Appendix 7-6 – Bird Survey Report (summer 2024)

FuturEnergy Ireland

Scart Mountain 2024 Ornithology Surveys: Breeding Season Baseline Report

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Contents

List of Figures

List of Tables

1. Executive Summary

APEM Ltd (APEM) was commissioned by FuturEnergy Ireland to undertake bird surveys between April and August 2024 for the proposed Scart Mountain Wind Farm. APEM was requested to carry out an additional year of surveys to update the baseline data for the Wind Farm Site and inform a future impact assessment. The Wind Farm Site is located approximately 17 km north - west of Dungarvan in Co. Waterford.

Ornithology surveys were undertaken to determine the ornithological baseline and to inform an assessment of potential effects arising from the proposed development. The main potential risks to birds arising from wind farms are direct habitat loss, disturbance and displacement, collision risk, and barrier effects. The survey scope was determined with reference to current NatureScot guidance, and the 'target species' included those which are Annex 1 listed and are of conservation concern, or those that are more likely to be impacted by the proposed development.

The survey scope included Flight Activity Surveys (FAS) from eight Vantage Points, Breeding Distribution Surveys (BDS) and Breeding Raptor Surveys. Flight activity was moderate during FAS with a total of 255 flights recorded, the majority of which were kestrel and hen harrier with 136 and 104 flights, respectively. Other target species were recorded infrequently with only golden plover involving significant numbers of birds (up to 48).

There were very few target species recorded breeding during the BDS, with snipe and red grouse territories identified. Targeted woodcock surveys detected 45 roding males, with a total of 48 roding males recorded across all survey methods. Based on these findings, it is estimated that seven woodcock territories are present within the Breeding Woodcock Survey Area.

Three kestrel territories were present within the Raptor Survey Area, with one inside the Wind Farm Site. In addition, three long-eared owl territories were recorded during surveys, all of which were more than 1 km from the Wind Farm Site. Territories for buzzard, sparrowhawk and raven (all secondary species) were also identified.

2. Introduction

2.1 Background

APEM Ltd (APEM) was commissioned by FuturEnergy Ireland to undertake bird surveys between April and August 2024 for the proposed Scart Mountain Wind Farm, hereafter referred to as 'the Wind Farm Site'.

The Wind Farm Site (**Figure 1**) is located approximately 17km north-west of Dungarvan, Co. Waterford, with a central grid reference of S 13219 05471. Habitats within the Wind Farm Site include commercial conifer plantation, with moorland in the upland portions. The centre of the Wind Farm Site also consists of pastoral farmland. The wider area surrounding the Wind Farm Site is comprised of coniferous plantations, farmland and open moorland. The Glenshelane River flows between the two areas of the Wind Farm Site and the Glenafallia River flows to the west of the Wind Farm Site.

2.2 Purpose of the Report

This report outlines the survey methods and results of all ornithology surveys undertaken during the 2024 breeding season. Ornithology surveys were undertaken to update the ornithological baseline and to inform an assessment of potential effects arising from the proposed development.

3. Methods

The key guidance used to inform the scope of surveys and reporting was published by NatureScot (2017) and is considered best practice for wind farm developments in Ireland. NatureScot guidance recommends that surveys should focus on a suite of 'target species' which are of higher importance (due to legislative protection or conservation status) and are more susceptible to potential impacts from wind farms. Target species for the project were determined with reference to guidance (NatureScot, 2016) and Irish legislation and conservation status. The target species selected for surveys are outlined in **Section 3.**

Species names used in this report follow common names as defined by BirdWatch Ireland (Birdwatch Ireland, 2021). A list of scientific names, as well as details of relevant legislation and conservation status of all bird species mentioned in this report is provided in **Appendix 1 Figures.** This report is supported by a separate Confidential Annex.

3.1 Field Survey Methods

The 2024 breeding season baseline ornithology survey programme was developed based on the habitats present at the Wind Farm Site and the sensitivities of species known to occur in the area and comprised of the following surveys:

- FAS – April to September 2024 (the breeding season);
- Breeding Distribution Surveys – April to July 2024;
- Breeding woodcock Surveys - May to June 2024, and
- Breeding Raptor Surveys – April to August 2024.

Full details of the methods followed during surveys are provided below. Survey methods followed current NatureScot (2017) guidance and were undertaken by Bird Surveyors Ltd (led by Marc Ruddock), Nick Veale, Andre Robinson and Paul Connaughton. All are experienced field ornithologists with full knowledge of all survey methods and the local environment.

Flight Activity Surveys

FAS were carried out between April and September 2024 using a series of watches from eight Vantage Point (VPs) locations overlooking the Wind Farm Developable Area and a surrounding 500m buffer to record flight activity of target bird species following NatureScot guidance. VPs were selected using viewshed analysis undertaken using Geographic Information Systems (GIS) and were 'ground-truthed' in the field to ensure that views were accurate. VP locations and viewsheds are shown in **Figure 2**.

The flight lines of all target species observed during the FAS were recorded on large scale maps in the field. Target species during FAS were as follows:

- All wild swan, duck and goose species except mallard;
- All diver and grebe species;
- All raptor species[1] except buzzard and sparrowhawk;
- All wader species; and
- Any other qualifying interests of nearby SPAs and Ramsar sites.

Secondary species included the following: buzzard, sparrowhawk, raven, mallard, all gull species, cormorant, grey heron and passerine species of conservation concern (Gilbert *et al*. 2021) recorded in flocks of more than 100 individuals. Recording of target species took priority over that of secondary species.

Each recorded flight path was numbered and cross-referenced, with the following data recorded:

- Time on detection;
- Bird species, age and sex (where age and sex were determinable);
- Number of birds;
- Behaviour where applicable (e.g. foraging, commuting, display etc);
- Duration of flight within the VP viewshed; and
- Duration at each height band as follows:
    1. <10m
    2. 10-20m
    3. 20-200m

[1] Owls have been included due to their nocturnal behaviour, which may cause them to be at greater risk of impacts from wind farms.

4. >200m

Height bands were determined based on the proposed turbine model at the commencement of surveys. In addition to recording target species flights, the number and activity of 'secondary' species was recorded when secondary species were detected.

Survey Effort

In line with NatureScot guidance, surveyors aimed to complete 36 hours of survey from each VP location during the breeding season, totalling 288 hours of VPs across the season. Surveys were stratified to cover all times of day including dawn and dusk periods. Each watch lasted three hours with a 30-minute break in-between watches. A breakdown of monthly survey effort is shown in **.**

Table 1**.**

Table 1. Flight Activity Survey Effort

Full details of survey dates, times and hourly weather conditions are presented in **Table 5**, **Appendix 3**.

Month and year	Number of survey hours							
	VP1	VP2	VP3	VP4	VP5	VP6	VP7	VP9
Breeding survey								
Apr-24	12	12	12	12	12	12	12	12
May-24	6	6	6	6	6	6	6	6
Jun-24	6	6	6	6	6	6	6	6
Jul-24	6	6	6	6	6	6	6	6
Aug-24	6	6	6	6	6	6	6	6
Total breeding season hours	**36**	**36**	**36**	**36**	**36**	**36**	**36**	**36**

Breeding Distribution Surveys

A Breeding Distribution Survey (BDS) was undertaken between April and July 2024. The BDS Survey Area covered the Wind Farm Site and a 500 m buffer. In line with NatureScot guidance, the survey combined elements of the Smith and O'Brien (1992) method, which is designed to census lowland breeding waders, and Brown and Shepherd, which is designed to survey moorland species, with four survey visits completed.

The survey dates were as follows:

- Visit 1: 18/04/2024-25/04/2024;
- Visit 2: 11/05/2024-23/05/2024;
- Visit 3: 06/06/2024-28/06/2024; and
- Visit 4: 06/07/2024-19/07/2024.

Target species during surveys were non-passerine species of conservation concern breeding within open habitats. NatureScot guidance states that survey of woodland and farmland passerines, especially in commercial coniferous forest or intensive agricultural land, is generally not required. All species of conservation concern were recorded during surveys, however passerine species are generally not subject to significant effects from wind farm developments and therefore were not considered target species during the BDS. The BDS Survey Area is shown in **Figure 1**.

Breeding Territory Analysis

Following completion of all BDS visits, all registrations of waders from the field maps were digitised using GIS to determine the number and distribution of likely territories present within the Survey Area.

The method used to determine territories was informed by that described by Bibby (2000) and Gilbert *et al*. (1998). A precautionary approach was followed, with a bird deemed to be holding a territory if breeding behaviour (e.g. singing, alarm-calling, adults carrying food, etc.) was observed, or if pairs of birds were observed in suitable habitat, during just one of the BDS visits.

Breeding Woodcock Survey

Breeding woodcock Surveys were undertaken between May and July 2024, following methods outlined in Gilbert *et al.* (1998), whereby suitable woodland within 500 m of the Site were surveyed. A minimum of five visits were undertaken to suitable habitats, of which at least three were undertaken between May and June, with surveyors following five predetermined transect routes from one hour before sunset to one hour after sunset (or until it became too dark to see). Transect routes are shown in **Figure 3**.

All observations of roding woodcock were recorded. After the surveys, the number of roding males observed was used to estimate the number of territories. Additionally, roding woodcock recorded during other surveys within this survey program were also included in the breeding woodcock analysis.

Individual survey dates and weather conditions can be found in **Appendix 3** .

Breeding Raptor Survey

Breeding Raptor Surveys were undertaken between April and August 2024 inclusive, with reference to the methods detailed in Hardey et al. (2013). Surveys covered a 2 km buffer of the Wind Farm Site (1 km for goshawk and owls other than short-eared owl), with surveyors covering all areas of habitat suitable for breeding raptors. Due to known breeding raptor species within the Survey Area (discussed further within the Confidential Annex) an intensive six-visit survey method was used to ensure all breeding raptor species were recorded.

Surveys involved completing a series of short watches over areas of suitable breeding habitat from suitable ad-hoc VP locations, and walkover surveys to identify any evidence of breeding. Although the surveys focused on recording target raptor species (Annex I species and raptors red-listed in the Birds of Conservation Concern in Ireland 4), 'secondary' species were also recorded (buzzard, sparrowhawk and raven). Observations were recorded on large-scale field maps, with notes on behaviour taken where appropriate.

Survey dates were as follows:

- Visit 1: 08/04/2024-25/04/2024;
- Visit 2: 10/05/2024-24/05/2024;
- Visit 3: 05/06/2024-29/06/2024;
- Visit 4: 04/07/2024-31/07/2024; and
- Visit 5: 17/08/2024-18/08/2024.

Individual survey dates can be found in **Appendix 3** .

The Breeding Raptor Survey Areas are shown in **Figure 1**.

3.2 Survey Limitations

Access was limited to the Wind Farm Site Boundary, Coillte land and publicly accessible lands. As far as possible, surveys were timed to coincide with suitable weather conditions, particularly during the breeding season, however periods of poor weather (e.g. rain, strong winds and reduced visibility) were occasionally encountered during the surveys, which was unavoidable due to the number of surveys required and the frequent, inclement weather encountered on the Wind Farm Site throughout the surveys.

As the majority of surveys were completed in suitable weather conditions it is considered that a small number of surveys undertaken in poor weather conditions are not a constraint. Furthermore, it is considered that surveying in a variety of conditions will be more representative of the baseline conditions and associated levels of bird activity within the Survey Areas. As such, instances of sub-optimal weather are not considered to represent a constraint to the robustness of the data collected.

4. Results

4.1 Flight Activity Surveys

Target Species Flights

A total of 156 flights by seven identified target species were recorded during FAS. Kestrel was the species recorded most frequently with a total of 78 flights, followed by hen harrier (64 flights). A summary of all target species flights recorded during the FAS, broken down by species, is provided in **Table 2**. Full details of target species flights, with the exception of hen harrier, are presented in **Appendix 4** and flight lines are shown in **Appendix 1** . Further details relating to hen harrier flight activity are contained within the Confidential Annex.

Kestrel was recorded throughout the 2024 breeding season, with birds primarily observed hunting over areas of open ground but also commuting throughout the survey area. The majority of records were outside the Wind Farm Site Boundary. Aside from hen harrier, the only other raptor species recorded was peregrine, with a single juvenile bird observed flying over the Wind Farm Site during August. All raptor flights involved single birds.

The number of flights of all other target species recorded were low, with just 13 recorded flights. Of these, golden plover was recorded on three occasions, but only during the first two visits in early April, with birds observed commuting northwards through the Wind Farm Site on spring passage. These observations are consistent with records from previous years. Woodcock was recorded five times along the forest margins in and around the Wind Farm Site Boundary. Three snipe were recorded close to the Glenshelane and Glenafallia rivers just to the west of the Wind Farm Site Boundary and red grouse was observed on two occasions at Knocksculloge just to the north.

Table 2. Summary of Target Species Flights Recorded during 2024 breeding season FAS

Species	Conservation Status*	Number of flights	No. of birds per flight
Red grouse	Red	2	1
Golden plover	Ann I, Red	3	22-48
Woodcock	Red	5	1
Snipe	Red	3	1-2
Hen harrier	Ann I, Amber	64	1
Kestrel	Ann I, Red	78	1
Peregrine	Ann I, Green	1	1
Total		**156**	

*Ann I = listed on Annex I of the Bird's Directive; Amber = Bird of Conservation Concern in Ireland Amber-listed species; Red = Bird of Conservation Concern in Ireland Red-listed species.

Secondary Species

Seven secondary species were recorded during the FAS, with raven recorded during the majority of surveys, and sparrowhawk and buzzard also recorded frequently, often hunting. There were also occasional registrations of cormorant, mallard, herring gull and grey heron, transiting through the site. Secondary species were generally recorded as single birds or in low numbers of fewer than five birds per record.

Incidental Records

Hen harrier was also recorded incidentally during FAS; flights were observed during surveys but were beyond 2 km from surveyors, and therefore in line with NatureScot (2017) guidance, these flights have been omitted from further analysis.

4.2 Breeding Distribution Surveys

Target Species

Following analysis of data collected during Breeding Distribution Survey data, and any data recorded during other surveys which was indicative of breeding, territory analysis was undertaken. Three non-passerine species of conservation concern: red grouse, snipe and woodcock were recorded breeding within the survey area. The estimated number of breeding woodcock pairs is further discussed in the following section. Two red grouse territories and one snipe territory were recorded during the BDS. Indicative territory locations[2] are shown on **Figure 13**. Further red grouse were also recorded during the BDS and incidentally during other surveys; however, the behaviours recorded were not enough to confirm breeding territories. It is therefore acknowledged that the number of red grouse territories could be a slight underestimate.

Table 3. Summary of Species of Conservation Concern Assessed as Breeding during the 2024 BDS

Species	Number of territories			Conservation Status*
	Within the Site	Within the Survey Area	Total	
Red grouse	1	1	**2**	Red
Snipe	1	1	**1**	Red
*Red = Bird of Conservation Concern Ireland Red-listed species.				

Golden plover (red listed) was also recorded in flight during BDS, however only during one mid-April survey visit and this species was not found breeding within the Survey Area. It is thought that these were birds on passage and this species is considered likely to have bred in the wider landscape.

[2] Indicative territory locations are shown, with the centre of the territory marked or the nest site if known. Territories include all birds that were defending or holding a territory (even if this was not subsequently occupied by nesting birds) and regardless of breeding success.

Lesser black-backed gull (amber listed) was also recorded occasionally with a few small groups of birds flying over during June and July BDS visits. The species was not considered to be breeding within the Survey Area.

4.3 Breeding Woodcock Surveys

A total of 56 woodcock flights were recorded, with 30 individual males observed performing roding display flights. Additionally, 21 point locations of woodcock behaviour were recorded, with 15 pertaining to roding displays. Furthermore, three roding males were recorded across the BDS, FAS, and raptor surveys. In total, 48 roding males were recorded within the Breeding Woodcock Survey Area across the different survey methods. The locations of recorded roding flights and point registrations are presented in **Figure 14** and **Figure 15**, with the number of registrations of roding males recorded in each individual Breeding Woodcock Survey detailed in **Table 8**. Based on the survey timings, location and number of roding woodcock recorded, an estimated seven territories are present within the survey area.

