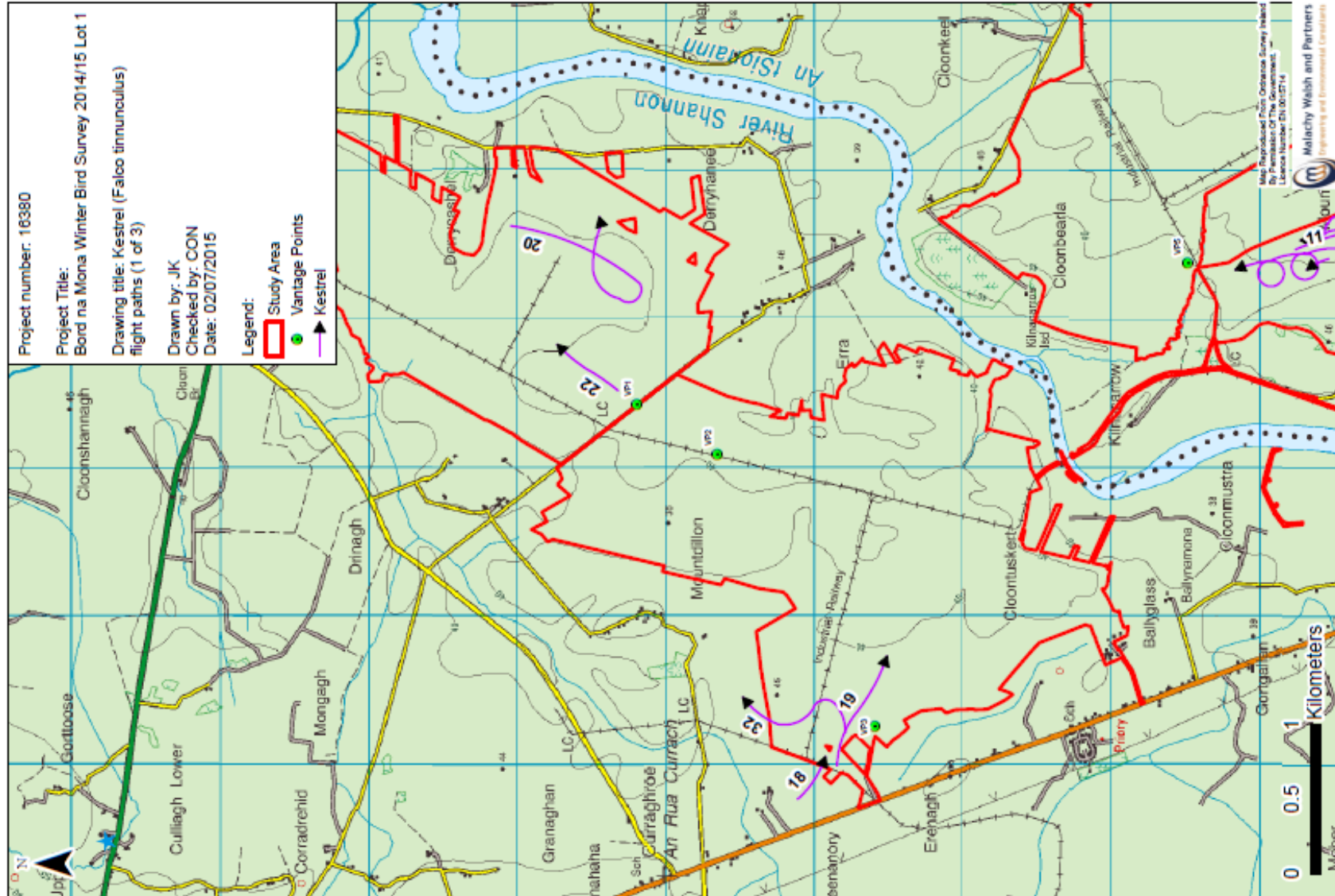
Hen Harrier Flight Paths



