

## Appendix 7-4 – Golden Eagle Survey Report (2020 and 2021)



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## A7.4.1 INTRODUCTION

This report presents the results of Golden Eagle surveys carried out for the Cloghercor Wind Farm project in 2020 and 2021.

The surveys were carried out by Bella Terra Environmental Consultants. The lead ornithologist was Nicholas Duff, with survey work also carried out by Chris Benson, Jamie Bliss and Andrew Ellard. Information about the qualifications and experience of the surveyors is included in Section 7.2.3.4 of the Ornithology chapter.

This report has been compiled by Tom Gittings. It is based on draft material, monthly survey updates, and survey data supplied by Nicholas Duff.

Due to the sensitivity of the Irish Golden Eagle population, and its potential vulnerability to persecution, information about their nest sites needs to be kept confidential. An Bord Pleanála have stated that they will not accept confidential information. Therefore, in accordance with Article 42(18) of the Habitats Regulations (2011) and Article 7(1), 8 and 10 of the European Communities (Access to Information on the Environment) Regulations 2007 to 2014, specific information on the location of Golden Eagle nest sites, and information that could be used to derive the location of the nest sites, is not included in this report.

The sensitive information that has been redacted from this report has been compiled in a confidential annex. This confidential annex can be presented to An Bord Pleanála and relevant statutory consultees on request.

## A7.4.2 METHODS

The survey methodology was primarily based on Hardey *et al.* (2009).

The survey aims were to identify breeding or potentially breeding Golden Eagles within a 6 km radius of the proposed wind farm site boundary. Due to an extension of the wind farm site, the 2021 survey covered a larger area than the 2020 survey (Figure A7.4.1 and Figure A7.4.2).

The methodology begins with the aim of detecting eagles within one or more home ranges as a starting point. In order to achieve as large a detection area as possible, vantage points commanding wide panoramic views were selected, mainly around the outer edges of the survey area. It is important to note that the vantage points used for the Golden Eagle survey (referred to as the EA vantage points, and numbered EA1, EA2, etc.) were different from the vantage points used for the standard vantage point survey over the wind farm site (referred to as the wind farm vantage points, and numbered VP1, VP2, etc.).

Eight EA vantage points were used in 2020 (Figure A7.4.1), and 13 EA vantage points were used in 2021 (Figure A7.4.2). The higher number of EA vantage points in 2021 reflected the increase in the size of the survey area. Most of the intervening air space and terrain between the EA vantage points, and from the EA vantage points to the wind farm site, was visible.

In 2021, the position of one of the vantage points was adjusted several times during the survey in response to observations of potential nesting behaviour. The adjusted positions of this vantage point are not shown in Figure A7.4.2, as these positions would indicate the location of the potential nest site.



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Survey visits were planned for March (first visit), April (second visit), June (third visit) and July (fourth visit), based on the four-visit schedule set out in Hardey *et al.* (2009). However, in 2020, the first visit was only partially completed due to COVID-19 restrictions (see Section A7.4.3), while in 2021 the fourth visit was not carried out as the eagles were considered to have abandoned their nest (see Section A7.4.3).

Each survey visit aimed to complete watches of three to six hours duration from each EA vantage point. The watches from each vantage point were usually conducted on separate days, though sometimes two watches were conducted on the same day by different observers. The watches were spread through a given month according to weather conditions and time availability, in some instances extending beyond the end of the month if the full round of visits could not be completed before the end of a scheduled month.

The methodology was flexible to the objective of seeking out the breeding territory or nest site of any pair of Golden Eagles once they had been detected early in the season or survey period. Therefore, the EA vantage point locations were changed, replaced or added to, in order to focus observation effort as appropriate in the relevant locations to determine occupancy and location of territories and to confirm breeding status of given birds. The observations made at each round of survey visits were reviewed so as to decide the observation plan for the next round of visits, and whether or not this gave reason to vary the survey effort and coverage or narrow the observation towards specific areas or locations of likely breeding sites.

