

Ornithology Report

Castlebanny, Mullinavat, Co. Kilkenny

Winter 2017/18



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1 INTRODUCTION

1.1 PROJECT BACKGROUND

Coillte are currently considering the viability of developing particular land portfolios for wind energy development. As part of baseline environmental studies, Malachy Walsh and Partners was commissioned to conduct a suite of bird surveys across a range of Coillte sites in order to investigate current and likely usage by avian species. This report, which pertains to Castlebanny, a Coillte-owned site located near Mullinavat in County Kilkenny, presents the findings of bird surveys conducted at Castlebanny during the winter 2017/18 period. This report has been informed by both field and desk-top studies. Relevant mapping, including the site location and site boundary, were provided by Coillte at the commencement of the project.

1.2 OVERVIEW OF SURVEY REQUIREMENT

Scottish Natural Heritage (SNH) is the public-body in Scotland tasked with promoting and caring for the country's natural heritage¹. Owing to the lack of industry guidelines on bird survey requirements for on-shore wind farms in Ireland, SNH is regarded as the "industry standard" (Percival, 2003) typically cited by NPWS and planning authorities in Ireland as it is the most detailed guidance document available. SNH have produced several guidance documents in relation to birds and impact assessment of onshore wind farms, the most recent of which was produced in March 2017 '*Recommended bird survey methods to inform impact assessment of onshore wind farms*' (SNH, 2017).

As outlined in the guidance, the purpose of the document is to define a set of standards for bird surveys at proposed wind farms in Scotland (SNH, 2017). While many parallels can be drawn between Scotland and Ireland regarding the landscape, habitats and species which occur, there are also differences which mean that in some instances modifications to survey design may be required to ensure that bird surveys are relevant in an Irish context. While some aspects of SNH recommended survey design such as area to be surveyed and survey duration are easily transferable to an Irish scenario, other aspects such as determining target species and recommended distribution and abundance surveys can require some degree of modification to ensure relevance and maintain applicability in an Irish context. In other instances, SNH recommended surveys may not be applicable at all e.g. breeding surveys for species such as black grouse and capercaillie which do not occur in Ireland. Therefore, some degree of interpretation is required when using the guidance for the purposes of bird survey design for proposed onshore wind farms in an Irish context.

With regards to impact assessment of on-shore wind farms a minimum two years of baseline surveys are recommended in order to allow for variation in bird use between years to be accounted for (SNH, 2017). The bird data gathered during the 2017/18 winter survey period comprises the 1st winter season of baseline data gathered for the Castlebanny site. It is intended that a second year of winter surveys will be undertaken over winter 2018/19. Breeding bird surveys will also be carried out across the two year survey period. This will ensure that sufficient baseline data is gathered as per recommended guidance.

¹ <https://www.nature.scot/about-snh>

1.3 STATEMENT OF AUTHORITY

The winter 2017/18 surveys were managed and co-ordinated by John N. Murphy. Field surveyors were John N. Murphy, Shane Cully (BSc.), Joseph Adamson (BSc. MSc), David Rees (BSc. PgD), Gerard Hayes (BSc.), Hazel Dalton (BSc.), and Muiréad Kelly (BSc. MSc.). This report has been prepared by Hazel Dalton (BSc.), an ecologist with Malachy Walsh and Partners, with the assistance of John N. Murphy who is the Project Ornithologist and Monica Kane (BSc. MSc.) who is the Project Manager.

The reliability of the survey work is dependent on the observers used to collect the underlying information. Using appropriately skilled and experienced observers is therefore essential. Individual surveyor profiles outlining surveyor competencies, expertise and previous experience are included in **Appendix 1**.

1.4 SITE LOCATION

The site is located in south Co. Kilkenny, approximately 4.5km north-east of Mullinavat and 10.7km west of New Ross (see **Figure 1** below). The site is accessed via the R704 Regional Road and an unnamed local road which runs adjacent to the sites eastern boundary.

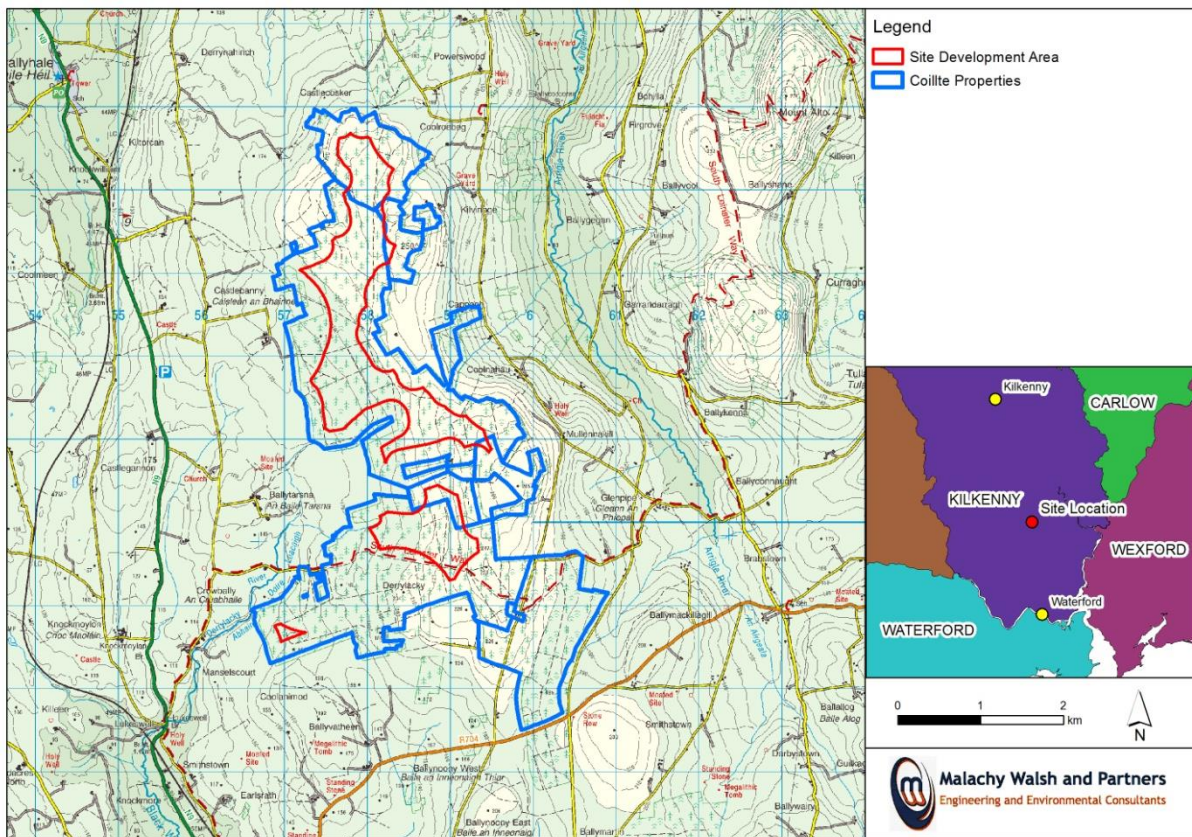


Figure 1. Site Location

2 METHODOLOGY

2.1 DESK-STUDY

A desktop study was carried out prior to the commencement of bird survey-work. This provided the opportunity to gain an understanding of the bird populations using the area through an investigation of the habitats present and previous species records. Available ornithological data was reviewed including:

- Review of online web-mappers: National Parks and Wildlife Service (NPWS), National Biodiversity Data Centre (NBDC), Irish Wetland Bird Survey I-Webs.
- Review of Bird Atlases: (Sharrock, 1976; Lack, 1986; Gibbons et al., 1993; Balmer et al., 2013).
- Review of Birds of Conservation Concern in Ireland (BoCCI) 2014-2019 (Colhoun & Cummins, 2013)
- Review of BirdWatch Ireland I-WeBS site information (www.birdwatchireland.ie)
- General ornithological information (www.birdwatchireland.ie)
- Irish Bird Reports and the journal *Irish Birds*, published by BirdWatch Ireland

2.1.1 Desk-Study Results

2.1.1.1 Previous Species Records

The entire study area lies within the 10km hectads S52 and S53. For these areas, the NBDC on-line mapping tool was used to generate an excel file of all bird species for which past records exist². This list was then checked for species which are either of conservation concern³ and/or are afforded a higher level of legislative protection in an Irish or European context i.e. under the Wildlife Acts or the EU Birds Directive. The resulting species list was then checked against the 'Bird Atlas 2007-11: The breeding and wintering birds of Britain and Ireland' (Balmer et al., 2013) to determine each species breeding and wintering status within the area. The Bird Atlas (2007-2011) is the most recent and comprehensive work on the distributions of breeding and wintering bird populations in Ireland.

The following table (**Table 1**) outlines all species which have been previously recorded in the relevant hectads S52 and S53 and which are either of conservation concern and/or are afforded a higher level of legislative protection in an Irish or European context, including their wintering and breeding status.

Table 1. Bird Atlas (2007-2011) status of species previously recorded in the 10km hectads S52 and S53

Species Name	Winter Atlas '07-11	Breeding Atlas '07-11	Conservation/Protection Status
Whooper Swan	Present	Absent	BoCCI Amber-listed/Annex I EU Birds Directive
Little Egret	Present	Possible	BoCCI Green-listed/ Annex I EU Birds Directive
Woodcock	Present	Absent	BoCCI Red-listed
Hen Harrier	Present	Probable	BoCCI Amber-listed/ Annex I EU Birds Directive/ Fourth schedule of the Wildlife Acts 1976-2012
Sparrowhawk	Present	Confirmed	BoCCI Amber-listed/ Fourth schedule of the

² Source: <https://maps.biodiversityireland.ie/Map>

³ Birds of Conservation Concern in Ireland (BoCCI) 2014-2019 (Colhoun & Cummins, 2013)

Species Name	Winter Atlas '07-11	Breeding Atlas '07-11	Conservation/Protection Status
			Wildlife Acts 1976-2012
Common Buzzard	Present	Absent	BoCCI Green-listed/ Fourth schedule of the Wildlife Acts 1976-2012
Kestrel	Present	Possible	BoCCI Amber-listed/ Fourth schedule of the Wildlife Acts 1976-2012
Northern Lapwing	Present	Absent	BoCCI Red-listed
Eurasian Curlew	Present	Absent	BoCCI Red-listed
Black-headed Gull	Present	Absent	BoCCI Red-listed
Cormorant	Present	Absent	BoCCI Amber-listed
Meadow Pipit	Present	Probable	BoCCI Red-listed
Grey Wagtail	Present	Probable	BoCCI Red-listed
Yellowhammer	Absent	Confirmed	BoCCI Red-listed
Kingfisher	Absent	Probable	Annex I EU Birds Directive/SCI species of SPA/ BoCCI Amber-listed

Other species for which past records exist but which are included in older Bird Atlas datasets are outlined in the following table (**Table 2**). The breeding and/or wintering status of each species and conservation/protection status is outlined along with the relevant dataset from which the record has been obtained on-line⁴.

Table 2. Bird Atlas (1968-1972) and Birds of Ireland status of other species previously recorded in the 10km hectads S52 and S53

Species	Status	Dataset	Conservation Status/Reason for Inclusion as Target Species
Barn owl	Confirmed breeding	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972	BoCCI Red-listed/ Fourth schedule of the Wildlife Acts 1976-2012
Tufted duck	Present	Birds of Ireland	BoCCI Red-listed
Red Grouse	Possible breeding	The First Atlas of Breeding Birds in Britain and Ireland: 1968-1972	BoCCI Red-listed
Peregrine Falcon	Confirmed breeding	Birds of Ireland	Annex I EU Birds Directive, BoCCI Green-listed/ Fourth schedule of the Wildlife Acts 1976-2012
Golden Plover	Present	The First Atlas of Wintering Birds in Britain and Ireland: 1981/82-1983/84; Birds of Ireland	Annex I EU Birds Directive, BoCCI Red-listed

⁴ Source: <https://maps.biodiversityireland.ie/Map>

2.1.1.2 Special Protection Areas (SPAs)

The European Union Directive on the Conservation of Wild Birds, known as the Birds Directive (Directive 2009/147/EC) requires Member States to designate legally-protected areas for the conservation of endangered or migratory species of birds, as listed on Annex I of the Directive. These areas are called Special Protection Areas (SPAs) and since 1994 all SPAs form part of the Natura 2000 network of protected sites. The EU Birds Directive is implemented in Irish law under the European Communities (Birds and Natural Habitats) Regulations 2011.

An on-line search for Special Protection Areas (SPAs) within the greater surrounding area was conducted to help identify potential 'connectivity' between the site and SPAs and assess whether pathways exist through which the proposal could impact on qualifying interest species, as recommended in the guidance document 'Assessing Connectivity with Special Protection Areas (SPAs)' (SNH, 2016). Within this guidance document core foraging ranges from nest-sites and roost-sites are published for both the breeding and winter seasons for those bird species which are frequently encountered when considering wind farm development proposals. SNH recommends that typically the core foraging range should be used when determining whether there is connectivity between the proposal and qualifying interest species (SNH, 2016). Core foraging ranges during the winter season are published for certain geese and swan species and range from <5km to 20km for whooper swan, greylag goose, pink-footed goose, Greenland white-fronted goose and barnacle goose (SNH, 2016).

An on-line search for SPAs within a 20km radius of the site was conducted. The on-line search determined that there is one SPA within 20km of the site, as outlined in **Table 3** below and shown in the Figures in **Appendix 2**.

Table 3. SPAs located within 20km radius of the potential development site boundary

Site Name	Proximity of SPA to potential development site boundary at closest point	Features of Interest
River Nore SPA (004233)	5.1km to the north-east	Kingfisher (<i>Alcedo atthis</i>) [A229]

There are no other SPAs within a 20km radius of the site, the maximum core foraging distance from winter night roosts for bird species considered sensitive to wind farms as per SNH (2016) guidance. Therefore, it is considered that there is no potential for connectivity between the site and any SPA target species populations.

2.1.1.3 Ramsar Sites/Important Bird and Biodiversity Areas

The Convention on Wetlands, also known as the Ramsar Convention, is an intergovernmental treaty which aims to conserve and protect wetlands and their resources around the world⁵. The desk-top review concluded that there are no Ramsar sites within 20km of the study area.

The Important Bird and Biodiversity Areas (IBAs) Programme, overseen by Birdlife International, aims to identify, conserve and protect those areas throughout the world considered to be of the

⁵ <http://www.ramsar.org/>

greatest significance to bird populations⁶. The desk-top review concluded that there are no IBA sites within 20km of the study area.

2.1.1.4 Irish Wetland Bird Survey (I-WeBS)

The Irish Wetland Bird Survey (I-WeBS) is a monitoring scheme for wintering waterbirds in Ireland run jointly by BirdWatch Ireland and the National Parks and Wildlife Service (NPWS). There are no designated I-WeBS sites within 5km of the study area.

2.2 IDENTIFICATION OF TARGET SPECIES

The results of the desk-top study and reconnaissance surveys were used to identify those bird species which were considered likely to occur. Of these, target species were identified which formed the main focus of the bird surveys.

Target species are typically those species which are afforded a higher level of legislative protection or which are considered to be more sensitive to potential impacts from wind farm developments by virtue of their behaviour (SNH, 2017). Target species should be restricted to those likely to be affected by wind farms (SNH, 2017).

With regards to drawing up the target species list for Castlebanny the SNH (2017) guidance was referred to. This guidance outlines three important sources of potential target species. The sources used have been modified where appropriate to ensure relevance in an Irish context (see bullet point 2 below). Additionally, SCI species for SPAs located within a 20km radius of the site were considered. The target species list for Castlebanny was drawn from:

- Annex I of the Birds Directive
- Species protected under the fourth schedule of the Wildlife Acts 1976-2012 (buzzards, eagles, falcons, harriers, hawks, kites, osprey, owls)
- Red-listed birds of Conservation Concern (Colhoun and Cummins, 2013)
- Special Conservation Interests (SCI) of Special Protection Areas (SPA) within 20km radius of site

The following table (**Table 4**) outlines those species for which past records exist within the hectads S52 and S53 identified during the desk-top study (**Section 2.1.1.1** above) and which meet one or more of the target species selection criteria as outlined above. The conservation status/level of protection afforded to each species is also included.

Table 4. Target species for which previous records exist in the relevant hectads S52 and S53

Target Species	Conservation/Protection Status
Hen Harrier (<i>Circus cyaneus</i>)	BoCCI Amber-listed/ Annex I EU Birds Directive/Fourth schedule of the Wildlife Acts 1976-2012
Sparrowhawk (<i>Accipiter nisus</i>)	BoCCI Amber-listed/ Fourth schedule of the Wildlife Acts 1976-2012
Common Buzzard (<i>Buteo buteo</i>)	BoCCI Green-listed/ Fourth schedule of the Wildlife Acts 1976-2012
Kestrel (<i>Falco tinnunculus</i>)	BoCCI Amber-listed/ Fourth schedule of the Wildlife Acts 1976-2012

⁶<http://www.birdlife.org/worldwide/programmes/important-bird-and-biodiversity-areas-ibas>

Target Species	Conservation/Protection Status
Peregrine Falcon (<i>Falco peregrines</i>)	BoCCI Green-listed/ Annex I EU Birds Directive/ Fourth schedule of the Wildlife Acts 1976-2012
Golden Plover (<i>Pluvialis apricaria</i>)	BoCCI Red-listed/ Annex I EU Birds Directive
Northern Lapwing (<i>Vanellus vanellus</i>)	BoCCI Red-listed
Eurasian Curlew (<i>Numenius arquata</i>)	BoCCI Red-listed
Whooper Swan (<i>Cygnus cygnus</i>)	BoCCI Amber-listed/Annex I EU Birds Directive
Woodcock (<i>Scolopax rusticola</i>)	BoCCI Red-listed
Red Grouse (<i>Lagopus lagopus</i>)	BoCCI Red-listed
Little Egret (<i>Egretta garzetta</i>)	BoCCI Green-listed/ Annex I EU Birds Directive
Black-headed Gull (<i>Larus ridibundus</i>)	BoCCI Red-listed

Wind-farm sensitive species meeting the criteria outlined above which were not identified as previously occurring within the general area during the desk-top study such as merlin were also included as target species, where recorded.

As outlined above and set out in SNH (2017), target species typically comprise those species which are afforded a higher level of legislative protection and should be restricted to those likely to be affected by wind farms. Therefore, only red-listed species have been included as target species, unless the species meets one of the other target species selection criteria e.g. Annex I, outlined above. However, to ensure other species which may be sensitive to wind farms were not missed during surveys all other species of gull, wader, duck, goose, swan, cormorant and heron were included as secondary species. According to SNH (2017) it is generally considered that passerine species are not significantly impacted by wind-farms. While they were not, therefore, included as either target or secondary species their presence was recorded in order to provide a complete picture of bird usage of the site.

2.3 FIELD SURVEYS

Initial walkovers of the site were carried out to enable the identification of suitable survey locations. As stipulated by the client, Coillte, all surveys were undertaken within Coillte owned land or on public roads. Access was not permitted to private lands outside of Coillte ownership.

Field surveys were undertaken to gather detailed information on bird distribution and flight activity in order to predict the potential effects of a wind farm proposal on birds. The field surveys comprised two main elements; vantage point watches and targeted distribution and abundance surveys which comprised;

- Transect/point count surveys
- Other winter surveys (driven hinterland surveys)
- Hen Harrier Winter Roost Watches

2.3.1 Vantage Point Surveys

2.3.1.1 Selection of VP locations

Vantage point surveys were carried out with regard to 'Recommended bird survey methods to inform impact assessment of onshore wind farms' (SNH, 2017).

Vantage point (VP) surveys were carried out by suitably qualified personnel over a seven month period spanning winter 2017/18 (September 2017 to March 2018 inclusive). The overall aim of these surveys was to quantify the level of flight activity and its distribution over the flight activity survey area and to determine bird usage of the site. The flight activity survey area was taken to be that area encompassing the potential development area and 500m beyond the development boundary as potential collision risk, habitat loss and displacement could affect birds outside the proposal site (see **Figure 2** below). Vantage points are ideally located on elevated areas, or other areas, which provide clear views over the survey area. Achieving maximum visibility over as much of the site as possible is important for these surveys.

According to SNH (2017) vantage points should be located so as to allow full coverage of the flight activity survey area such that no point is greater than 2km from a VP. In order to minimise observer effect on bird behaviour VPs should ideally be located outside the survey area but should be located as close as possible. SNH (2017) stipulates that where VPs are located within the survey area they should not be used simultaneously with other VPs which overlook them to minimise potential observer effect on birds.

With regards to Castlebanny, VP locations were selected so as to provide maximum site coverage. Several factors limited selection of VP locations including the forested nature of the site and the unusually flat topography of the landscape. VP selection also had to take the clients stipulation that all surveys were to be undertaken on either Coillte-owned land or public roadways into consideration which limited availability of potential VP locations.

The locating of some of the VPs within the site/survey area achieved best visual coverage of the area given the limiting factors outlined above. Three of the ten VPs are located within the site/survey area (VP3, VP6 and VP10) (see **Figure 2** below). VP10 is over-looked by both VP6 and VP7; however, there was no temporal overlap in VP surveys conducted at these locations over the course of the winter survey period. Observer influence on bird behaviour was not apparent to surveyors during any of the VP surveys which were carried out. This was reflected in the flight paths recorded for the various target and secondary species with birds regularly recorded flying in relatively close proximity to surveyors and no obvious alterations in flight paths observed.

Initially, seven VP locations were selected with a further three added following commencement of the surveys. In total therefore ten VPs were surveyed over the winter season. Additional survey hours were carried out at the three new VPs to ensure that the full 36 hours per VP location were completed for the winter season. The Irish Transverse Mercator (ITM) grid co-ordinate locations of each VP are provided in **Table 5** below. Figures showing the location of each VP and the viewsheds from each VP in order to show the extent of site coverage are provided in **Appendix 2**. Full details on individual VP surveys including survey dates, times, weather conditions etc. can be found in **Appendix 3**.

Table 5. Castlebanny VP locations

VP No.	ITM Grid Co-ordinates
1	658157, 635929
2	659031, 634875
3	658960, 631712
4	660497, 629666

VP No.	ITM Grid Co-ordinates
5	658599, 628977
6	658161, 629742
7	656719, 632610
8	656096, 633522
9	656070, 634977
10	657585, 631334

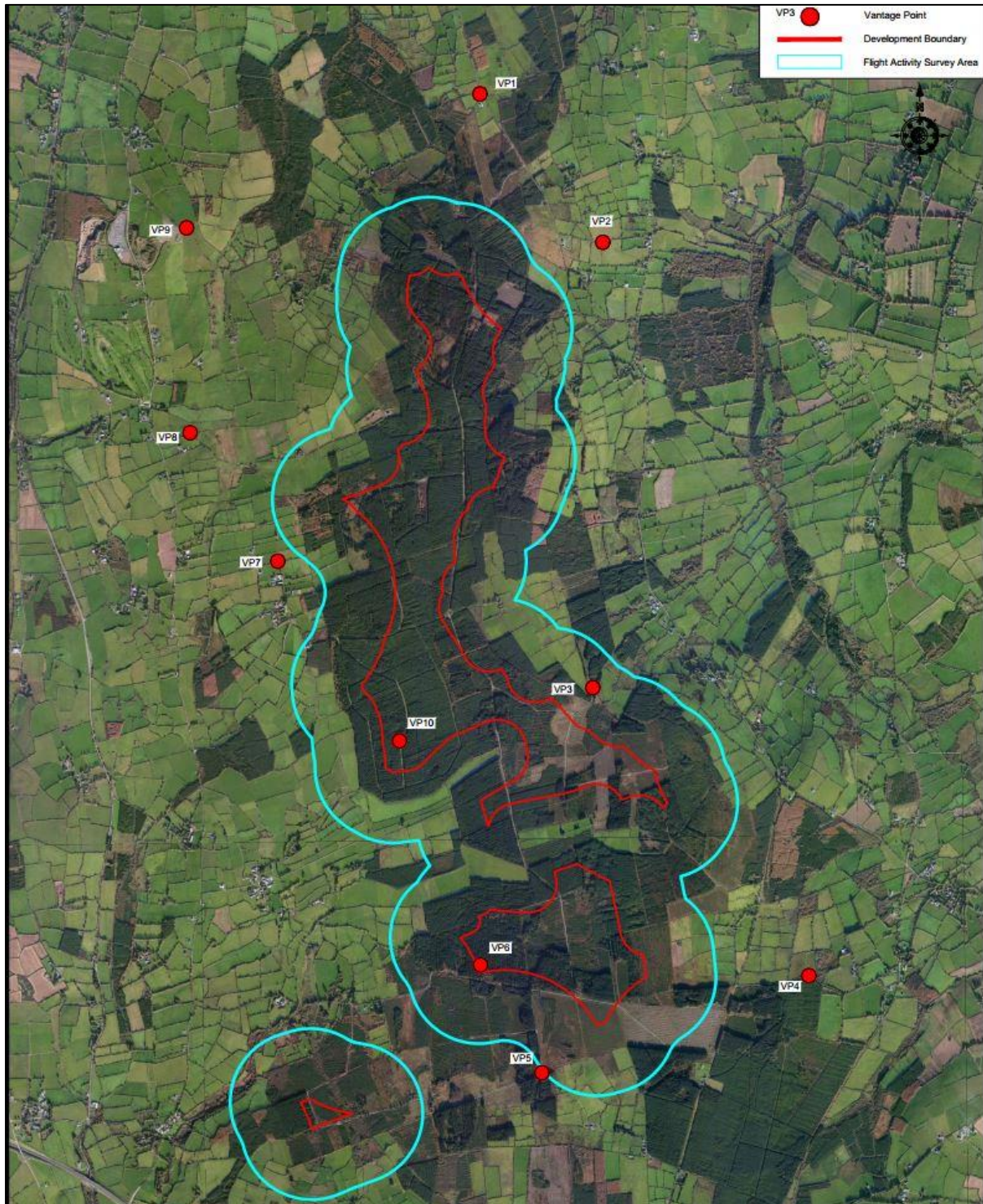


Figure 2. VP locations and Flight Activity Survey Area (development boundary plus 500m buffer)

2.3.1.2 Viewshed Analysis of VP Locations

Viewshed analysis was undertaken for each VP location to determine visual coverage of the survey area (taken to encompass the site and the flight activity survey area). Viewsheds were set to observer height of 2m showing a view of everything over 25m height. Viewsheds encompassed a 2km radius with 360° view. Each viewshed was then cropped to an 180° arc showing the relevant direction of view. Viewshed analysis determined that, based on the VP locations selected, visual coverage of approximately 91% of the survey area was achieved. The factors limiting visual coverage of the site have already been outlined in **Section 2.3.1.1** above. Figures showing the viewsheds from each VP in order to show the extent of site coverage are provided in **Appendix 2**.