Merlin Flight Paths

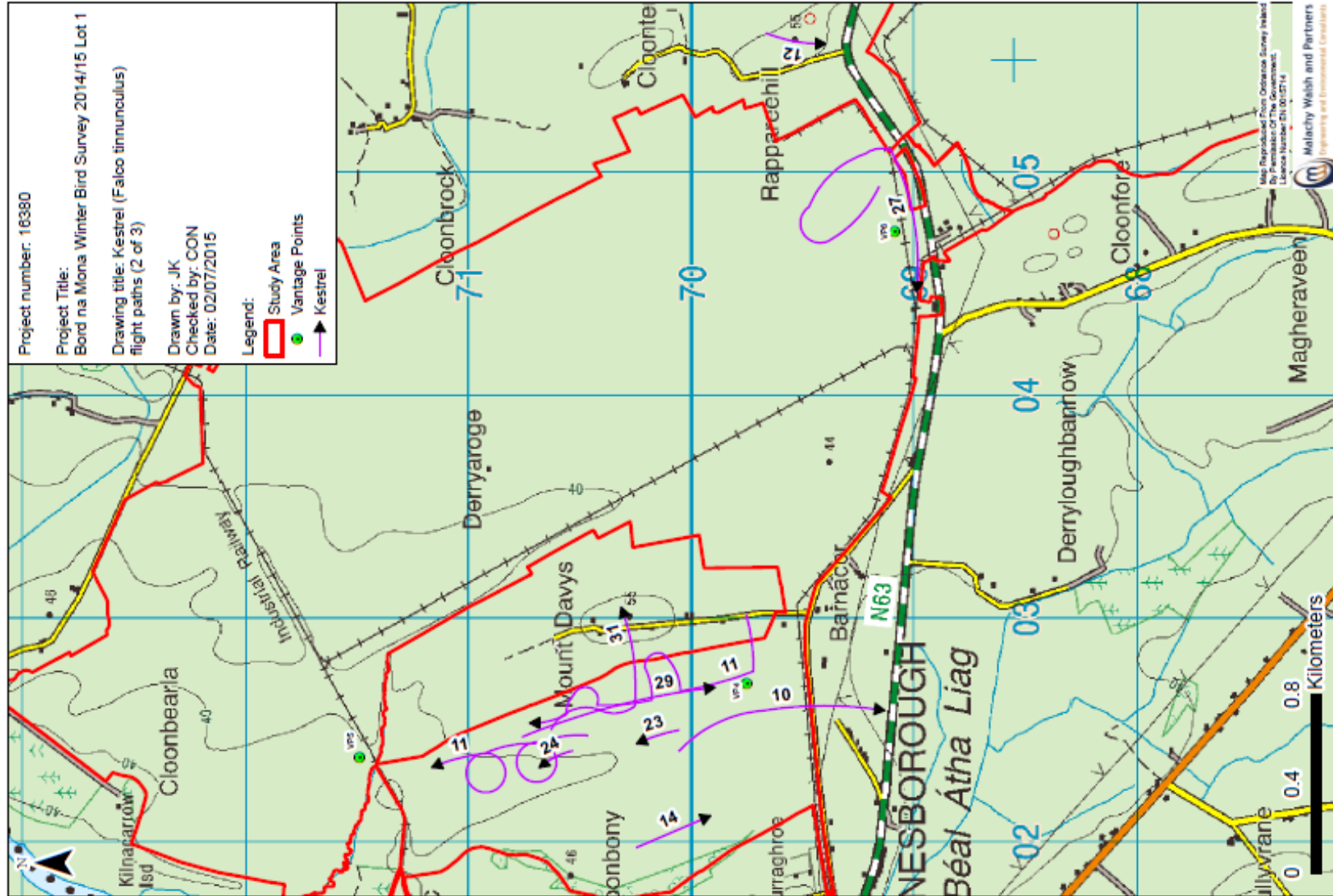


Peregrine Falcon Flight Paths