It should be acknowledged that the number of woodcock territories is difficult to determine due to the size of the Site and number of transects required, and therefore it was not possible to cover the whole Site during a single visit. It is unlikely that all roding registrations related to unique birds, and uncertainty is introduced different birds can overlap when roding. Hence, there is a need for precaution when interpreting the number of territories present and therefore there could be a lesser or greater number of territories present.

4.4 Breeding Raptor Surveys

Annex I Raptor Species

A total of four Annex I raptor species were recorded within the Survey Area during Breeding Raptor Surveys. Details of Annex I raptor and owl species which were confirmed breeding species are provided in the Confidential Annex.

One non-breeding Annex I species, white-tailed eagle, was recorded twice during the Breeding Raptor Surveys. An immature male was observed flying north-west over Crohan Hill to the north-west of the Raptor Survey Area on 25/04/24. Another immature bird was observed circling over the west of the Wind Farm Site on 13/06/2024.

There was no evidence of any breeding white-tailed eagle during surveys. This species ranges widely when not holding territory, and it is likely that records relate to non-breeding birds.

Other Target Raptor Species

Three other target raptor species were recorded during Breeding Raptor Surveys of which, two were breeding within the Breeding Raptor Survey Area.

Kestrel was frequently recorded during FAS, with a total of 78 flights during the 2024 breeding season, and kestrel was also recorded on 62 occasions during Breeding Raptor Surveys. The majority of flight

activity related to hunting birds and was concentrated within suitable areas of open foraging habitat, particularly to the south of Knocknanask and Knoocknasheega, as well as around the edges of the Wind Farm Site Boundary in the south. A number of short duration flights were also recorded associated with woodland habitat.

During Breeding Raptor Surveys, although no kestrel nest locations were identified, evidence of breeding behaviour was recorded, and a number of juveniles were recorded within the Breeding Raptor Survey Area towards the end of the breeding season which confirmed successful breeding. Based on behaviour observed, three territories were identified, however this may be an underestimate and that further territories were present within the Survey Area.

Long-eared owl was recorded on five occasions during surveys, with three calling males during April and May and two records of calling juveniles. As a cryptic nocturnal species, it is difficult to record this species through standard survey methods and therefore a precautionary approach was taken when determining the three long-eared owl territories present. All long-eared owl territories were further than 1 km from the Wind Farm Site. Non-confidential breeding raptor territories are shown on **Figure 16**.

A single male goshawk flight was recorded during a survey on 11/07/24 at the edge of the Raptor Survey Area to the south-west of the Wind Farm Site Boundary. It is possible that this species bred outside the Raptor Survey Area, however there was no indication of breeding within this area.

Secondary Raptor Species

Three secondary species were observed during the Breeding Raptor Surveys: buzzard, sparrowhawk and raven. Registrations of these species are briefly summarised below:

- **Buzzard**: Frequently recorded, with at least five territories within the Raptor Survey Area, of which two were within the Wind Farm Site. There is an abundance of suitable breeding habitat within the Wind Farm Site and Survey Area.
- **Sparrowhawk**: Frequently recorded, with at least three territories within the Raptor Survey Area, all outside Wind Farm Site. There is an abundance of suitable breeding habitat within the Wind Farm Site and Survey Area.
- **Raven*:*** Frequently recorded, with at least one nest identified and juveniles observed later in the season. No territories were identified within the Wind Farm Site.

5. Summary of Key Findings

Flight activity was moderate during FAS with a total of 160 flights recorded. The majority of records were accounted for by two species, kestrel and hen harrier, with a total of 78 and 64 flights, respectively. Other species were recorded infrequently; however, three records of golden plover involved up to 48 birds passing over the Wind Farm Site.

There were very few target species recorded breeding during the BDS, with snipe and red grouse territories identified. Targeted woodcock surveys detected 45 roding males, with a total of 48 roding males recorded across all survey methods. Based on these findings, it is estimated that between X and X breeding woodcock pairs are present within the Breeding Woodcock Survey Area.

A minimum of three kestrel territories were present within the Raptor Survey Area, of which one was within the Wind Farm Site Boundary. However, given the abundant suitable breeding habitat and large number of flights recorded during FAS, the number of territories may be an underestimate. Additionally, long-eared owl was recorded during surveys with three territories present. Due to the cryptic, nocturnal nature of the species, a precautionary approach to calculating territories was adopted as the survey method does not target nocturnal species. All long-eared owl territories were further than 1 km from the Wind Farm Site. Territories for buzzard, sparrowhawk and raven (all secondary species) were also identified.

6. References

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Appendix 1 Figures

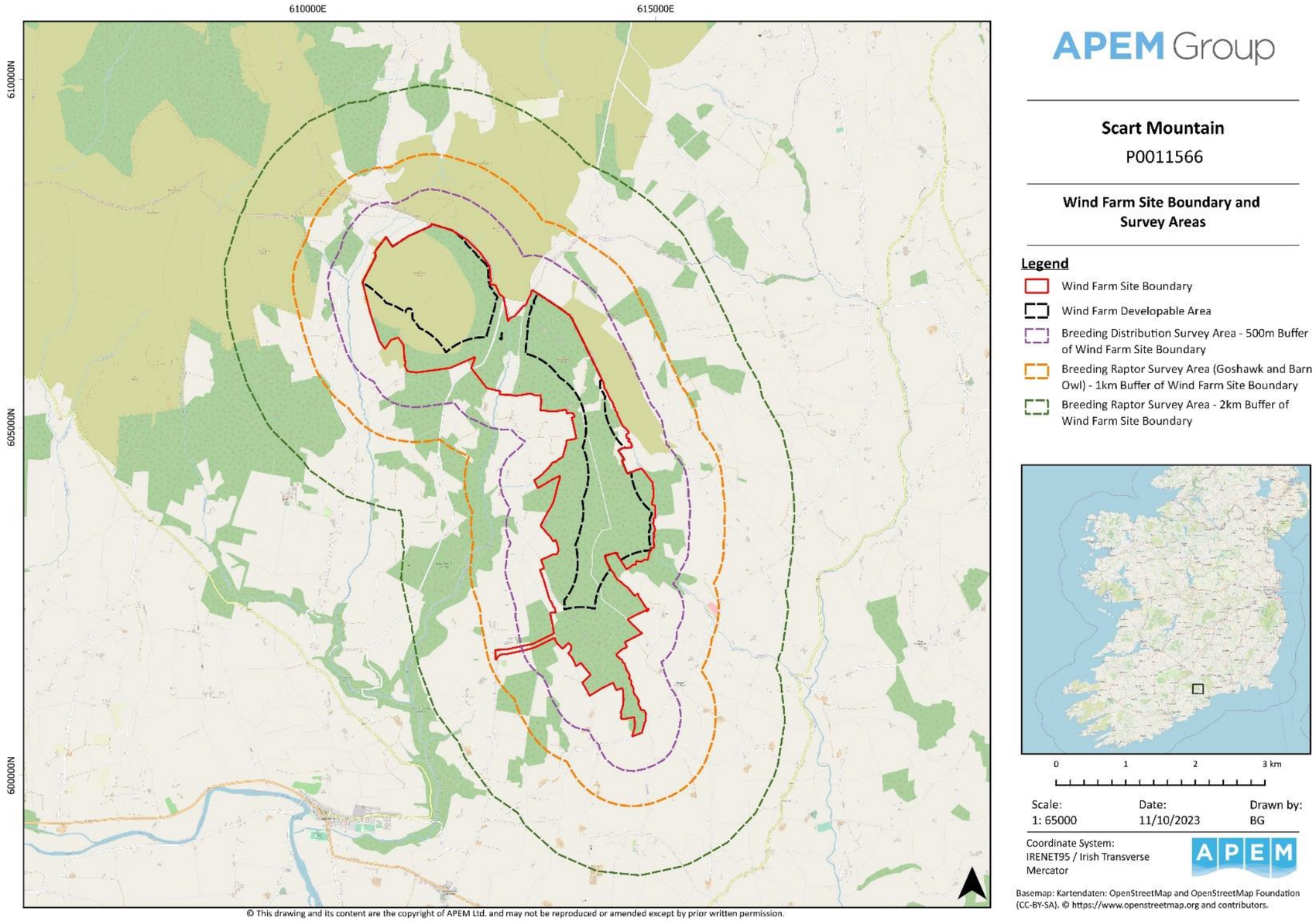


Figure 1: The Wind Farm Site Boundary and Survey Areas

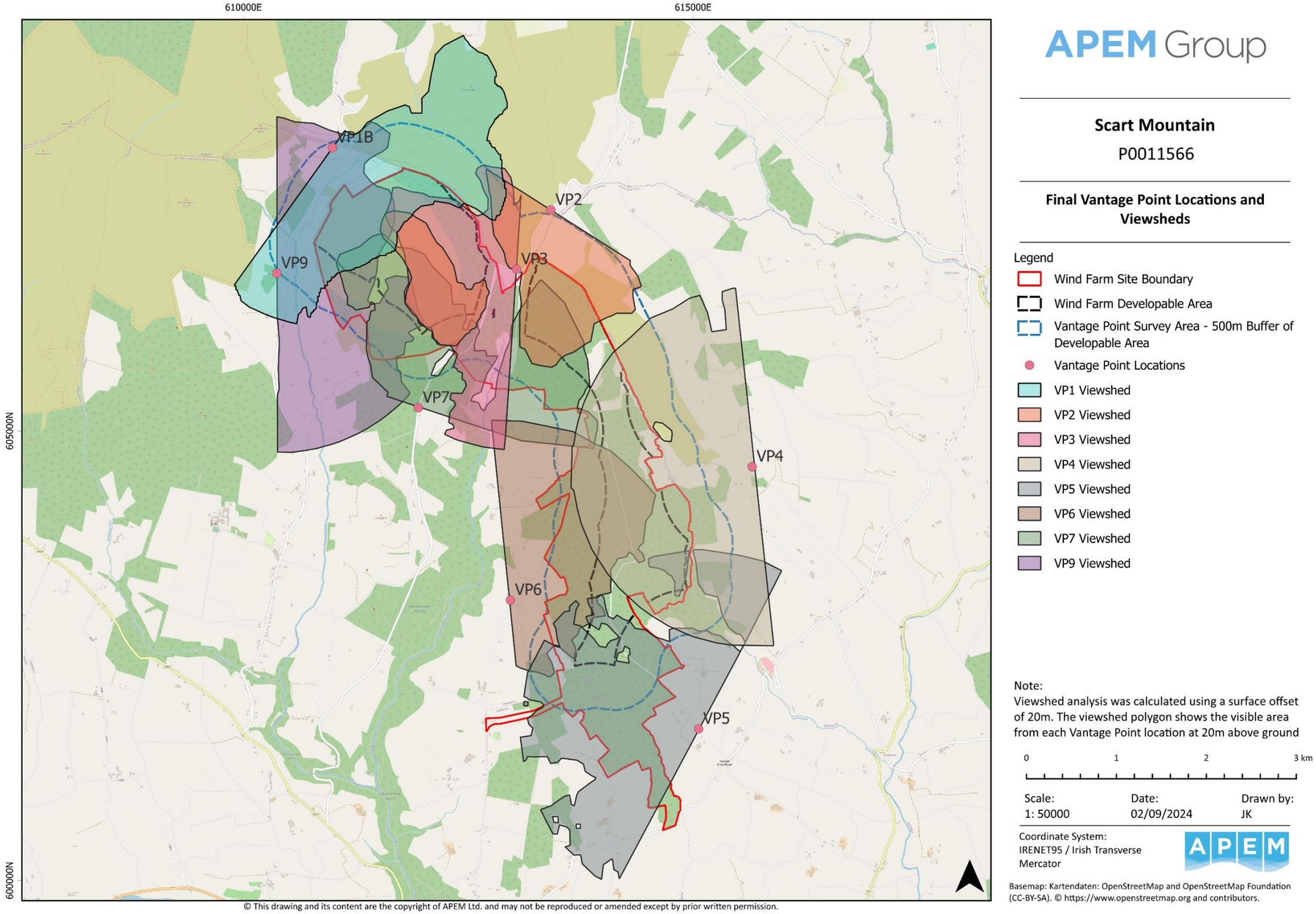
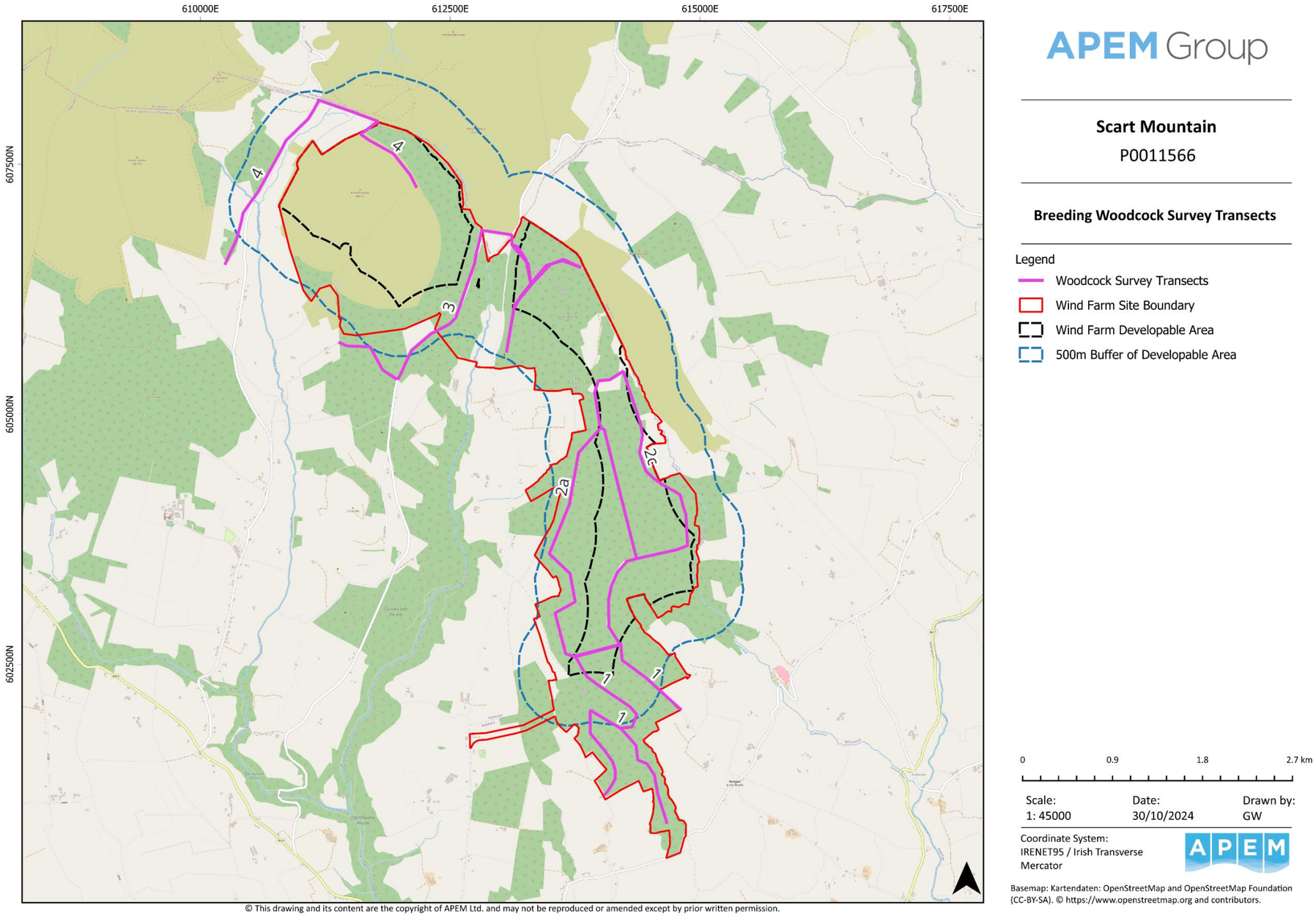


Figure 2: Final Vantage Point locations and their respective viewsheds.