The main part of the survey area not visually covered by selected VP locations comprised the south-western corner. This particular area comprises predominantly mature forestry and agricultural land. The south-western corner of the site was partially encompassed by walked transects and point count surveys which were conducted on a monthly basis throughout the survey period (see **Section 2.3.2.1** below for further detail. See Figures in **Appendix 2** for transect route and point count locations.

2.3.1.3 Flight Data Recording

During VP surveys the flight behaviour of target species was recorded. Based on the precautionary principle flight behaviour of secondary species was also recorded; however, recording of secondary species was subsidiary to recording of target species (SNH, 2017). At the time of each species observation the following information was recorded:

- The time that the bird was detected;
- The flight duration (seconds) within various flight height categories (0-50m, 50-100m, 100-200m and >200m);
- Sex and age of the bird(s) (adult/juvenile), where possible to determine;
- Type of activity/behaviour such as hunting, flying, displaying etc;
- Estimation of actual flight height;
- Habitat(s) where the bird was observed;
- Weather conditions at time of sighting including wind speed and direction.

Once an initial sighting was made, each target or secondary species was observed until lost from view. Flight paths were recorded as observed, including where birds travelled or were observed outside of the flight activity survey area; such that all flight activity within the broader landscape was encompassed. Flight paths were mapped in the field on OSI 1:25 000 mapping.

Details on flight behaviour for each individual target/secondary species observed, including a unique map identifier code which corresponds to a mapped flight path, are provided in tabulated format in **Appendix 4**. All flight paths are provided in **Appendix 5**. Summaries and monthly peak counts of all non-target species of conservation concern recorded during VP surveys are provided in **Appendix 6**.

2.3.2 Distribution and Abundance Surveys

Distribution and abundance surveys were carried out to record numbers and distributions of wintering and migrant birds using the site that might be affected either directly or indirectly by the proposal (e.g. collision risk, habitat loss, displacement effects).

2.3.2.1 *Transect and Point Count Surveys*

A transect survey is a survey along a defined route within the survey area. The overall aim of the transect surveys was to assess general bird distribution throughout the site and gather data on bird usage of the site. Transect surveys were completed on a monthly basis between September 2017 and March 2018. All bird species seen or heard, typically within 100m of the transect route, were recorded, although the topography of the landscape often allowed for detection of birds at greater distances. The transect route was selected to provide representative coverage of all habitats, both open and closed, occurring within the site e.g. clearfell forestry, young/mature forestry, scrub etc. The transect route followed an existing forestry access track which runs through the site.

Wintering birds were also surveyed using point count methodologies. Point counts were conducted during each monthly transect survey. A total of 24 point count locations were surveyed during each individual transect survey. Point count locations were sited at approximately 0.5km intervals along the overall length of the designated transect route. All birds seen or heard during these surveys were recorded.

A map showing the transect survey route and point count locations within the Castlebanny site is included in the Figures in **Appendix 2**. Details on each transect survey carried out including survey date, time and weather conditions can be found in **Appendix 7**. Tabulated results of peak counts for all species recorded during monthly transect and point count surveys are provided in **Appendix 8**.

2.3.2.2 *Other Winter Surveys*

Driven hinterland surveys were conducted in certain locations in the area surrounding the potential development area on several occasions throughout the winter season. These surveys aimed to identify areas of the surrounding hinterland which were being used, or had the potential to be used, by waders, swans, geese and other over-wintering species. A map showing the areas encompassed by the hinterland surveys is included in the Figures in **Appendix 2**.

2.3.2.3 *Hen Harrier Winter Roost Watches*

Potential hen harrier roost sites within 5km of the study area were identified during initial walkovers and field surveys. Four locations considered suitable for roosting hen harrier were identified within the study area. These areas comprised a wet valley located outside the site boundary in the vicinity of VP9 and areas in proximity to VP5 and VP6 located within the site. These locations were deemed potentially suitable for roosting hen harrier based on the habitats present. Evening watches for roosting hen harrier were undertaken at these locations (VP 5, 6, and 9) on a number of occasions over the winter survey period. It should be noted, that owing to the continually changing landscape associated with site operations, suitable habitats may become available in due course. Similarly, owing to the operations at the site, suitable habitats that have been identified may become unsuitable in time.

Additionally, a wetland area designated as Hugginstown Fen SAC and pNHA (Site Code: 000404), located adjacent to the M9 Motorway and approximately 4.7km from the development boundary at the closest point, was checked periodically for roosting hen harrier over the winter period due to the suitability of the habitats encompassed within the area. A map showing the areas encompassed by hen harrier winter roost watches is included in the Figures in **Appendix 2**.

3 EXISTING ENVIRONMENT

3.1 SITE DESCRIPTION

The study area encompasses the townlands of Ballytarsna, Baunskeha, Cappagh, Castlebanny, Castlecoster, Coolnahau, Coolroebeag, Derrylackey, Derrynahinch, Glenpipe, Kiltorcan, Kilvinoge and Mullennakill⁷. The area encompasses the Electoral Divisions (EDs) of Pleberstown (CSO Area Code 07081), Castlebanny (CSO Area Code 07066), Jerpoint West (CSO Area Code 07035), Castlegannon (CSO Area Code 07067) and Kiltorcan (CSO Area Code 07079). Population data available on-line from the latest national census indicates that these ED's had a combined total population of 912 persons resident in 2016⁸.

The site comprises a relatively flat afforested area which generally runs in a north-south orientation. The dominant habitat type throughout the overall site is mature non-native conifer forestry occurring in mosaic with areas of second rotation forestry, clearfell, scrub and commercial non-native broadleaf. The dominant land-use extending away from the site comprises improved agricultural farmland. Internal forestry access roads are located throughout the site. According to Corine Landcover (2012) mapping, the study area comprises mainly 'Coniferous forests' and 'Transitional woodland scrub' with 'Mixed forests' and 'Pastures'⁹. Soil cover is categorised as 'Coarse loamy drift with siliceous stones'. Sub-soils comprise 'Bedrock at or close to the surface' and 'Sandstone till (Devonian)'. Underlying bedrock is described as the 'Palaeozoic, Devonian', 'Lower Palaeozoic' and 'Caledonian (Silurian-Devonian)' age brackets.

The 'South Leinster Way' runs along an internal road which transects the southern end of the site. This walking route runs in a west-east direction and connects two local roads which run parallel to the sites western and eastern boundaries.

The site is located within the 'Blackwater (Kilmacow)_SC_010' and 'Nore_SC_130' sub-catchments. The area is drained by several watercourses comprising tributaries of the Ballytarsna River which drain the western half of the site and the Mullenhakill River which drain to the east. A review of the River Waterbody WFD Status (2010-2015) of these watercourses determined that all have a status of 'Good'¹⁰. The site overlies the 'Mullinavat' and 'Inistioge'¹¹ groundwater bodies, both of which are described as 'Poorly productive bedrock'. The Ground Waterbody WFD Status 2010-2015 of these water bodies is 'Good'.

⁷ <https://maps.biodiversityireland.ie/Map> [Accessed 05/11/2018]

⁸ <http://census.cso.ie/sapmap/> [Accessed 05/11/2018]

⁹ <https://gis.epa.ie/EPAMaps/> [Accessed 05/11/2018]

¹⁰ <https://gis.epa.ie/EPAMaps/> [Accessed 05/11/2018]

¹¹ Ground Waterbody Codes SE_G_155, SE_G_076

4 BIRD SURVEY RESULTS

4.1 INTRODUCTION

The following target and secondary species were recorded during bird surveys carried out at the Castlebanny site during the winter 2017/18 period (Annex I species are highlighted in bold):

- **Hen Harrier**
- **Peregrine Falcon**
- Kestrel
- Sparrowhawk
- Buzzard
- **Whooper Swan**
- **Golden Plover**
- Lapwing
- Black-headed Gull
- Grey Heron
- Lesser Black-baked Gull
- Mallard
- Moorhen
- Snipe
- Water Rail

A comprehensive list of all bird species recorded within the study area over the course of the winter 2017/18 surveys is provided in **Appendix 9**.

4.2 VANTAGE POINT SURVEY RESULTS

4.2.1 Target Species

The following sub-sections summarise sightings of all target species recorded during vantage point surveys at Castlebanny during the winter 2017/18 period. Tabulated summaries of these target species observations, including flight information, are available in **Appendix 4**. Flight line mapping for each target species is available in **Appendix 5**. Annex I species are highlighted in bold.

4.2.1.1 *Hen Harrier*

There were a total of six sightings of **hen harrier** (*Circus cyaneus*) in flight during the winter bird surveys. All observations were of single birds. Four of the six flight lines recorded occurred outside the site boundary, while two occurred within the southernmost section of the site, in the vicinity of VP6.

A male was recorded in mid-November to the north of VP6 flying low through scrub. In mid-January a male was observed flying through the study area close to VP6. This bird was hunting low to the ground over scrub and newly planted forestry. In mid-February an adult female flew low across fields just north of VP7. Later that day a ringtail, possibly the same bird, was observed flying northwards across fields to the east of VP8 whilst being mobbed by hooded crows. The following day a female was recorded hunting over farmland and hedgerows at the edge of clearfell forestry to the west of VP10. This bird headed south out of view. Towards the start of March a male was observed

commuting across farmland and into forestry to the south of VP1. Hen harrier is an Annex I species under the EU Birds Directive and is amber-listed in Ireland.

4.2.1.2 Peregrine Falcon

There was a single record of **peregrine falcon** (*Falco peregrines*) during the winter vantage-point surveys. Peregrine falcon is an Annex I species and is green-listed in Ireland. In mid-January two peregrines were observed in-flight together to the east of VP9. Both birds were calling and interacting with each other in mid-air. These birds travelled eastwards towards the flight activity survey area. One bird then veered northwards while the other continued east over forestry through the flight activity survey area and towards the site.

4.2.1.3 Kestrel

Kestrel (*Falco tinnunculus*) was observed on a regular basis throughout the site over the winter period. In total 46 observations of kestrels in flight were made. The majority of observations pertained to single birds either hunting or flying although two birds were recorded together on several occasions. The majority of flights paths were recorded outside the site although several were recorded within the southern section of the site, particularly in the vicinity of VP6. Kestrel is amber-listed in Ireland.

4.2.1.4 Sparrowhawk

Sparrowhawk (*Accipiter nisus*) was observed on a regular basis throughout the site over the winter survey period. A total of 26 observations of sparrowhawks in flight were made. The majority of flights paths were recorded outside the flight activity survey area. A total of three flight paths were recorded within the southern section of the site, all in the vicinity of VP6. Sparrowhawks were observed exhibiting display behaviour in January in the vicinity of VP4 and VP9. Sparrowhawk is an amber-listed species in Ireland.

4.2.1.5 Buzzard

Buzzard (*Buteo buteo*), which is a green-listed species in Ireland, was recorded regularly at almost all VP locations throughout the site. A total of 44 flight-lines of buzzard were recorded over the survey period. Buzzard was regularly observed in-flight within the flight activity survey area. A total of eight flight paths occurred within the site boundary. The majority of sightings were of single birds soaring or flying although 2-3 birds were recorded together regularly and up to six birds were observed together at the one time. Display behaviour was observed from VP1, 3, 7 and 8.

4.2.1.6 Whooper Swan

Whooper swan (*Cygnus cygnus*) are an Annex I species and are amber-listed in Ireland. There was a single sighting of whooper swan during the winter surveys. Three birds were observed flying in a northerly direction through the flight activity survey area to the east of VP7 in mid-November. This flight path travelled through the western edge of the site.

4.2.1.7 Golden Plover

There was one record of **golden plover** (*Pluvialis apricaria*) during site surveys. Golden plover are an Annex I species and are red-listed in Ireland. Towards the start of March a single golden plover was observed flying south over farmland to the west of VP10. This flight path was recorded outside the site but within the flight activity survey area.

4.2.1.8 Lapwing

There was a single sighting of lapwing (*Vanellus vanellus*) during the site surveys. Lapwing is a red-listed species in Ireland. Towards the start of March a flock of approx. 250 lapwing were observed to the west of VP1 flying first in a northerly and then north-easterly direction over farmland to the north of the flight activity survey area.

4.2.1.9 Black-headed Gull

There were sporadic records of black-headed gull (*Larus ridibundus*) during site surveys. In total four flight-lines were recorded. Black-headed gull is a red-listed species of conservation concern in Ireland. Towards the end of September a flock of mixed gulls including approx. 60 black-headed gulls was observed flying over grassland, scrub and forestry to the south-west of VP5 (within the flight activity survey area). In mid-December approx. 50 black-headed gulls were observed flying in a north-westerly direction during VP2 (outside the flight activity survey area).

4.2.1.10 Target Species VP Summary

The target species recorded during VP surveys in winter 2017/18 can be categorised as follows (Annex I species are highlighted in bold):

- Raptors
 - **Hen harrier (*C. cyaneus*)**
 - **Peregrine falcon (*F. peregrinus*)**
 - Kestrel (*F. tinnunculus*)
 - Sparrowhawk (*A. nisus*)
 - Buzzard (*B. buteo*)
- Swans/Geese
 - **Whooper swan (*C. cygnus*)**
- Waders
 - **Golden plover (*P. apricaria*)**
 - Lapwing (*V. vanellus*)
- Gulls
 - Black-headed gull (*L. ridibundus*)

Table 6 below shows monthly peak counts of all target species recorded during vantage point surveys over the winter 2017/18 period. Species name are colour-coded to indicate conservation status as determined in the most recent assessment of all regularly occurring birds in Ireland (Colhoun and Cummins, 2013). Species highlighted in red represent species that are 'red-listed' (considered to be of high conservation concern); species highlighted in orange represent species that are 'amber-listed' (considered to be of lesser conservation concern but still with an unfavourable conservation status). Remaining species, which are 'green-listed', are considered to have a favourable conservation status (Colhoun and Cummins, 2013). Species which are considered to be of unfavourable conservation status in a European context and are listed on Annex I of the EU Birds Directive (Directive 2009/147/EC) are highlighted in bold in the table below.

Table 6. Monthly peak counts of all target species recorded during winter 2017/18 vantage point surveys

Common Name	Latin Name	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Black-headed Gull	<i>Larus ridibundus</i>	63			1			
Golden Plover	<i>Pluvialis apricaria</i>							1
Lapwing	<i>Vanellus vanellus</i>							250
Hen Harrier	<i>Circus cyaneus</i>	1		1		1	1	1
Kestrel	<i>Falco tinnunculus</i>	1	1	2	1	2	1	2
Sparrowhawk	<i>Accipiter nisus</i>	1	1	1	1	3	1	1
Whooper Swan	<i>Cygnus cygnus</i>			3				
Buzzard	<i>Buteo buteo</i>	6	3	1	2	1	2	3
Peregrine Falcon	<i>Falco peregrinus</i>					2		

4.2.2 Secondary Species

The following sub-sections summarise sightings of all secondary species recorded during vantage point surveys at Castlebanny during the winter 2017/18 period. Tabulated summaries of these secondary species observations, including flight information, are available in **Appendix 4**. Flight line mapping for each target species is available in **Appendix 5**.

4.2.2.1 Grey Heron

Grey heron (*Ardea cinerea*) was infrequently recorded (one observation in October, November and December). Grey heron was recorded from VP5, VP6 and VP10. Only two flight paths were recorded. One individual flew south-east to north-west during VP5 in November (outside the flight activity survey area). Another individual flew south past VP6 in December (outside but adjacent to the site boundary). Grey heron is green-listed in Ireland.

4.2.2.2 Lesser Black-backed Gull

Lesser black-backed gull (*Larus fuscus*) was recorded regularly throughout the survey period being recorded in every month except February. A total of 14 flight-lines of lesser black-backed gull were recorded over the survey period (approximately half of these were recorded within the flight activity survey area). Of these, only three occurred within the site boundary. The majority of observations pertained to birds feeding in agricultural grassland and moving between fields. A mixed flock of gulls, including 52 lesser black-backed gulls, was observed from VP5 at the end of September. The highest single count for this species comprised a total of 263 birds observed during VP6 in mid-October. Approximately 20 birds were observed feeding with corvids in fields located west of VP8 at the end of the month. Lesser black-backed gull is an amber-listed species in Ireland.

4.2.2.3 Mallard

There was one record of mallard (*Anas platyrhynchos*) over the course of the winter VP surveys. Two mallard were observed swimming and feeding in a pond to the south-east of VP9 in mid-March. No flight paths were recorded. Mallard is green-listed in Ireland.

4.2.2.4 Moorhen

There was one record of moorhen (*Gallinula chloropus*) over the course of the winter VP surveys. Two moorhen were observed swimming and feeding in a pond to the south-east of VP9 in mid-March along with mallard. No flight paths were recorded. Moorhen is green-listed in Ireland.

4.2.2.5 Snipe

Snipe (*Gallinago gallinago*) was recorded regularly, being recorded in every survey month except September and March. A total of 7 in-flight observations of snipe were recorded (during VP5, VP9, and VP10). The majority of flights were recorded outside the flight activity survey area. There were no records of snipe in-flight within the site boundary. Numbers recorded per month were low (<4), except for February when a peak count of 7 birds was recorded flying north over farmland and forestry during VP10. A snipe was heard calling from VP6 in mid-January. Snipe is an amber-listed species in Ireland.

4.2.2.6 Water Rail

There was one record of water rail (*Rallus aquaticus*) over the course of the winter VP surveys. One water rail was observed in a pond to the south-east of VP9 in mid-March along with mallard and moorhen. No flight path was recorded. Water rail is green-listed in Ireland.

4.2.2.7 Secondary Species VP Summary

The secondary species recorded during VP surveys in winter 2017/18 can be categorised as follows:

- Gulls
 - Lesser Black-backed Gull (*L. fuscus*)
- Waders
 - Moorhen (*G. chloropus*)
 - Snipe (*G. gallinago*)
 - Water Rail (*R. aquaticus*)
- Waterbirds
 - Grey Heron (*A. cinerea*)
 - Mallard (*A. platyrhynchos*)

The following table (**Table 7**) shows monthly peak counts of all secondary species recorded during vantage point surveys over the winter 2017/18 period. As above, species name are colour-coded to indicate conservation status (Colhoun and Cummins, 2013).

Table 7. Monthly peak counts of all secondary species recorded during winter 2017/18 vantage point surveys

Common Name	Latin Name	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Lesser Black-backed Gull	<i>Larus fuscus</i>	52	263	2	1	1		2
Snipe	<i>Gallinago gallinago</i>		1	3	2	1	7	
Grey Heron	<i>Ardea cinerea</i>		1	1	1			
Mallard	<i>Anas platyrhynchos</i>							2
Moorhen	<i>Gallinula chloropus</i>							2
Water Rail	<i>Rallus aquaticus</i>							1

4.3 DISTRIBUTION AND ABUNDANCE SURVEYS

4.3.1 Transect and Point Count Surveys

Tabulated results of peak counts for all species recorded during monthly transect and point count surveys are provided in **Appendix 8**.

4.3.2 Other Winter Surveys

During driven hinterland surveys carried out outside the site no areas considered to be of any particular importance to over-wintering species were identified (see Figures in **Appendix 2**).

4.3.3 Hen Harrier Winter Roost Watches

Areas of habitat considered potentially suitable for roosting hen harrier were identified in the vicinities of VP 5, 6 and 9 within the study area (see **Appendix 2** for mapped locations). Monitoring of these potential roost sites was undertaken in conjunction with evening VP watches on the dates outlined in **Table 8** below). An area of fen located approximately 4.7km west of the site was also identified as encompassing suitable roosting habitat. This area was checked over the winter period.

No roosting hen harriers were observed in any of these areas during the winter 2017/18 survey period.

Table 8. Hen harrier roost monitoring dates

VP	Date	Time of sunset	Results
VP5	21/09/17	19.28	No roosting HH observed
	22/09/17	19.26	No roosting HH observed
	09/01/18	16.36	No roosting HH observed
VP6	21/09/17	19.28	No roosting HH observed
	13/11/17	16.38	No roosting HH observed
	04/12/17	16.17	No roosting HH observed
	09/01/18	16.36	No roosting HH observed
	10/01/18	16.37	No roosting HH observed
VP9	30/11/17	16.19	No roosting HH observed
	14/12/17	16.15	No roosting HH observed
	15/01/18	16.45	No roosting HH observed
	14/02/18	17.39	No roosting HH observed
	15/03/18	18.32	No roosting HH observed

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Colhoun, K. & Cummins, S., 2013. Birds of Conservation Concern in Ireland 2014-2019. *Irish Birds*, Volume 9, pp. 523-544.

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Scottish Natural Heritage (2017). Recommended Bird Survey Methods to Inform Impact Assessment on Onshore Wind Farms. Version 2.

Scottish Natural Heritage (2016). Assessing Connectivity with Special Protection Areas (SPAs). Version 3

Appendix 1

Statement of Surveyor Competency and Expertise

The winter 2017/18 field surveys were undertaken by the following competent personnel.

Team Role	Name and Qualifications
Project Manager	Monica Kane (Senior Ecologist, MSc. BSc.)
Project Ornithologist/Survey Team Lead/Report Input	John Murphy (Senior Ornithologist, Dip.)
Field Surveyor	Joseph Adamson (Senior Ecologist/Ornithologist, BSc. MSc. MIEEM)
Field Surveyor	David Rees (BSc. Zoology, PgD. Conservation Management)
Field Surveyor	Shane Cully (Ecologist, BSc. Wildlife Biology)
Field Surveyor/Reporting	Hazel Dalton (Ecologist, BSc. Wildlife Biology)
Field Surveyor	Muiréad Kelly (Ecologist, BSc. Zoology, MSc. Marine Biology)
Field Surveyor	Ger Hayes (Ecologist, BSc. Bachelor of Biological Science Education)
GIS Mapping & Data	Jeremy King (GIS Technician, Dip. PGDip.)
GIS Mapping & Data	Valerie Heffernan (Environmental Scientist, MSc. BSc.)

Monica Kane

Monica Kane manages the Environmental Section of Malachy Walsh and Partners where her role involves managing the day to day running of the section and the Environmental Team. She is an Environmental and Ecological Consultant with over 10 years consultancy experience. She has been responsible for EIA and planning application project management, Appropriate Assessments, Ecological Impact Assessments, auditing and constraints studies. She undertook and managed the environmental inputs into the Cluddaun Wind Farm, a Strategic Infrastructure Development, as well as the Boggeragh Wind Park, Knockranny Wind Farm and Clydaghroe Wind Farm EIS. As part of her involvement in the EU stoRE Project she was the principal author of EC guidelines for PHES and Natura 2000 sites. She was an expert witness for the Oral Hearing on the Kenmare Water Supply Scheme for Kerry County Council and Cluddaun Wind Farm.

Role: Project Manager, liaising with client, review of all reports and data

John Murphy

John Murphy is a senior ornithologist with Malachy Walsh and Partners and is the Project Ornithologist. He is very experienced having worked in the field of ornithology and ecology since 1982 and has extensive knowledge of the Irish landscape with regard to bird populations. He collaborates regularly with NPWS on different projects throughout the country. John is one of the country's foremost ornithologists and is a licensed bird ringer. He has always had an interest in wildlife photography and his work has been published in many magazines and books. As a 'Heritage in the Schools Specialist', he has travelled the country lecturing in schools and colleges, and to various clubs and organizations. He was the Biodiversity Officer with Clare County Council and has been working as part of the MWP Ecology team on a variety of projects nationwide since 2010. He spends as much time in the field as possible as a bird observer.