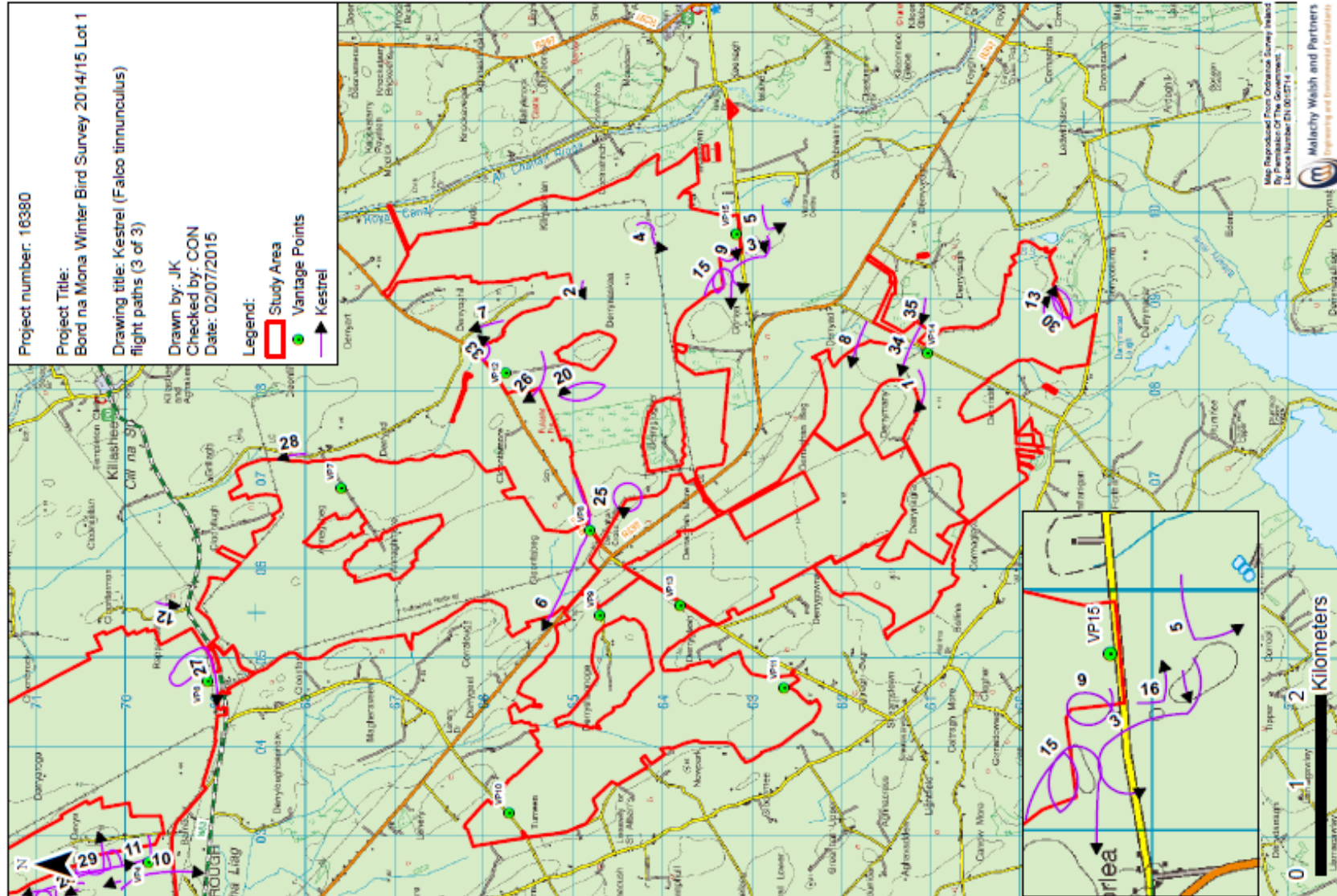


Kestrel Flight Paths (1/3)