### A7.4.3 CONSTRAINTS

There were two constraints to the 2020 survey. Firstly, the notification and confirmation of arrangements to undertake the survey by Bella Terra Environmental Consultants was made late in March 2020, which was already near the end of the first survey period for Visit 1. Secondly, work times and stages were curtailed due to the onset of the COVID-19 pandemic (lockdown from late March) until letters for ‘essential worker’ status were issued. As a result, some of the Visit 1 vantage point surveys were not carried out.

### A7.4.4 SURVEY RESULTS (2020)

#### *Golden Eagle observations*

All the Golden Eagle observations recorded in the 2020 Golden Eagle survey are summarised in Table A7.4.1. The locations referred to in Table A7.4.1 are shown in Figure A7.4.3, and the flightlines are shown in Figure A7.4.4. The full survey data is included in Annex 7.4.1.



Table A7.4.1 Golden Eagle observations recorded during the 2020 Golden Eagle survey.

Survey visit	EA VP	Date	Location	Observation details
Visit 1	EA3	26/03	Crockmore, Drumnalough, Stracashel	1 Golden Eagle observed at distance, flew NW from Bluestacks and over ridge of Crockmore. Low level flight. Shortly after circled over the mink farm area.
Visit 1	EA8	27/03	Scaigs, Lough Muck, Aghla Mountain (east)	2 possible eagles (pair) flew from Scaigs SW towards Aghla Mountain, 4 km south of EA8; identification not confirmed (shaky observation in strong wind).
Visit 2	EA7a	22/04	Clogher North, Tievelough, Aghla Mountain (east), Lough Muck	1 Golden Eagle soaring at 200 m 1 km to west. Flew north mobbed by a Buzzard towards Lough Muck.
Visit 4	EA3	24/07	Knockraver, Aghla Mountain (west)	1 juvenile Golden Eagle 2-3 km to NE of EA3, foraging over SW side of Aghla Mountain, and Knockraver in easterly direction.

### Visit details

#### Visit 1

Field surveys commenced on 26<sup>th</sup> March 2020, following approval to proceed from the lead consultants, Tobins. Six hour watches were conducted from vantage points EA1, EA3 and EA8 up to 28<sup>th</sup> March whereupon a national policy measure for cessation of work outside of a 5 km restricted travel area was introduced in response to the onset of the COVID19 pandemic in Ireland and elsewhere. Tobins instructed the site work to cease until clarification was established in relation to essential worker travel arrangements and the issuing of letters to cover surveyors for energy/infrastructure projects. Consequently, the remaining five EA vantage points were not surveyed in the Visit 1 period.

Weather conditions were generally dominated by high pressure systems from the east and southeast giving clear and sunny with excellent visibility but accompanied by cold fresh winds from the east and southeast making exposure challenging for survey work. Long range observation using a telescope was limited and observation was often shaky with binoculars owing to wind force.

A Golden Eagle was recorded from EA3 over the Crockmore area. There were a few other related incidental observations of Golden Eagles at this location/area from this period. There was a suggestion that this may indicate a potential occupied territory, while at the same time the observed flightlines appeared to link this Golden Eagle with the range to the south in the Bluestacks.

One other brief observation of a pair of large birds flying east to west from Scaigs to Aghla was made from EA8, but due to shake and distance it was not possible to be confirm the identification. The record was included as a 'possible' Golden Eagle pair but was not regarded as a reliable indicator of Golden Eagle territory unless subsequent observations were to add evidence to this possibility.



### Visit 2

A decision to resume field work was received from Tobins in mid-April following which, surveys from all eight EA vantage points were carried out to complete six hours of watch time from each vantage point. Working practices and conditions were heavily regulated under COVID-19 restrictions.

One adult Golden Eagle was recorded on just one vantage point watch during this period, from EA7a (replacing the initial EA7 location). As with the March observation from EA3, this Golden Eagle observation was located to the south of the survey area suggesting a possible territory centred to the south (Bluestacks). However in this case the adult did move away to the north along the east slopes of Aghla Mountain.

### Visit 3

The Golden Eagle survey undertaken in June was not based on any nest sites suspected, identified or located during the Visit 2 period. The few observations from the Golden Eagle survey prior to Visit 3 provided little indication of any occupied territory or breeding site within the survey area. For these reasons, the Visit 3 survey continued the process of scanning widely for eagles via vantage point watches from the eight EA vantage points to cover the full range of the survey area for eagle occurrence and activity. No further eagle sightings or observations were made, so the outcome of these watches discovered no evidence of breeding in the survey area.