Role: Project ornithologist, lead surveyor responsible for all field activity, report input

Joseph Adamson

Joe Adamson is a senior ecologist with wide ranging experience in the field of ecology and ornithology. For the past number of years Joe has specialised in wind farms on upland blanket bog environments, often evaluating sites using a multidisciplinary approach, by incorporating vegetation and topographical characteristics. Joe has worked on over forty wind farm projects throughout Ireland and has extensive experience in bird identification and monitoring bird movements at wind farm sites.

Role: Field surveyor

David Rees

David has over 30 years' experience working in nature conservation and as an ecological consultant. He has an Honours Degree in Zoology and Postgraduate Diploma in Conservation Management. He is a full member of the Chartered Institute for Ecology and Environmental Management (MCIEEM). David is a highly experienced field surveyor with particular expertise in birds, habitats and botany. He has project managed and contributed to a wide range of ecological impact assessments, carrying out fieldwork and producing reports for a diversity of projects including wind farm developments, overhead power lines, road schemes, fuel pipelines and housing schemes. His ornithological experience includes surveys for wind farms, wintering bird surveys and breeding bird surveys.

Role: Field surveyor

Shane Cully

Shane has a Degree in Wildlife Biology and has over 6 years general birding experience. He has experience of Vantage Point Surveys, Transect surveys, Merlin/Golden Plover walkover surveys, Nightjar/Woodcock Surveys, Red Grouse Surveys and Hen Harrier Roost Surveys. He has previously been involved in the Corncrake Conservation Project with Birdwatch Ireland where he undertook dedicated night-time surveys, on a nightly basis during peak season, and dealt directly with landowners with regards to participation in the Corncrake Grant scheme. He has also worked with Birdwatch Ireland on the Results Based Agri-Environment Payments Scheme (RBAPS) in the Shannon Callows. This work included surveying of breeding waders, monitoring of whinchat and signing farmers/landowners up to the scheme.

Role: Field surveyor

Hazel Dalton

Hazel Dalton is an experienced field ecologist who has been working with Malachy Walsh and Partners for the past four years on a full-time basis and for several years previously on a part-time basis over the summer months. She qualified with a degree in Wildlife Biology from Tralee IT in 2015. Over the last four years she has undertaken bird survey work for a number of large-scale wind farm projects in the west and south-west of Ireland as well as in the midlands. She has completed numerous reports for bird survey work and is experienced in the collation of data, GIS mapping and in field ecology survey techniques.

Role: Field surveyor, report author

Muiréad Kelly

Muiread Kelly is an experienced field ecologist who has been working as part of the Malachy Walsh and Partners team for the past four years. She has been working on a variety of ecological projects including wind farm projects. She works with the ornithology team and assists in bird survey work across the country including large-scale bird surveys for BNM in the midlands. Muiréad has particular experience in seabirds and waders.

Role: Field surveyor

Gerard Hayes

A member of the Chartered Institute of Ecology and Environmental Management (MCIEEM) Gerard is an ecologist with over 11 years professional practice in environmental consultancy. He has been an author/co-author and/or carried out surveys for NPWS Irish Wildlife Manual Nos. 15, 24, 26, 37, 45 and brings a wealth of experience and expertise to the services provided by the company. As is the case with all MWP staff ecologists Gerard has a wide range of experience across all technical areas spanning both field-work and report writing skills. He has gained considerable experience of bird survey work over the course of his career and, since joining Malachy Walsh and Partners in May 2017, has been a participating surveyor on a number of wind farm projects including Tullahennel and Coolegrean Wind Farms.

Role: Field surveyor

Jeremy King

Jeremy is the lead GIS technician in Malachy Walsh and Partners. He assists the environmental team in completing EIAR's, wind farm feasibility studies and planning applications and also works closely with the wind farm civil design team. He also works on LVIA, photomontages and shadow flicker assessments with the EIA team. Jeremy assists in the final reporting for all bird survey projects through the production of mapping and other drawings, as well as any other GIS requirements which arise throughout the life of the project.

Role: Responsible for mapping, GIS project and report inputs

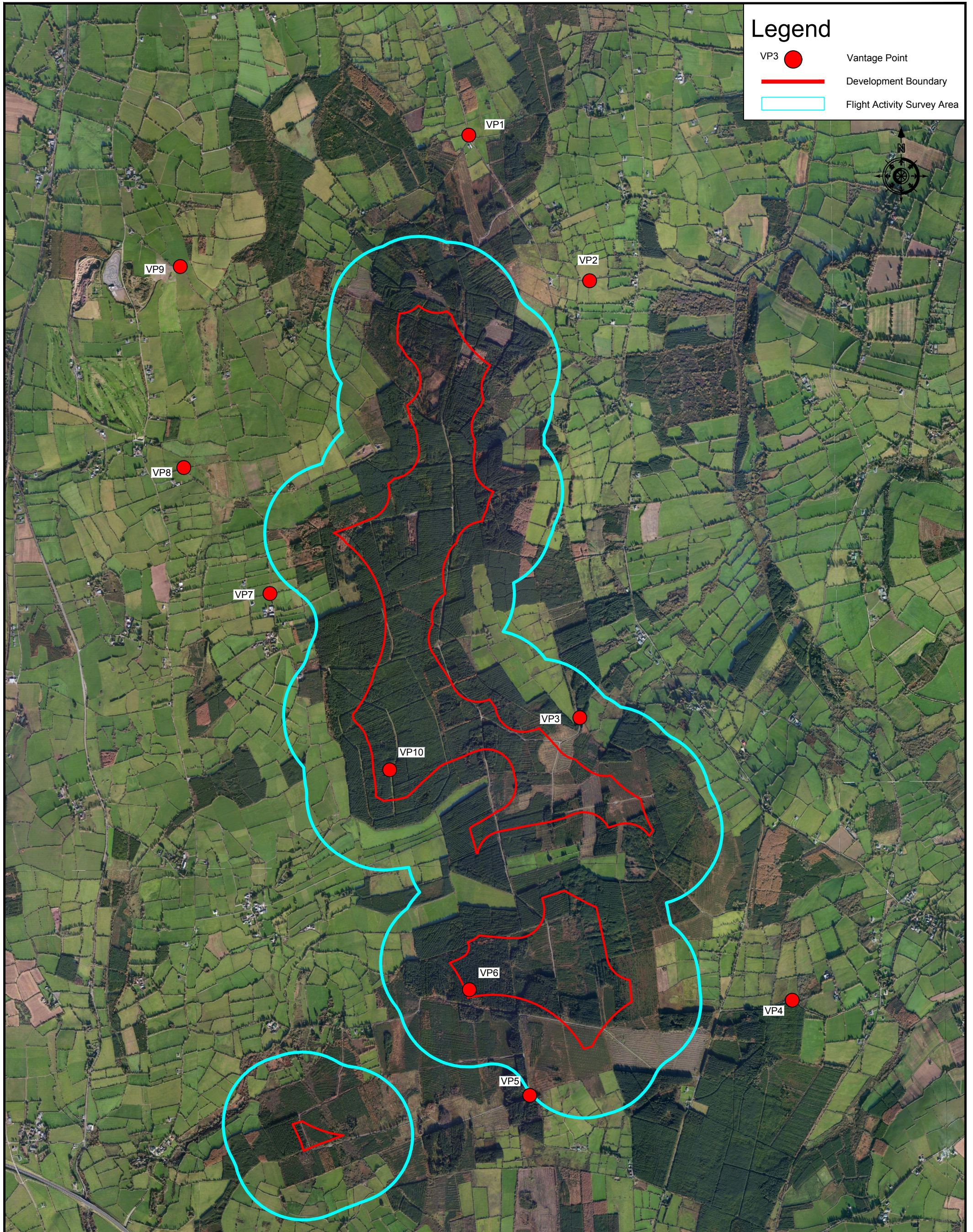
Valerie Heffernan

Valerie has worked as an environmental professional since graduating in 2015 and has been employed as an Environmental Scientist with Malachy Walsh and Partners since 2018. She has considerable experience in Solar Farm development and has had input in a variety of projects including solar farms, marine and wind energy developments. She is experienced in GIS, planning and environmental report input.

Role: Responsible for viewshed analysis and flight path mapping

Appendix 2

Figures



Legend

- VP3 ● Vantage Point
- Development Boundary
- Flight Activity Survey Area

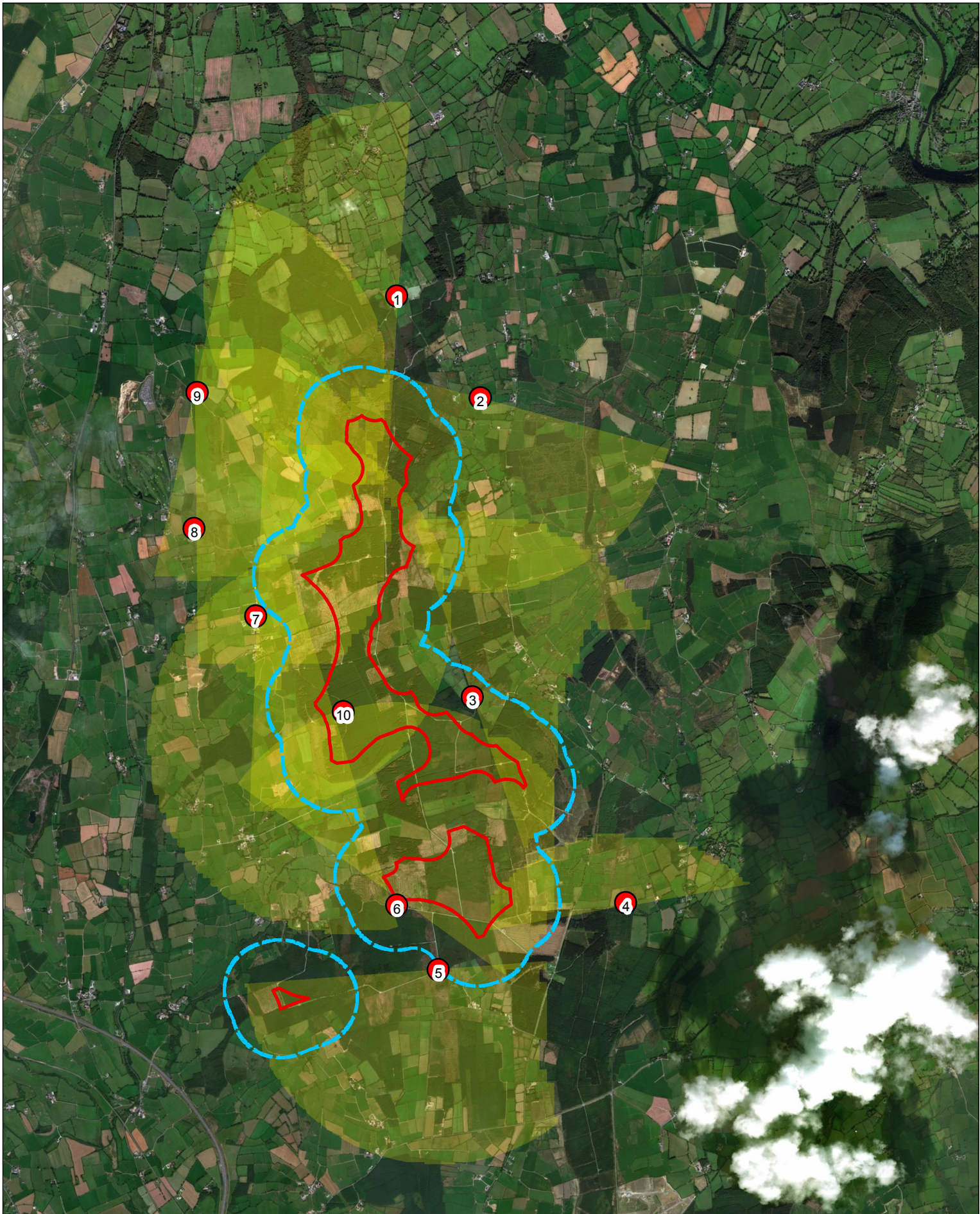
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Project Coillte - Winter Bird Surveys					
Title Castlebanny Vantage Point Locations					

Malachy Walsh and Partners
Consulting Engineers

Cork | Tralee | London | Limerick


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Checked	HD	13.02.2019		



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TITLE	1-10 Viewshed		
CLIENT	Coillte		
DRAWN BY	VH	CHECKED BY	MK
DATE	11/07/2019		
DRAWING NO	Map 1	REF.	B

- Vantage Point
- Site Development Area
- Flight Activity Survey Area
- Viewshed

1. All drawings are to be read in conjunction with all relevant specifications, Bills of Quantities, Architectural, Services and Engineering drawings.
2. Any discrepancies between these documents shall be brought to the attention of the Engineer.
3. All dimensions are in millimetres, unless noted otherwise.
4. All levels are in metres related to Ordnance Datum.
5. Drawings are not to be scaled.

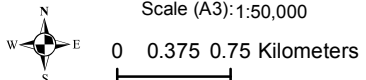


Malachy Walsh and Partners
Engineering and Environmental Consultants

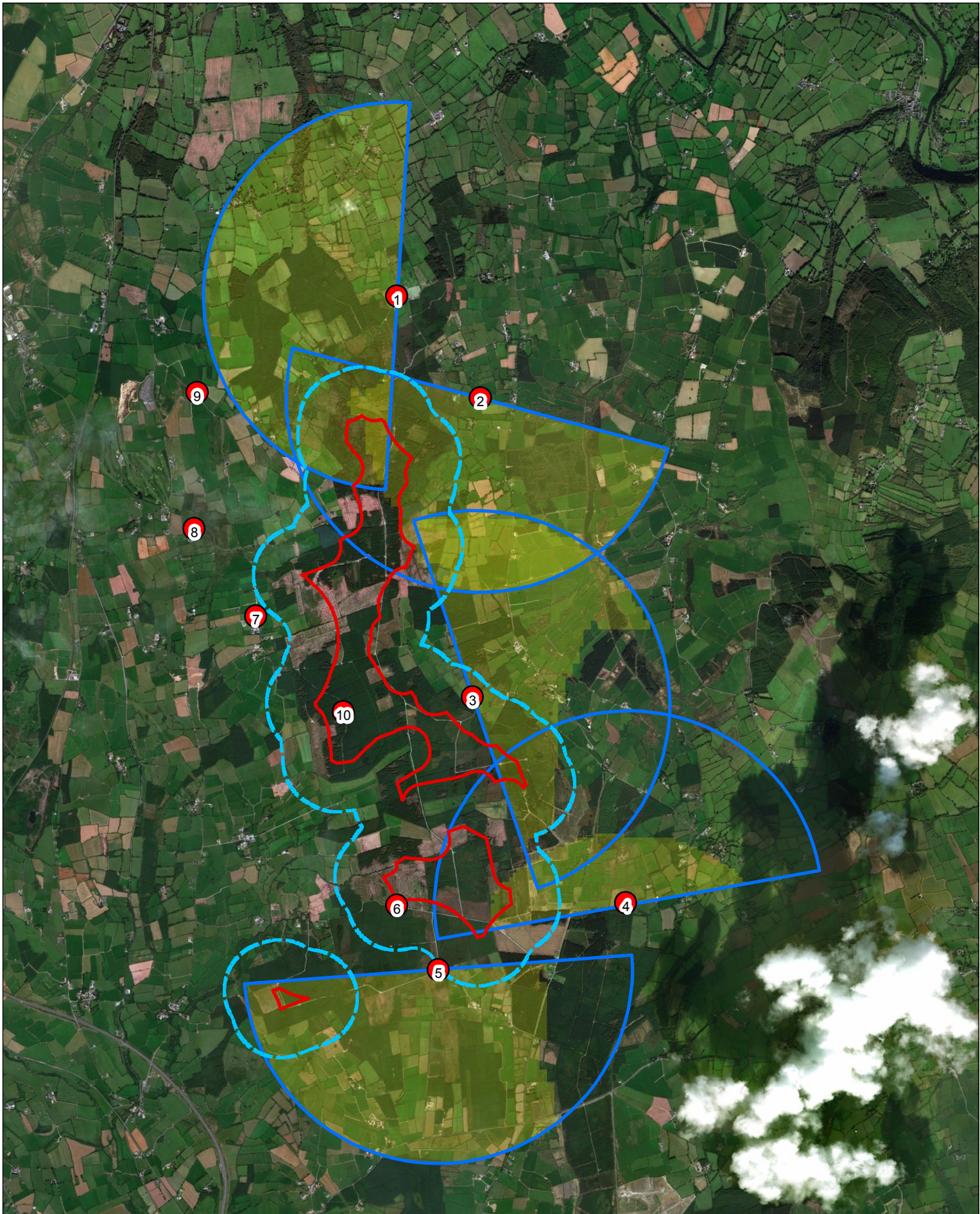
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Tel: +353(0)66 7123404
fax: +353(0)66 7126586
Email: tralee@mwp.ie

Scale (A3): 1:50,000




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CLIENT	Coillte		
DRAWN BY	VH	CHECKED BY	MK
DATE	09/07/2019		
DRAWING NO	Map 1	REF.	B

- Vantage Point
- Site Development Area
- Flight Activity Survey Area
- Viewshed Extent
- Viewshed

1. All drawings are to be read in conjunction with all relevant specifications, Bills of Quantities, Architectural, Services and Engineering drawings.
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5. Drawings are not to be scaled.

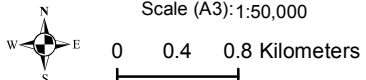


Malachy Walsh and Partners
Engineering and Environmental Consultants

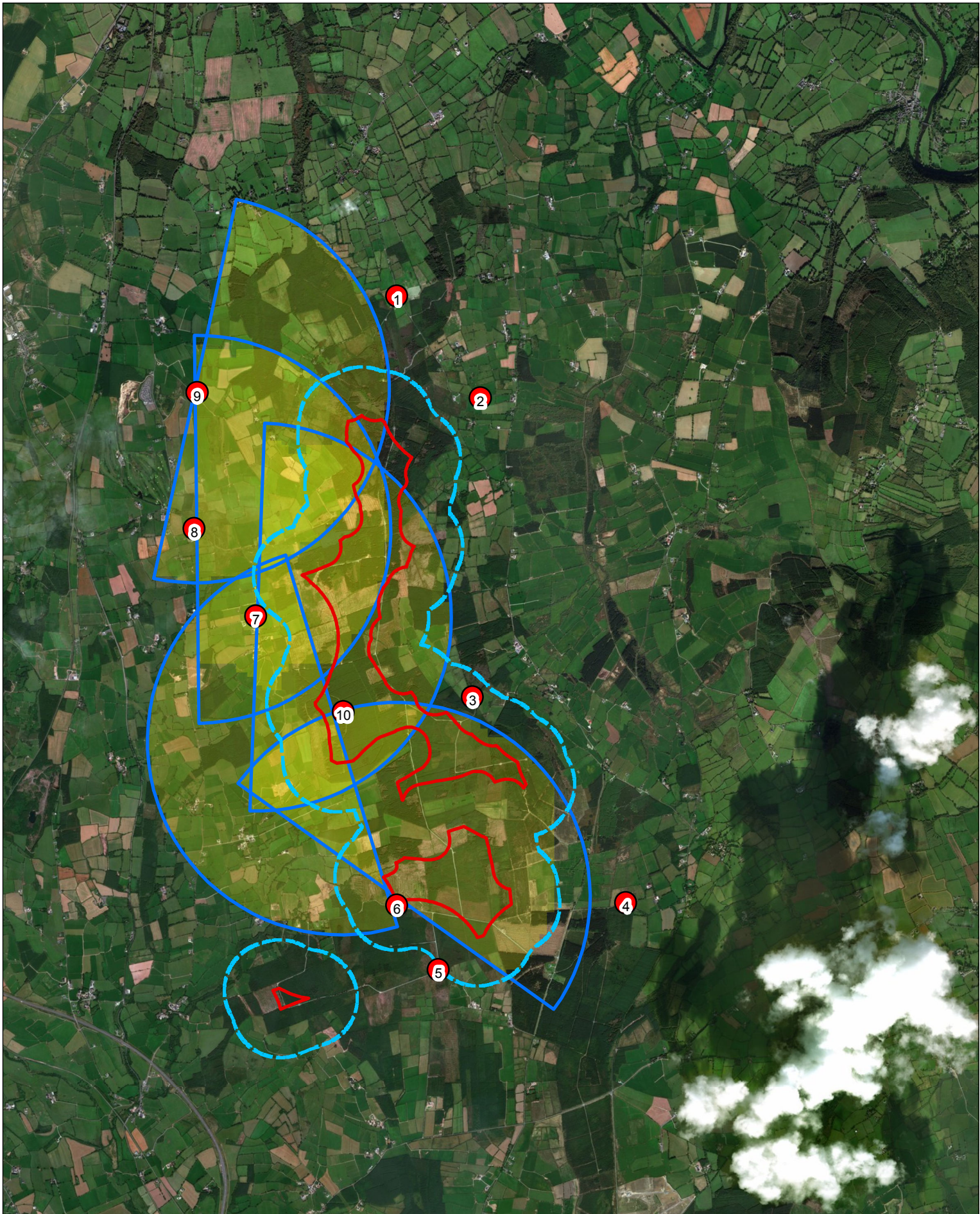
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Scale (A3): 1:50,000




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TITLE	6-10 Viewshed		
CLIENT	Coillte		
DRAWN BY	VH	CHECKED BY	MK
DATE	09/07/2019		
DRAWING NO	Map 1	REF.	B

- Vantage Point
- Site Development Area
- Flight Activity Survey Area
- Viewshed Extent
- Viewshed

1. All drawings are to be read in conjunction with all relevant specifications, Bills of Quantities, Architectural, Services and Engineering drawings.
 2. Any discrepancies between these documents shall be brought to the attention of the Engineer.
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 5. Drawings are not to be scaled.