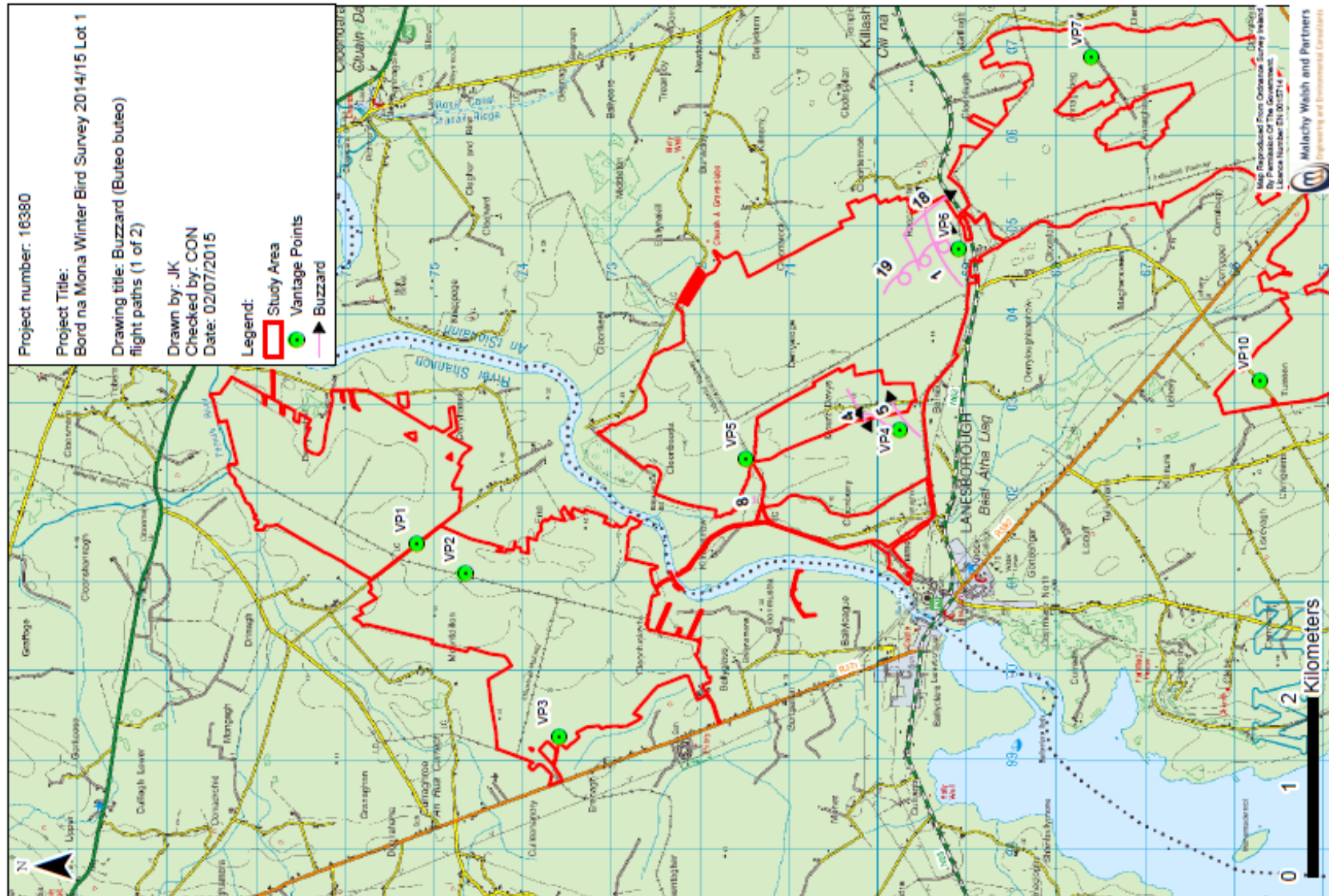