### Visit 4

As for Visit 3, vantage point watches from all eight EA vantage points were conducted in the final round of the survey to cover the full range of the survey area for eagle occurrence and activity. Just one eagle observation was made from EA3 on 24<sup>th</sup> July when a juvenile Golden Eagle was observed flying over Knockraver on the Aghla Mountain ridge. This bird may have fledged recently from a Golden Eagle nest in the surrounding area and within its natal home range.

## **A7.4.5 INFORMATION ABOUT A GOLDEN EAGLE EYRIE RECEIVED FROM NPWS**

Information about a confirmed 2020 Golden Eagle breeding site at the edge of the Cloghercor Wind Farm site, was received from NPWS in September 2021. This nest had confirmed breeding with eggs photographed. The evidence also indicated that this site successfully produced a single chick in 2020.

## **A7.4.6 DISCUSSION AND INTERPRETATION OF THE SURVEY RESULTS**

The Golden Eagle survey was carried out with a view to detecting and locating occupied territories and active breeding sites within 6 km of the proposed Cloghercor Wind Farm site boundary. The survey relied heavily on detection of eagles from eight vantage points located strategically at high level to cover the survey area. They were outwardly located to maximise detection of birds within, and moving into, or out of, the survey area. Thereby, it was intended that the survey would enable a spatial understanding of Golden Eagle home ranges and breeding territories layout in the context of the breeding population in the Bluestacks and Derryveagh uplands relative to the proposed site.



**Appendix 7.4 – Golden Eagle Survey, 2020 and 2021**

The Golden Eagle survey data from late March and April revealed Golden Eagle activity in the south of the survey area, but not in the north. Observations were few and, taken along with a few incidental sightings by Andrew Ellard in March, suggested that the home range of one adult Golden Eagle observed travelling into the survey area, and foraging over the ridge from Mully to Crockmore, was centred to the south within the main Bluestack Mountains.

Based on subsequent review of data from the wind farm vantage point surveys, it appears that the nature and timing of Golden Eagle observations around the wind farm site were indicative of a pair in an occupied territory. In comparison to the level of detection of eagles recorded from the EA vantage points in late March and April, the multiple observations of both single Golden Eagles and a pair from the wind farm vantage points from January to March, and in the months that followed, reflects the concentration of Golden Eagle observations and activity associated with a breeding site, which was subsequently confirmed by the information provided by NPWS.

**A7.4.7 SURVEY RESULTS (2021)**

*Presentation of survey results*

A suspected Golden Eagle nest site was found during the survey work in 2021. Due to the confidentiality issues discussed above, it was necessary to obscure details that could lead to identification of the nest site location. Therefore, in the presentation of the survey results, the vantage point numbers were replaced by codes (e.g., VP-A, VP-B, etc.). The alphabetical sequence of these codes was randomised (e.g., VP-A does not necessarily correspond to VP1, VP-A does not necessarily correspond to VP2). Place names have been removed from the text and from the observation details in Annex 7.5.2. Flightline maps are not included. The full survey data, with the original VP numbers, and the flightline maps, has been submitted to NPWS.

*Golden Eagle observations*

The survey effort, and the number of Golden Eagle observations, at each EA vantage point during each visit is summarised in Table A7.4.2. However, it should be noted that, in some cases, observations were very distant from the vantage points, so the numbers of records at each vantage point do not necessarily indicate the degree of concentration of Golden Eagle activity around the vantage points. The full survey data, subject to the editing described above, is included in Annex 7.5.2.