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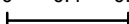
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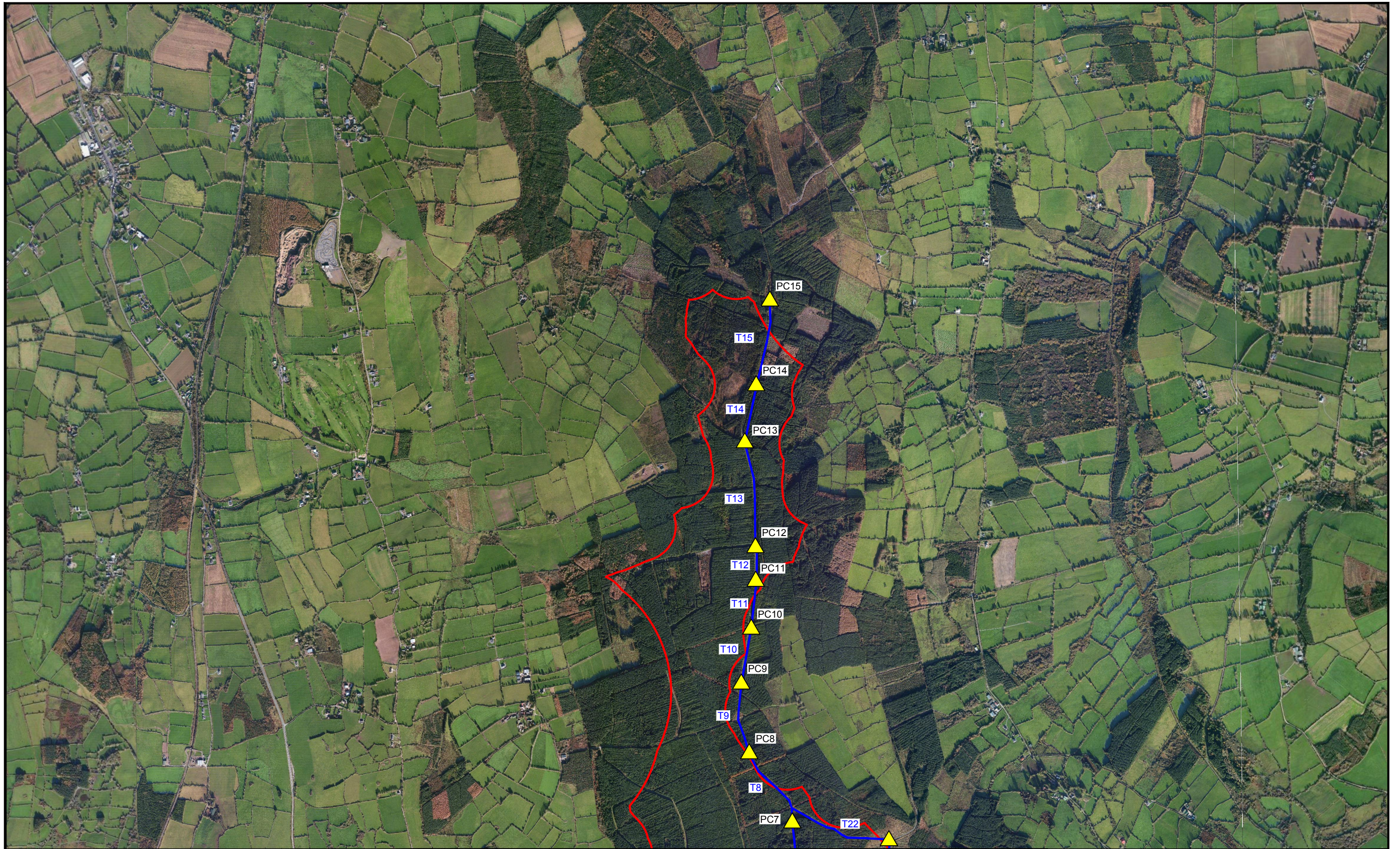
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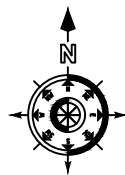
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Legend

- Development Boundary
- ▲ Point Count
- Transect



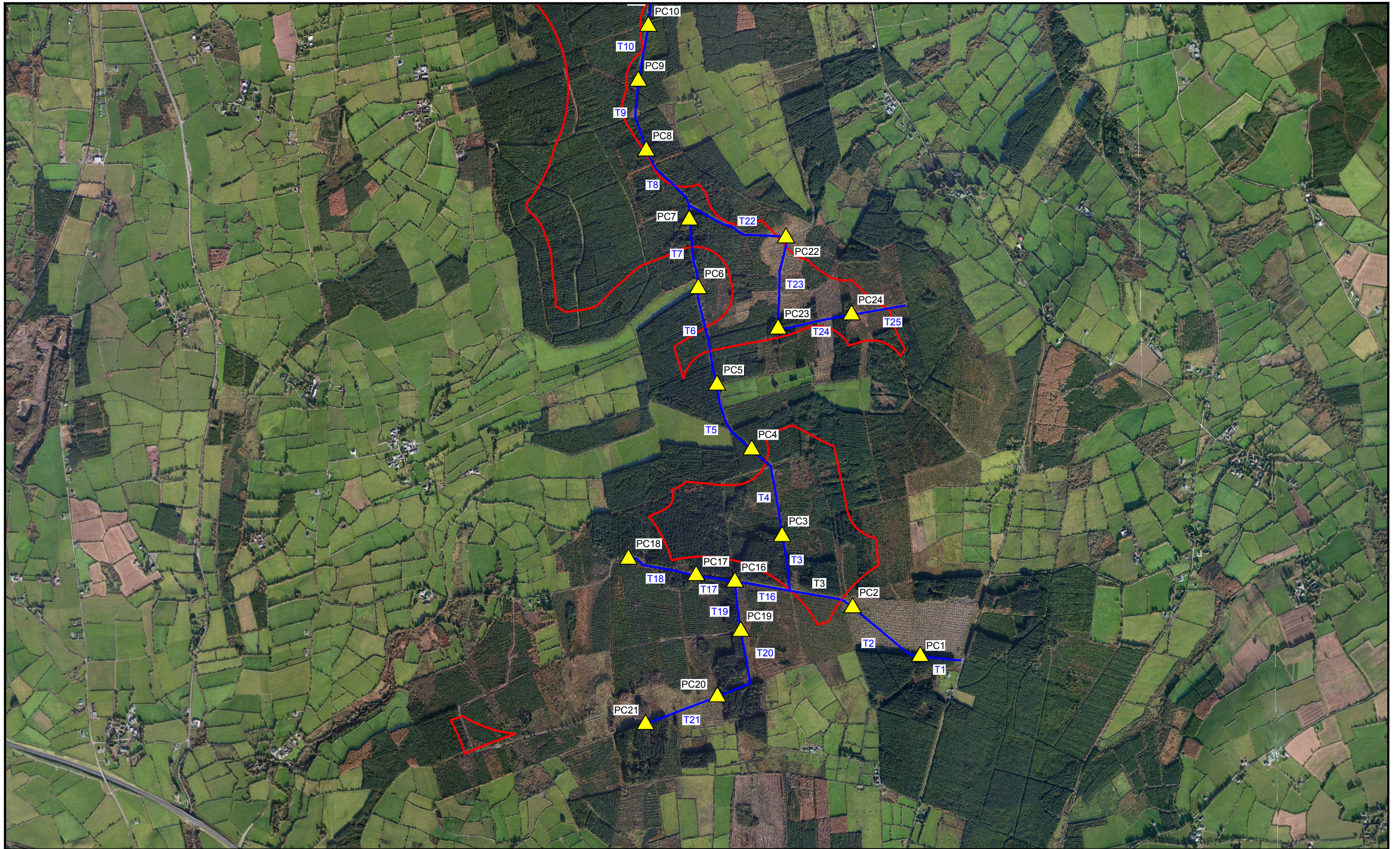
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Client		Coillte			

Project		Coillte - Winter Bird Surveys	
Title		Castlebanny Transects and Point Count Locations Sheet 1	



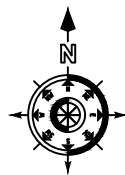
Malachy Walsh and Partners
Consulting Engineers
 Cork | Tralee | London | Limerick

Scales (A3)		1:20,000		Drg. No. 18608-0101	Rev. A
Drawn	JK	13.02.2019			
Checked	HD	13.02.2019			



Legend

- Development Boundary
- ▲ Point Count
- Transect



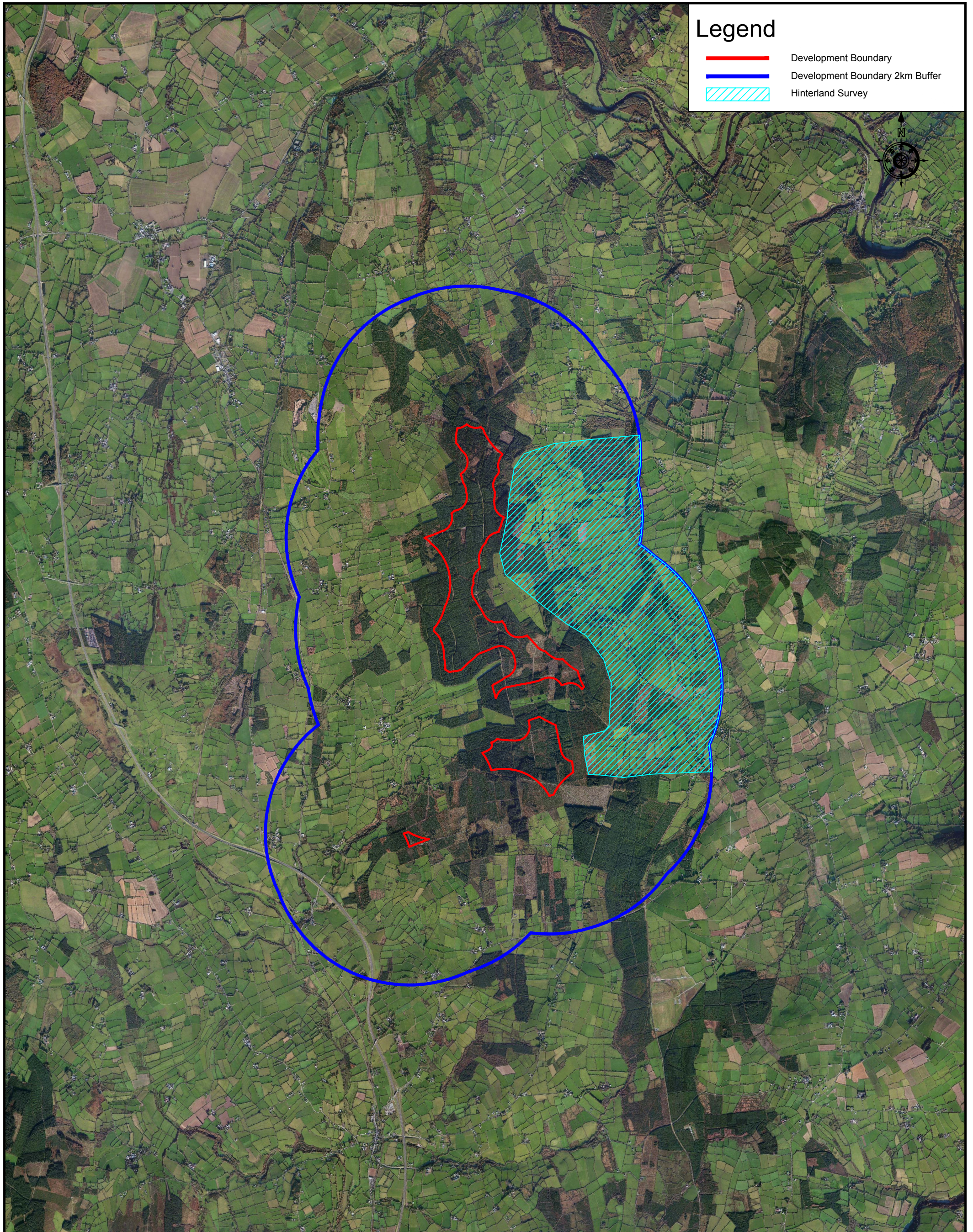
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Client			Coillte		

Project		Coillte - Winter Bird Surveys	
Title		Castlebanny Transects and Point Count Locations Sheet 2	



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Scales (A3)	1:20,000	Drg. No.	18608-0102	Rev.	A
Drawn	JK	13.02.2019			
Checked	HD	13.02.2019			




Legend

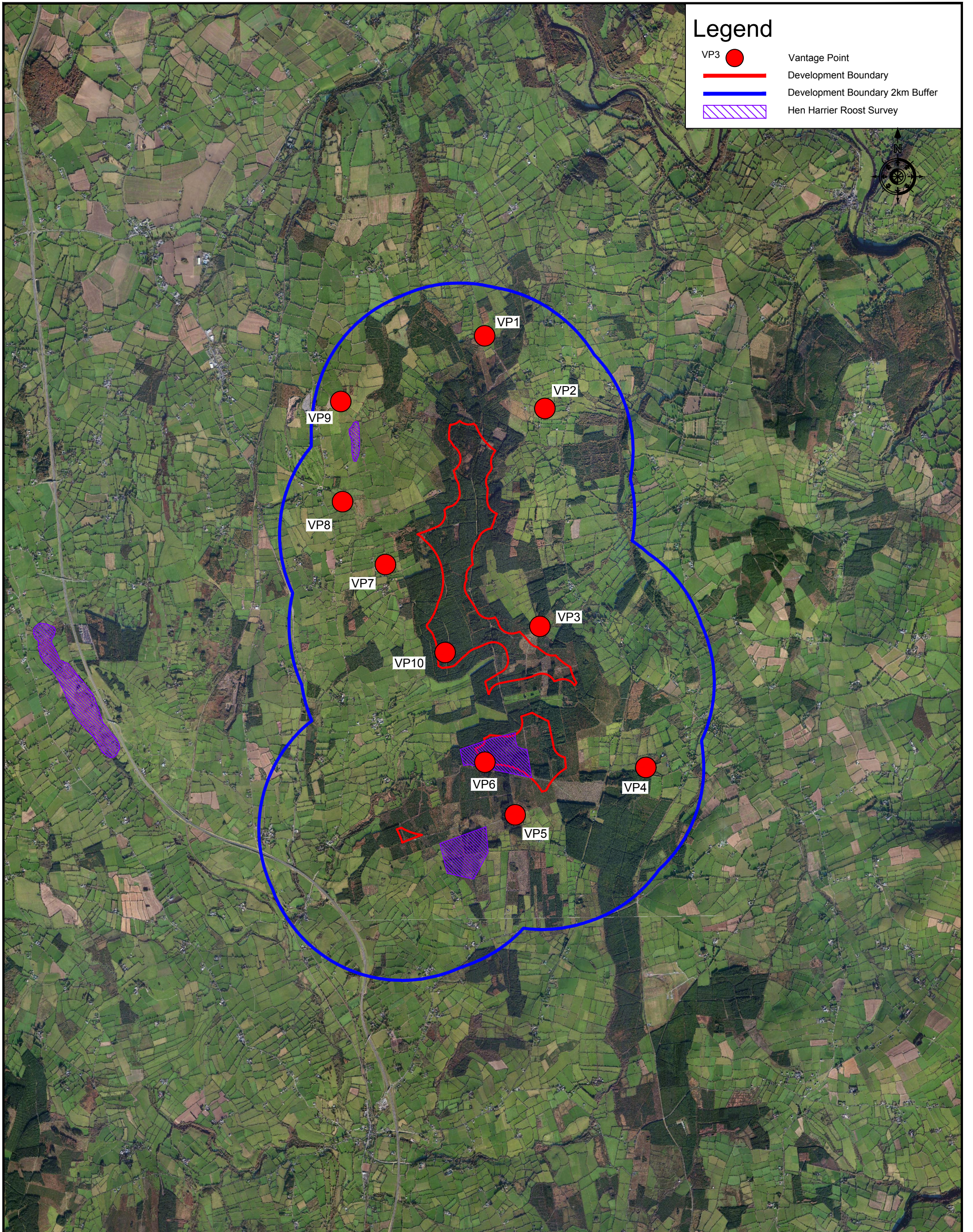
- Development Boundary
- Development Boundary 2km Buffer
- Hinterland Survey



Rev.	Date	Description	by	ch'd	app
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A	13.02.19	Issued For Information	JK	HD	HD
Client Coillte					

Project Coillte - Winter Bird Surveys	Title Castlebanny Hinterland Survey Area
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	Malachy Walsh and Partners		
	Consulting Engineers		
	Cork Tralee London Limerick		
Scales (A3)	1:50,000	Drg. No.	18608-0103
Drawn	JK	13.02.2019	B
Checked	HD	13.02.2019	



Legend

- VP3 ● Vantage Point
- Development Boundary
- Development Boundary 2km Buffer
- ▨ Hen Harrier Roost Survey

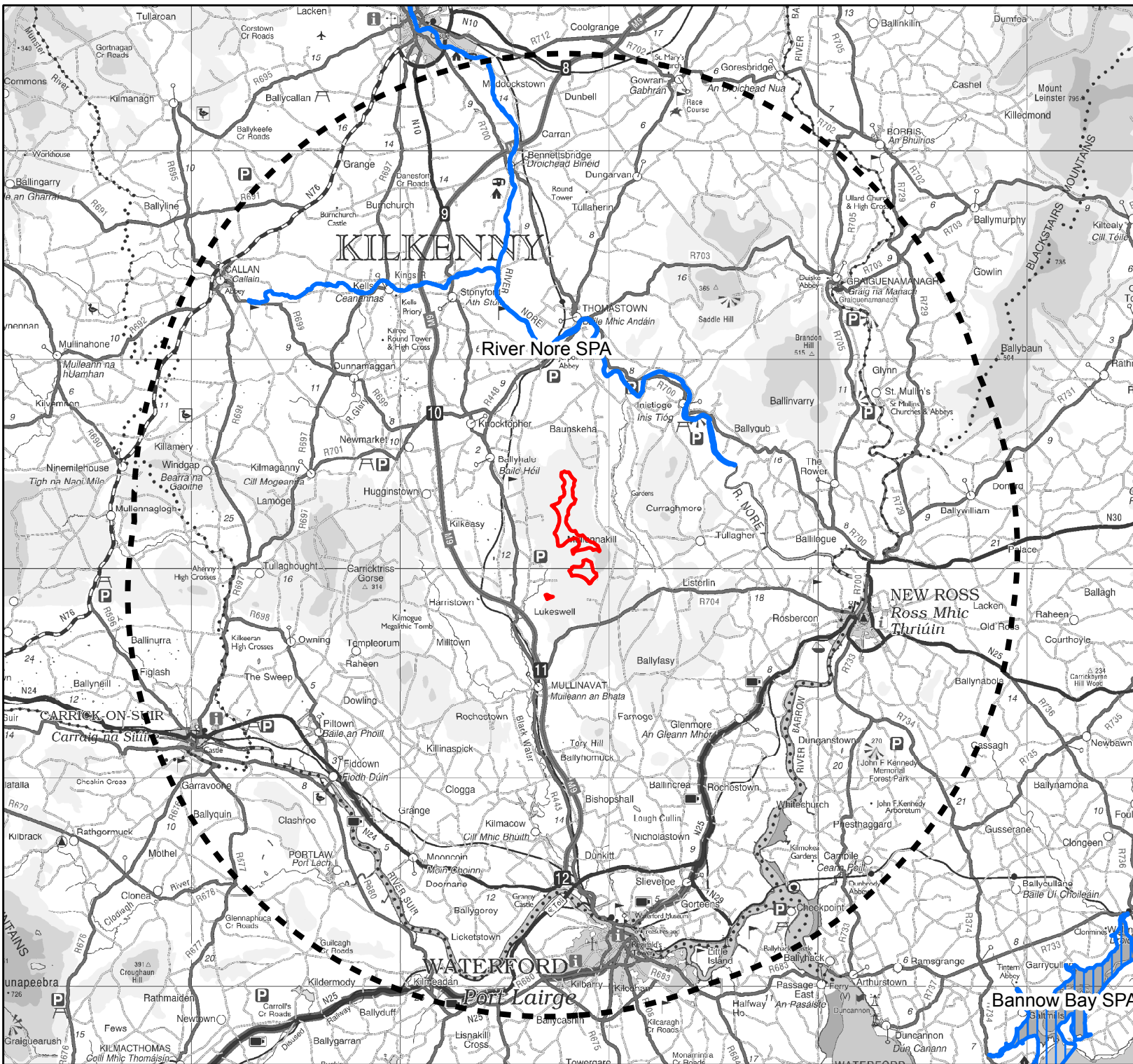


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A	13.02.19	Issued For Information	JK	HD	HD

Client	Coillte
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Project	Coillte - Winter Bird Surveys
Title	Castlebanny Hen Harrier Winter Roost Survey Areas

 Malachy Walsh and Partners Consulting Engineers Cork Tralee London Limerick	Scales (A3) 1:50,000		Drg. No. 18608-0104	Rev. B
	Drawn JK	13.02.2019		
	Checked HD	13.02.2019		






Project Title:
Winter Bird Surveys

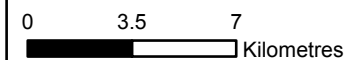
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SPA Sites Within 20km Of Castlebanny Site

Client: Coillte

Drawn by: JK
Checked by: HD
Drawing Date: 13/02/2019
Drawing Size: A4

Legend

-  Development Area
-  Development Area 20km Buffer
-  Special Protection Areas (SPA)



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Appendix 3

Vantage Point Survey Summary

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hrs)	Weather	Visibility
1	24/09/2017	JA	13.20	16.20	3	Bright, sunny, clear, wind F2 S-SW, temp 15 C	Excellent
1	30/09/2017	JA	10.00	13.00	3	Drizzle, occasional heavy showers with bright spells, wind F1 SW, temp 12 C	Good
2	05/12/2017	DR	13.21	16.21	2	Cloud 8/8, no rain for most of VP, light misty drizzle for the last 30 minutes, wind F1 SW, temp 10C	Good
2	06/12/2017	DR	09.03	12.03	3	Blustery, rain at start of VP, easing off, wind F3-4 SW, temp 10C	Moderate
3	24/09/2017	JA	10.00	13.00	3	Bright, sunny, clear, wind F2-3 S-SW, temp 14-16 C	Excellent
3	29/09/2017	JA	9.30	12.30	3	Frequent squalls with bright intervals, wind F3-4, W-SW, temp 11 C	Excellent
4	21/09/2017	HD	15.30	18.30	3	Cloud 3/8, sunny and warm, wind F1-2 S-SE, temp 17 C	Excellent
4	22/09/2017	HD	10.30	13.30	3	Cloud 8/8, overcast damp day with misty rain, wind F1-2 S, temp 14-15 C	Poor
5	21/09/2017	JNM	15.30	18.30	3	Cloud 4/8, dry with clear sunny spells, wind F3-5 SE, temp 10-15 C	Good
5	22/09/2017	JNM	10.30	13.30	3	Damp misty rain continuous, some clear spells, wind F3 SW, temp 17 C	Moderate
6	21/09/2017	GH	15.30	18.30	3	Wind F2-3 W, temp 16 C	Excellent
6	22/09/2017	GH	10.30	13.30	3	Overcast damp drizzly day with infrequent sunny spells, wind F3-5 SW, temp 15 C	Good
7	30/09/2017	JA	13.30	16.30	3	Constant light drizzle becoming dull and overcast, wind F1 SW, temp 12 C	Good
7	01/10/2017	JA	12.45	15.45	3	Bright, blustery and mild, occasional shower, wind F4-5 SW, temp 18 C	Excellent
8	29/09/2017	JA	13.00	16.00	3	Bright, clear and sunny, occasional shower, wind F4 SW, temp 12 C	Excellent
8	01/10/2017	JA	9.30	12.30	3	Dull and overcast, occasional rain, very mild and blustery, wind F4-5 SW, temp 16 C	Excellent
9	05/12/2017	DR	08.56	11.56	3	Cloud 8/8, dry, wind F1 SW, temp 7C	Good
9	06/12/2017	DR	13.01	16.01	3	Very blustery, rain throughout the VP, wind F4-5 SW, temp 11C	Moderate - Poor

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hrs)	Weather	Visibility
10	15/02/2018	JM	15.00	18.00	3	Dry and cold with some sunny spells, hail and sleet showers, wind F3-6 SSW, temp 6-7C	Good
10	16/02/2018	JM	09.30	12.30	3	Dry cold sunny morning, wind slack, temp 6C	Good
1	20/10/2017	JA	13.20	16.20	3	Showery with bright spells, very blustery, wind F4-5 SW, temp 12C	Good
1	27/10/2017	JA	14.15	17.15	3	Bright clear sunny day and mild, wind <F1 SW, temp 15C	Excellent
2	07/12/2017	DR	12.48	15.48	3	Cloud 2/8, dry and sunny, wind F3 NW, temp 7C	Moderate
2	12/12/2017	DR	08.57	11.54	3	Cloud 8/8, snow on ground, icy after overnight frost, dry, wind F0, temp 2C	Good
3	20/10/2017	JA	10.00	13.00	3	Rain but mostly showers and blustery, wind F4-5, temp 12C	Good
3	27/10/2017	JA	11.00	14.00	3	Foggy at first, clearing to clear skies and sunshine, wind <F1 SW, temp 15C	Excellent
4	10/10/2017	GH	15.30	18.30	3	Sunny with some passing cloud, wind moderate and S, temp 16C	Excellent
4	11/10/2017	GH	9.30	12.30	3	Almost persistent rain for first 2.5 hours then cleared for sunshine and scattered showers, wind moderate SW, temp 11-12C	Good
5	10/10/2017	HD	16.30	19.30	3	Cloud 5/8, wind moderate F1-2 SW, temp 15C	Good
5	11/10/2017	MK	10.00	13.00	3	Heavy rain clearing around 12pm to give dry, windy overcast conditions, wind F3-5 SW	Poor
6	10/10/2017	MK	16.00	19.00	3	Cloud 7/8, some light bright sunny spells, wind F3-4 W-SW, temp 16-13C	Moderate
6	11/10/2017	HD	10.00	13.00	3	Cloud 8/8, rain initially and then stopping with cloud clearing to 4/8 from 12pm, wind calm mostly with occasional F3-4 NW, temp 15C	Poor - Good
7	21/10/2017	JA	10.30	13.30	3	Very blustery with showers, wind F5-6 W-NW, temp 12-14C	Good
7	30/10/2017	JA	13.10	16.10	3	Bright, sunny cool at times with some haze, wind F3 and occasionally F4-5 SW, temp 5C	Excellent

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hrs)	Weather	Visibility
8	21/10/2017	JA	14.00	17.00	3	Very blustery with showers, wind F5-6 W-NW, temp 14C	Excellent
8	30/10/2017	JA	10.00	13.00	3	Bright clear/hazy, sunny and calm, wind F3-4 N-NW veered around to SW F3, temp 6C	Excellent
9	07/12/2017	DR	08.52	11.52	3	Cloud 1/8, dry, wind F3 NW, temp 5C	Good
9	12/12/2017	DR	12.47	15.47	3	Cloud 8/8, dry at first then persistent rain from 14.15 to end of watch, wind F3-4 NW, temp 4C	Good - Poor
10	15/01/2018	SC	10.00	16.30	6	Cloud 3/8, sunny spells, wind F3-4 NW, temp 9-10C	Good
1	24/11/2017	JA	9.30	12.30	3	Very cold, bright at first with the occasional heavy shower, cleared later becoming bright again, wind <F1-F2/3 W-NW, temp 4-6C	Excellent
1	29/11/2017	JA	12.10	15.10	3	Very cold, bright and sunny mostly and occasionally overcast, wind F3-4 NE-NW, temp 1C	Excellent
2	24/11/2017	JA	12.35	15.35	3	Very cold, overcast with bright spells, wind calm F2-3 W, temp 3C	Excellent
2	29/11/2017	JA	9.00	12.00	3	Bright, sunny and cold, wind F3-4 NE veering N and then NW, temp 1-2C	Excellent
3	07/11/2017	HD	13.15	16.15	3	Cloud 5/8, cold with some sunny spells, wind F3 W-NW, temp 9C	Good
3	08/11/2017	HD	10.00	13.00	3	Cloud 6/8 cold crisp day with sunny spells, wind F0-2 SW, temp 3C	Good
4	07/11/2017	JNM	13.30	16.30	3	Dry day with sunny spells, wind F1-2 S, temp 7-8C	Good
4	08/11/2017	JNM	10.00	13.00	3	Dry, cold sunny morning, wind F1-2 SW, temp 1-7C	Good
5	07/11/2017	MK	13.30	16.30	3	Cloud 4-5/8, dry with sunny spells, wind F1-2 SW, temp 9C	Moderate
5	08/11/2017	MK	10.00	13.00	3	Cloud 6/8, sunny spells, wind calm, temp 3C	Moderate
6	13/11/2017	DR	13.07	16.07	3	Cloud 2/8, calm and bright with no rain, wind F0-1 N, temp 8C	Good