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Breeding Woodcock Survey Transects

Legend

- Woodcock Survey Transects
- Wind Farm Site Boundary
- Wind Farm Developable Area
- 500m Buffer of Developable Area

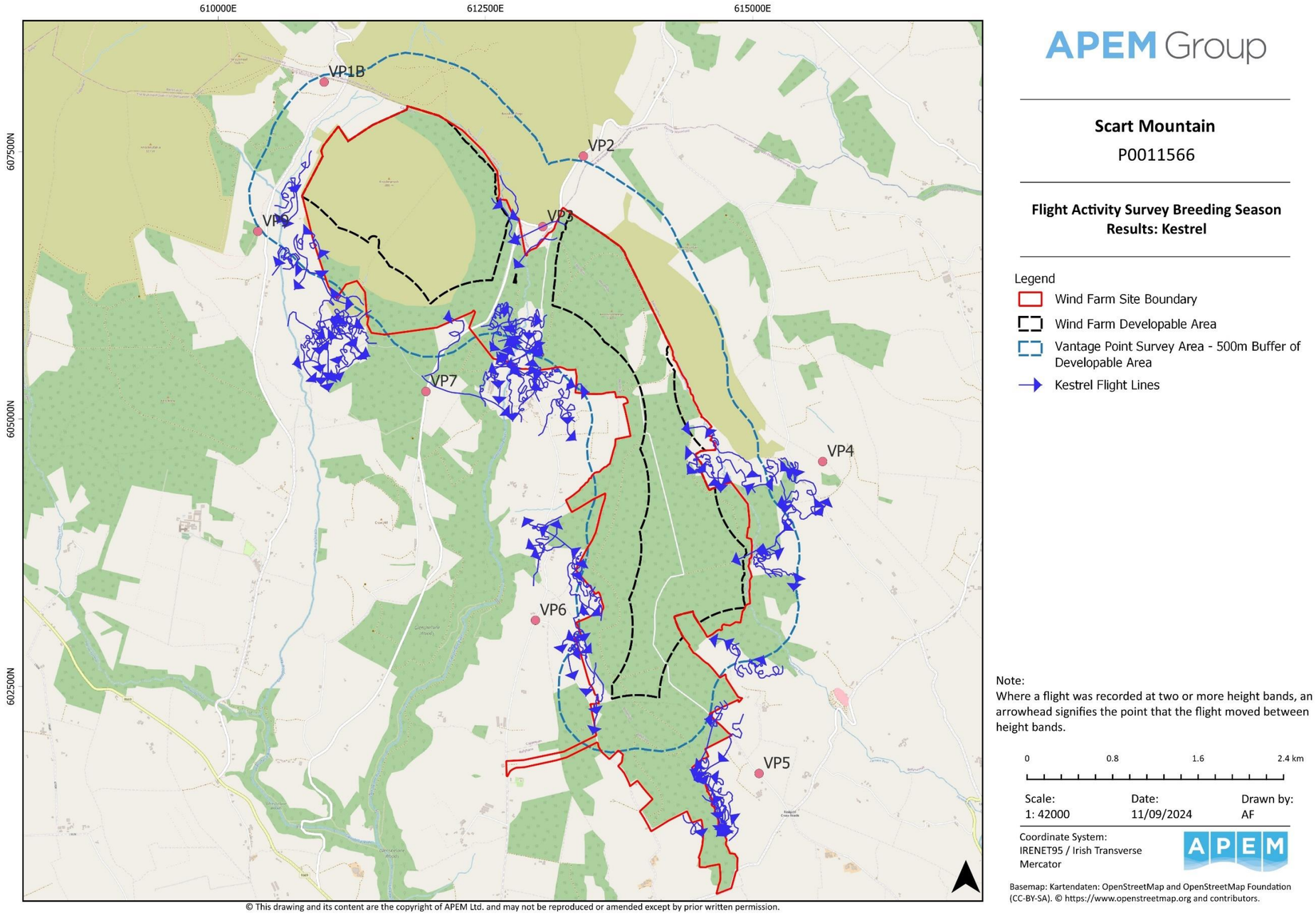
0 0.9 1.8 2.7 km

Scale:	Date:	Drawn by:
1: 45000	30/10/2024	GW

Coordinate System:
IRENET95 / Irish Transverse Mercator

Basemap: Kartendaten: OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © https://www.openstreetmap.org and contributors.

Figure 3: Breeding Woodcock Survey Transects



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Flight Activity Survey Breeding Season Results: Kestrel

Legend

- Wind Farm Site Boundary
- Wind Farm Developable Area
- Vantage Point Survey Area - 500m Buffer of Developable Area
- Kestrel Flight Lines

Note:
Where a flight was recorded at two or more height bands, an arrowhead signifies the point that the flight moved between height bands.

0 0.8 1.6 2.4 km

Scale:	Date:	Drawn by:
1: 42000	11/09/2024	AF

Coordinate System:
IRENET95 / Irish Transverse Mercator

Basemap: Kartendaten: OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © https://www.openstreetmap.org and contributors.

Figure 4. Flight Activity Survey Breeding Season Results: Kestrel

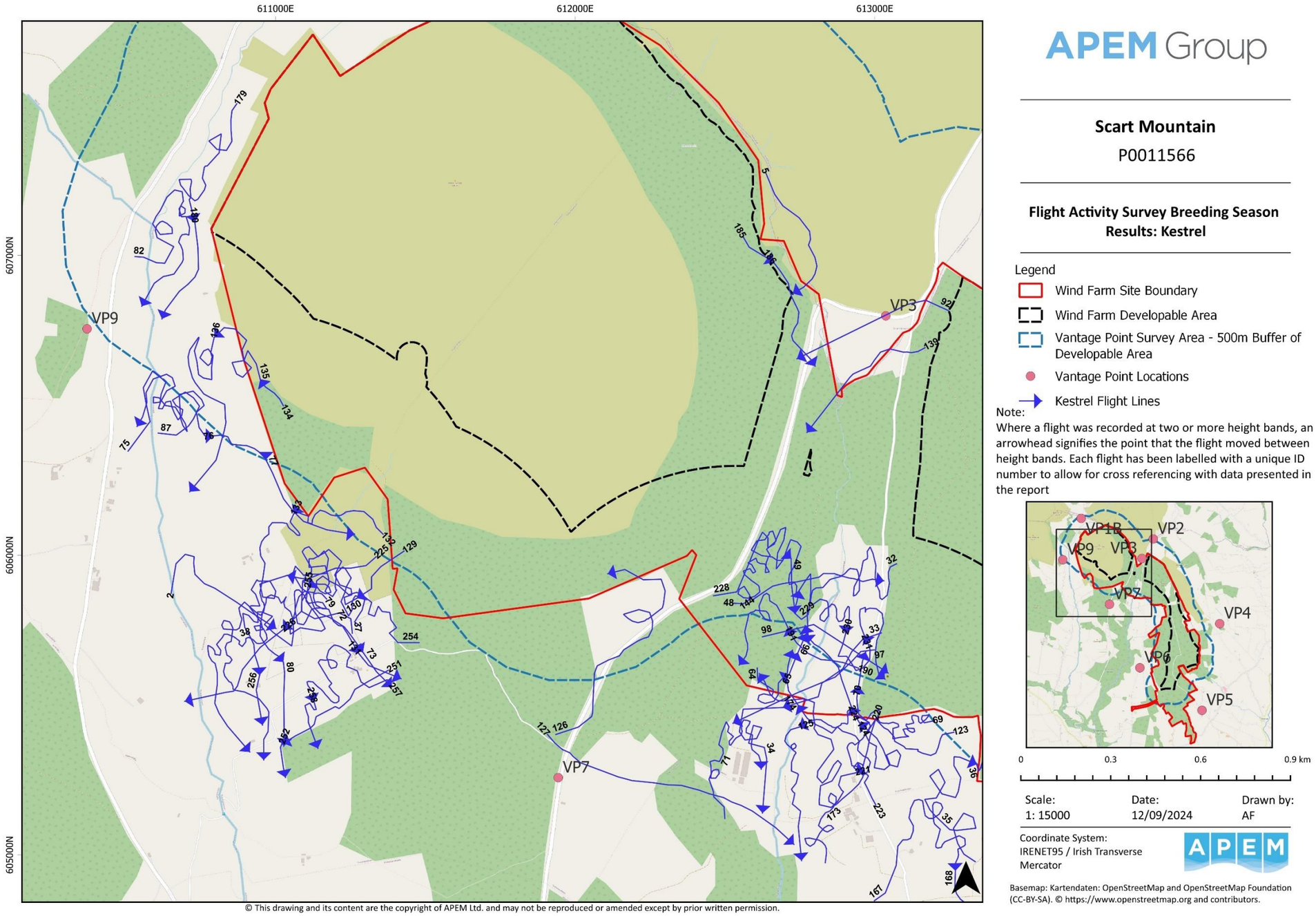


Figure 5. Flight Activity Survey Breeding Season Results: Kestrel. Part 1

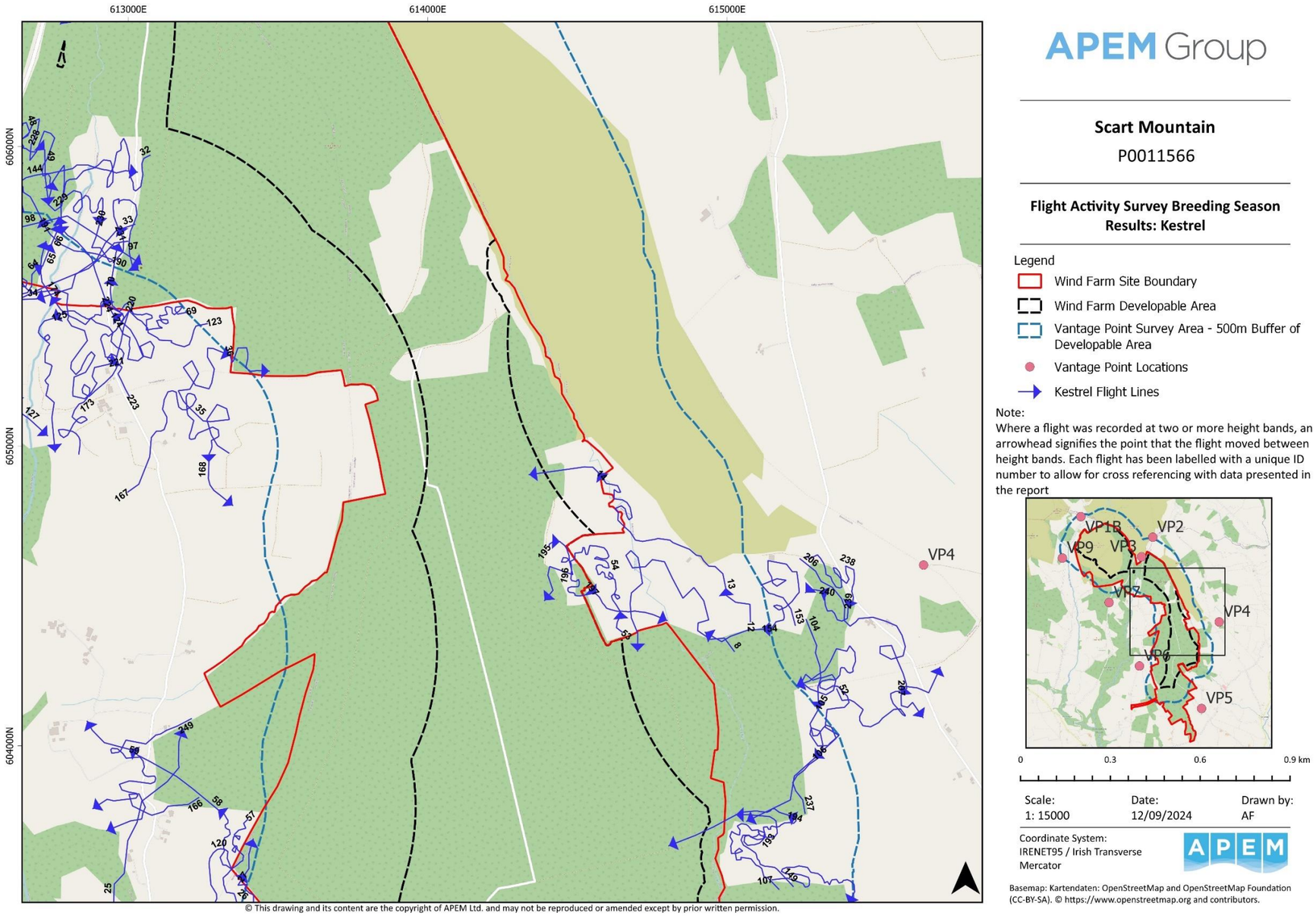


Figure 6. Flight Activity Survey Breeding Season Results: Kestrel. Part 2

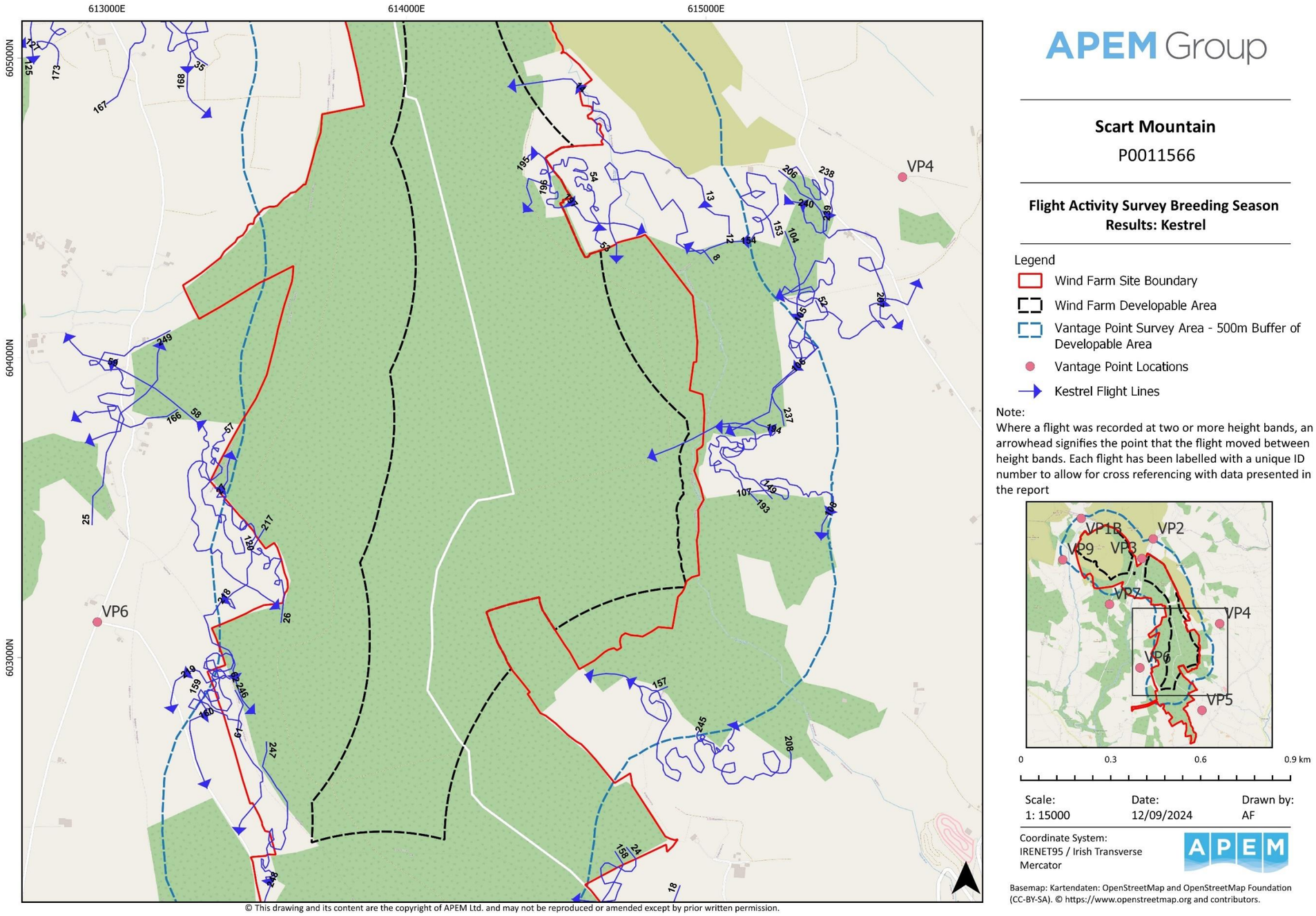
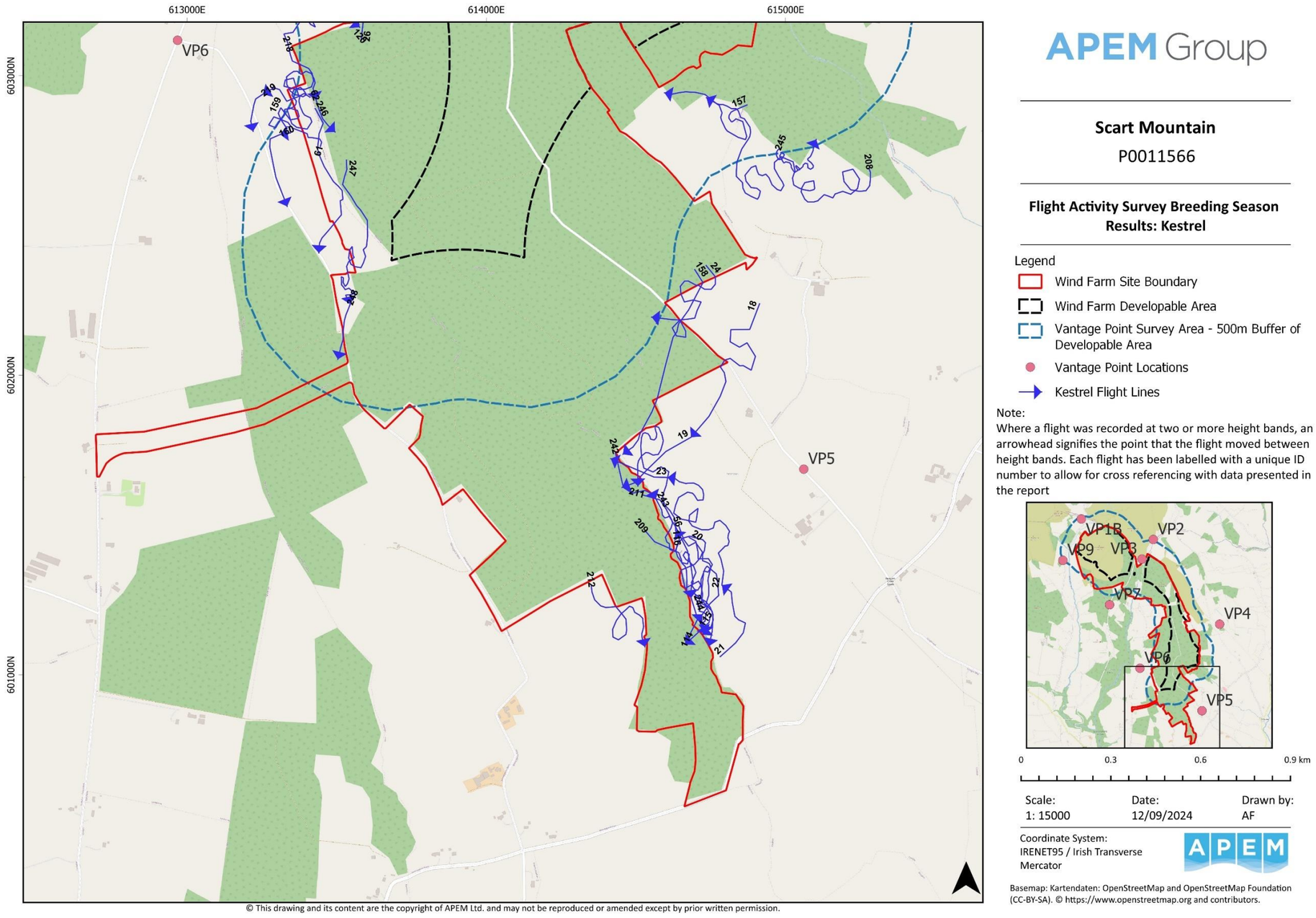