*Table A7.4.2 Summary of vantage point survey effort and Golden Eagle observations during the 2021 Golden Eagle survey.*

EA VP	Survey effort (hours)			Number of Golden Eagle observations		
	Visit 1	Visit 2	Visit 3	Visit 1	Visit 2	Visit 3
EA-A	6	3		0	0	
EA-B	6	6		0	2	
EA-C		3.75			0	
EA-D	6.5			4		
EA-E			6			0



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EA VP	Survey effort (hours)			Number of Golden Eagle observations		
	Visit 1	Visit 2	Visit 3	Visit 1	Visit 2	Visit 3
EA-F		4.5	14		3	2
EA-G	6	6.5		4	2	
EA-H	7	13	12	0	7	3
EA-I	6	6		0	0	
EA-J	6	6		0	2	
EA-K	9.5	6.5		6	5	
EA-L		6.5			4	
EA-M	6			1		

The vantage point numbers were replaced by codes, using a randomised sequence, to protect information about the location of the suspected nest site (see text).

*Visit details*

Visit 1

A total of 61.75 hours of vantage point surveys were completed at nine EA vantage points between 21<sup>st</sup> March and 2<sup>nd</sup> April 2021.

There was a total of 15 Golden Eagle observations during the vantage point surveys, and three possible Golden Eagle territories interspaced partly within the survey area were identified: one to the west, one to the east and one to the south. Based on the results of the Visit 1 surveys, the Golden Eagle vantage point locations were changed, and new locations added for the Visit 2 surveys to get better viewing over certain areas in order to locate possible nest sites.

Visit 2

A total of 59 hours of vantage point surveys were completed at ten EA vantage points between 11<sup>th</sup> April and 30<sup>th</sup> April 2021.

Based on repeated Golden Eagle observations at one vantage point (including during Visit 1), as well as observations from the wind farm vantage point surveys, an occupied eyrie and breeding site / territory was identified in the western part of the survey area, outside the wind farm site. The most notable observations were on 14<sup>th</sup> and 23<sup>rd</sup> April. The breeding pair was observed on 14<sup>th</sup> April, with one bird observed flying out from a crag and returning after uniting with the male in flight and possible food pass. There were then further observations of soaring over the vantage point (evading mobbing by Hooded Crows), followed later by display (skydance swoops and stoop dives against the ridge of a hill. Further activity and display was observed on 23<sup>rd</sup> April in the same area, and on nearby hills where the male may have roosted as it went to ground a few times (although it was also mobbed by a pair of Kestrels here). A Golden Eagle was again seen flying away to the north-east from the crag from a vehicle on the approach road. The eyrie site was viewed briefly from a vantage point, where sticks and nest material were partly visible on an apparently broad ledge under an imperfect overhang rock. A pair of Kestrels were also located here.

This series of observations were considered to represent a breeding attempt at this crag. This was probably the pair of unidentified eagles seen circling to the north of Gweebarra Estuary on



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21<sup>st</sup> March. The home range (based on wider observations) was considered to extend to Clogheracullion, Croaghleconnell, and to Gweebarra Bay and Dooley dunes for rabbit prey opportunities. Gull feather remains were found on the hills in the area, corresponding to the passage of large numbers of commuting gulls to and from the mink farm, suggesting that the eagles may be exploiting a unique prey opportunity. Also, the uplands locally were considered to be relatively productive for Red Grouse and Irish Hares, which are both important prey species for Golden Eagles.

A potential home range for a second Golden Eagle pair was identified in the eastern part of the survey area. This was based on a series of observations of Golden Eagles in flight in the eastern part of the survey area, including a pair and a bird displaying on 10<sup>th</sup> April. There are many small craggs over a broad remote and undisturbed area which could offer an eyrie site and make a potential nest site inconspicuous and cryptic over an extensive zone of potential. This is a vast and remote enough area to offer a breeding home range for a pair that fits between the one described above and the known traditional territory in Glenveagh National Park. Birds seen over Croaghleheen were considered to be from this pair, indicating that Croaghleheen marks the boundary of the two territories.

### Visit 3

A total of 32 hours of vantage point surveys were completed at three Golden Eagle vantage points between 13<sup>th</sup> June and 27<sup>th</sup> June 2021. The survey effort focussed on the suspected eyrie in the south-western part of the survey area (18 hours at two vantage points) and the potential home range in the eastern part of the survey area (14 hours at one vantage point). Golden Eagle activity was observed in both areas. However, the suspected eyrie was not considered to be occupied during Visit 3, and it was considered that this nest had failed.