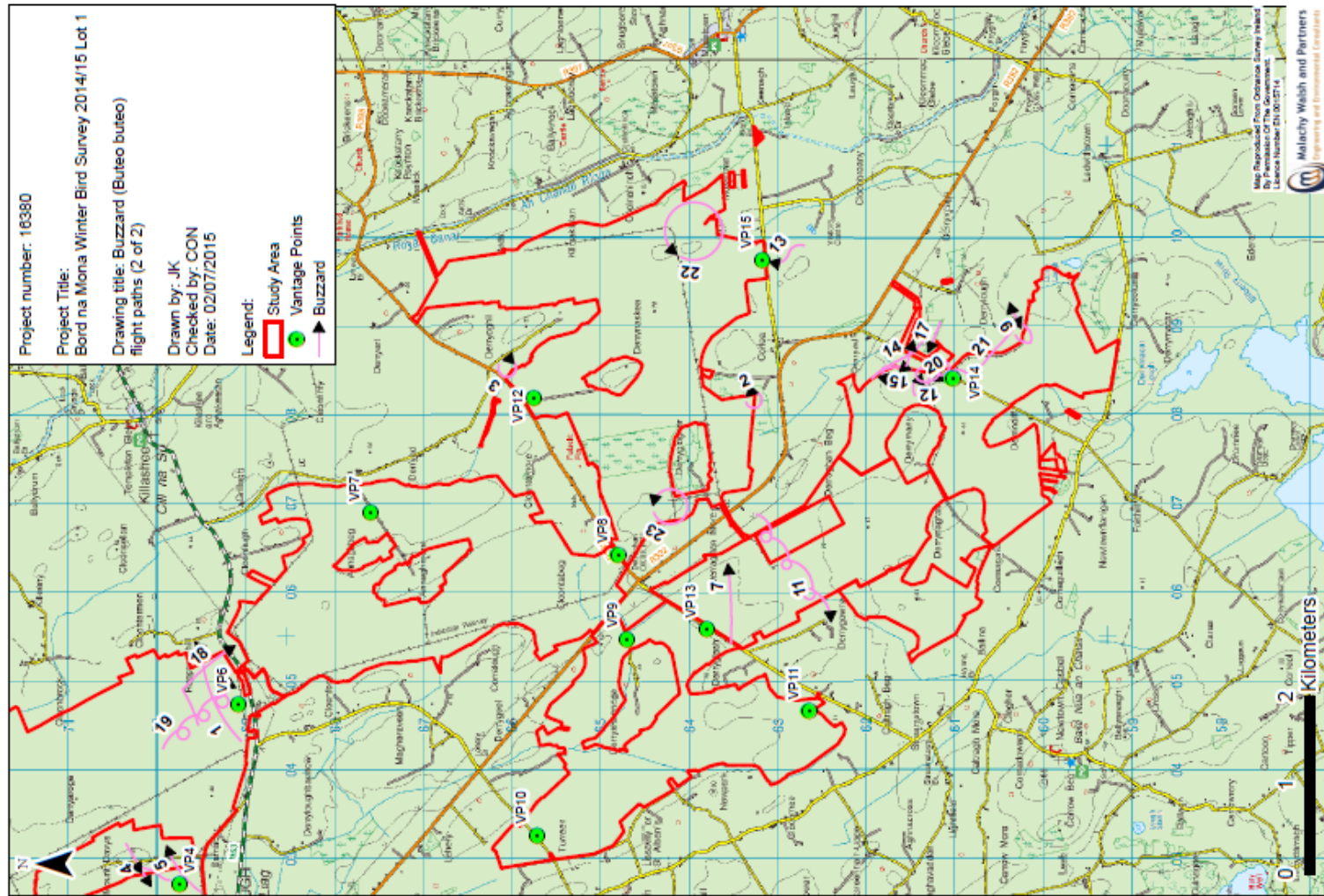
Kestrel Flight Paths (2/3)