Figure 7. Flight Activity Survey Breeding Season Results. Part 3



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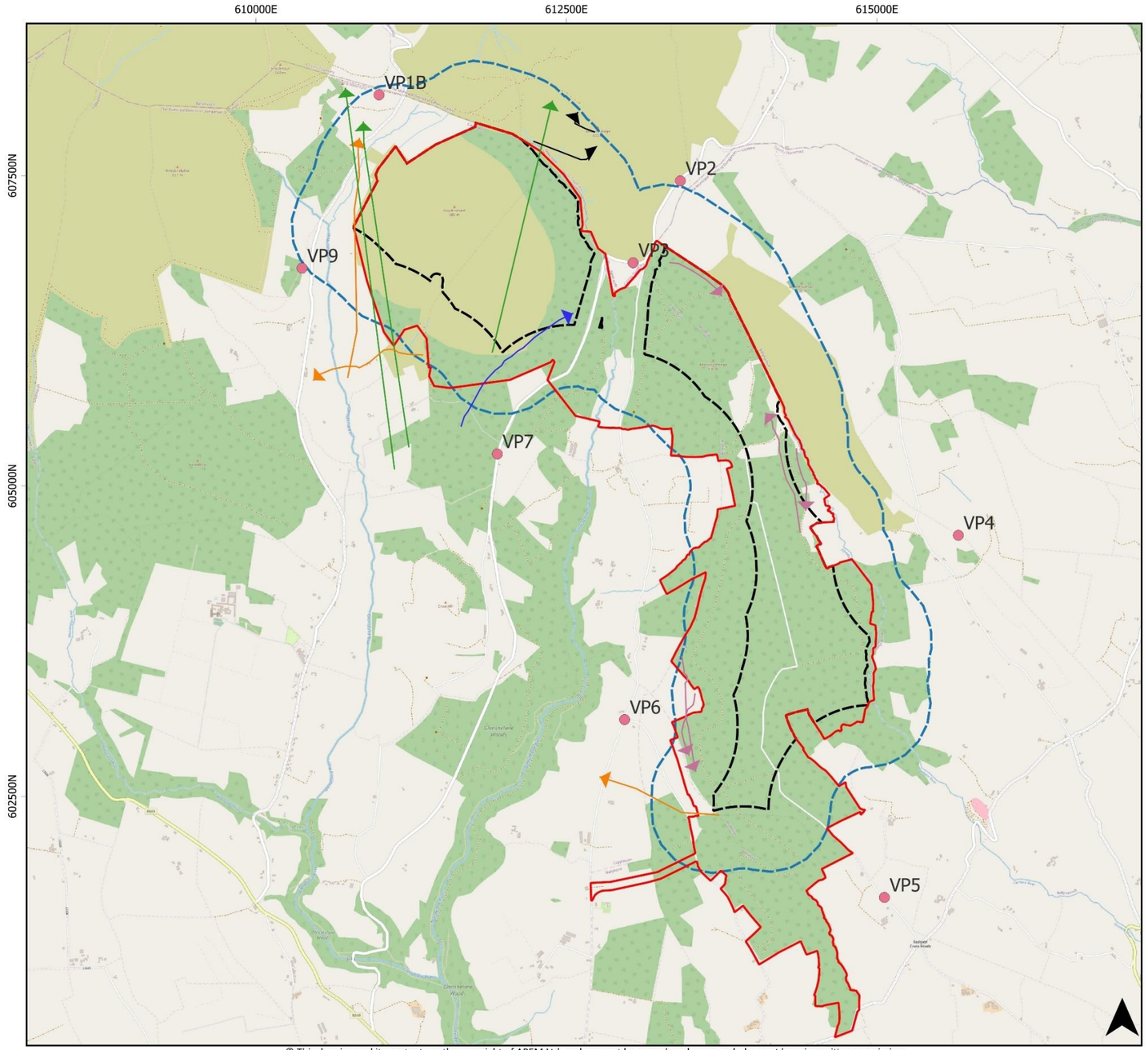
Flight Activity Survey Breeding Season Results: Kestrel

Legend

- Wind Farm Site Boundary
- Wind Farm Developable Area
- Vantage Point Survey Area - 500m Buffer of Developable Area
- Vantage Point Locations
- Kestrel Flight Lines

Note:
Where a flight was recorded at two or more height bands, an arrowhead signifies the point that the flight moved between height bands. Each flight has been labelled with a unique ID number to allow for cross referencing with data presented in the report

Figure 8. Flight Activity Survey Breeding Season Results. Part 4



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Flight Activity Survey Breeding Season Results: Other Target Species

Legend

- Wind Farm Site Boundary
- Wind Farm Developable Area
- Vantage Point Survey Area - 500m Buffer of Developable Area
- Golden Plover Flight Lines
- Peregrine Flight Lines
- Red Grouse Flight Lines
- Snipe Flight Lines
- Woodcock Flight Lines

Note:
Where a flight was recorded at two or more height bands, an arrowhead signifies the point that the flight moved between height bands.

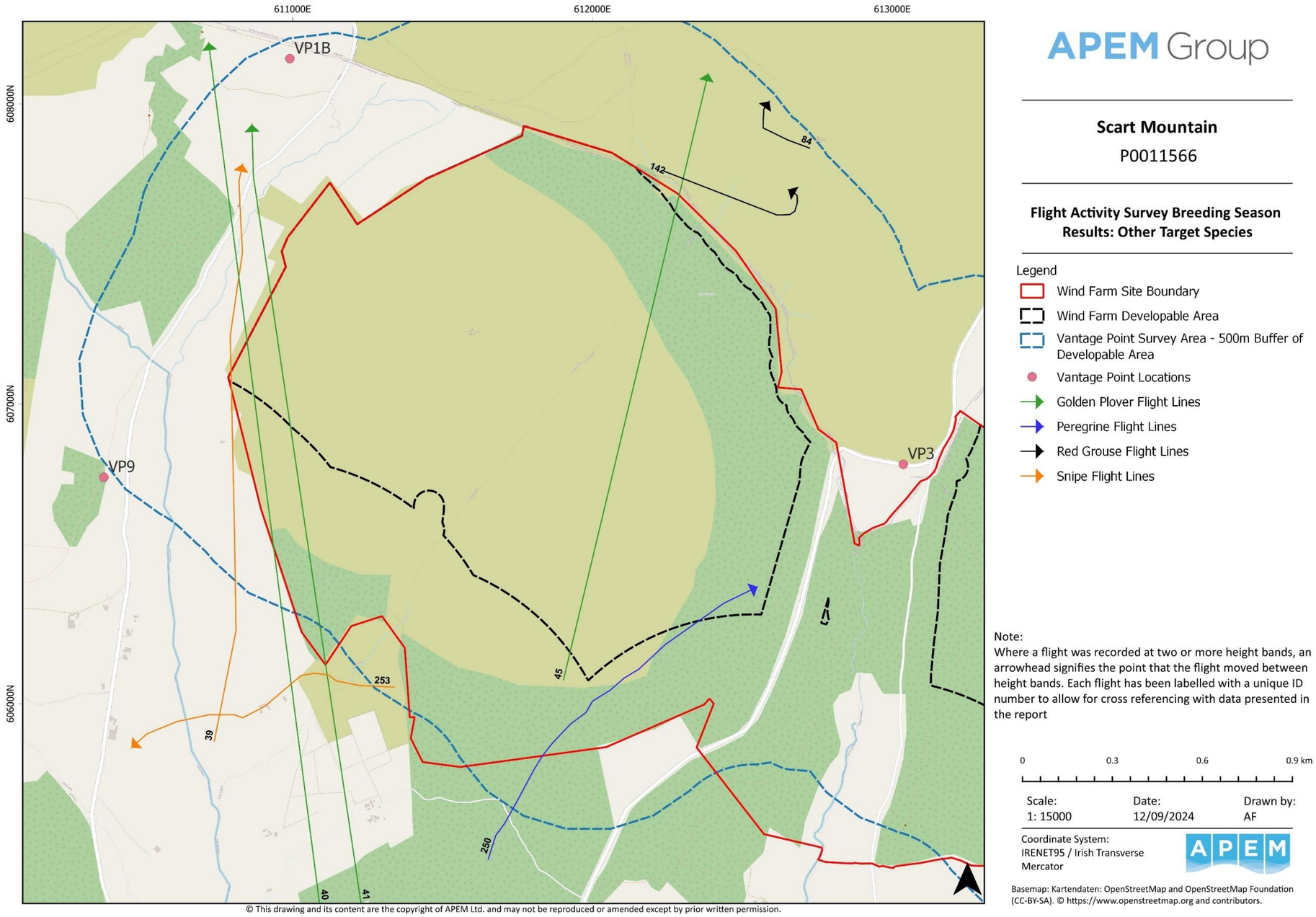
0 0.8 1.6 2.4 km

Scale:	Date:	Drawn by:
1: 42000	12/09/2024	AF

Coordinate System:
IRENET95 / Irish Transverse Mercator

Basemap: Kartendaten: OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © https://www.openstreetmap.org and contributors.

Figure 9. Flight Activity Survey Breeding Season Results: Other Target Species.



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Scart Mountain

P0011566

Flight Activity Survey Breeding Season Results: Other Target Species

Legend

- Wind Farm Site Boundary
- Wind Farm Developable Area
- Vantage Point Survey Area - 500m Buffer of Developable Area
- Vantage Point Locations
- Golden Plover Flight Lines
- Peregrine Flight Lines
- Red Grouse Flight Lines
- Snipe Flight Lines

Note:
Where a flight was recorded at two or more height bands, an arrowhead signifies the point that the flight moved between height bands. Each flight has been labelled with a unique ID number to allow for cross referencing with data presented in the report

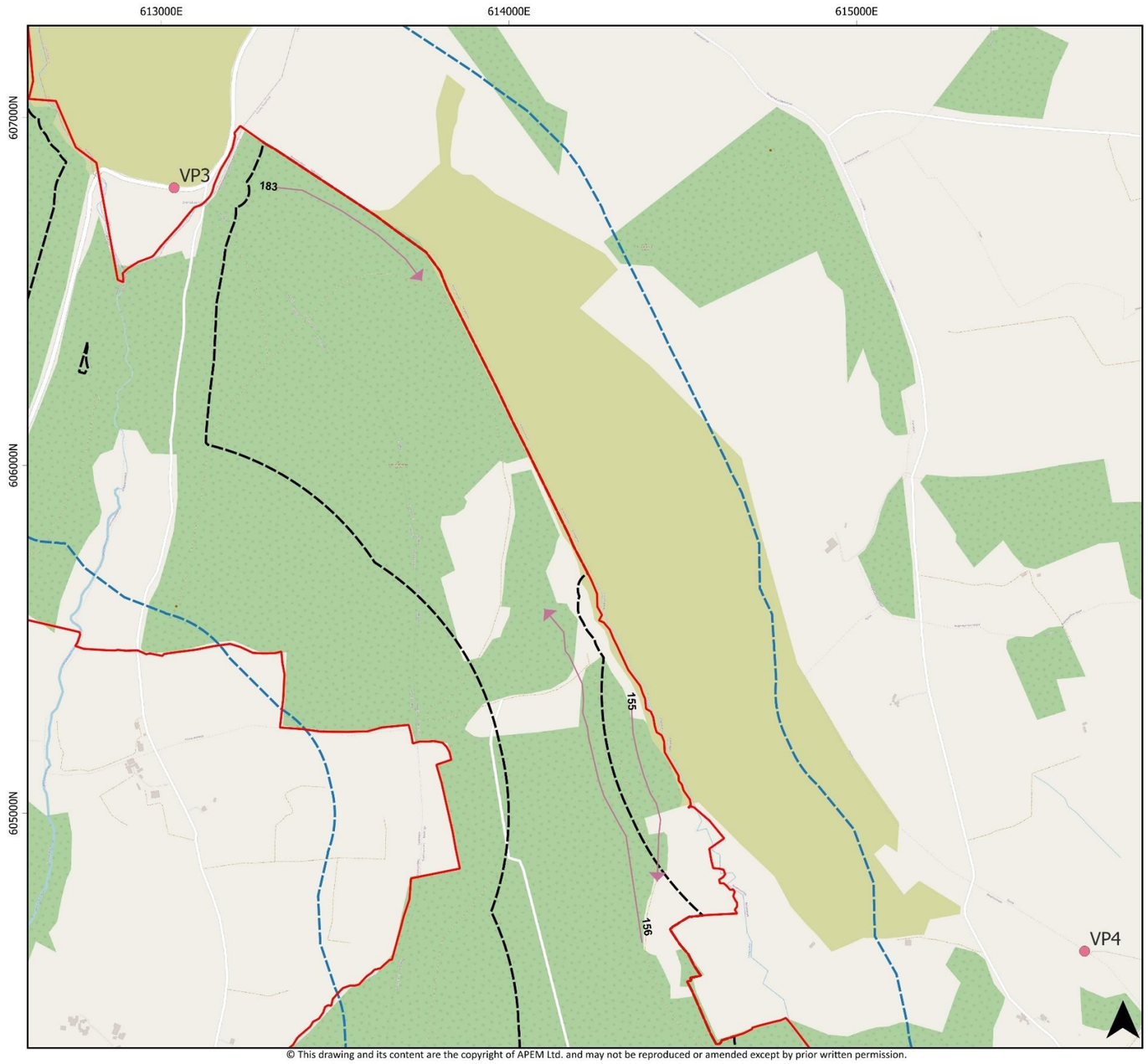
0 0.3 0.6 0.9 km

Scale:	Date:	Drawn by:
1: 15000	12/09/2024	AF

Coordinate System:
IRENET95 / Irish Transverse Mercator

Basemap: Kartendaten: OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © https://www.openstreetmap.org and contributors.