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hrs)	Weather	Visibility
6	14/11/2017	DR	8.48	11.48	3	Cloud 8/8, no rain with mist at the top of the site, wind F0, temp 10C	Moderate
7	13/11/2017	DR	8.58	11.58	3	Cloud 8/8, bright, clear frosty day with no rain, wind calm F0, temp 1C	Good
7	14/11/2017	DR	12.44	15.44	3	Cloud 8/8 with no rain, wind F2 W, temp 14C	Good
8	26/11/2017	JA	12.50	15.50	3	Dull overcast, continuous light drizzle from 14.00, wind F2-3 W, temp 7C	Good
8	30/11/2017	JA	9.00	12.00	3	Dull , overcast with bright spells, wind F4 NW with occasional F4-5, temp 5C	Excellent
9	26/11/2017	JA	9.30	12.30	3	Cloud 8/8, dull and overcast with the occasional light drizzle, wind F1-2 W, temp 6C	Excellent
9	30/11/2017	JA	12.15	15.15	3	Bright, blustery and cold, wind F4-5 NW, temp 5-6C	Excellent
10	01/01/2018	JA	09.15	15.15	6	Heavy showers at first, clearing to bright spells, wind F5-6 WNW, temp 4-5C	Excellent
1	13/12/2017	JA	12.20	15.20	3	Bright, sunny and blustery, wind F3-4 and occasionally F4-5 N-NW, temp 6C	Excellent
1	24/12/2017	JA	9.15	12.15	3	Dull, overcast with the occasional bright spells and mild, wind F3-4 and occasional F4 S-SW, temp 10C	Excellent
2	15/12/2017	DR	12.41	15.41	3	Cold, dry, wind F3 N, temp 7C	Good
2	16/12/2017	DR	9.01	12.01	3	Cloud 8/8, overcast but dry, wind F3 N, temp 3.3C	Good
3	13/12/2017	JA	9.00	12.00	3	Dull, overcast with frequent heavy squalls and bright spells at times, wind F4 N-NE, temp 8C	Good - Excellent
3	23/12/2017	JA	9.30	1230.00	3	Fog at first then lifted with bright spells, wind F3-4 NW, temp 8C	Fair-Good
4	04/12/2017	MK	13.30	16.30	3	Cloud 7/8, overcast with some sunny spells, wind F1-2, temp 8C	Good

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hrs)	Weather	Visibility
4	05/12/2017	JNM	8.30	11.30	3	Cool morning, low cloud and no rain, wind calm, temp 8C	Moderate
5	04/12/2017	HD	13.30	16.30	3	Cloud 8/8, dull overcast evening, wind calm and occasionally F1 SW, temp 8C	Good
5	05/12/2017	MK	9.00	12.00	3	Cloud 8/8, calm, dry and cold, wind calm, temp 5C	Good
6	04/12/2017	JNM	13.30	16.30	3	Cold, damp afternoon with little to no showers, wind calm, temp 8C	Moderate
6	05/12/2017	HD	8.30	11.30	3	Cloud 8/8, dull morning, wind mainly calm, temp 5C	Good
7	04/12/2017	DR	9.02	12.20	3	Very misty start with poor visibility, improved at 10.43 onwards, wind F1-2 SW, temp 6C	Mostly poor
7	04/12/2017	DR	13.10	16.10	3	Cloudy, overcast with no rain, wind F1-2 SW, temp 11C	Good
8	20/12/2017	JA	12.15	15.15	3	Dull, overcast fog eventually lifted, wind calm <F1 SW, temp 11C	Good
8	24/12/2017	JA	12.35	15.35	3	Dull, overcast and blustering with bright spells, wind F4 and occasionally F4-5 SW, temp 10C	Excellent
9	14/12/2017	DR	12.52	15.52	3	Occasional heavy showers, cold and gusting, wind F3 NW, temp 7C	Good
9	15/12/2017	DR	8.45	11.45	3	Cloud 2/8, cold and windy with no rain, wind F5 N, temp 5C	Good
10	20/12/2018	JA	9.00	12.00	3	Dull, overcast with fog lifting at times, wind <F1 SW, temp 11C	Fair-Good
10	02/01/2018	JA			3	Dull, overcast with occasional drizzle, wind F4-5 NW, temp 9C	Good
1	13/01/2018	JA	9.00	12.00	3	Heavy showers at first clearing to dull, overcast skies with intermittent showers, wind F3-4 SW, temp 8C	
1	27/01/2018	JA	9.30	12.30	3	Drizzle and rain at first eventually cleared to dull overcast skies, wind F3-4 W-NW, temp 7-8C	Good
2	13/01/2018	JA	12.15	15.15	3	Heavy rain with poor visibility at times, wind F3-4 SE, temp 8-9C	Fair to poor

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hrs)	Weather	Visibility
2	27/01/2018	JA	12.40	15.40	3	Dull, overcast skies with intermittent drizzle, wind F4 W-NW, temp 10-12C	Good
3	08/01/2018	DR	12.14	15.14	3	Cloud 8/8, increasing low cloud with visibility deteriorating, wind F1 SE, temp 2C very cold	Good at first
3	09/01/2018	DR	9.04	12.04	3	Cloud 8/8, cold with no rain, overcast with low cloud, wind F2-3 SE, temp 5C	Okay
4	11/01/2018	DR	12.47	15.47	3	Cold, no rain. Foggy at first and mist slowly cleared through the afternoon, wind calm F0, temp 4C	Very poor
4	12/01/2018	DR	8.43	11.43	3	Cloud 8/8, no rain, wind F2-3 S, temp 6C	Good
5	08/01/2018	DR	8.59	11.59	3	Cloud 0/8, overnight frost, cold but very bright all day, wind F1 SE, temp -2C	Good
5	09/01/2018	DR	12.18	15.18	3	Persistent rain throughout VP with poor visibility, wind F4 SE, temp 8C	Poor
6	09/01/2018	JNM	12.00	15.00	3	Misty wet day with some heavy showers at times, wind F1-3 S-SE, temp 9C	Bad
6	10/01/2018	JNM	13.00	16.00	3	A dry cold day with some slash winds, wind F2-3 E-SE, temp 7C	
7	09/01/2018	MK	12.00	15.00	3	Cloud cover 8/8 and rain, wind F2-6 SW, temp 7C	Mostly poor
7	10/01/2018	HD	9.15	12.15	3	Cloud 7/8 and dull, wind mainly calm F0-2 SW, temp 2-4C	Good
8	09/01/2018	HD	12.00	15.00	3	Cloud 8/8 dull, misty rain persistent at times, wind F2-4 SW, temp 8C	Moderate - poor
8	10/01/2018	MK	9.15	12.15	3	Cloud 6/8 cold, dry and sunny day, wind calm, temp -1C	Good
9	15/01/2018	DR	9.04	12.04	3	Cloud 7/8 occasional heavy showers in the morning, bright and clear in the afternoon, wind F3-4 W, temp 7C	Good
9	15/01/2018	DR	12.04	15.04	3	Cloud 7/8 occasional heavy showers in the morning, bright and clear in the afternoon, wind F3-4 W, temp 7C	Good
10	11/01/2018	DR	08.51	11.51	3	Cloud 8/8, dry, cold and very foggy, wind F0, temp 2C	Poor

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hrs)	Weather	Visibility
10	12/01/2018	DR	12.50	15.50	3	Cloud 8/8, dry, wind F2-3 SW, temp 8C	Good
1	06/02/2018	HD	14.00	17.00	3	Cloud 3/8, bright cold afternoon, wind F1-4 N-NE, temp 3-4C	Excellent
1	07/02/2018	MK	10.00	13.00	3	Cloud 8/8 dry and cold early on, clearing to give some bright sunny spells, wind calm, temp 1-3C	Good
2	06/02/2018	MK	14.00	17.00	3	Cloud 4/8 sunny and dry day, wind F2-4 W-SW, temp 4C	Good
2	07/02/2018	HD	10.00	13.00	3	Cloud 7/8 hazy dull morning becoming bright and sunny, wind F0 and occasionally F1 SW, temp 0-4C	Good
3	12/02/2018	DR	8.54	11.54	3	cloud 3/8 very cold, heavy frost but bright, wind F0, temp -2C	Good
3	13/02/2018	DR	12.07	15.07	3	cloud 1/8 no rain, sunny and bright, wind F2 W, temp 7C	Good
4	12/02/2018	DR	12.42	15.42	3	Cloud 1/8 no rain, cloud increasing through afternoon, wind F2-3 SW, temp 6C	Good
4	13/02/2018	DR	8.49	11.49	3	Cloud 0/8 no rain, cold and bright, wind F3 NW, temp 2C	Good
5	12/02/2018	JA	9.00	12.00	3	Bright, clear, sunny and calm, wind F2-3, occasionally F3-4, temp 4C	Excellent
5	26/02/2018	JA	12.40	15.40	3	Overcast and dull, wind N-NE, temp 3C	Excellent
6	12/02/2018	JA	12.05	15.05	3	Bright, clear, sunny and calm, wind F2-3, temp 4.5C	Excellent
6	26/02/2018	JA	9.30	12.30	3	Cold, dull and overcast, wind E veering N-NE, temp 2-3C	Excellent
7	14/02/2018	DR	8.39	11.39	3	Rain persistent for the first hour and eased off with the occasional shower, visibility improved through the morning, wind F4-5 SW, temp 6C	Poor-okay
7	15/02/2018	DR	13.05	16.05	3	Cloud 0/8 at start and increasing through the afternoon, cold and blustery, wind F4 SW, temp 7.5C	Good

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hrs)	Weather	Visibility
8	14/02/2018	DR	11.45	14.45	3	Occ. showers, overcast, wind F3 SW, temp 9C	Good
8	15/02/2018	DR	9.29	12.29	3	Cloud 2/8, cold and no rain apart from a brief wintery shower, wind F3 SW, temp 4C	Good
9	14/02/2018	SC	9.30	16.00	6	Cloud 8/8 -4/8. Rain, fog, mist and strong winds to begin but over the course of the day gradually cleared, wind F5-6 S, temp 8-10C	Very poor - improved
10	13/02/2018	SC	09.30	16.00	6.5	Clear skies, sunny, cold, wind F1-2 WNW, temp 2C	Good
1	06/03/2018	DR	15.18	18.18	3	Cloud 8/8, no rain, wind F1 E, temp 10C	Good
1	07/03/2018	DR	8.49	11.49	3	Dry, bright and sunny after overnight frost, wind F1-2 NE, temp 8C	Good
2	15/03/2018	JM	11.00	14.00	3	Damp and overcast, wind F3-4 SE, temp 9-101C	Moderate
2	16/03/2018	JM	12.15	15.15	3	Some heavy showers, wind F1-3 S, temp 8C	Moderate
3	15/03/2018	DR	9.01	12.01	3	Cloud 8/8, no rain, wind F3 S, temp 9C	Good
3	16/03/2018	DR	11.49	14.49	3	Frequent showers, wind F2 SE, temp 9C	Good
4	06/03/2018	DR	12.07	15.07	3	Cloud 8/8, no rain, wind F0, temp 9C	Good
4	07/03/2018	DR	12.00	15.00	3	Bright, sunny at first, cloud cover increasing through survey, wind F3 W, temp 10C	Good
5	14/03/2018	DR	11.38	14.38	3	Heavy rain throughout survey, wind F4 S, temp 11C	Okay
5	15/03/2018	DR	12.10	15.10	3	Cloudy, no rain until last 30 minutes of VP, showery, wind F3-4 SW, temp 10C	Good
6	16/03/2018	DR	8.41	11.41	3	No rain, initially overcast but brightening, wind F1-2 SE, temp 8C	Good
6	17/03/2018	DR	8.29	11.29	3	Cloud 8/8, occasional light shower and overcast, wind F3-4 E, temp 3C	Good
7	24/03/2018	JA	12.40	15.40	3	Bright, calm and sunny, wind F2-3 NW, temp 12C	Excellent
7	25/03/2018	JA	13.10	16.10	3	Slightly overcast and sunny at times, wind F1-2 sunny at times, temp 18C	Excellent

VP	Date	Observer	Start Time	Finish Time	Length of VP watch (hrs)	Weather	Visibility
8	24/03/2018	JA	9.30	12.30	3	Bright, calm sunny with some cloud, wind F2-3 W-NW, temp 10C	Excellent
8	25/03/2018	JA	10.00	13.00	3	Bright, calm, sunny and slightly overcast at times, wind F1-2 NW, temp 12-18C	Excellent
9	15/03/2018	JM	14.30	17.30	3	Damp and overcast with showers, wind F3-4 SE, temp 6-9C	Moderate
9	16/03/2018	JM	9.00	12.00	3	Dry with sunny spells, wind F1-3 S, temp 8C	Moderate
10	09/03/2018	DR	7.49	10.49	3	Cloud 8/8, no rain, overcast and cold after overnight frost, wind F2W, temp 2C	Good
10	14/03/2018	DR	14.56	16.56	2	Heavy rain and strong winds, wind F4-5, temp 8C	Okay
10	15/03/2018	DR	15.25	16.25	1	Occasional light showers, wind F3 SW, temp 8C	Good

Appendix 4

Target/Secondary Species Observations

Buzzard														
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category				
										0-50m	50 – 100m	100-200m	>200m	
22/09/17	6	Unknown	Unknown	1	Scrub and First rotation forest	1	16.35	Flying and being mobbed	-		45	-	-	-
01/10/17	7	Unknown	Unknown	2a & b	Improved grassland and Rough grassland	1	13.35	Commuting	-		35			
					First rotation forestry	1		Commuting	-		20			
					First rotation forestry and Improved grassland	6		Display, Soaring, Circling and Calling	-		840			
27/10/17	1	Unknown	Unknown	3	Improved grassland	3	14.29	Display, Soaring and Circling	-		-	-	-	70
13/11/17	6	Unknown	Unknown	4	Scrub and Second rotation forestry	1	13.46	Perched and Flying	-		-	-	-	90
29/11/17	2	Unknown	Adult	5	Improved grassland	1	11.55	Hunting, Flying and Circling	10-15m		25	-	-	-
05/12/17	2	Unknown	Unknown	6	Improved grassland and Rough grassland	1	14.08	Perched and Flying	-		30	-	-	-
15/12/17	9	Unknown	Unknown	7a & b	First rotation forestry	2	10.36	Flying and Perched	-		360	60	-	-
09/01/18	3	Unknown	Unknown	8	Improved grassland and First rotation forestry	1	09.45	Flying and Perched	5-15m		45	-	-	-

Buzzard														
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category				
										0-50m	50 – 100m	100-200m	>200m	
10/01/18	8	Unknown	Adult	9	Improved grassland and Thicket	1	09.15	Perched and Flying	10-20m		12	-	-	-
15/01/18	9	Unknown	Unknown	10	Improved grassland	1	10.17	Flying	<25m		90	-	-	-
06/02/18	2	Unknown	Unknown	11	Scrub/improved grazing	1	14.59	Flying	5-30m		7	-	-	-
12/02/18	3	Unknown	Unknown	12a	First-rotation forestry	1	10.36	Perched/flying	5m		360	-	-	-
12/02/18	3	Unknown	Unknown	12b	First-rotation forestry	1	11.53	Calling	-		-	-	-	-
13/02/18	3	Unknown	Unknown	13	First-rotation forestry	1	13.20	Soaring/circling	-		180	-	-	-
13/02/18	10	Unknown	Unknown	14	First-rotation forestry	1	14.46	Calling/perched	-		-	-	-	-
14/02/18	8	Unknown	Unknown	15	First-rotation forestry	1	12.49	Circling/display/flying	15-40m		1,230	-	-	-
14/02/18	9	Unknown	Unknown	16a	First rotation forestry/ improved grazing	1	13.10	Flying	-		20	-	-	-
14/02/18	9	Unknown	Unknown	16b	First and second rotation forestry	1	15.28	Soaring	60-70m		-	90	-	-
15/02/18	7	Unknown	Unknown	17a	First-rotation forestry	1	13.51	Hunting/flying	-		20	-	-	-
15/02/18	7	Unknown	Unknown	17b	First-rotation forestry	1	13.58	Hunting/flying	35-65m		360	60	-	-

Buzzard													
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category			
										0-50m	50 – 100m	100-200m	>200m
15/02/18	7	Unknown	Unknown	17c	First-rotation forestry	1	14.22	Soaring/flying	-	30	-	-	-
15/02/18	7	Unknown	Unknown	17d	First-rotation forestry/clearfell	1	15.30	Hunting/flying	-	180	-	-	-
16/02/18	10	Unknown	Unknown	18	Improved/rough grazing/scrub/ forestry	2	10.20	Soaring	-	-	-	600	-
07/03/18	1	Unknown	Unknown	19a	First-rotation forestry	1	10.17	Flying	15m	5	-	-	-
07/03/18	1	Unknown	Unknown	19b	First-rotation forestry/improved grassland	1	11.23	Flying, circling	100m	30	450	-	-
07/03/18	1	Unknown	Unknown	19c	Improved grassland	1	11.32	Flying, circling	60m	60	120	-	-
07/03/18	4	Unknown	Unknown	20a	First-rotation forestry	2	13.04	Flying/soaring	20m	15	-	-	-
07/03/18	4	Unknown	Unknown	20b	First-rotation forestry	1	13.26	Flying	20m	5	-	-	-
09/03/18	10	Unknown	Unknown	21a	Second rotation forestry/ improved grazing	1	08.39	Flying/perched	10m	60	-	-	-
09/03/18	10	Unknown	Unknown	21b	First-rotation forestry/ improved grazing	3	09.21	Flying, circling	20m	300	-	-	-
09/03/18	10	Unknown	Unknown	21c	Improved grazing	1	09.15	Flying, circling	75m	-	120	-	-
15/03/18	3	Unknown	Unknown	22a, b, c, d, e,	First/second rotation forestry	2	09.13	Hunting/flying/ soaring	-	780	-	-	-
						3	10.41		-	1,560	-	-	-

Buzzard														
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category				
										0-50m	50 – 100m	100-200m	>200m	
				f	First/second rotation forestry			Perched/flying/soaring						
					First-rotation forestry	4	11.33	Soaring/displaying	-	660	300	-	-	
15/03/18	2	Unknown	Unknown	23	Improved/rough grazing, first-rotation forestry	1	12.00	Soaring	70-80m	-	600	-	-	
							13.20	Soaring		-	1,080	-	-	
15/03/18	10	Unknown	Unknown	24	Second-rotation forestry	1	13.25	Flying	-	20	-	-	-	
16/03/18	2	Unknown	Unknown	25	Improved/rough grazing, first-rotation forestry	3	11.35	Soaring	-	-	-	1,200	1,200	
16/03/18	3	Unknown	Unknown	26a, b, c	First/second rotation forestry	3	12.09	Flying/soaring/perched	-	460	-	-	-	
16/03/18	9	Unknown	Unknown	27	Improved/marginal farmland/forestry	3	11.35	Circling/soaring	100-150m	-	-	900	-	
25/03/18	7	Unknown	Unknown	28	Forestry/improved grazing	1	14.05	Flying	20-30m	5	-	-	-	

Black-headed Gull														
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category				
										0-50m	50 – 100m	100-200m	>200m	
22/09/17	5	Unknown	Unknown	29	Improved grassland, Rough grassland, Scrub, First rotation forestry and	63	10.30	Flying	50m	120	-	-	-	

Black-headed Gull													
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category			
										0-50m	50 – 100m	100-200m	>200m
					Second rotation forestry								
16/12/17	2	Unknown	Unknown	30	Improved grassland	56	09.07	Flying	-		-	-	-

Golden Plover													
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category			
										0-50m	50 – 100m	100-200m	>200m
09/03/18	10	Unknown	Unknown	31	Improved grazing/second-rotation forestry	1	09.10	Flying	120m		-	-	30

Grey Heron													
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category			
										0-50m	50 – 100m	100-200m	>200m
08/11/17	5	Unknown	Adult	118	Improved grassland, scrub, second rotation forestry	1	11.46	Flying	-		20	-	-
05/12/17	6	Unknown	Adult	119	Clearfell, scrub	1	10.56	Flying	25-30m		37	-	-

Hen Harrier													
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category			
										0-50m	50 – 100m	100-200m	>200m
14/11/17	6	Male	Unknown	35	Scrub, Second rotation forest and Thicket	1	11.17	Flying	-	-	-	-	60
10/01/18	6	Male	Adult	36	Scrub and Second rotation forest	1	14.08	Hunting	1-3m	60	-	-	-
15/02/18	7	Female	Adult	37	Improved grassland	1	14.08	Flying	2m	25	-	-	-
15/02/18	8	Ringtail	Unknown	38	Improved/rough grazing	1	10.36	Flying	2m	5	-	-	-
16/02/18	10	Female	Adult	39	Improved grassland, scrub, clearfell	1	11.40	Hunting	3-5m	120	-	-	-
06/03/18	1	Male	Adult	40	Improved grassland/ forestry	1	16.57	Flying	2m	20	-	-	-

Kestrel													
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category			
										0-50m	50 – 100m	100-200m	>200m
21/09/17	5	Female	Adult	41	First rotation forest, Rough grassland and Improved grassland	1	16.12	Flying and Perched	8m	60	-	-	-
22/09/17	6	Unknown	Unknown	42a, b, c	Second rotation forest	1	12.15	Flying and Calling	-	4	-	-	-
							12.50	Perched and Flying	-	7	-	-	-

Kestrel													
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category			
										0-50m	50 – 100m	100-200m	>200m
					Scrub and First rotation forest		16.35	Flying and Mobbing	-	45			
11/10/17	6	Male	Adult	43a & b	Re-vegetated Clear fell Scrub and Second rotation forest	1	11.36	Flying	25-40m	32	-	-	-
							12.07		20-35m	38			
13/11/17	6	Male	Unknown	44a, b, c	Thicket , Scrub and Second rotation forest	1	13.19	Perched and Hunting	-	-	-	-	600
								Mobbing	-				35
								Perched and Hunting	-				1,440
14/11/17	6	Male and Female	Unknown	45a, b, c	Thicket , Scrub and Second rotation forest	2	10.10	Perched and Flying	-	-	-	-	180
								Mobbing	-				15
								Perched and Flying	-				480
14/11/17	7	Female	Unknown	46a & b	Improved grassland , First rotation forestry and Rough grassland	1	13.14	Perched and Flying	-	-	25	240	
04/12/17	5	Female	Adult	47a & b	Scrub and Forest	1	13.29	Perched and Flying	15m	20	-	-	-

Kestrel													
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category			
										0-50m	50 – 100m	100-200m	>200m
					Forest, Improved grassland and Rough grassland		14.52	Perched and Flying	15-20m	17	-	-	-
05/12/17	6	Male	Adult	48a & b	Scrub and Treeline	1	09.04	Flying	20m	15	-	-	-
					Scrub and Second rotation forestry		11.09		12-17m	20			
05/12/17	2	Unknown	Unknown	49	Rough grassland	1	15.32	Perched and Hunting	-	120	-	-	-
05/12/17	9	Unknown	Unknown	50	Thicket and Scrub	1	11.18	Perched and Flying	-	120	-	-	-
07/12/17	9	Unknown	Unknown	51	Thicket and Scrub	1	11.23	Hunting and Flying	-	60	-	-	-
14/12/17	9	Unknown	Unknown	52	Improved grassland	1	13.50	Hunting and Flying	-	40	-	-	-
15/12/17	9	Unknown	Unknown	53	Improved grassland and Rough grassland	1	11.40	Hunting and Flying	-	180	-	-	-
10/01/18	7	Male	Unknown	54	Improved grassland	1	11.11	Flying	6m	25	-	-	-
15/01/18	9	Unknown	Unknown	55a	First rotation forestry and Scrub	2	11.03	Hunting and Flying	20-30m	600	-	-	-
15/01/18	9	Unknown	Unknown	55b	First rotation forestry and Scrub	1	12.21	Hunting and Flying	30m	360	-	-	-

Kestrel													
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category			
										0-50m	50 – 100m	100-200m	>200m
15/01/18	10	Male	Unknown	56a & b	Clearfell/ forestry	1	13.14	Hunting/flying	-	180	-	-	-
								Perched	-	-	-	-	
12/02/18	4	Male	Unknown	57	Forestry/ improved grassland	1	13.50	Hunting/flying	15-25m	1,680	-	-	-
12/02/18	6	Unknown	Unknown	58	Second-rotation forestry	1	13.03	Mobbing/ hunting	55m	40	65	-	-
14/02/18	9	Male	Unknown	59a & b	Forestry/ improved grassland	1	13.30	Hunting/flying	20-70m	60	30	-	-
15/02/18	7	Male	Unknown	60a	Forestry	1	13.26	Hunting/flying	15-60m	540	60	-	-
15/02/18	7	Male	Unknown	60b	Forestry/scrub	1	13.58	Hunting/flying	15-50m	300	-	-	-
15/02/18	7	Male	Unknown	60c	Forestry/scrub	1	14.25	Hunting/flying	5-25m	660	-	-	-
15/02/18	8	Male	Unknown	61	Improved/ rough grazing	1	11.30	Flying	1.5m	10	-	-	-
06/03/18	1	Male	Unknown	62a & b	Forestry/clear fell	1	15.36	Perched/flying	-	3,600	-	-	-
06/03/18	4	Unknown	Unknown	63	Improved grazing	1	14.44	Perched/flying	10m	30	-	-	-
07/03/18	1	Unknown	Unknown	64a	Improved grazing/ second rotation forestry	2	10.31	Hunting/flying	30m	600	-	-	-
07/03/18	1	Unknown	Unknown	64b	Improved grazing/ second	1	11.21	Hunting/flying	50m	30	90	-	-