## REFERENCE

Hardey, J., Crick, H., Wernham, C., Riley, H., Etheridge, B. & Thompson, D. (2013). Raptors: A Field Guide for Surveys and Monitoring. The Stationery Office, Edinburgh.



Appendix 7.4 – Golden Eagle Survey, 2020 and 2021

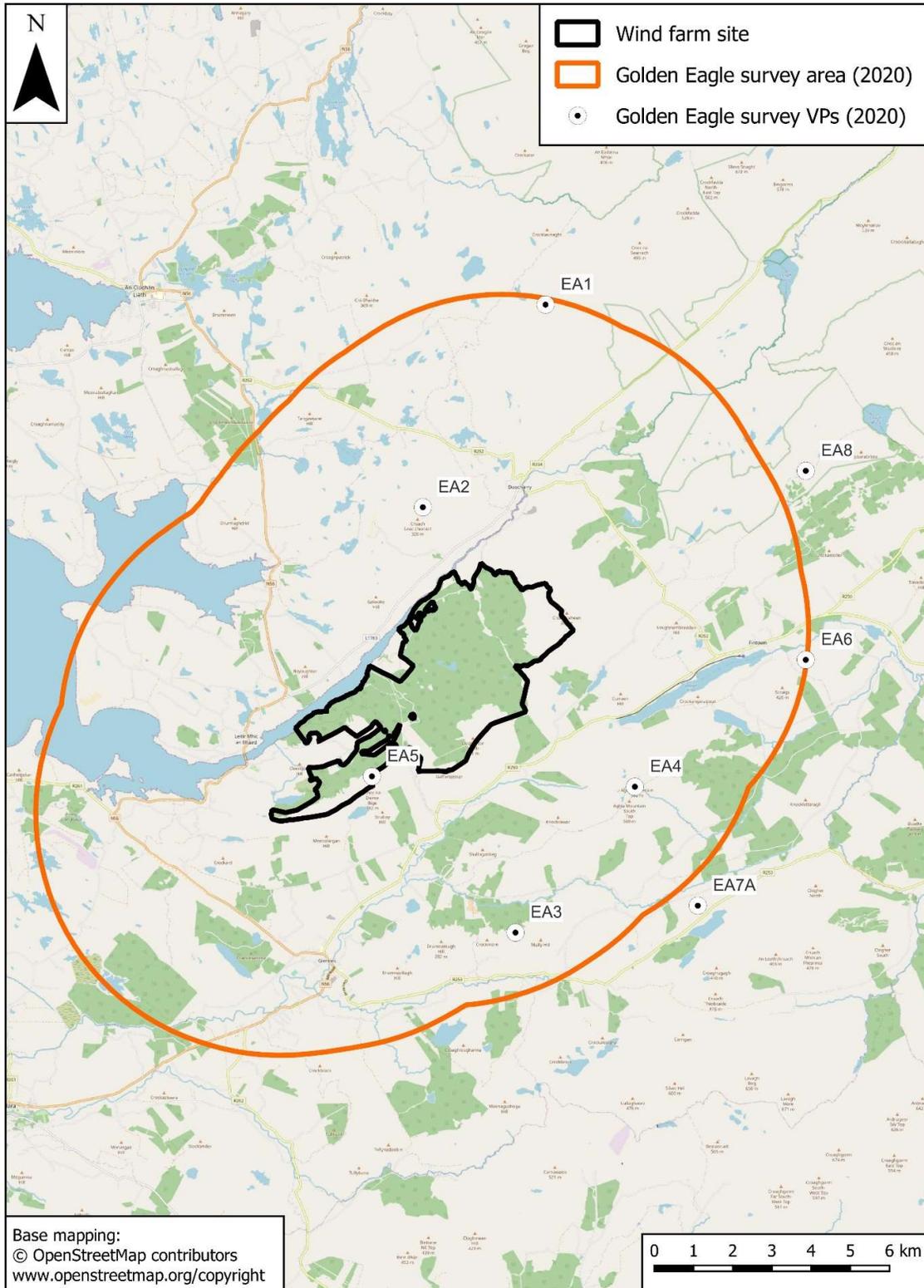


Figure A7.4.1 Golden Eagle survey area and vantage point locations (2020).