Figure 10. Flight Activity Survey Breeding Season Results: Other Target Species . Part 1



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Flight Activity Survey Breeding Season Results: Other Target Species

Legend

- Wind Farm Site Boundary
- Wind Farm Developable Area
- Vantage Point Survey Area - 500m Buffer of Developable Area
- Vantage Point Locations
- Woodcock Flight Lines

Note:
Where a flight was recorded at two or more height bands, an arrowhead signifies the point that the flight moved between height bands. Each flight has been labelled with a unique ID number to allow for cross referencing with data presented in the report

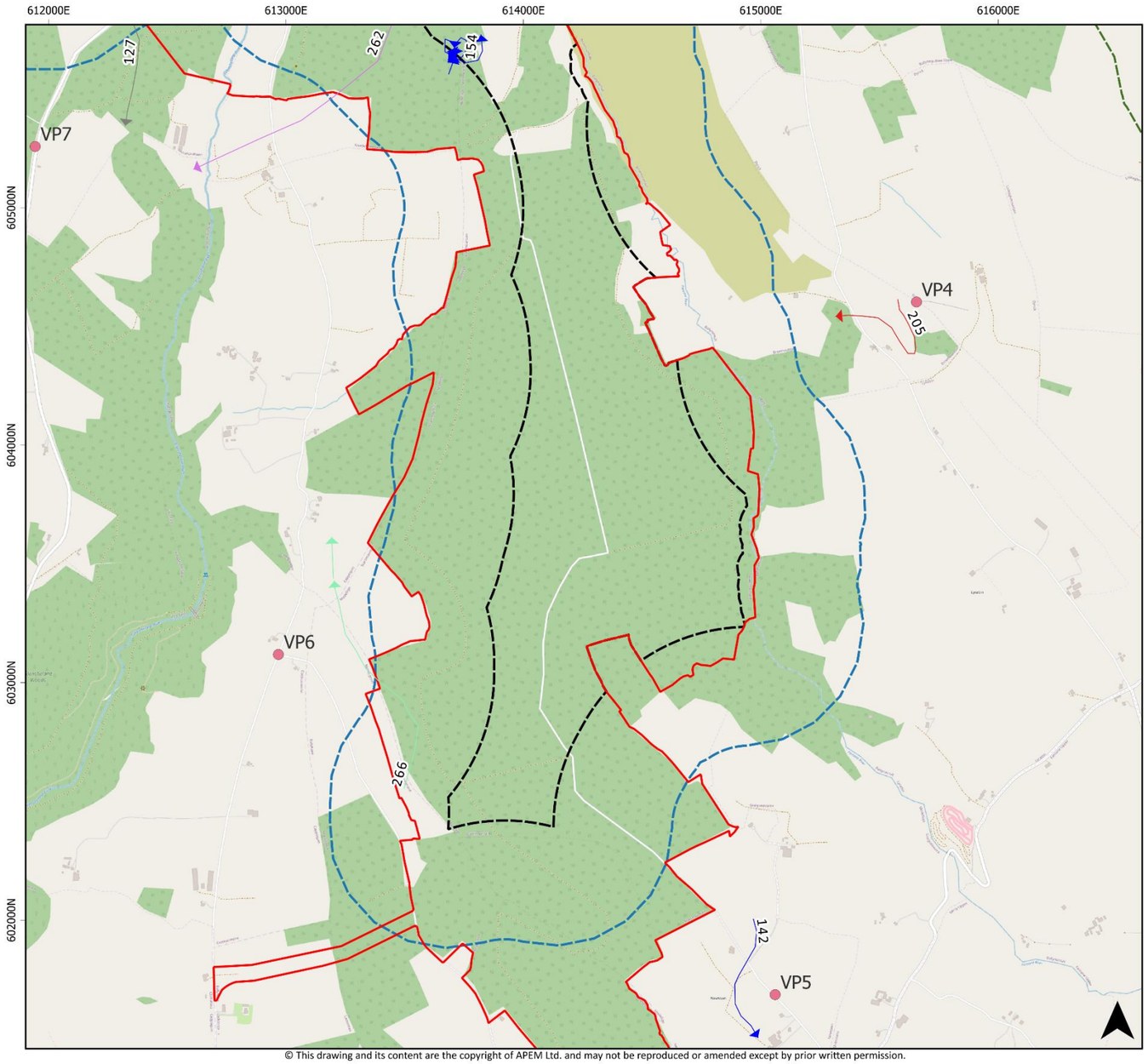
0 0.3 0.6 0.9 km

Scale:	Date:	Drawn by:
1: 15000	12/09/2024	AF

Coordinate System:
IRENET95 / Irish Transverse Mercator

Basemap: Kartendaten: OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © https://www.openstreetmap.org and contributors.

Figure 11. Flight Activity Survey Breeding Season Results: Other Target Species. Part 2



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Scart Mountain

P0011566

Flight Activity Survey Breeding Season Results: Other Target Species

Legend

- Wind Farm Site Boundary
- Wind Farm Developable Area
- Vantage Point Survey Area - 500m Buffer of Developable Area
- Vantage Point Locations
- Golden Plover Flight Lines
- Woodcock Flight Lines
- Snipe Flight Lines
- Merlin Flight Lines
- Peregrine Flight Lines

Note:
Where a flight was recorded at two or more height bands, an arrowhead signifies the point that the flight moved between height bands. Each flight has been labelled with a unique ID number to allow for cross referencing with data presented in the report

0 0.4 0.8 1.2 km

Scale:	Date:	Drawn by:
1: 22000	01/07/2024	GW

Coordinate System:
IRENET95 / Irish Transverse Mercator

Basemap: Kartendaten: OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © https://www.openstreetmap.org and contributors.

Figure 12. Flight Activity Survey Breeding Season Results: Other Target Species . Part 3

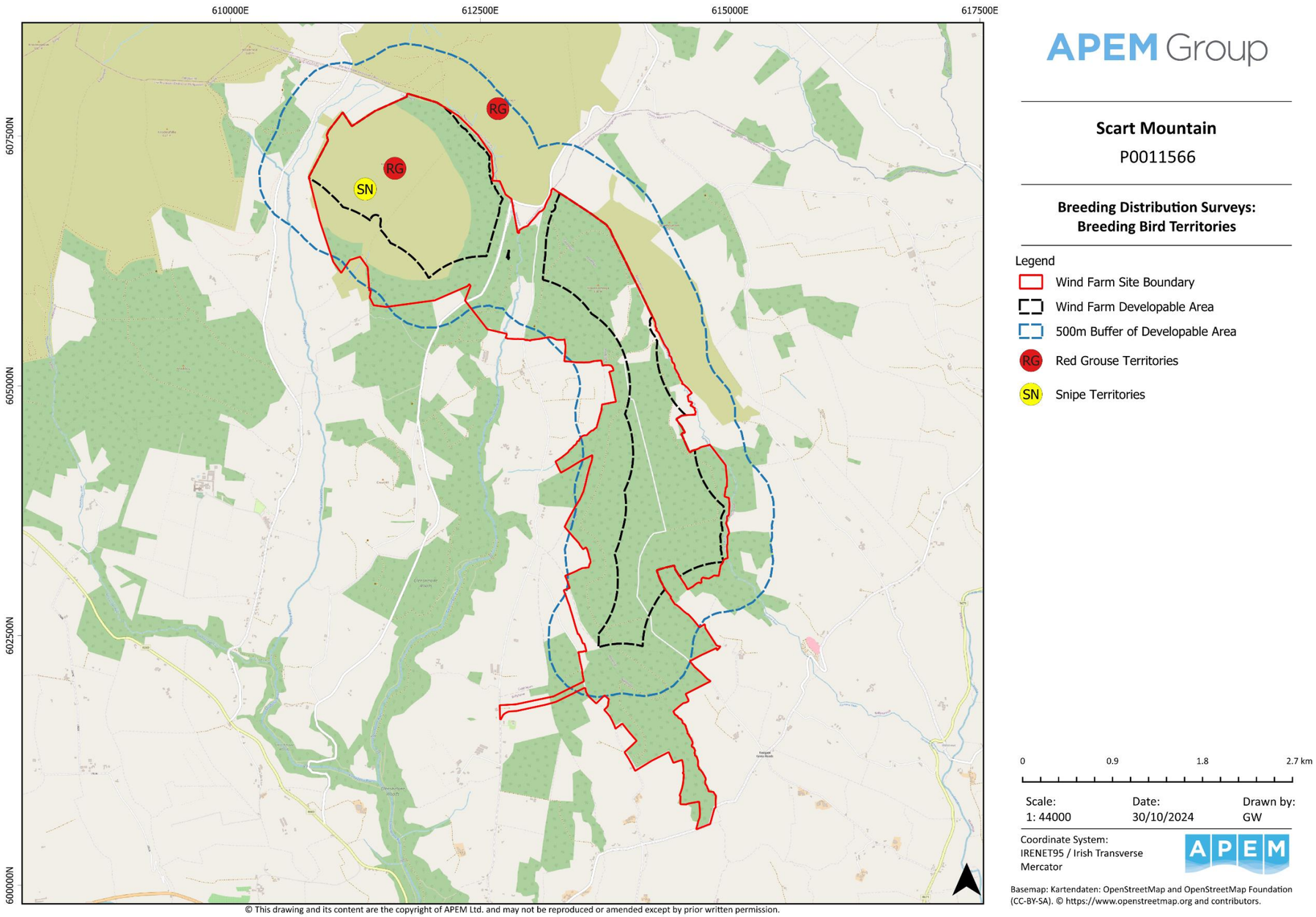
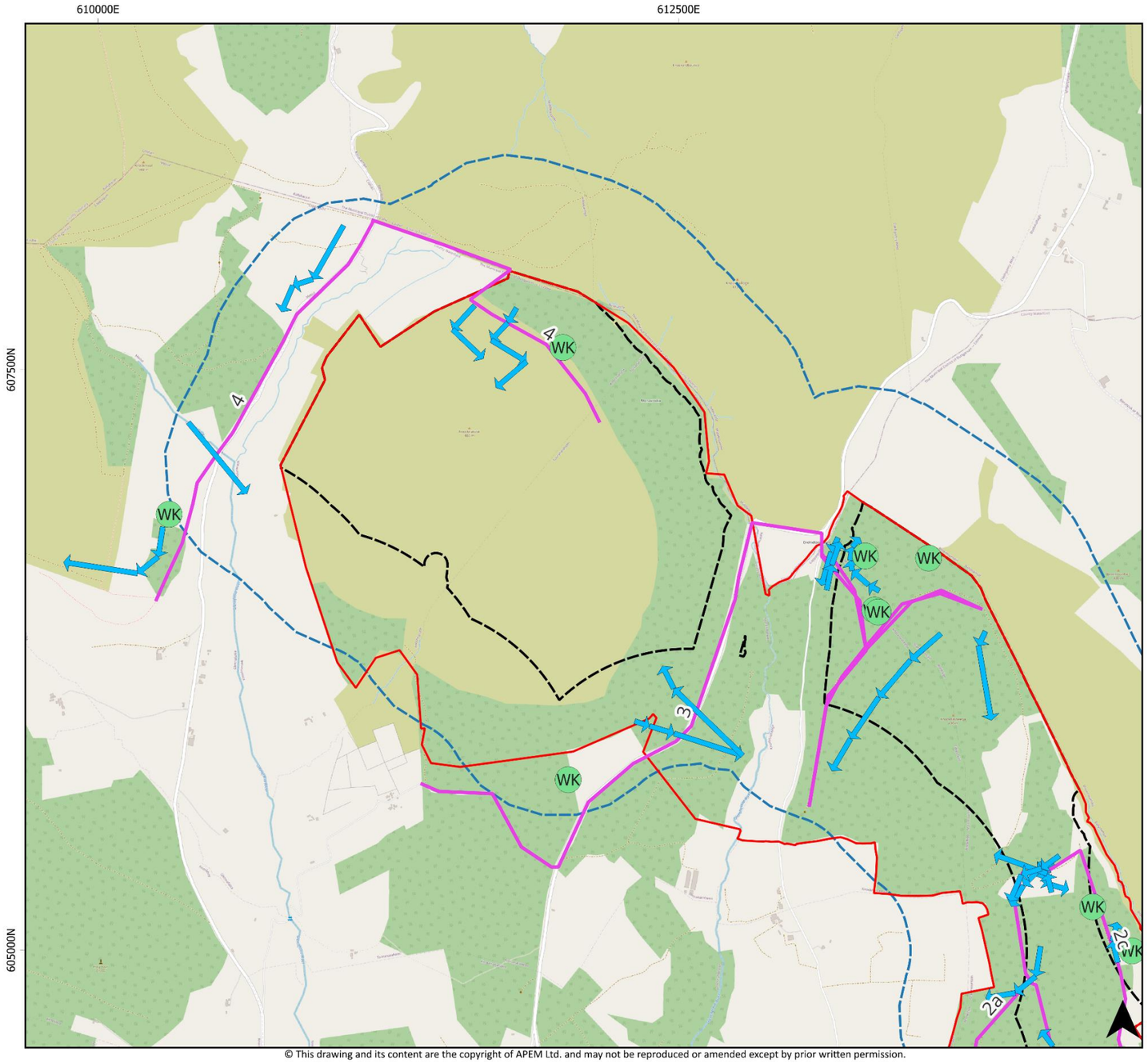


Figure 13. Breeding Distribution Surveys: Breeding Bird Territories



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Breeding Woodcock Surveys: Roding Displays Recorded