Kestrel													
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category			
										0-50m	50 – 100m	100-200m	>200m
					rotation forestry								
07/03/18	4	Unknown	Unknown	65	Rough grazing/ forestry	1	13.00	Flying	30m	5	-	-	-
15/03/18	5	Male	Unknown	66a	Second-rotation forestry/ improved grazing	1	13.45	Hunting/flying	30m	120	-	-	-
15/03/18	5	Male and female	Unknown	66b	Second-rotation forestry/ improved grazing	2	13.57	Hunting/flying	15m	30	-	-	-
15/03/18	5	Male and female	Unknown	66c	Thicket	2	14.11	Hunting/flying	-	45	-	-	-
16/03/18	2	Female	Unknown	67	Improved grazing/ forestry	1	12.20	Hunting/flying	60-70m	10,800	-	-	-
16/03/18	3	Unknown	Unknown	68	Forestry	1	13.59	Hunting/flying	0-150m	120		40	-
25/03/18	8	Male	Adult	69	Improved grazing	1	12.00	Soaring/circling	20m	20	-	-	-

Lapwing													
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category			
										0-50m	50 – 100m	100-200m	>200m
07/03/18	1	Unknown	Unknown	70	Improved grazing/first-rotation forestry	250	11.35	Flying	100m	-	-	120	-

Lesser Black-backed Gull													
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category			
										0-50m	50 – 100m	100-200m	>200m
22/09/17	5	Unknown	Unknown	104a,b,c	Improved/rough grassland, scrub, first and second rotation forestry	52	-	Flying	50m	120	-	-	-
01/10/17	8	Unknown	Unknown	-	Improved grassland	5	-	On ground	-	-	-	-	-
10/10/17	6	Unknown	Unknown	105a	Improved/rough grassland, scrub, first and second rotation forestry	8	17.00	Flying	30m	85	-	-	-
10/10/17	6	Unknown	Unknown	105b	Improved/rough grassland, scrub, first and second rotation forestry	109	17.19	Flying	10-80m	270	150	-	-
10/10/17	6	Unknown	Unknown	105c	Improved/rough grassland, scrub, first and second rotation forestry	66	17.22	Flying	10-30m	240	-	-	-
10/10/17	6	Unknown	Unknown	105d	Improved/rough grassland, scrub, first and second rotation forestry	80	17.32	Flying	20-80m	300	150	-	-

Lesser Black-backed Gull													
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category			
										0-50m	50 – 100m	100-200m	>200m
11/10/17	5	Unknown	Unknown	106a, b	First and second rotation forestry, scrub	19	12.40	Flying	20-30m	120	-	-	-
30/10/17	8	Unknown	Unknown	-	Improved grassland	22	-	On ground	-	-	-	-	-
08/11/17	3	Unknown	Unknown	107	Improved grassland, scrub, forestry	2	11.55	Flying	25-30m	15	-	-	-
14/12/17	9	Unknown	Unknown	108	Rough/improved grassland, scrub	2	13.41	Flying	-	30	30	-	-
09/01/18	8	Unknown	Unknown	109	Improved grassland, forestry	1	14.21	Flying	25-40m	35	-	-	-
15/01/18	10	Unknown	Unknown	110	Improved grassland, first rotation forestry, clearfell	1	13.01	Flying	50m	60	-	-	-
15/03/18	2	Unknown	Unknown	111	Improved/rough grassland, scrub, first and second rotation forestry	2	11.55	Flying	80-100m	-	120	-	-

Peregrine													
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category			
										0-50m	50 – 100m	100-200m	>200m
15/01/18	9	Female	Adult	79	Rough grassland, Scrub	2	10.12		30-50m	120	-		-

Peregrine													
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category			
										0-50m	50 – 100m	100-200m	>200m
					and First rotation forest			Flying and Soaring				-	

Snipe													
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category			
										0-50m	50 – 100m	100-200m	>200m
07/11/17	5	Unknown	Unknown	112a	Clearfell, drain	1	14.00	Flying	1-2m	3	-	-	-
07/11/17	5	Unknown	Unknown	112b	Clearfell, drain	1	16.06	Flying	0.5-1m	4	-	-	-
04/12/17	5	Unknown	Unknown	113a	First and second rotation forestry	2	14.54	Flying	60-100m	-	30	-	-
04/12/17	5	Unknown	Unknown	113b	First and second rotation forestry, improved grassland	2	15.05	Flying	60-120m	-	25	10	-
05/12/17	5	Unknown	Unknown	114	Thicket forestry, road, drain	1	09.10	Flying	1-15m	15	-	-	-
13/02/18	10	Unknown	Unknown	115	Improved grassland, first rotation forestry	7	15.26	Flying	40-50m	60	-	-	-
14/02/18	9	Unknown	Unknown	116	Improved	1	12.29	Circling	-	40	-	-	-

Snipe													
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category			
										0-50m	50 – 100m	100-200m	>200m
					grassland								
16/02/18	10	Unknown	Unknown	117	-	4	-	On ground	-	-	-	-	-

Sparrowhawk													
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category			
										0-50m	50 – 100m	100-200m	>200m
10/10/17	6	Male	Adult	84	Scrub	1	18.02	Flying	1-2m	3	-	-	-
11/10/17	5	Female	Adult	85	Scrub and Track Scrub	1	13.00	Flying	-	6	-	-	-
								Perched	20	-	-	-	
08/11/17	4	Male	Unknown	86	Improved grassland and Scrub	1	12.50	Hunting	0.5m	60	-	-	-
05/12/17	5	Male	Adult	87	Scrub	1	10.00	Flying	1m	20	-	-	-
05/12/17	6	Female	Adult	88	First rotation forest, Re-vegetated second rotation forestry and Scrub	1	11.30	Flying	20-70m	35	10	-	-
14/12/17	9	Unknown	Unknown	89	Improved grassland and Rough grassland	1	13.31	Flying	-	30	-	-	-
15/12/17	9	Unknown	Unknown	90a & b	First rotation forest	2	11.02	Displaying	-		120	-	-

Sparrowhawk														
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category				
										0-50m	50 – 100m	100-200m	>200m	
					Improved grassland and Rough grassland		11.12	Mobbing			35			
16/12/17	2	Unknown	Unknown	91	Improved grassland	1	09.29	Flying	-		45	-	-	-
10/01/18	6	Male	Juvenile	92	Scrub and Second rotation forestry	1	15.11	Hunting	1-2m		40	-	-	-
12/01/18	4	Unknown	Unknown	93a & b	First rotation forest	3	12.25	Flying, Soaring and Displaying	<75m		40	20	-	-
					First rotation forest and Improved grassland						1,260			
15/01/18	9	Unknown	Unknown	94a, b, c, d, e, f	Rough grassland and Scrub	3	09.44	Displaying	-		30			
					Rough grassland and Scrub		10.11	Displaying and Flying	-		60			
					First rotation forest and Improved grassland		10.24	Displaying and Flying	-		30	-	-	-
					Rough grassland and Scrub		10.32	Displaying	-		30			
				Improved grassland										

Sparrowhawk														
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category				
										0-50m	50 – 100m	100-200m	>200m	
					Rough grassland and Scrub		10.34	Displaying	-		60			
							10.44	Displaying	-		30			
15/01/18	10	Unknown	Unknown	95	Improved grazing	1	13.08	Flying	-		-	-	-	-
13/02/18	4	Unknown	Unknown	96	Improved grazing/ forestry	1	10.15	Flying	-		-	-	-	-
14/02/18	9	Male	Adult	97	Rough grazing	1	15.06	Flying/perched	-		-	-	-	-
15/02/18	7	Female	Unknown	98	Forestry	1	14.13	Flying	10m		10	-	-	-
06/03/18	4	Unknown	Unknown	99	Improved/rough grazing	1	13.47	Flying/circling	15m		360	-	-	-
15/03/18	9	Male	Adult	100	Improved grazing	1	15.40	Flying/hunting	2m		60	-	-	-
16/03/18	3	Female	Unknown	101	First and second rotation forestry	1	14.01	Hunting/flying	-		240	-	-	-
25/03/18	8	Female	Adult	102	Improved grazing	1	12.15	Flying	-		15	-	-	-

Whooper Swan														
Date	VP	Sex	Age	Map Ref	Habitat	No. Of Birds	Time of Flight/ Obs.	Activity	Approx Flight Height (m)	Time (sec) in Height Category				
										0-50m	50 – 100m	100-200m	>200m	
13/11/17	7	Unknown	Unknown	103	First rotation forest , Second rotation forest and Improved grassland	3	09.14	Flying	-	-	-	-	-	80

Appendix 5

Flight Paths



PROJECT	Castlebanny Winter Bird Survey		
PROJECT NO.	18608		
TITLE	Black Headed Gull		
CLIENT	Coillte		
DRAWN BY	VH	CHECKED BY	HD
DATE	12/02/2019		
DRAWING NO	Map 1	REF.	A


Site Development Area	Black Headed Gull
Flight Activity Survey Area	29A
Vantage Point	29B
	29C
	30

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4. All levels are in metres related to Ordnance Datum.
5. Drawings are not to be scaled.

Scale (A3): 1:20,000

0 0.15 0.3 Kilometers

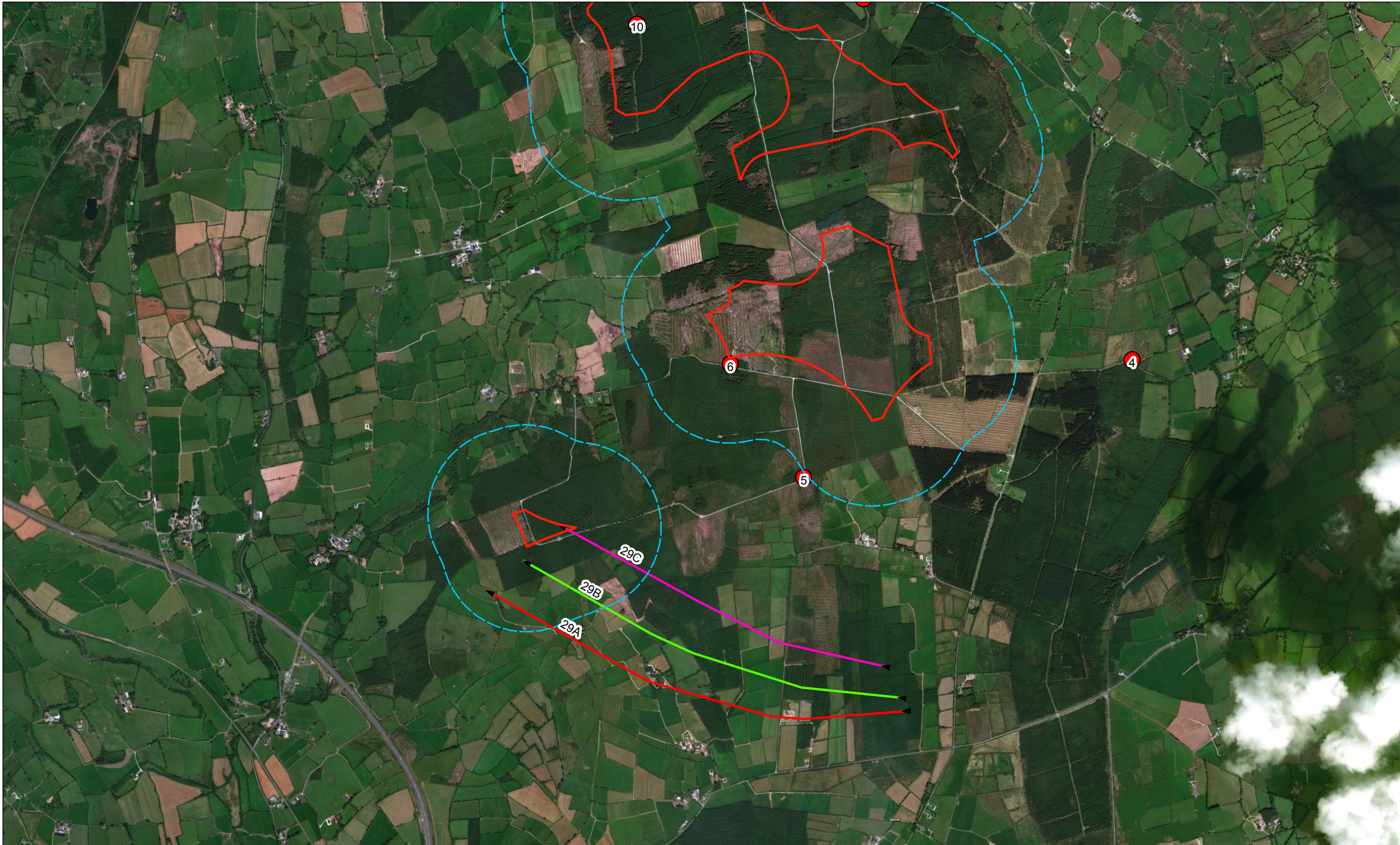
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PROJECT	Castlebanny Winter Bird Survey		
PROJECT NO.	18608		
TITLE	Black Headed Gull		
CLIENT	Coillte		
DRAWN BY	VH	CHECKED BY	HD
DATE	12/02/2019		
DRAWING NO	Map 2	REF.	A

▭ Site Development Area
- - - Flight Activity Survey Area
● Vantage Point

Black Headed Gull
→ 29A
→ 29B
→ 29C
→ 30


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Scale (A3): 1:20,000

0 0.15 0.3 Kilometers

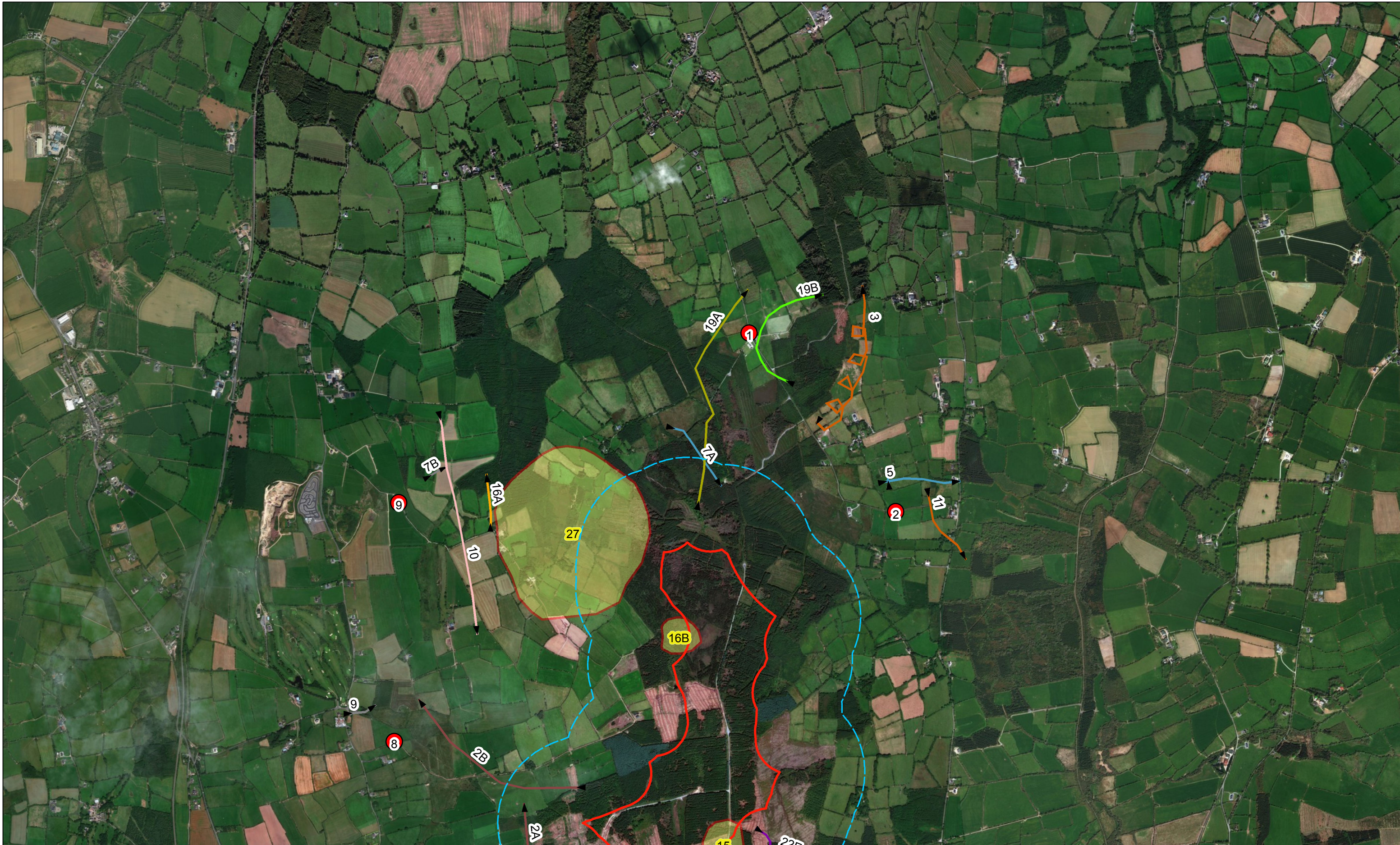
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PROJECT	Castlebanny Winter Bird Survey		
PROJECT NO.	18608		
TITLE	Buzzard		
CLIENT	Coillte		
DRAWN BY	VH	CHECKED BY	HD
DATE	12/02/2019		
DRAWING NO	Map 1	REF.	A

Site Development Area			
Flight Activity Survey Area			
Vantage Point			
Buzzard Activity			
Buzzard Flight Path			

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4. All levels are in metres related to Ordnance Datum.
5. Drawings are not to be scaled.

Scale (A3): 1:20,000

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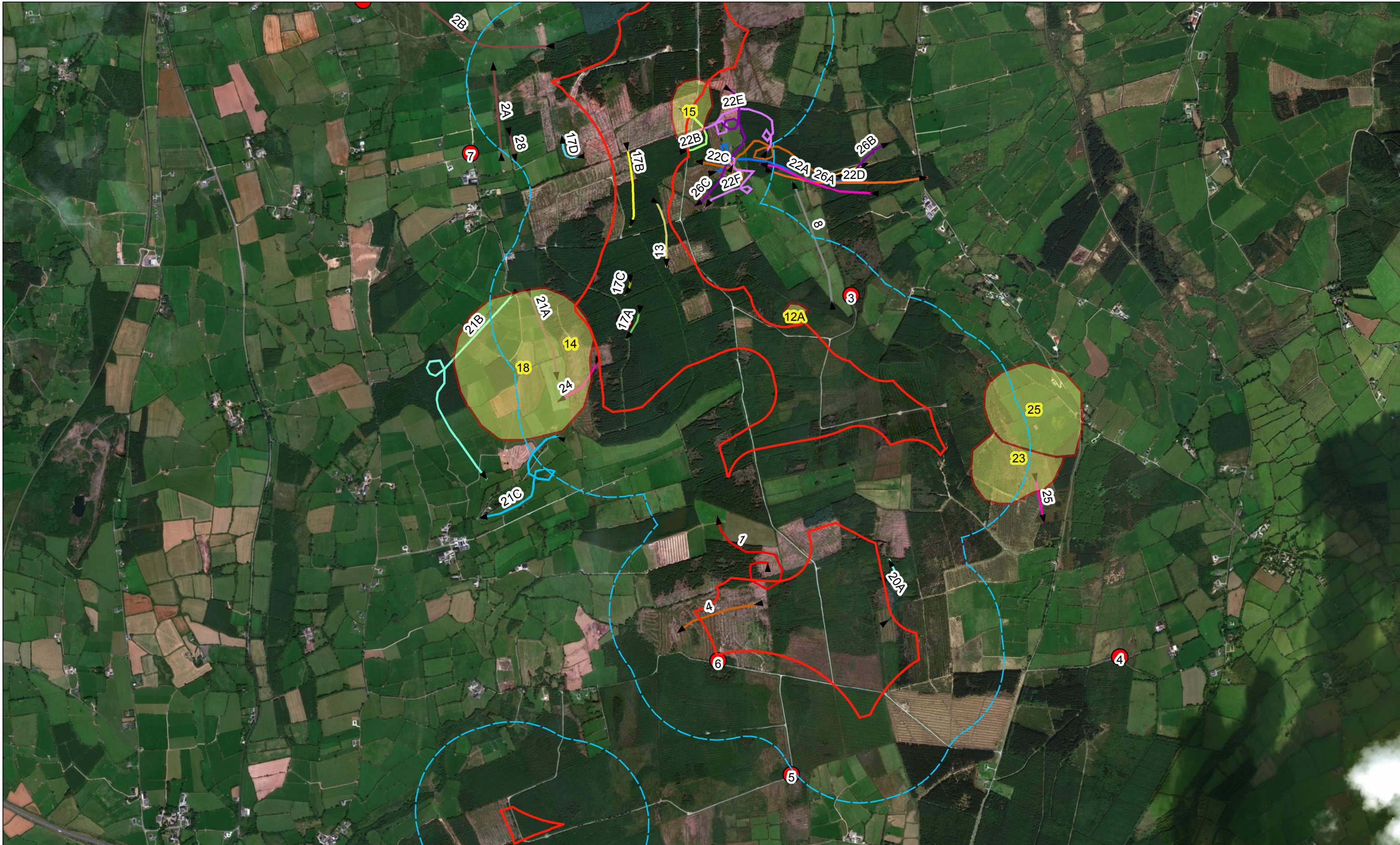
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PROJECT	Castlebanny Winter Bird Survey		
PROJECT NO.	18608		
TITLE	Buzzard		
CLIENT	Coillte		
DRAWN BY	VH	CHECKED BY	HD
DATE	12/02/2019		
DRAWING NO	Map 2	REF.	A

Site Development Area	12B	20B	22D	26C
Flight Activity Survey Area	13	21A	22E	28
Vantage Point	17A	21B	22F	2A
Buzzard Activity	17B	21C	24	2B
Buzzard Flight Path	17C	22A	25	4
1	17D	22B	26A	8
	20A	22C	26B	

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Scale (A3): 1:20,000

0 0.15 0.3 Kilometers

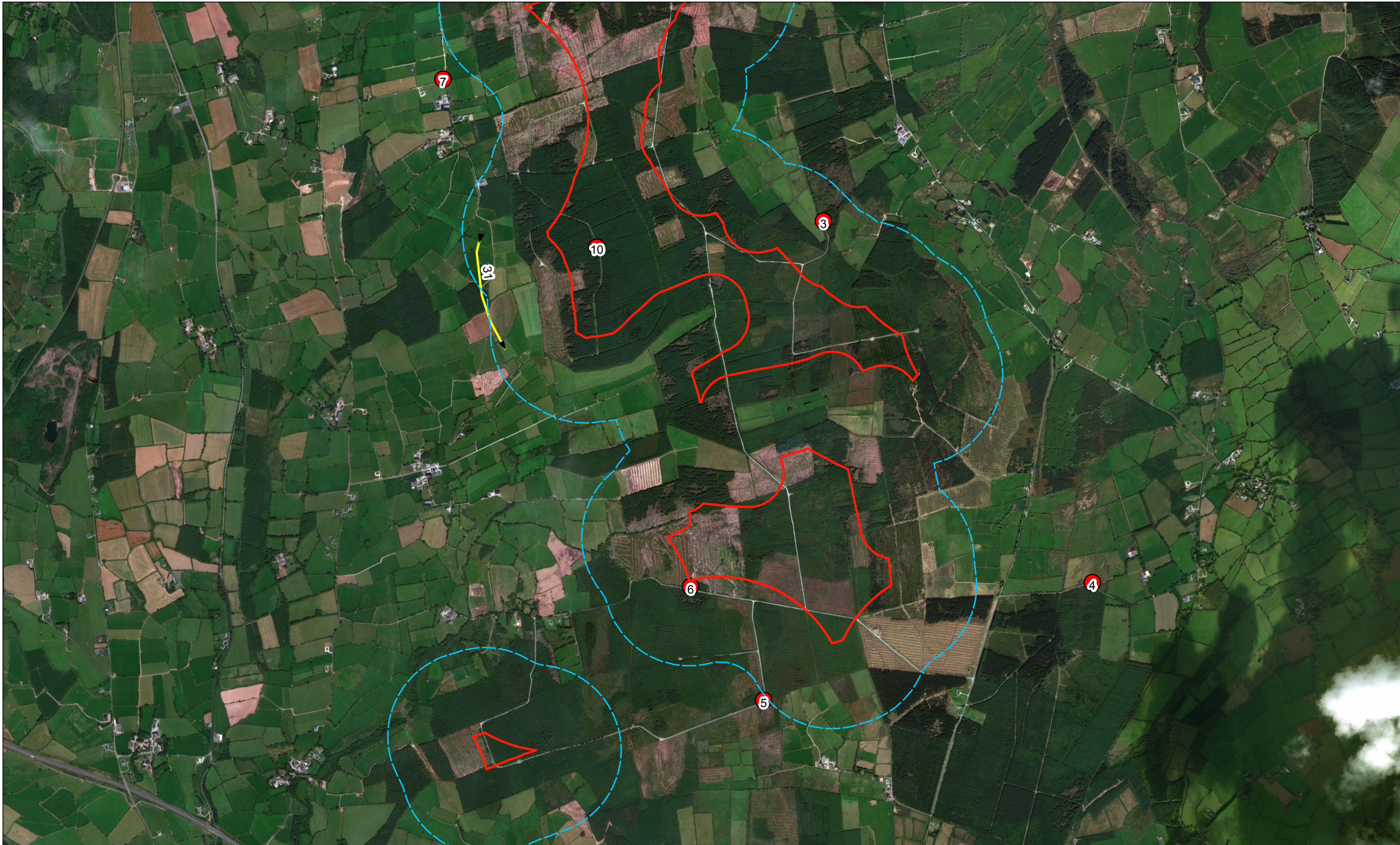
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PROJECT	Castlebanny Winter Bird Survey		
PROJECT NO.	18608		
TITLE	Golden Plover		
CLIENT	Coillte		
DRAWN BY	VH	CHECKED BY	HD
DATE	12/02/2019		
DRAWING NO	Map 1	REF.	A