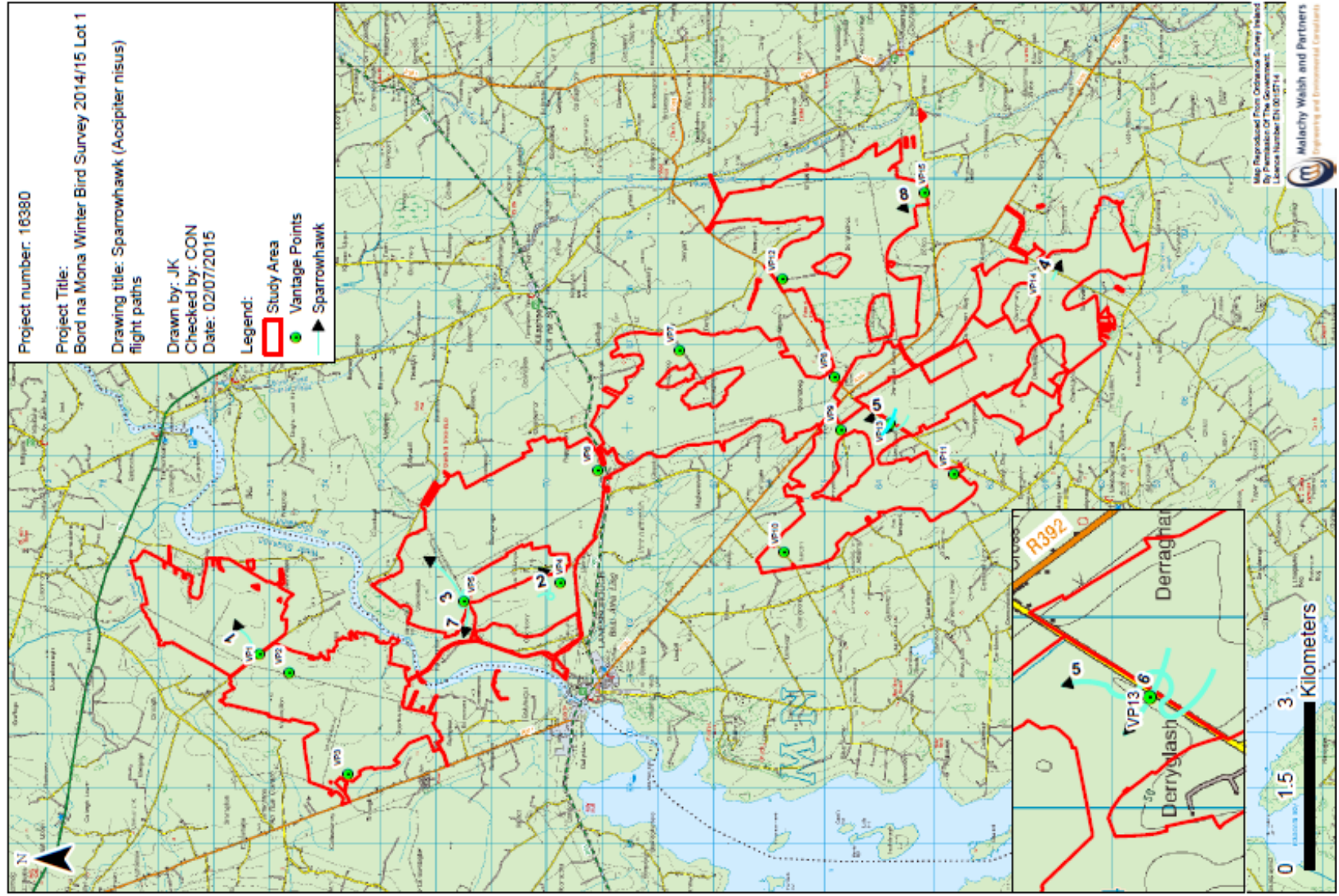
Kestrel Flight Paths (3/3)



Buzzard Flight Paths (1/2)



Buzzard Flight Paths (2/2)



Sparrowhawk Flight Paths

## **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