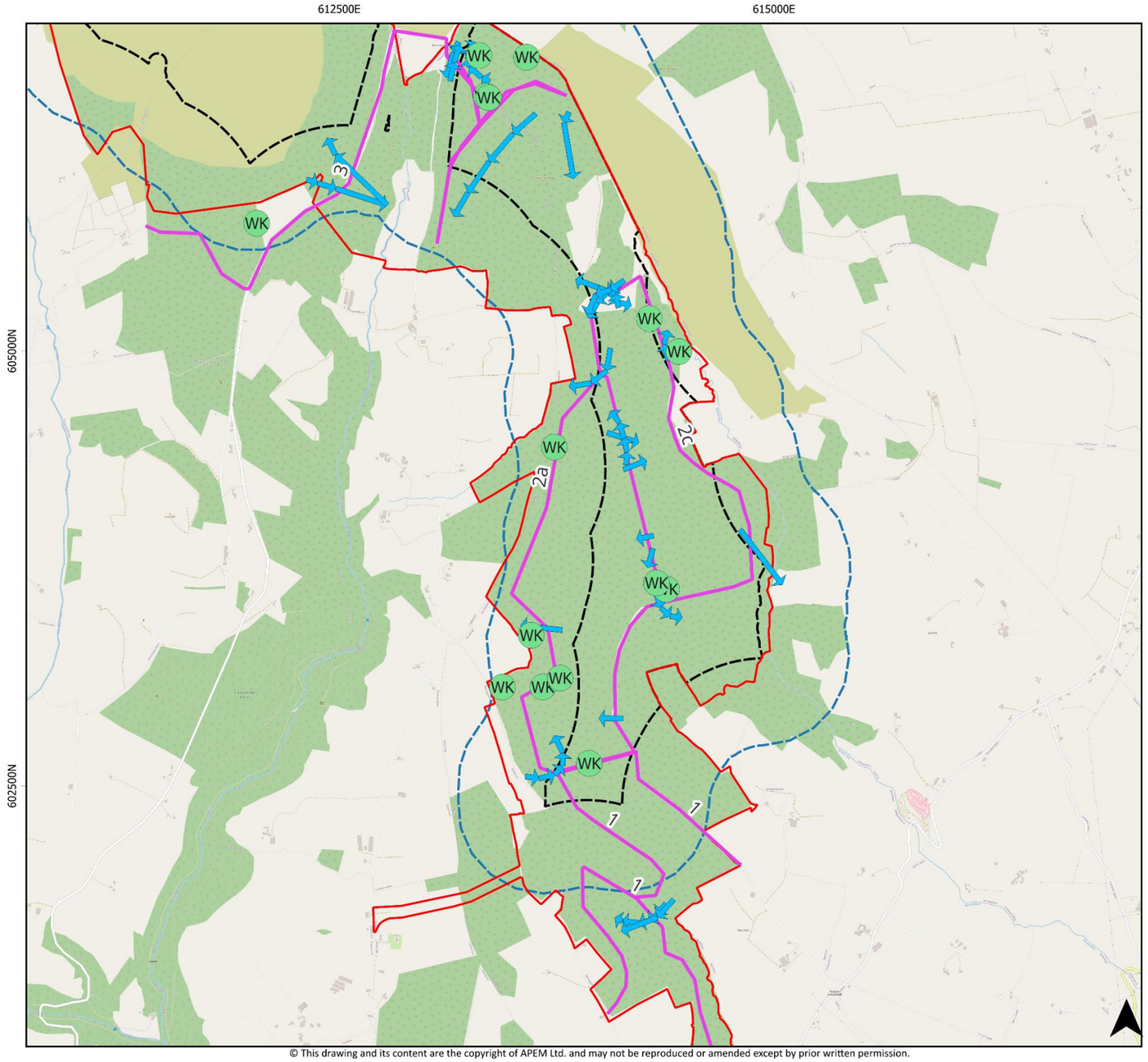
- Woodcock Survey Transects
- Wind Farm Site Boundary
- Wind Farm Developable Area
- 500m Buffer of Developable Area
- WK Point Locations of Roding Woodcock
- Roding Woodcock Flights

0 0.4 0.8 1.2 km

Scale:	Date:	Drawn by:
1: 25500	08/11/2024	GW

Coordinate System: IRENET95 / Irish Transverse Mercator

Figure 14. Breeding Woodcock Surveys: Roding Displays Recorded, part 1



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Scart Mountain

P0011566

Breeding Woodcock Surveys: Roding Displays Recorded

- Woodcock Survey Transects
- Wind Farm Site Boundary
- Wind Farm Developable Area
- 500m Buffer of Developable Area
- WK Point Locations of Roding Woodcock
- Roding Woodcock Flights

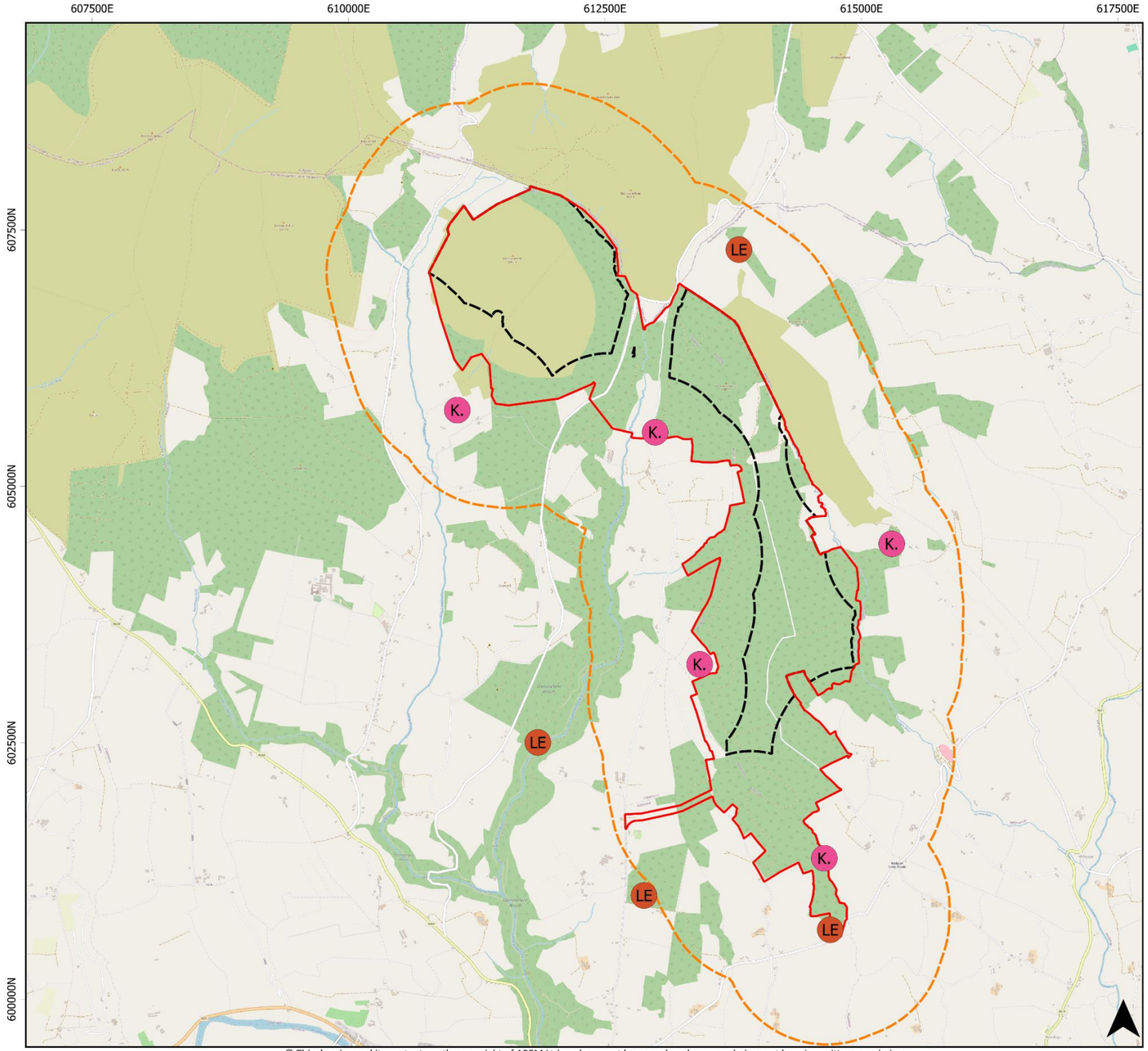
0 0.6 1.2 1.8 km

Scale:	Date:	Drawn by:
1: 30000	08/11/2024	GW

Coordinate System: IRENET95 / Irish Transverse Mercator

Basemap: Kartendaten: OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © https://www.openstreetmap.org and contributors.

Figure 15. Breeding Woodcock Surveys: Roding Displays Recorded, part 2



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Breeding Distribution Surveys: Breeding Bird Territories

Wind Farm Site Boundary

Wind Farm Developable Area

1km Buffer of Development Area

2024 Breeding Territories

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Scale:	Date:	Drawn by:
1: 44000	04/11/2024	AF

Coordinate System: IRENET95 / Irish Transverse Mercator

Basemap: Kartendaten: OpenStreetMap and OpenStreetMap Foundation (CC-BY-SA). © https://www.openstreetmap.org and contributors.

Figure 16. Breeding Raptor Surveys: Breeding Raptor Territories.

Appendix 1 Species List

Table 4 provides vernacular and scientific names for all bird species named within this report as taken from the BirdWatch Ireland Species List

Table 4. List of Species mentioned within this report

English common name	Birdwatch Ireland Species Name	Scientific name	Annex I Listing**	BoCCI Conservation Status**
Mallard	Mallard	*Anas platyrhynchos*		Amber
Red grouse	Red grouse	*Lagopus lagopus scotica*		Red
Stock dove	Stock dove	*Columba oenas*		Red
Golden plover	Golden plover	*Pluvialis apricaria*	Ann I	Red
Curlew	Curlew	*Numenius arquata*		Red
Woodcock	Woodcock	*Scolopax rusticola*		Red
Snipe	Snipe	*Gallinago gallinago*		Red
Lesser black-backed gull	Lesser black-backed gull	*Larus fuscus*		Amber
Grey heron	Grey heron	*Ardea cinerea*		Green
Osprey	Osprey	*Pandion haliaetus*	Ann I	N/A
Sparrowhawk	Sparrowhawk	*Accipiter nisus*		Green
Goshawk	Northern goshawk	*Accipiter gentilis*		Amber
Hen harrier	Hen harrier	*Circus cyaneus*	Ann I	Amber
Red kite	Red Kite	*Milvus milvus*	Ann I	Red
White-tailed eagle	White-tailed eagle	*Haliaeetus albicilla*	Ann I	Red
Buzzard	Buzzard	*Buteo buteo*		Green
Kestrel	Kestrel	*Falco tinnunculus*		Red
Merlin	Merlin	*Falco columbarius*	Ann I	Amber
Hobby	Hobby	*Falco subbuteo*		N/A
Peregrine	Peregrine falcon	*Falco peregrinus*	Ann I	Green
Hooded crow	Hooded crow	*Corvus cornix*		Green
Raven	Raven	*Corvus corax*		Green

*Ann I = listed on Annex I of the Bird's Directive;

**Green = Bird of Conservation Concern Ireland Green-listed species, Amber = Bird of Conservation Concern Ireland Amber-listed species; Red = Bird of Conservation Concern Ireland Red-listed species.

Appendix 3 Weather Data

Table 5. Survey times and weather conditions during 2024 breeding season FAS

Survey	Date	Time	Temperature (Celsius)	Wind (Beaufort scale and direction)	Visibility	Precipitation	Cloud Cover (oktas)
VP 1B							
1	02/04/2024	13:30-16:30	5	BF2 WNW	>10km	Dry	3
1	04/04/2024	13:25-16:25	10	BF2 E	>5km	Light showers	6
2	16/04/2024	13:10-16:10	10	BF2 NW	>10km	Dry	5
2	18/04/2024	16:00-19:00	11	BF3 W	>5km	Dry	8
3	08/05/2024	08:30-11:30	13	BF1 SW	>5km	Dry	0
3	11/05/2024	12:20-15:20	16	BF2 SSE	>10km	Dry	2
4	17/06/2024	15:30-18:30	16	BF2 ENE	>5km	Dry	5
4	24/06/2024	04:28-07:28	16	BF1 ESE	>5km	Dry	6
5	01/07/2024	08:00-11:00	12	BF1 WSW	>5km	Dry	6
5	14/07/2024	08:30-11:30	16	BF1 E	>10km	Dry	5
6	02/08/2024	12:20-15:20	20	BF1 S	>10km	Dry	0
6	06/08/2024	12:20-15:20	20	BF2 SSE	>10km	Dry	3
VP 2							
1	03/04/2024	17:35-20:35	10	BF2 WNW	>5km	Dry	7
1	04/04/2024	09:55-12:55	8	BF2 ENE	>5km	Dry	7
2	16/04/2024	05:52-08:52	7	BF3 W	>10km	Dry	5
2	29/04/2024	12:45-15:45	13	BF3 S	>3km	Light showers	8

Survey	Date	Time	Temperature (Celsius)	Wind (Beaufort scale and direction)	Visibility	Precipitation	Cloud Cover (oktas)
3	08/05/2024	05:07-08:07	11	BF1 (var)	>5km	Dry	0
3	10/05/2024	12:05-15:05	16	BF2 SSE	>10km	Dry	3
4	10/06/2024	08:00-11:00	12	BF2 NNW	>10km	Dry	1
4	24/06/2024	08:00-11:00	19	BF1 ESE	>10km	Dry	5
5	14/07/2024	04:45-07:45	12	BF1 (var)	>5km	Dry	6
5	30/07/2024	19:55-21:55	18	BF2 SE	>5km	Dry	5
5	01/08/2024	16:00-17:00	19	BF1 SSW	>10KM	Dry	2
6	02/08/2024	05:15-08:15	16	BF1 (var)	>10km	Dry	0
6	07/08/2024	18:40-21:40	18	BF2 SW	>5km	Dry	7
VP 3							
1	05/04/2024	14:08-17:08	15	BF4 SSW	>3km	Light showers	6
1	05/04/2024	17:38-20:38	13	BF3 SSW	>3km	Light rain	6
2	18/04/2024	08:50-11:50	7	BF2 WSW	>5km	Dry	5
2	29/04/2024	09:15-12:15	11	BF3 SSE	>3km	Light showers	8
3	09/05/2024	07:35-10:35	14	BF1 S	>10km	Dry	2
3	24/05/2024	08:15-11:15	11	BF3 W	>3km	Light showers	8
4	10/06/2024	11:30-14:30	14	BF3 NNW	>10km	Dry	3
4	24/06/2024	11:30-14:30	22	BF1 ESE	>5km	Dry	3
5	14/07/2024	12:00-15:00	18	BF1 E	>10km	Dry	5
5	22/07/2024	12:00-15:00	16	BF3 SW	>3km	Showers	8
6	02/08/2024	08:45-11:45	17	BF1 SSW	>10km	Dry	0
6	06/08/2024	05:10-08:10	11	BF1 SSW	>10km	Dry	0
VP 4							

Survey	Date	Time	Temperature (Celsius)	Wind (Beaufort scale and direction)	Visibility	Precipitation	Cloud Cover (oktas)
1	03/04/2024	13:45-16:45	10	BF3 NW	>5km	Dry	7
1	05/04/2024	09:55-12:55	13	BF3 SSW	>5km	Dry	5
2	16/04/2024	09:40-12:40	9	BF3 WNW	>5km	Shower	6
2	18/04/2024	12:30-15:30	11	BF3 WSW	>5km	Light showers	7
3	10/05/2024	05:03-08:03	12	BF1 SSE	>5km	Dry	6
3	10/05/2024	08:35-11:35	14	BF1 SSE	>10km	Dry	5
4	18/06/2024	08:10-11:10	16	BF1 WNW	>10km	Dry	5
4	18/06/2024	19:30-22:30	16	BF1 NW	>5km	Dry	3
5	15/07/2024	08:35-11:35	14	BF1 SSE	>10km	Dry	3
5	15/07/2024	12:05-15:05	18	BF1 ESE	>10km	Dry	5
6	01/08/2024	05:12-08:12	15	BF1 (var)	>10km	Dry	0
6	01/08/2024	08:45-11:45	18	BF1 WSW	>10km	Dry	1
VP 5							
1	02/04/2024	17:30-20:30	10	NW/ESE	>10km	Light showers	5
1	03/04/2024	06:25-09:25	8	BF3 NNE	>5km	Light showers	6
2	30/04/2024	05:22-08:22	9	BF1 E	>3km	Dry	7
2	30/04/2024	12:45-15:45	11	BF3 SSE	>5km	Dry	7
3	11/05/2024	05:02-08:02	9	BF1 ESE	>5km	Dry	1
3	24/05/2024	11:45-14:45	13	BF3 WSW	>3km	Light showers	8
4	17/06/2024	19:25-22:25	14	BF1 N	>5km	Dry	4
4	18/06/2024	04:28-07:28	13	BF2 NW	>5km	Dry	6
5	15/07/2024	04:45-07:45	10	BF1 (var)	>5km	Dry	1
5	22/07/2024	08:30-11:30	16	BF3 WSW	>3km	Light rain	8