Site Development Area
 Flight Activity Survey Area
● Vantage Point
Golden Plover Flight Path
➤ 31

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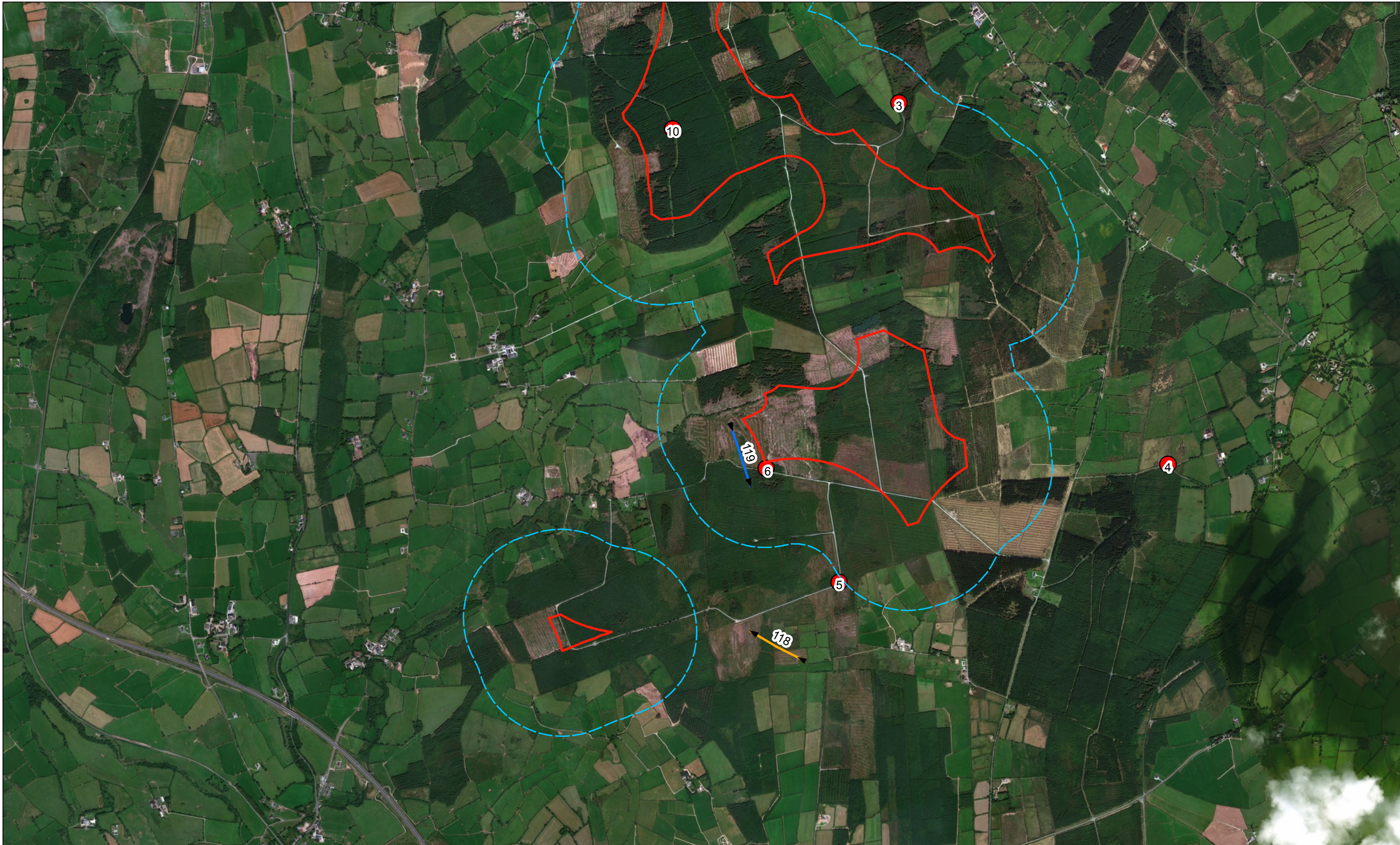
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PROJECT	Castlebanny Winter Bird Survey		
PROJECT NO.	18608		
TITLE	Grey Heron		
CLIENT	Coillte		
DRAWN BY	VH	CHECKED BY	HD
DATE	10/07/2019		
DRAWING NO	Map 1	REF.	A


Site Development Area
 Flight Activity Survey Area
● Vantage Point
Grey Heron Flight Path
▶ 118
▶ 119

1. All drawings are to be read in conjunction with all relevant Specifications, Bills of Quantities, Architectural, Services and Engineering drawings.
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3. All dimensions are in millimetres, unless noted otherwise.
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Scale (A3): 1:20,000

0 0.175 0.35 Kilometers

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PROJECT	Castlebanny Winter Bird Survey		
PROJECT NO.	18608		
TITLE	Hen Harrier		
CLIENT	Coillte		
DRAWN BY	VH	CHECKED BY	HD
DATE	12/02/2019		
DRAWING NO	Map 1	REF.	A


Site Development Area	36
Flight Activity Survey Area	37
Vantage Point	38
Hen Harrier Flight Path	
	39
	40
	35

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4. All levels are in metres related to Ordnance Datum.
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Scale (A3): 1:20,000

0 0.15 0.3 Kilometers

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PROJECT	Castlebanny Winter Bird Survey		
PROJECT NO.	18608		
TITLE	Hen Harrier		
CLIENT	Coillte		
DRAWN BY	VH	CHECKED BY	HD
DATE	12/02/2019		
DRAWING NO	Map 2	REF.	A

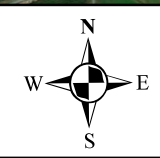

Site Development Area	36
Flight Activity Survey Area	37
Vantage Point	38
Hen Harrier Flight Path	39
	40
	35

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0 0.15 0.3 Kilometers

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PROJECT	Castlebanny Winter Bird Survey		
PROJECT NO.	18608		
TITLE	Kestrel		
CLIENT	Coillte		
DRAWN BY	VH	CHECKED BY	HD
DATE	12/02/2019		
DRAWING NO	Map 1	REF.	A

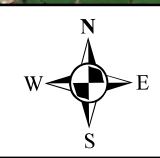

Site Development Area	46B	55B	62A
Flight Activity Survey Area	49	56A	62B
Vantage Point	51	59A	64A
Kestrel Activity	52	60A	64B
Kestrel Flight Path	53	60B	68
46A	54	60C	69
	55A	61	

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Scale (A3): 1:20,000

0 0.15 0.3 Kilometers

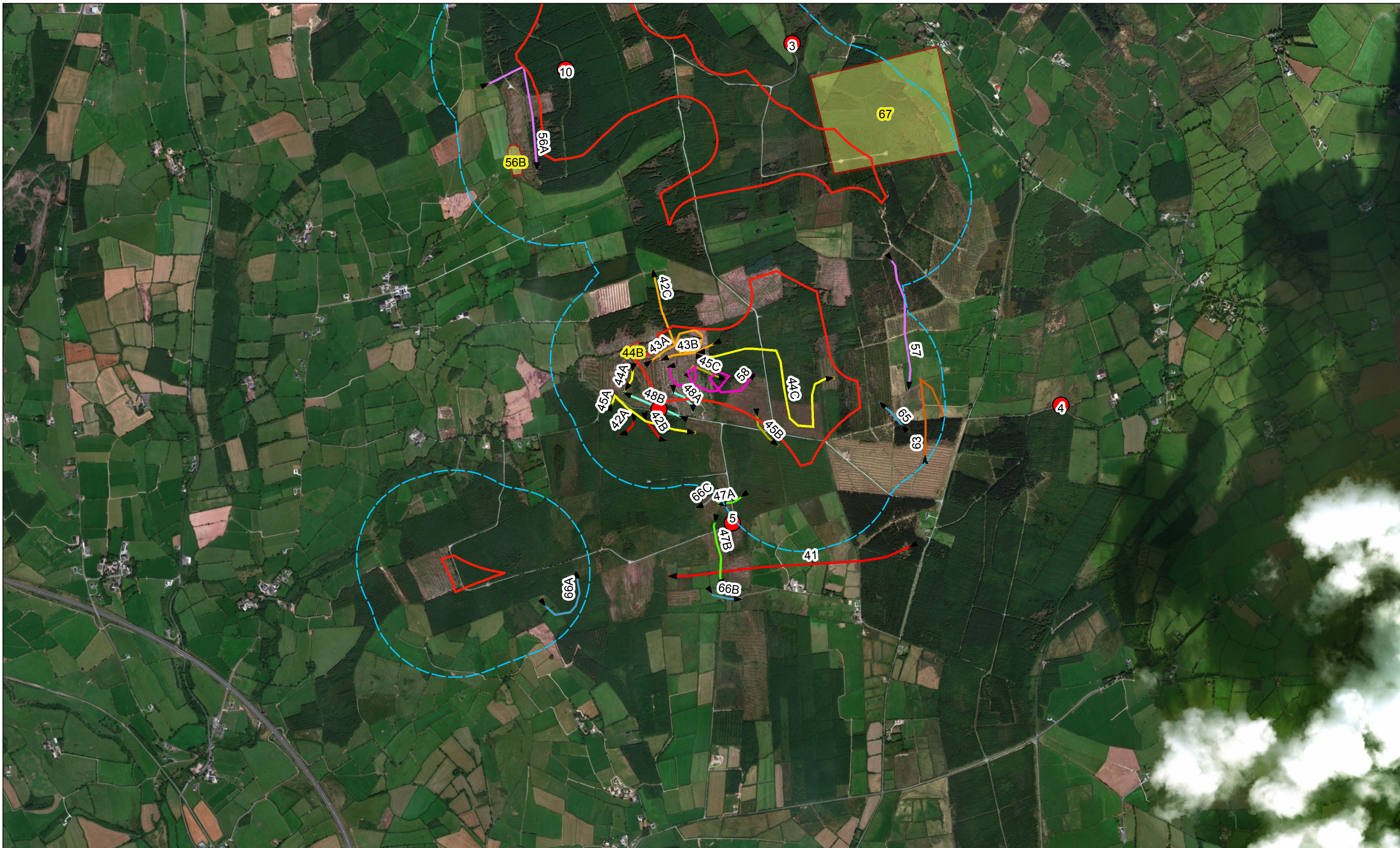
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PROJECT	Castlebanny Winter Bird Survey		
PROJECT NO.	18608		
TITLE	Kestrel		
CLIENT	Coillte		
DRAWN BY	VH	CHECKED BY	HD
DATE	12/02/2019		
DRAWING NO	Map 2	REF.	A

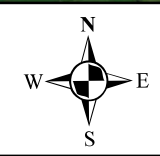
Site Development Area	42B	45B	57
Flight Activity Survey Area	42C	45C	58
Vantage Point	43A	47A	63
Kestrel Activity	43B	47B	65
Kestrel Flight Path	44A	48A	66A
	44C	48B	66B
	45A	56A	66C
	41		
	42A		

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0 0.15 0.3 Kilometers

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PROJECT	Castlebanny Winter Bird Survey		
PROJECT NO.	18608		
TITLE	Lapwing		
CLIENT	Coillte		
DRAWN BY	VH	CHECKED BY	HD
DATE	12/02/2019		
DRAWING NO	Map 1	REF.	A

Site Development Area
 Flight Activity Survey Area
● Vantage Point
➤ 70
Lapwing Flight Path

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4. All levels are in metres related to Ordnance Datum.
5. Drawings are not to be scaled.

Scale (A3): 1:20,000

0 0.15 0.3 Kilometers

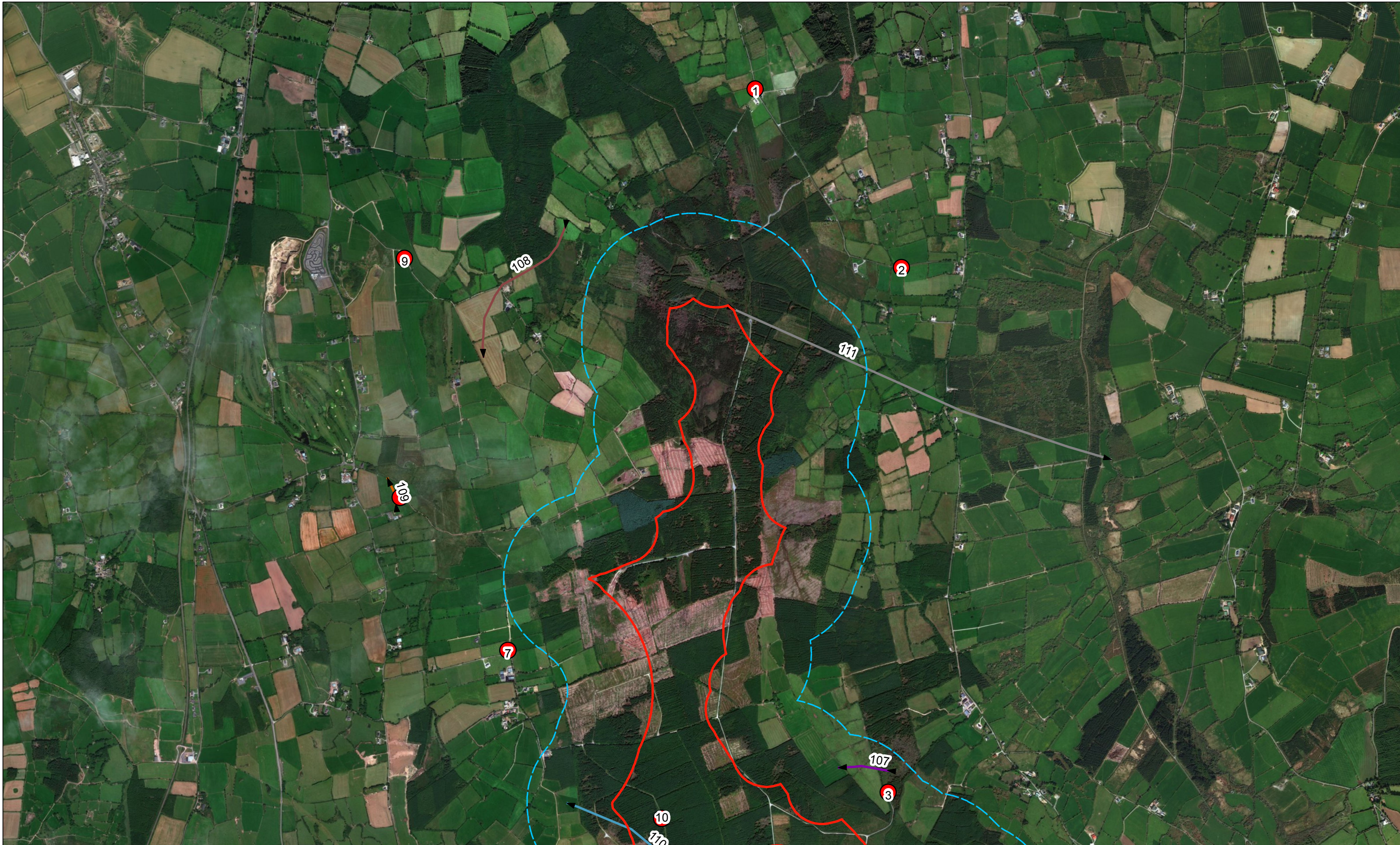
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PROJECT	Castlebanny Winter Bird Survey		
PROJECT NO.	18608		
TITLE	Lesser Black-Backed Gull		
CLIENT	Coillte		
DRAWN BY	VH	CHECKED BY	HD
DATE	17/06/2019		
DRAWING NO	Map 1	REF.	B

Site Development Area
 Flight Activity Survey Area
● Vantage Point

Lesser Black-Backed Gull Flight Path

▶ 104A
▶ 104B
▶ 104C
▶ 104D
▶ 105A
▶ 105B
▶ 105C
▶ 105D
▶ 106A
▶ 106B
▶ 107
▶ 108
▶ 109
▶ 110
▶ 111

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4. All levels are in metres related to Ordnance Datum.
5. Drawings are not to be scaled.

Scale (A3): 1:20,000

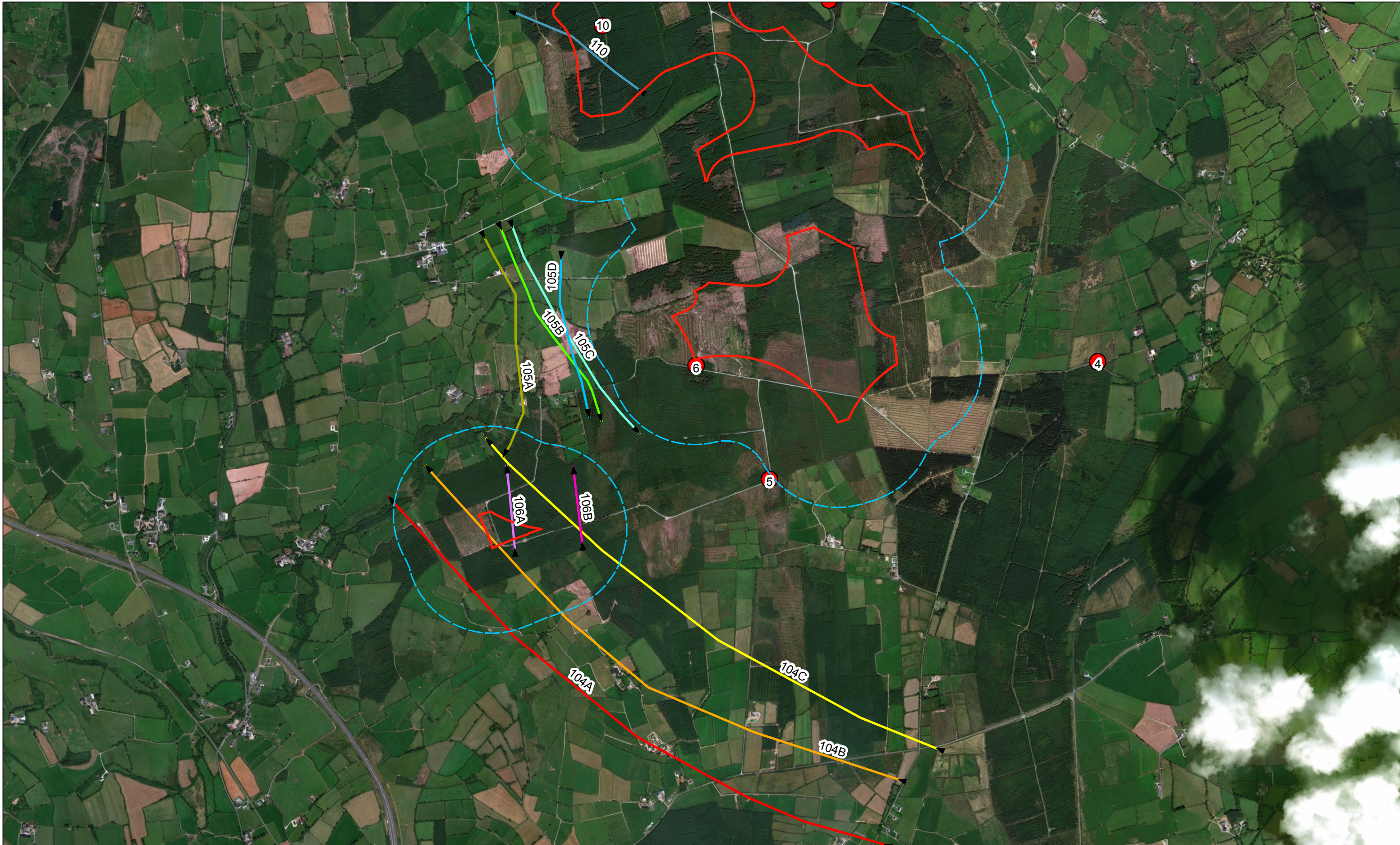
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PROJECT	Castlebanny Winter Bird Survey		
PROJECT NO.	18608		
TITLE	Lesser Black-Backed Gull		
CLIENT	Coillte		
DRAWN BY	VH	CHECKED BY	HD
DATE	17/06/2019		
DRAWING NO	Map 2	REF.	B

Site Development Area	104B	106B
Flight Activity Survey Area	104C	107
Vantage Point	105A	108
Lesser Black-Backed Gull Flight Path	105B	109
	105C	110
	105D	111
	104A	
	106A	

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Scale (A3): 1:20,000

0 0.175 0.35 Kilometers

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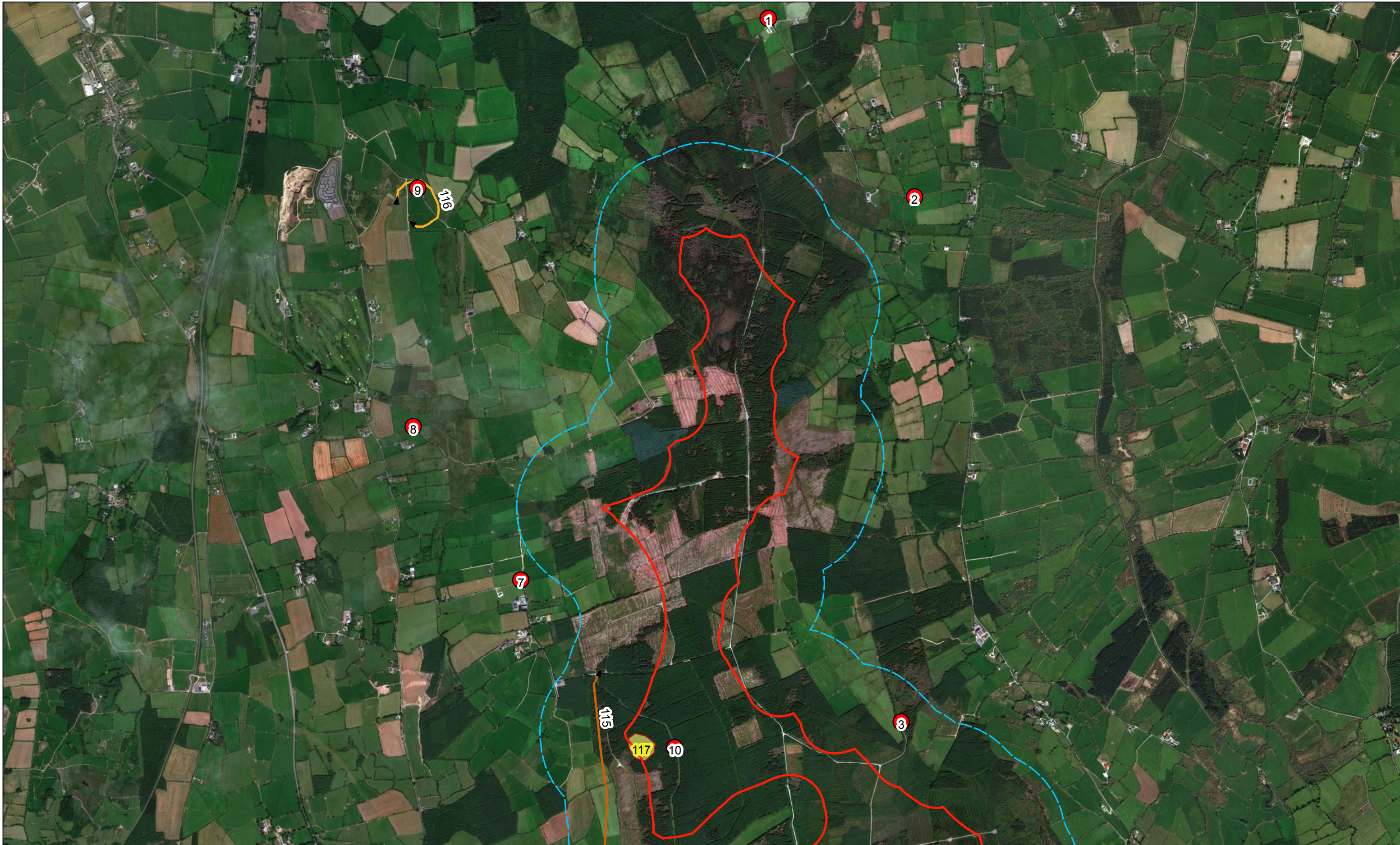
PROJECT	Castlebanny Winter Bird Survey		
PROJECT NO.	18608		
TITLE	Peregrine Falcon		
CLIENT	Coillte		
DRAWN BY	VH	CHECKED BY	HD
DATE	12/02/2019		
DRAWING NO	Map 1	REF.	A