Survey	Date	Time	Temperature (Celsius)	Wind (Beaufort scale and direction)	Visibility	Precipitation	Cloud Cover (oktas)
6	07/08/2024	15:10-18:10	20	BF2 SSW	>10km	Dry	6
6	05/08/2024	11:45-14:45	22	BF3 SSW	>5km	Scattered showers	5
VP 6							
1	04/04/2024	17:36-20:36	9	BF1 ESE	>5km	Showers	7
1	05/04/2024	06:19-09:19	11	BF1 S	>3km	Dry	6
2	19/04/2024	05:45-08:45	9	F4 W	>5km	Drizzle	8
2	19/04/2024	09:15-12:15	10	F4 WSW	>5km	Drizzle	8
3	09/05/2024	14:35-17:35	18	BF2 SSW	>10km	Dry	3
3	25/05/2024	04:40-07:40	11	BF1 E	>5km	Dry	0
4	18/06/2024	15:30-18:30	17	BF1 NW	>10km	Dry	4
4	19/06/2024	04:25-07:25	7	BF1 W	>5km	Dry	0
5	21/07/2024	04:55-07:55	11	BF2 WSW	>5km	Dry	5
5	30/07/2024	16:20-19:20	19	BF1 ESE	>10km	Dry	3
6	05/08/2024	15:15-18:15	23	BF3 SSW	>5km	Scattered showers	4
6	30/08/2024	06:02-09:02	6	BF1 SSW	>10km	Dry	0
VP 7							
1	03/04/2024	10:00-13:00	10	BF3 NW	>5km	Light showers	7
1	04/04/2024	06:21-09:21	7	Bf2 NNE	>5km	Drizzle	8
2	19/04/2024	12:45-15:45	10	BF3 WSW	>5km	Light showers	8
2	29/04/2024	16:15-19:15	14	BF2 SSW	>5km	Light showers	7
3	09/05/2024	11:05-14:05	16	BF1 S	>10km	Dry	1
3	25/05/2024	08:20-11:20	14	BF2 SSE	>10km	Dry	0
4	19/06/2024	11:25-14:25	16	BF2 WNW	>5km	Dry	2

Survey	Date	Time	Temperature (Celsius)	Wind (Beaufort scale and direction)	Visibility	Precipitation	Cloud Cover (oktas)
4	25/06/2024	04:30-07:30	15	BF2 SSW	>5km	Dry	0
5	21/07/2024	08:30-11:30	13	BF2 WSW	>10km	Light showers	6
5	22/07/2024	04:55-07:55	15	BF1 W	>10km	Drizzle	8
6	05/08/2024	18:45-21:45	17	BF2 WSW	>5km	Light showers	6
6	30/08/2024	09:40-12:40	12	BF1 (var)	>10km	Dry	0
VP 9							
1	02/04/2024	06:26-09:26	2	BF1 (var)	>10km	Dry	0
1	02/04/2024	10:00-13:00	4	BF1 NW	>10km	Dry	1
2	16/04/2024	17:58-20:58	8	BF2 WNW	>10km	Dry	3
2	30/04/2024	09:05-12:05	10	BF3 ESE	>5km	Dry	1
3	08/05/2024	12:00-15:00	14	BF1 SSW	>10km	Dry	1
3	11/05/2024	08:40-11:40	11	BF1 SSE	>5km	Dry	1
4	10/06/2024	04:30-07:30	6	BF3 NNW	>5km	Dry	1
4	19/06/2024	07:55-10:55	12	BF1 W	>10km	Dry	1
5	01/07/2024	04:30-07:30	10	BF1 WSW	>5km	Dry	7
5	21/07/2024	19:20-22:20	17	BF1 SSE	>10km	Drizzle	8
6	01/08/2024	12:25-15:25	19	BF1 SW	>10km	Dry	3
6	06/08/2024	08:45-11:45	15	BF1 S	>10km	Dry	0

Table 6. Survey times and weather conditions during 2024 breeding raptor surveys

Date	Time	Temperature	Wind (Beaufort scale and direction)	Visibility	Precipitation	Cloud Cover (oktas)
08/04/2024	09:30-11:30	6		>2km	Heavy Rain	8
08/04/2024	12:00-14:00	6	F4 N	>2km	Heavy Rain	8
08/04/2024	14:30-16:30	6	F4 N	>2km	Heavy Rain	8
08/04/2024	16:40-18:40	6	F4 N	>2km	Heavy Rain	8
13/04/2024	09:50-12:50	12	F3 SW	2km	Dry	6
13/04/2024	13:15-15:15	12	F3 W	2km	Dry	5
13/04/2024	15:30-18:30	11	F3 W	2km	Dry	4
14/04/2024	10:00-11:00	8	F2 SW	2km	Dry	7
14/04/2024	11:20-12:00	8	F2 SW	2km	Light rain	7
14/04/2024	14:05-15:05	10	F2 SW	2km	Dry	8
14/04/2024	12:30-13:30	10	F2 SW	2km	Dry	8
14/04/2024	15:15-16:00	9	F2 SW	2km	Dry	8
14/04/2024	16:40-18:40	9	F2 SW	2km	Dry	4
18/04/2024	16:40-19:10	11	F1 SW	3km	Dry	6
18/04/2024	15:45-18:45	15	F2 NW	>2km	Dry	5
19/04/2024	13:30-15:30	12	F1 NW	3km	Dry	5
19/04/2024	15:40-18:30	12	F1 NW	3km	Dry	3
23/04/2024	18:30-19:00	15	F1 NW	5km	Dry	4
23/04/2024	19:00-21:30	15	F1 NW	5km	Dry	4
24/04/2024	15:45-19:00	11	F3 NNW	>2km	Dry	6
24/04/2024	09:30-11:30	9	F3 N	5km	Dry	4
24/04/2024	15:00-17:00	11	F2 N	5km	Dry	3
24/04/2024	08:30-11:15	9	F2 N	5km	Dry	4
24/04/2024	15:00-18:30	9	F2 N	5km	Dry	4

Date	Time	Temperature	Wind (Beaufort scale and direction)	Visibility	Precipitation	Cloud Cover (oktas)
24/04/2024	06:05-08:30	9	F2 N	5km	Dry	4
25/04/2024	11:30-17:30	11	F1 SW	>2km	Light rain	7
25/04/2024	17:50-20:50	11	F1 SW	>2km	Dry	0
10/05/2024	07:30-08:00	9	F1 SE	>5km	Dry	1
10/05/2024	08:15-08:45	12	F1 SE	>5km	Dry	2
10/05/2024	09:00-09:30	14	F1 SE	>5km	Dry	3
10/05/2024	09:45-11:45	19	F1 SE	>5km	Dry	2
10/05/2024	12:10-14:10	19	F1 SE	>5km	Dry	2
10/05/2024	15:00-17:00	19	F4 SW	>5km	Dry	1
11/05/2024	08:30-09:15	16	F2 SW	>5km	Dry	1
11/05/2024	09:40-11:40	16	F4 SW	>5km	Dry	1
11/05/2024	12:10-13:20	19	F2 SW	>5km	Dry	2
11/05/2024	13:30-17:30	19	F2 SW	>5km	Dry	3
11/05/2024	16:30-19:00	19	F2 SW	>5km	Dry	3
11/05/2024	14:00-16:00	19	F2 SW	>5km	Dry	3
11/05/2024	11:30-13:30	19	F2 SW	>5km	Dry	2
12/05/2024	11:05-22:30	8	F2 SE	>2km	Dry	4
16/05/2024	10:00-13:30	14	F2 NE	>2km	Dry	4
16/05/2024	13:45-15:00	14	F2 NE	>2km	Dry	4
16/05/2024	16:00-19:00	15	F2 NE	>2km	Heavy Rain	5
17/05/2024	17:30-19:00	14	F3 NW	>2km	Dry	4
17/05/2024	15:30-17:15	12	F2 NW	>2km	Dry	4
22/05/2024	17:00-19:30	12	F3 NW	>2km	Light rain	8
23/05/2024	17:20-19:30	14	F3 N	>2km	Dry	5
23/05/2024	13:20-20:00	12	F1 NW	>2km	Dry	3
23/05/2024	13:30-15:30	12	F3 NNW	>2km	Dry	6

Date	Time	Temperature	Wind (Beaufort scale and direction)	Visibility	Precipitation	Cloud Cover (oktas)
23/05/2024	15:50-18:00	12	F3 NNW	>2km	Dry	6
23/05/2024	18:16-20:55	12	F3 NW	>2km	Dry	6
24/05/2024	07:00-11:00	12	F2 NW	>2km	Dry	4
24/05/2024	11:30-12:30	14	F1 NW	>2km	Dry	3
24/05/2024	13:00-15:00	13	F1 NW	>2km	Dry	2
24/05/2024	06:30-08:30	5	F1 NW	>2km	Dry	2
24/05/2024	09:30-12:00	7	F1 NW	>2km	Dry	4
24/05/2024	12:30-15:00	13	F1 NW	>2km	Dry	6
25/05/2024	15:00-20:00	9	F2 SE	>2km	Light rain	5
05/06/2024	13:00-15:00	15	F1 WNW	>2km	Dry	6
05/06/2024	15:30-17:30	15	F1 WNW	>2km	Dry	6
05/06/2024	18:00-20:00	15	F1 WNW	>2km	Dry	6
05/06/2024	13:00-15:30	13	F1 W	1-2km	Dry	7
05/06/2024	18:30-21:00	11	F1 W	>2km	Dry	7
05/06/2024	15:30-18:30	12	F1 W	>2km	Dry	7
06/06/2024	15:00-18:00	11	F1 W	>2km	Dry	6
11/06/2024	20:20-21:40	12	NIL	>2km	Dry	2
12/06/2024	14:10-16:40	14	F3 S	>2km	Dry	6
12/06/2024	16:45-19:15	14	F3 S	>2km	Dry	7
13/06/2024	14:30-19:30	12	SW/3	>2km	Dry	6
14/06/2024	14:30-16:30	12	F1 N	>2km	Light rain	6
14/06/2024	16:30-19:30	12	F1 N	>2km	Light rain	7
18/06/2024	15:00-18:00	17	F1 NW	>2km	Dry	3
18/06/2024	18:30-19:30	15	F1 NW	>2km	Dry	3
18/06/2024	20:00-21:00	11	F2 NW	>2km	Dry	3
19/06/2024	10:30-13:00	15	F1 NW	>2km	Dry	2

Date	Time	Temperature	Wind (Beaufort scale and direction)	Visibility	Precipitation	Cloud Cover (oktas)
19/06/2024	14:00-15:00	17	F1 NW	>2km	Dry	3
19/06/2024	15:30-16:00	17	F1 NW	>2km	Dry	3
19/06/2024	16:15-18:15	15	F1 NW	>2km	Dry	3
28/06/2024	12:05-14:05	16	F2 SW	>2km	Dry	6
28/06/2024	14:20-16:20	16	F2 SW	>2km	Dry	6
28/06/2024	16:30-18:00	16	F2 SW	>2km	Dry	6
28/06/2024	18:20-19:35	14	F2 SW	>2km	Light rain	8
28/06/2024	19:50-21:00	14	F2 SW	>2km	Light rain	8
29/06/2024	19:05-21:05	14	F2 NW	>2km	Light rain	7
29/06/2024	07:45-18:30	15	F1 S	>2km	Light rain	8
04/07/2024	12:28-14:28	15	F3 W	>2km	Dry	6
04/07/2024	14:59-16:59	16	F3 W	>2km	Dry	6
04/07/2024	18:00-20:00	16	F3 W	>2km	Dry	6
06/07/2024	16:00-21:00	15	F2 W	>2km	Dry	5
10/07/2024	11:05-14:05	16	F2 NW	>2km	Dry	7
10/07/2024	14:30-16:30	16	F2 NW	>2km	Dry	7
10/07/2024	17:00-20:30	16	F3 NW	>2km	Dry	7
11/07/2024	15:00-16:30	19	F2 N	>2km	Dry	6
11/07/2024	16:45-17:30	15	F2 N	>2km	Dry	6
11/07/2024	17:40-18:40	16	F1 N	>2km	Dry	3
11/07/2024	19:00-21:00	12	F2 N	1-2km	Dry	4
11/07/2024	08:30-13:55	10	F3 NNW	>2km	Dry	3
12/07/2024	10:30-13:30	13	F2 NW	>2km	Dry	2
12/07/2024	14:00-16:00	13	F2 NW	>2km	Dry	2
12/07/2024	16:15-17:15	12	F1 NW	>2km	Dry	2
12/07/2024	17:30-19:30	12	F2 NW	>2km	Dry	2

Date	Time	Temperature	Wind (Beaufort scale and direction)	Visibility	Precipitation	Cloud Cover (oktas)
12/07/2024	19:45-21:00	12	F1 NW	>2km	Dry	3
18/07/2024	16:00-18:00	14	F3 S	<1km	Heavy Rain	8
18/07/2024	18:00-19:00	16	F1 S	1-2km	Dry	8
18/07/2024	19:10-20:10	12	F2 S	>2km	Light rain	6
18/07/2024	20:15-21:10	12	F2 S	>2km	Light rain	3
19/07/2024	13:30-15:30	15	F1 SW	>2km	Dry	6
19/07/2024	12:30-13:00	12	F1 SW	>2km	Dry	2
19/07/2024	16:30-17:30	13	F2 SW	>2km	Dry	2
31/07/2024	14:15-15:00	25	F1 S	>2km	Dry	5
31/07/2024	15:20-16:05	25	F1 S	>2km	Dry	6
31/07/2024	18:30-19:00	23	F1 S	>2km	Dry	4
31/07/2024	19:00-20:00	19	F1 S	>2km	Dry	3
31/07/2024	21:00-22:00	18	F1 S	>2km	Dry	3
31/07/2024	16:05-18:30	24	F1 S	>2km	Dry	5
17/08/2024	08:10-09:00	12	F2 SW	4km	Dry	5
17/08/2024	09:10-09:35	13	F2 WSW	4km	Dry	6
17/08/2024	09:45-10:30	14	F2 WSW	4km	Dry	8
17/08/2024	10:35-11:10	15	F1 WSW	4km	Dry	8
17/08/2024	11:35-12:35	16	F2 WSW	4km	Dry	8
17/08/2024	12:50-13:20	17	F3 WSW	4km	Dry	8
17/08/2024	13:30-14:00	17	F3 WSW	4km	Light rain	8
17/08/2024	14:05-14:40	16	F3 WSW	4km	Light rain	8
17/08/2024	14:50-15:15	15	F3 WSW	4km	Light rain	8
17/08/2024	15:25-15:45	15	F3 WSW	3km	Dry	8
17/08/2024	15:50-18:15	15	F2 WSW	3km	Dry	8
18/08/2024	08:45-10:15	13	F1 W	3km	Dry	8

Date	Time	Temperature	Wind (Beaufort scale and direction)	Visibility	Precipitation	Cloud Cover (oktas)
18/08/2024	10:25-10:55	13	F1 W	3km	Dry	8
18/08/2024	11:30-11:50	13	F2 W	2km	Light rain	8
18/08/2024	11:55-12:15	15	F2 W	4km	Dry	6
18/08/2024	12:25-12:55	16	F2 W	4km	Dry	6
18/08/2024	13:30-13:50	18	F2 WNW	3km	Dry	5
18/08/2024	14:00-14:30	18	F2 WNW	3km	Dry	5
18/08/2024	14:40-15:10	19	F2 WNW	4km	Dry	4
18/08/2024	15:25-15:50	19	F2 WNW	4km	Dry	4
18/08/2024	16:10-16:40	19	F3 WNW	4km	Dry	4
18/08/2024	17:30-18:00	18	F2 W	4km	Dry	3
18/08/2024	18:05-18:25	18	F2 W	4km	Dry	3
18/08/2024	18:30-19:45	18	F2 W	4km	Dry	3

Table 7. Survey times and weather conditions during 2024 MBBS

Date	Time	Temperature	Wind (Beaufort scale and direction)	Visibility	Precipitation	Cloud Cover (oktas)
18/04/2024	09:30-16:00	12	F2 SW	>3km	Dry	7
18/04/2024	09:00-15:10	12	F1 WNW	>2km	Dry	5
19/04/2024	08:30-13:00	11	F2 NW	3km	Dry	7
24/04/2024	11:50-14:50	10	F3 N	5km	Dry	4
24/04/2024	11:30-14:30	9	F2 N	5km	Dry	4
25/04/2024	06:00-11:00	8	F2 NW	5km	Dry	5
11/05/2024	06:00-11:30	16	F2 SW	>5km	Dry	1
12/05/2024	06:15-10:45	12	F2 W	>2km	Dry	5
17/05/2024	10:00-15:00	14	F1 NW	>2km	Dry	3
21/05/2024	19:00-21:15	18	F2 N	>2km	Light Rain	8
22/05/2024	09:30-16:30	12	F3 NW	>2km	Light Rain	8
23/05/2024	10:00-16:30	14	F4 N	>2km	Dry	4
06/06/2024	09:00-14:00	12	F2 W	>2km	Dry	6
12/06/2024	09:00-14:00	14	F2 SE	>2km	Dry	6
13/06/2024	09:00-14:00	11	F3 S	>2km	Moderate Rain	8
14/06/2024	08:00-14:00	12	F1 N	>2km	Moderate Rain	7
28/06/2024	06:45-11:55	9	F3 W	>2km	Dry	8
06/07/2024	05:30-14:00	9	F2 W	>2km	Dry	5
07/07/2024	06:15-11:15	10	F1 W	>2km	Dry	4
18/07/2024	09:30-15:30	13	F3 S	<1km	Heavy Rain	8
18/07/2024	13:00-17:30	11	F2 S	<1km	Light Rain	8
19/07/2024	08:30-12:00	14	F2 S	1-2km	Light Rain	8

Table 8: Survey times, weather conditions, and the number of roding woodcock registrations recorded during the 2024 Breeding Woodcock Surveys.