Site Development Area
 Flight Activity Survey Area
● Vantage Point
Peregrine Falcon Flight Path
▶ 79A
▶ 79B

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PROJECT	Castlebanny Winter Bird Survey		
PROJECT NO.	18608		
TITLE	Snipe		
CLIENT	Coillte		
DRAWN BY	VH	CHECKED BY	HD
DATE	17/06/2019		
DRAWING NO	Map 1	REF.	B


Site Development Area	112B
Flight Activity Survey Area	113A
Vantage Point	113B
Snipe Activity	114
Snipe Flight Path	115
112A	116

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Scale (A3): 1:20,000

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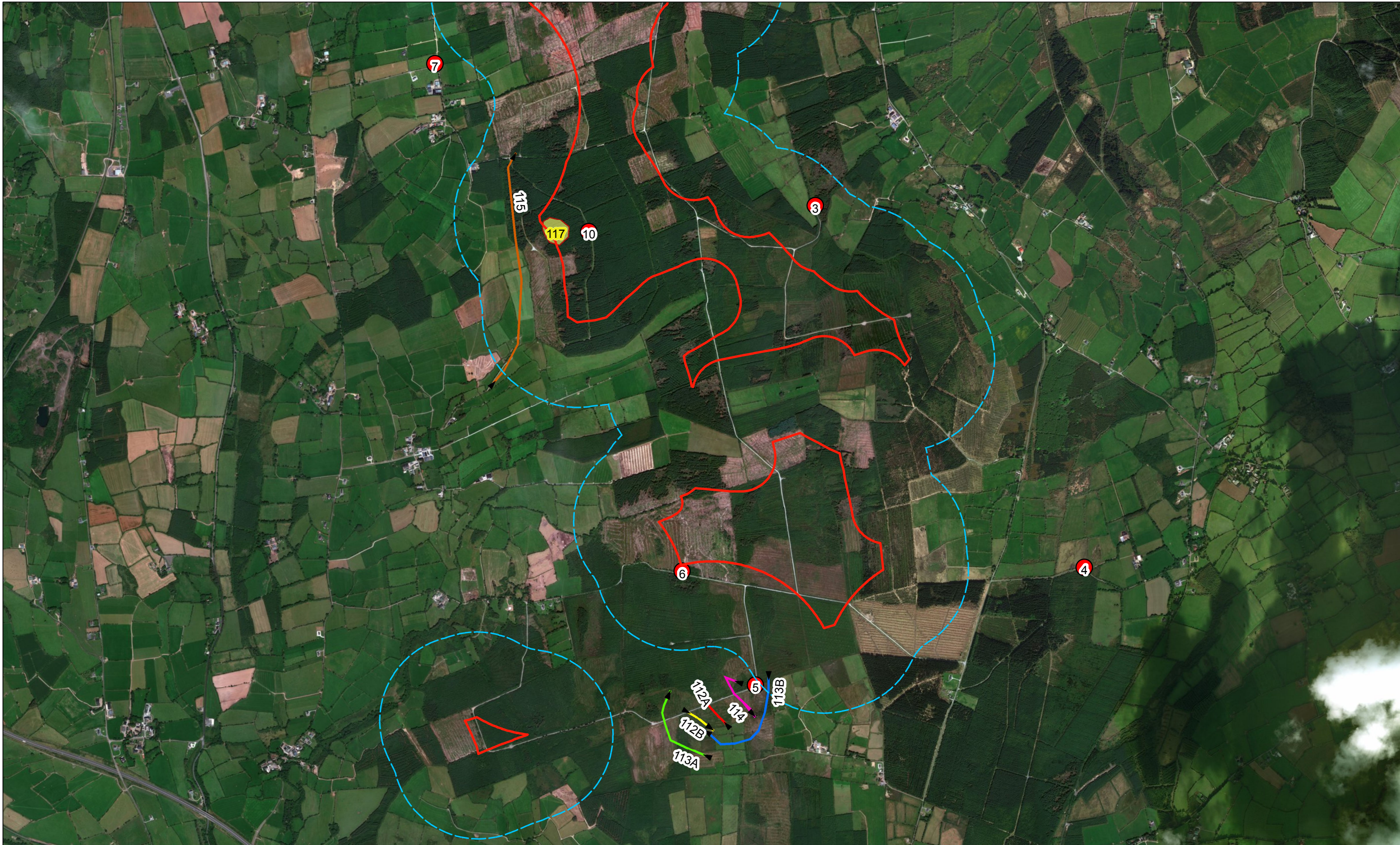
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PROJECT	Castlebanny Winter Bird Survey		
PROJECT NO.	18608		
TITLE	Snipe		
CLIENT	Coillte		
DRAWN BY	VH	CHECKED BY	HD
DATE	17/06/2019		
DRAWING NO	Map 2	REF.	B


Site Development Area	112B
Flight Activity Survey Area	113A
Vantage Point	113B
Snipe Activity	114
Snipe Flight Path	115
112A	116
113A	

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5. Drawings are not to be scaled.

Scale (A3): 1:20,000

0 0.175 0.35 Kilometers

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PROJECT	Castlebanny Winter Bird Survey		
PROJECT NO.	18608		
TITLE	Sparrowhawk		
CLIENT	Coillte		
DRAWN BY	VH	CHECKED BY	HD
DATE	12/02/2019		
DRAWING NO	Map 1	REF.	A

Site Development Area	89	94D
Flight Activity Survey Area	90A	94E
Vantage Point	90B	94F
Sparrowhawk Flight Path	91	95
100	94A	97
101	94B	98
102	94C	

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Scale (A3): 1:20,000

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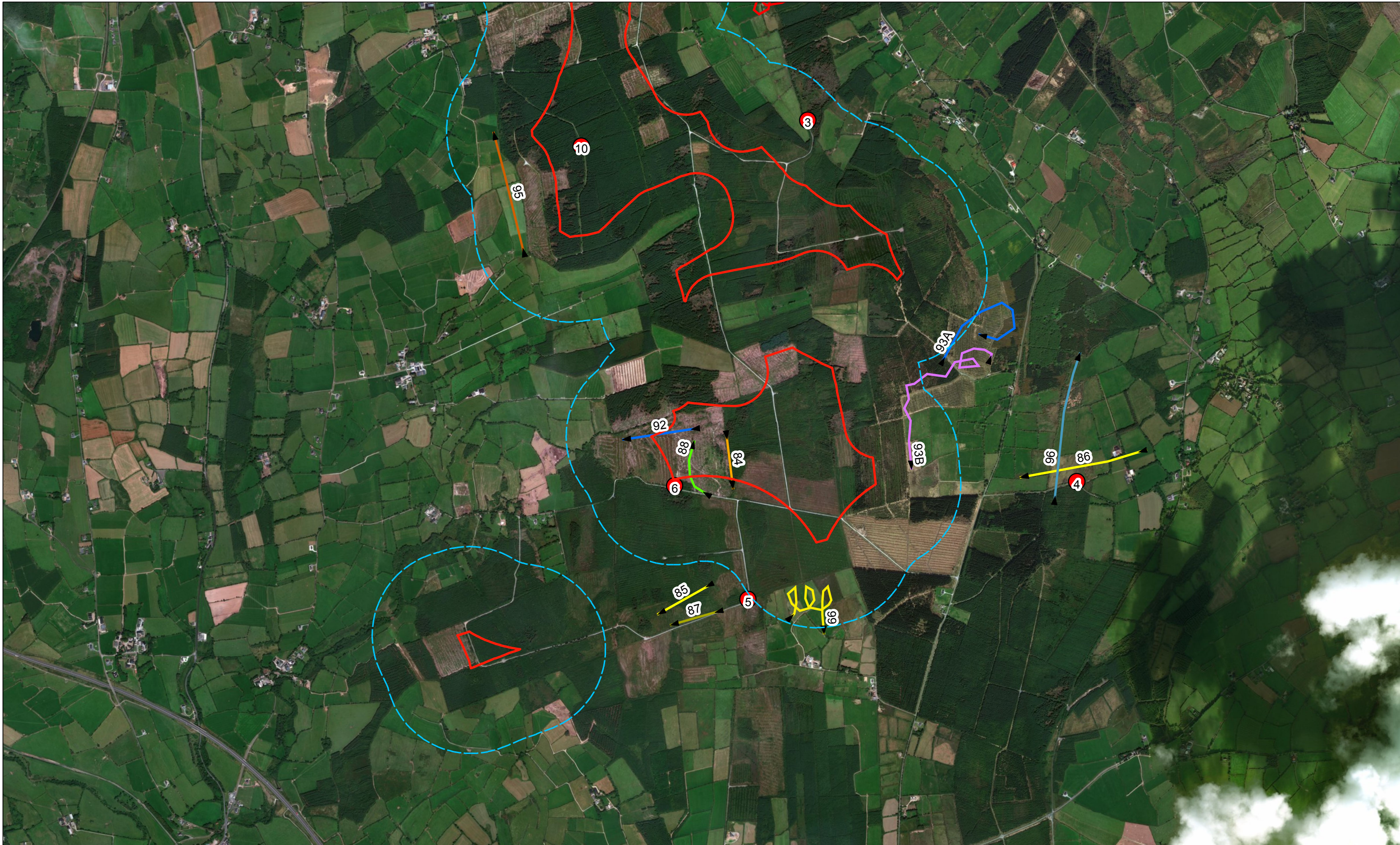
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PROJECT	Castlebanny Winter Bird Survey		
PROJECT NO.	18608		
TITLE	Sparrowhawk		
CLIENT	Coillte		
DRAWN BY	VH	CHECKED BY	HD
DATE	12/02/2019		
DRAWING NO	Map 2	REF.	A


Site Development Area
 Flight Activity Survey Area
● Vantage Point
Sparrowhawk Flight Path
▶ 101
▶▶ 84 ▶▶ 93A
▶▶ 85 ▶▶ 93B
▶▶ 86 ▶▶ 95
▶▶ 87 ▶▶ 96
▶▶ 88 ▶▶ 99
▶▶ 92

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4. All levels are in metres related to Ordnance Datum.
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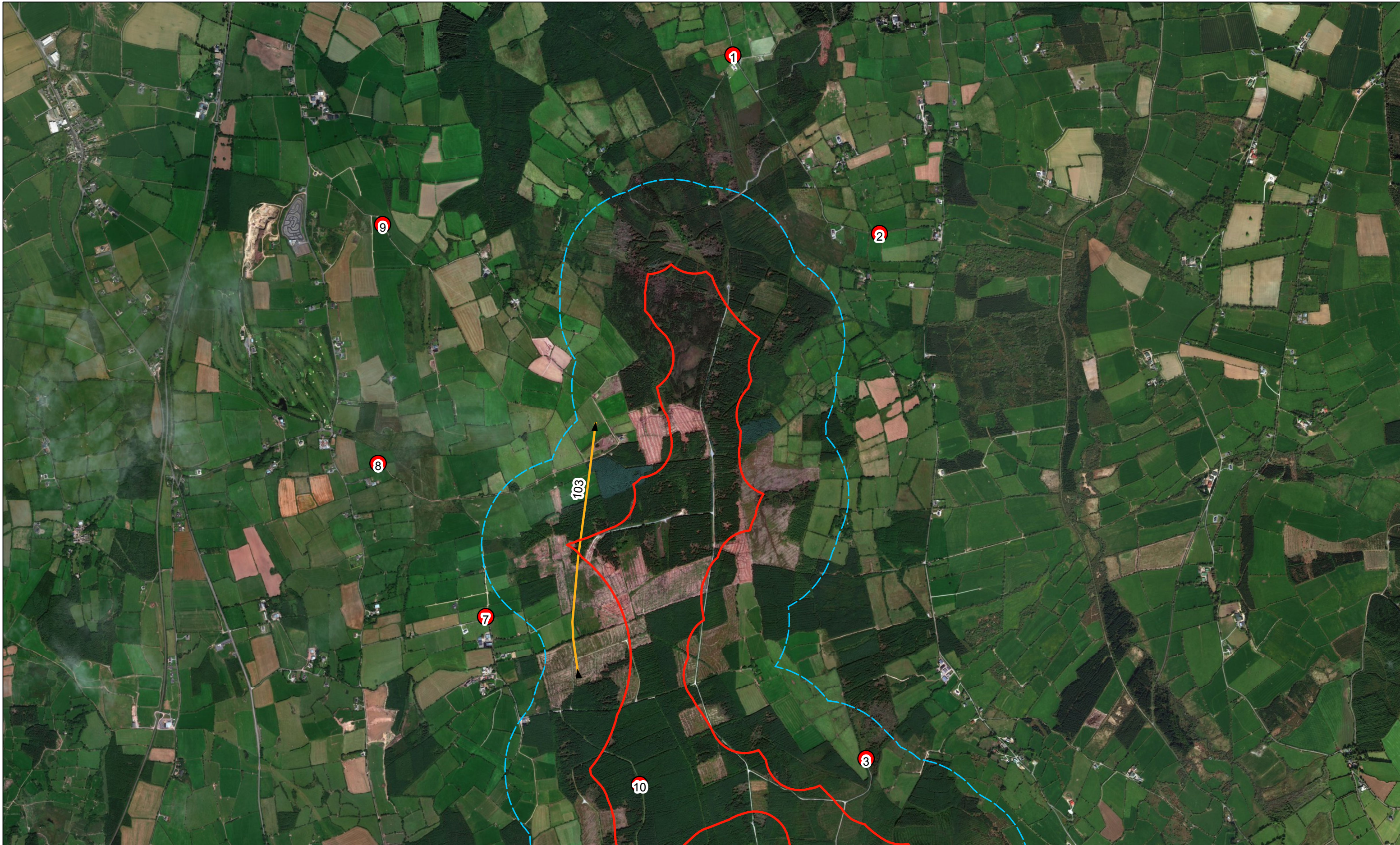
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PROJECT	Castlebanny Winter Bird Survey		
PROJECT NO.	18608		
TITLE	Whooper Swan		
CLIENT	Coillte		
DRAWN BY	VH	CHECKED BY	HD
DATE	12/02/2019		
DRAWING NO	Map 1	REF.	A

Site Development Area
 Flight Activity Survey Area
 Vantage Point
Whooper Swan Flight Path
▶ 103

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4. All levels are in metres related to Ordnance Datum.
5. Drawings are not to be scaled.

Scale (A3): 1:20,000

0 0.15 0.3 Kilometers

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Appendix 6

Non-target Species of Conservation Concern recorded during VP Surveys

The following summary outlines all non-target species of conservation concern recorded during the Castlebanny winter 2017/18 VP surveys.

Red-listed non-target species of conservation concern recorded included grey wagtail (*Motacilla cinerea*), meadow pipit (*Anthus pratensis*) and yellowhammer (*Emberiza citrinella*). Meadow pipit was by far the most abundant of these species being recorded in every survey month and throughout the site. Grey wagtail was recorded in November, December and January. Yellowhammer was recorded in October and December.

Amber-listed non-target species which were recorded in every month included robin (*Erithacus rubecula*), goldcrest (*Regulus regulus*), linnet (*Carduelis cannabina*), mistle thrush (*Turdus viscivorus*) and starling (*Sturnus vulgaris*). Other amber-listed species frequently recorded included greenfinch (*Carduelis chloris*), house sparrow (*Passer domesticus*) and stonechat (*Saxicola torquata*) while less frequently recorded species comprised skylark (*Alauda arvensis*), stock dove (*Columba oenas*), swallow (*Hirundo rustica*) and tree sparrow (*Passer montanus*).

Other than buzzard and peregrine, 32 other green-listed species were recorded during the winter vantage point surveys (refer to **Appendix 9**). The majority of these species are common and widespread and occur in a wide variety of habitat-types, many of which are found within the survey area. Most of these species are present in Ireland throughout the year while some are migrant species which over-winter in Ireland.

The following table outlines monthly peak counts of all non-target species of conservation concern recorded during VP surveys in winter 2017/18.

Common Name	Latin Name	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Grey Wagtail	<i>Motacilla cinerea</i>			1	1		1	
Meadow Pipit	<i>Anthus pratensis</i>	6	10	21	20	5	22	16
Yellowhammer	<i>Emberiza citrinella</i>		2		1			
Goldcrest	<i>Regulus regulus</i>	5	5	12	7	7	7	1
Greenfinch	<i>Carduelis chloris</i>		2	1		1		1
House Sparrow	<i>Passer domesticus</i>		8	4	4		4	
Linnet	<i>Carduelis cannabina</i>	30	14	35	1	28	10	2
Mistle Thrush	<i>Turdus viscivorus</i>	6	3	5	6	2	4	3
Robin	<i>Erithacus rubecula</i>	7	4	8	6	3	4	6
Skylark	<i>Alauda arvensis</i>		5	2				
Starling	<i>Sturnus vulgaris</i>	400	107	102	75	120	254	150
Stock Dove	<i>Columba oenas</i>				4	1	1	4
Stonechat	<i>Saxicola torquata</i>	2	1	2	1		3	2
Swallow	<i>Hirundo rustica</i>	8						
Tree Sparrow	<i>Passer montanus</i>		4					

Appendix 7

Transect Survey Summary

Date	Observer	Start Time	Finish Time	Weather	Visibility
11/10/2017	SC	10.15		Heavy rain showers and mist, clearing, wind F3-4 SW, temp 10C	Poor
07/11/2017	SC	8.45	14.40	Cold breeze. Full cloud cover at first, then clearing, wind F2-3 NW, temp 7C	Very good
14/11/2017	SC	9.00	15.04	Fog and light mist in morning, clearing to clear sky with sunny spells, wind F0-1 SW, temp 11C	Very good
05/12/2017	SC	9.15	14.38	Cloud 8/8, wind F2-3 SW, temp 6C	Good
08/01/2018	SC	9.26	15.06	Cloud 3/8 at first then 8/8 with misty rain, wind F0-1 SE, temp 2C	Good
01/02/2018	SC	9.15	15.12	Cloud 5/8, sunny spells, wind F3-4 WNW, temp 3-5C	Good
23/03/2018	SC	9.25	16.12	Cloud 6/8, overcast with some sunny spells, light rain becoming heavy, wind F0-1 increasing to F3-4 WSW, temp 7-9C	Good

Appendix 8

Transect/Point Counts Summary Results

The following table outlines the monthly peak counts of all species recorded during transect and point count surveys carried out within Castlebanny during the winter 2017/18 season.

Common Name	Latin Name	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Blackbird	<i>Turdus merula</i>	2	2	3	1	2	2	2
Blue Tit	<i>Cyanistes caeruleus</i>	2	4	3	1	3	2	2
Bullfinch	<i>Pyrrhula pyrrhula</i>	3	4	6	4	6	2	
Buzzard	<i>Buteo buteo</i>	2		1			1	1
Chaffinch	<i>Fringilla coelebs</i>	4	5	3	3		2	5
Coal Tit	<i>Parus ater</i>	9	6	7	6	6	10	7
Crossbill	<i>Loxia curvirostra</i>		9	6	10	5	5	3
Dunnock	<i>Prunella modularis</i>	3	6	5	3	4	5	2
Fieldfare	<i>Turdus pilaris</i>					1		
Goldcrest	<i>Regulus regulus</i>	10	6	8	12	6	7	3
Goldfinch	<i>Carduelis carduelis</i>		11					
Great Tit	<i>Parus major</i>	1	3	2	1	1	2	2
Herring Gull	<i>Larus argentatus</i>			9				
Hooded Crow	<i>Corvus cornix</i>	2	5	3	3	5	2	3
House Martin	<i>Delichon urbicum</i>	20						
Jackdaw	<i>Corvus monedula</i>	1		2	1			
Jay	<i>Garrulus glandarius</i>	2		1		2		
Kestrel	<i>Falco tinnunculus</i>	1	1	1	1	1		2
Linnet	<i>Carduelis cannabina</i>	3		1				
Long-tailed Tit	<i>Aegithalos caudatus</i>		6	9	7	7	2	4
Magpie	<i>Pica pica</i>		1	1	1	2		1
Meadow Pipit	<i>Anthus pratensis</i>	4	3	2	1		3	5
Mistle Thrush	<i>Turdus viscivorus</i>	1					2	3
Pheasant	<i>Phasianus colchicus</i>							1
Pied Wagtail	<i>Motacilla alba</i>	1		2				1
Raven	<i>Corvus corax</i>		4	1	4	1	5	1
Redpoll	<i>Carduelis cabaret</i>	4	4	19	3	3	8	4
Redwing	<i>Turdus iliacus</i>			3	1	3	40	4
Reed Bunting	<i>Emberiza schoeniclus</i>	1	1					
Robin	<i>Erithacus rubecula</i>	6	6	6	3	3	3	3
Rook	<i>Corvus frugilegus</i>	26	2	3	3	1	1	1
Siskin	<i>Carduelis spinus</i>	3	2					1
Snipe	<i>Gallinago gallinago</i>			1			1	1
Song Thrush	<i>Turdus philomelos</i>			1			1	2
Sparrowhawk	<i>Accipiter nisus</i>		1				1	
Starling	<i>Sturnus vulgaris</i>	1		14			8	30
Stonechat	<i>Saxicola torquata</i>		2					
Woodcock	<i>Scolopax rusticola</i>			1		1		
Woodpigeon	<i>Columba palumbus</i>	1			5	2		

Common Name	Latin Name	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Wren	<i>Troglodytes troglodytes</i>	4	8	7	5	4	3	3

Appendix 9

List of all species recorded

The following table outlines all species recorded during the winter 2017/18 surveys at Castlebanny. A total of 59 species were recorded.

Common Name	Latin Name	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Blackbird	<i>Turdus merula</i>							
Black-headed Gull	<i>Larus ridibundus</i>							
Blue Tit	<i>Cyanistes caeruleus</i>							
Bullfinch	<i>Pyrrhula pyrrhula</i>							
Buzzard	<i>Buteo buteo</i>							
Chaffinch	<i>Fringilla coelebs</i>							
Chiffchaff	<i>Phylloscopus collybita</i>							
Coal Tit	<i>Periparus ater</i>							
Crossbill	<i>Loxia curvirostra</i>							
Duncock	<i>Prunella modularis</i>							
Fieldfare	<i>Turdus pilaris</i>							
Goldcrest	<i>Regulus regulus</i>							
Golden Plover	<i>Pluvialis apricaria</i>							
Goldfinch	<i>Carduelis carduelis</i>							
Great Tit	<i>Parus major</i>							
Greenfinch	<i>Carduelis chloris</i>							
Grey Heron	<i>Ardea cinerea</i>							
Greylag Goose	<i>Anser anser</i>							
Grey Wagtail	<i>Motacilla cinerea</i>							
Hen Harrier	<i>Circus cyaneus</i>							
Hooded Crow	<i>Corvus cornix</i>							
House Sparrow	<i>Passer domesticus</i>							
Jackdaw	<i>Corvus monedula</i>							
Jay	<i>Garrulus glandarius</i>							
Kestrel	<i>Falco tinnunculus</i>							
Lapwing	<i>Vanellus vanellus</i>							
Lesser Black-backed Gull	<i>Larus fuscus</i>							
Linnet	<i>Carduelis cannabina</i>							
Long-tailed Tit	<i>Aegithalos caudatus</i>							
Magpie	<i>Pica pica</i>							
Mallard	<i>Anas platyrhynchos</i>							
Meadow Pipit	<i>Anthus pratensis</i>							
Mistle Thrush	<i>Turdus viscivorus</i>							
Moorhen	<i>Gallinula chloropus</i>							
Peregrine Falcon	<i>Falco peregrinus</i>							
Pheasant	<i>Phasianus colchicus</i>							
Pied Wagtail	<i>Motacilla alba</i>							
Raven	<i>Corvus corax</i>							
Redpoll	<i>Carduelis cabaret</i>							

Common Name	Latin Name	Sep	Oct	Nov	Dec	Jan	Feb	Mar
Redwing	<i>Turdus iliacus</i>							
Reed Bunting	<i>Emberiza schoeniclus</i>							
Robin	<i>Erithacus rubecula</i>							
Rook	<i>Corvus frugilegus</i>							
Siskin	<i>Carduelis spinus</i>							
Skylark	<i>Alauda arvensis</i>							
Snipe	<i>Gallinago gallinago</i>							
Song Thrush	<i>Turdus philomelos</i>							
Sparrowhawk	<i>Accipiter nisus</i>							
Starling	<i>Sturnus vulgaris</i>							
Stock Dove	<i>Columba oenas</i>							
Stonechat	<i>Saxicola torquata</i>							
Swallow	<i>Hirundo rustica</i>							
Treecreeper	<i>Certhia familiaris</i>							
Tree Sparrow	<i>Passer montanus</i>							
Water Rail	<i>Rallus aquaticus</i>							
Whooper Swan	<i>Cygnus cygnus</i>							
Woodpigeon	<i>Columba palumbus</i>							
Wren	<i>Troglodytes troglodytes</i>							
Yellowhammer	<i>Emberiza citrinella</i>							