Date	Time	Temperature (Celsius)	Wind (Beaufort scale and direction)	Visibility	Precipitation	Cloud Cover (oktas)	Roding Woodcock Registrations Recorded
Transect 1							
21/05/2024	21:15-22:30	11	BF1 N	>2km	Light Rain	8	0
23/05/2024	21:15-22:30	9	BF1 N	>5km	Dry	5	1
05/06/2024	21:35-22:45	10	BF1 W	>5km	Dry	6	1
13/06/2024	21:40-23:00	12	BF3 SW	>5km	Dry	7	0
14/06/2024	21:40-22:55	10	BF1 N	>5km	Dry	4	1
18/06/2024	21:40-23:30	12	BF1 NW	>2km	Dry	3	0
06/07/2024	21:40-23:15	11	BF2 SW	>2km	Dry	6	0
12/07/2024	21:30-22:45	14	BF1 NW	>2km	Dry	3	0
Transect 2a							
23/05/2024	21:15-22:30	9	BF1 N	>5km	Dry	5	4
05/06/2024	21:28-22:44	15	BF1 WNW	>2km	Dry	6	0
13/06/2024	21:40-23:00	12	BF3 SW	>5km	Dry	7	6
14/06/2024	21:40-22:55	10	BF1 N	>5km	Dry	4	2
16/06/2024	21:40-22:55	10	BF1 N	>5km	Dry	4	0
18/06/2024	21:40-23:30	12	BF1 NW	>2km	Dry	3	5
12/07/2024	21:30-22:45	14	BF1 NW	>2km	Dry	3	0
Transect 2c							
23/05/2024	21:15-22:30	7	BF1 NW	>2km	Dry	6	2
05/06/2024	21:28-22:44	15	BF1 WNW	>2km	Dry	6	2
13/06/2024	21:45-23:00	12	BF3 SW	>5km	Dry	7	0
18/06/2024	21:40-23:30	12	BF1 NW	>2km	Dry	3	2

Date	Time	Temperature (Celsius)	Wind (Beaufort scale and direction)	Visibility	Precipitation	Cloud Cover (oktas)	Roding Woodcock Registrations Recorded
29/06/2024	21:30-23:15	14	BF2 NW	>2km	Light Rain	7	2
12/07/2024	21:30-22:45	14	BF1 NW	>2km	Dry	3	0
Transect 3							
21/05/2024	21:15-22:30	11	BF1 N	>2km	Light Rain	8	2
11/06/2024	21:40-22:55	12	BF1 N	>5km	Dry	7	4
14/06/2024	21:40-22:55	10	BF1 N	>5km	Dry	4	2
19/06/2024	21:50-23:20	13	BF1 NW	>2km	Dry	3	1
28/06/2024	21:35-23:10	14	BF2 SW	>2km	Light Rain	8	1
06/07/2024	21:40-23:20	11	BF3 SW	>2km	Dry	6	0
Transect 4							
22/05/2024	21:15-22:30	11	BF3 NW	>5km	Light Rain	8	0
25/05/2024	20:30-22:30	13	BF2 SE	>2km	Dry	5	1
11/06/2024	21:40-22:55	12	BF1 N	>5km	Dry	7	3
12/06/2024	21:40-22:55	12	BF4 S	>5km	Dry	8	0
19/06/2024	21:50-23:30	13	BF1 NW	>2km	Dry	3	2
28/06/2024	21:35-23:10	14	BF2 SW	>2km	Light Rain	8	3
11/07/2024	21:33-22:50	14	BF1 N	1-2km	Dry	4	0

Appendix 4 Details of Target Species Flight Lines

Details of target species flight lines recorded during 2024 breeding season FAS are presented below in **Table 9.** The Flight ID allows for cross-referencing of flights shown on **Figure 4** to **Figure 12**, **Appendix 1** . Details of confidential raptor species are detailed in the Confidential Annex.

Table 9. Details of non-confidential target species flight lines recorded during FAS

Species	Flight ID	Date	VP	Count	Time	Flight Duration	Height Bd	Age*	Sex	Notes
Red grouse	84	08/05/2024	1B	1	10:22	13	A		M	Landed
	142	24/06/2024	2	1	08:39	34	A		M	Flushed by walker, landed
Golden plover	40	02/04/2024	9	48	10:20	75	C			
	41	02/04/2024	9	22	10:17	71	C			
	45	04/04/2024	2	26	11:40	64	C			Flew N 150m calling
Woodcock	60	04/04/2024	6	1	20:05	38	B		M	Roding male over plantation
	155	18/06/2024	4	1	22:03	34	B			
	156	18/06/2024	4	1	21:52	41	B			
	165	19/06/2024	6	1	04:41	64	C			
	183	14/07/2024	2	1	05:06	41	B			
Snipe	39	02/04/2024	9	2	08:11	52	C			
	118	09/05/2024	6	2	15:35	37	C			
	253	06/08/2024	9	1	09:17	48	C			2 SN 100m Flying WSW
Kestrel	2	18/04/2024	1B	1	18:25	26	C		F	
	5	29/04/2024	2	1	15:05	32	B		F	
	8	03/04/2024	4	1	16:08	34	B		M	
	12	18/04/2024	4	1	13:06	19	C		M	Hunting
	12	18/04/2024	4	1	13:06	12	C		M	Hunting

Species	Flight ID	Date	VP	Count	Time	Flight Duration	Height Bd	Age*	Sex	Notes
	12	18/04/2024	4	1	13:06	120	B		M	Hunting
	18	02/04/2024	5	1	18:04	84	B		F	Hunting
	18	02/04/2024	5	1	18:04	22	A		F	Hunting
	20	02/04/2024	5	1	19:28	56	B		M	Hunting
	21	03/04/2024	5	1	07:32	17	C		M	Hunting
	21	03/04/2024	5	1	07:32	75	B		M	Hunting
	21	03/04/2024	5	1	07:32	10	A		M	Hunting
	24	03/04/2024	5	1	09:02	46	C		M	Hunting
	25	19/04/2024	6	1	08:05	38	B		F	
	26	19/04/2024	6	1	11:09	126	B		M	Hunting
	26	19/04/2024	6	1	11:09	11	C		M	Hunting
	32	03/04/2024	7	1	12:15	78	C		M	Hunting
	33	19/04/2024	7	1	13:25	31	B		F	
	33	19/04/2024	7	1	13:25	36	C		M	
	35	19/04/2024	7	1	14:16	85	B		M	Hunting
	35	19/04/2024	7	1	14:16	10	C		M	Hunting
	37	02/04/2024	9	1	07:54	21	A		M	Hunting
	37	02/04/2024	9	1	07:54	65	B		M	Hunting
	48	05/04/2024	3	1	14:22	84	B		M	Hunting
	48	05/04/2024	3	1	14:22	10	A		M	Hunting
	52	16/04/2024	4	1	10:07	55	C		F	Searching
	53	16/04/2024	4	1	10:25	15	C		M	Hunting
	53	16/04/2024	4	1	10:25	125	B		M	Hunting
	56	30/04/2024	5	1	13:08	41	C		F	

Species	Flight ID	Date	VP	Count	Time	Flight Duration	Height Bd	Age*	Sex	Notes
	57	04/04/2024	6	1	18:24	94	B		M	Hunting
	57	04/04/2024	6	1	18:24	25	C		M	Hunting
	57	04/04/2024	6	1	18:24	10	B		M	Hunting
	61	05/04/2024	6	1	07:48	65	C		M	Hunting and displaying
	61	05/04/2024	6	1	07:48	8	B		M	Hunting and displaying
	64	04/04/2024	7	1	07:39	41	C		M	Hunting
	64	04/04/2024	7	1	07:39	11	B		M	Hunting
	64	04/04/2024	7	1	07:39	5	A		M	Hunting
	69	29/04/2024	7	1	16:31	85	B		F	Hunting
	69	29/04/2024	7	1	16:31	6	A		F	Hunting
	71	29/04/2024	7	1	17:22	105	B		M	Hunting
	72	16/04/2024	9	1	18:20	52	C		F	Searching
	72	16/04/2024	9	1	18:20	11	B		F	Searching
	75	30/04/2024	9	1	09:45	65	C		M	Hunting
	75	30/04/2024	9	1	09:45	10	B		M	Hunting
	75	30/04/2024	9	1	09:45	30	C		M	Hunting
	79	30/04/2024	9	1	11:56	70	C		M	Hunting
	79	30/04/2024	9	1	11:56	10	B		M	Hunting
	82	08/05/2024	1B	1	10:07	48	C		M	Hunting
	87	11/05/2024	1B	1	14:32	45	C		M	
	92	10/05/2024	2	1	12:27	34	C		M	
	97	09/05/2024	3	1	10:02	35	C		M	
	98	09/05/2024	3	1	10:16	27	C		M	
	104	10/05/2024	4	1	09:06	32	C		M	Searching and displaying

Species	Flight ID	Date	VP	Count	Time	Flight Duration	Height Bd	Age*	Sex	Notes
	104	10/05/2024	4	1	09:06	20	B		M	Hunting
	104	10/05/2024	4	1	09:06	16	C		M	
	107	10/05/2024	4	1	10:24	102	B		M	Hunting
	107	10/05/2024	4	1	10:24	10	C		M	
	114	24/05/2024	5	1	13:04	8	C		M	Hunting
	114	24/05/2024	5	1	13:04	70	B		M	Hunting
	114	24/05/2024	5	1	13:04	62	C		M	
	120	25/05/2024	6	1	06:03	75	B		F	Hunting
	123	09/05/2024	7	1	11:36	68	B		M	Hunting
	123	09/05/2024	7	1	11:36	22	C		M	
	123	09/05/2024	7	1	11:36	55	B		M	Hunting
	126	09/05/2024	7	1	13:25	85	C		M	
	127	25/05/2024	7	1	10:16	58	C		F	
	129	08/05/2024	9	1	13:18	20	C		F	Hunting
	129	08/05/2024	9	1	13:18	108	B		F	Hunting
	131	08/05/2024	9	1	13:18	8	C		F	
	132	08/05/2024	9	1	14:23	61	C		M	Hunting
	132	08/05/2024	9	1	14:23	115	B		M	Hunting
	134	17/06/2024	1B	1	16:08	18	C		M	Hunting
	134	17/06/2024	1B	1	16:08	26	B		M	Hunting
	134	17/06/2024	1B	1	16:08	40	C		M	
	139	10/06/2024	2	1	09:17	41	C		F	
	144	10/06/2024	3	1	12:14	34	C		M	
	149	18/06/2024	4	1	10:16	52	B		M	Hunting

Species	Flight ID	Date	VP	Count	Time	Flight Duration	Height Bd	Age*	Sex	Notes
	153	18/06/2024	4	1	20:36	75	C		F	Hunting
	153	18/06/2024	4	1	20:36	14	B		F	
	157	18/06/2024	5	1	06:47	45	C		M	
	158	18/06/2024	5	1	07:04	51	C			Carrying food
	159	18/06/2024	6	1	16:37	55	C		M	Displaying
	159	18/06/2024	6	1	16:37	10	B		M	
	166	19/06/2024	6	1	06:49	40	C		M	
	167	19/06/2024	7	1	12:01	72	B		F	Hunting
	167	19/06/2024	7	1	12:01	10	A		F	Hunting
	173	25/06/2024	7	1	06:52	106	C		M	Searching and displaying
	173	25/06/2024	7	1	06:52	15	B		M	Hunting
	179	14/07/2024	1B	1	09:10	68	C		M	Searching
	179	14/07/2024	1B	1	09:10	19	B		M	
	185	14/07/2024	2	1	07:31	10	C		M	
	185	14/07/2024	2	1	07:31	28	B		M	
	190	14/07/2024	3	1	13:04	26	C		M	Hunting
	190	14/07/2024	3	1	13:04	32	B		M	Hunting
	193	15/07/2024	4	1	08:48	85	B		M	Hunting
	193	15/07/2024	4	1	08:48	21	C		M	Hunting
	195	15/07/2024	4	1	09:16	8	C		M	Hunting
	195	15/07/2024	4	1	09:16	55	B		M	Hunting
	195	15/07/2024	4	1	09:16	12	A		M	Hunting
	206	15/07/2024	4	1	14:42	42	C		M	Searching
	206	15/07/2024	4	1	14:42	8	B		M	

Species	Flight ID	Date	VP	Count	Time	Flight Duration	Height Bd	Age*	Sex	Notes
	208	15/07/2024	5	1	07:01	135	B		M	Searching, short display, then hunting
	209	15/07/2024	5	1	07:01	31	B		F	
	211	22/07/2024	5	1	08:56	105	B		K.	Hunting
	212	22/07/2024	5	1	09:42	38	C		M	Searching
	217	30/07/2024	6	1	18:29	35	C		M	Hunting
	217	30/07/2024	6	1	18:29	30	B		M	Hunting
	217	30/07/2024	6	1	18:29	10	A		M	
	220	21/07/2024	7	1	09:53	15	C		M	Hunting
	220	21/07/2024	7	1	09:53	65	B		M	Hunting
	223	22/07/2024	7	1	07:04	35	B		M	Mobbed by HC
	223	22/07/2024	7	1	07:04	25	C		M	Mobbed by HC
	225	21/07/2024	9	1	19:20	25	B		F	
	225	21/07/2024	9	1	19:20	20	C		F	
	228	02/08/2024	3	1	10:19	93	B		M	5
	229	06/08/2024	3	1	07:24	47	C		M	5
	229	06/08/2024	3	1	07:24	15	B		M	5
	231	06/08/2024	3	1	11:26	10	A		M	5
	237	01/08/2024	4	1	09:05	105	B		F	Hunting
	238	01/08/2024	4	1	10:29	45	B		M	Hunting
	238	01/08/2024	4	1	10:29	12	C		M	Hunting
	238	01/08/2024	4	1	10:29	6	B		M	
	242	07/08/2024	5	1	16:11	45	C		M	Hunting
	242	07/08/2024	5	1	16:11	50	B		M	Hunting
	242	07/08/2024	5	1	16:11	5	A		M	

Species	Flight ID	Date	VP	Count	Time	Flight Duration	Height Bd	Age*	Sex	Notes
	245	07/08/2024	5	1	16:12	85	B		F	Searching
	245	05/08/2024	4	1	16:12	32	B		F	
	247	30/08/2024	6	1	07:49	65	B		M	Hunting
	247	30/08/2024	6	1	07:49	12	A		M	Lost to view
	249	30/08/2024	6	1	08:53	70	B		F	Hunting
	251	01/08/2024	9	1	14:35	26	C		F	Female direct flight, plus one juvenile following
	251	01/08/2024	9	1	14:35	5	B		F	Female direct flight, plus one juvenile following
	254	06/08/2024	9	1	10:12	92	C		F	Searching
	254	06/08/2024	9	1	10:12	35	B		F	Hunting
	254	06/08/2024	9	1	10:12	20	A		F	Lost to view
	257	06/08/2024	9	1	11:26	108	B		M	Hunting
	257	06/08/2024	9	1	11:26	10	A		M	Lost to view
Peregrine	250	01/08/2024	9	1	13:42	55	C	Juv		Flew NNE

*Imm = immature, Juv – juvenile, CY = calendar year

Confidential Annex:
A confidential annex can be made available to An Bord Pleanála or the Development Applications Unit on request, however due to the sensitive nature of the information from a conservation perspective, they have not been included in this publicly available document.