Appendix 7.4 – Golden Eagle Survey, 2020 and 2021

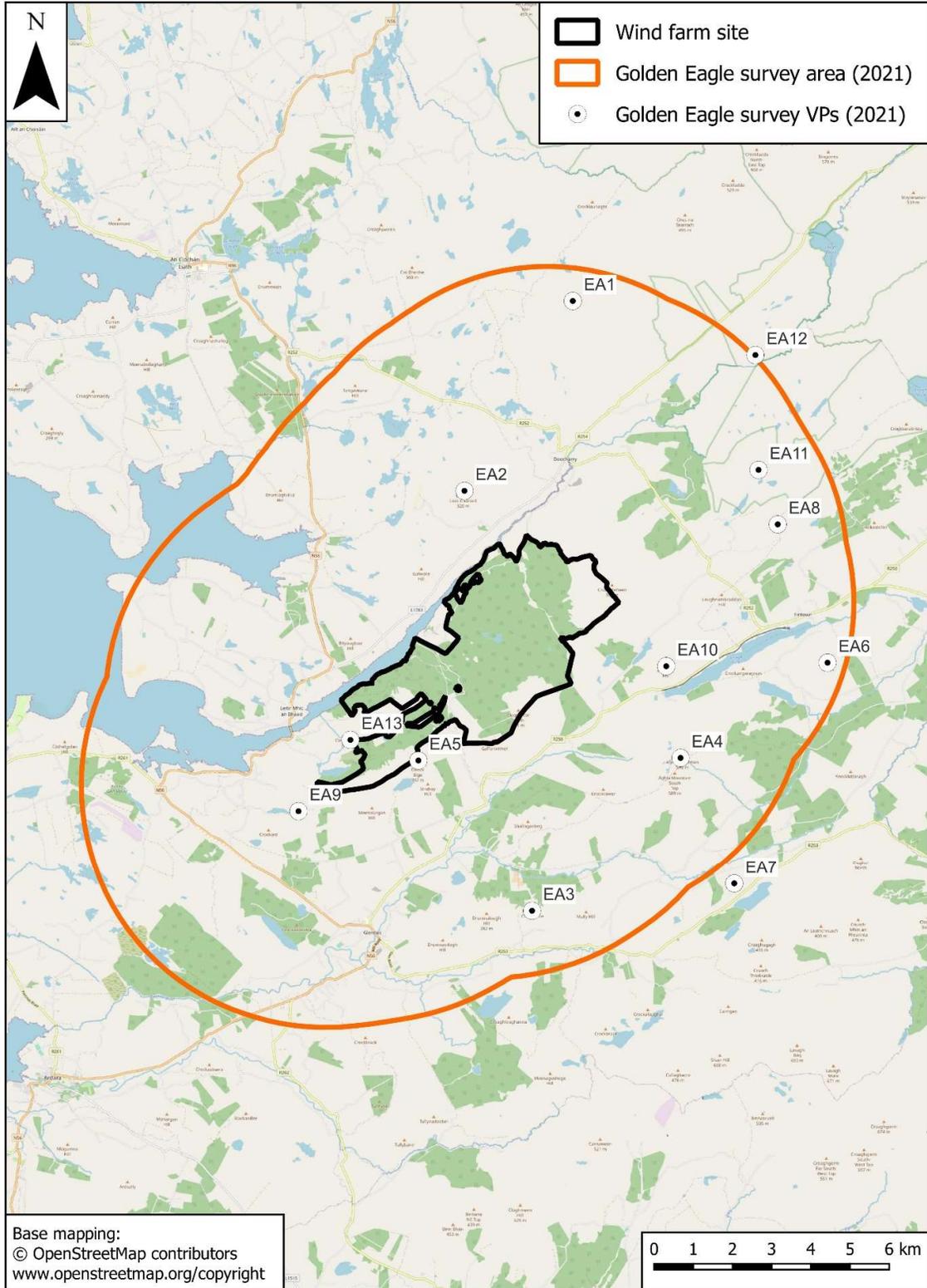


Figure A7.4.2 Golden Eagle survey area and vantage point locations (2021).



Appendix 7.4 – Golden Eagle Survey, 2020 and 2021

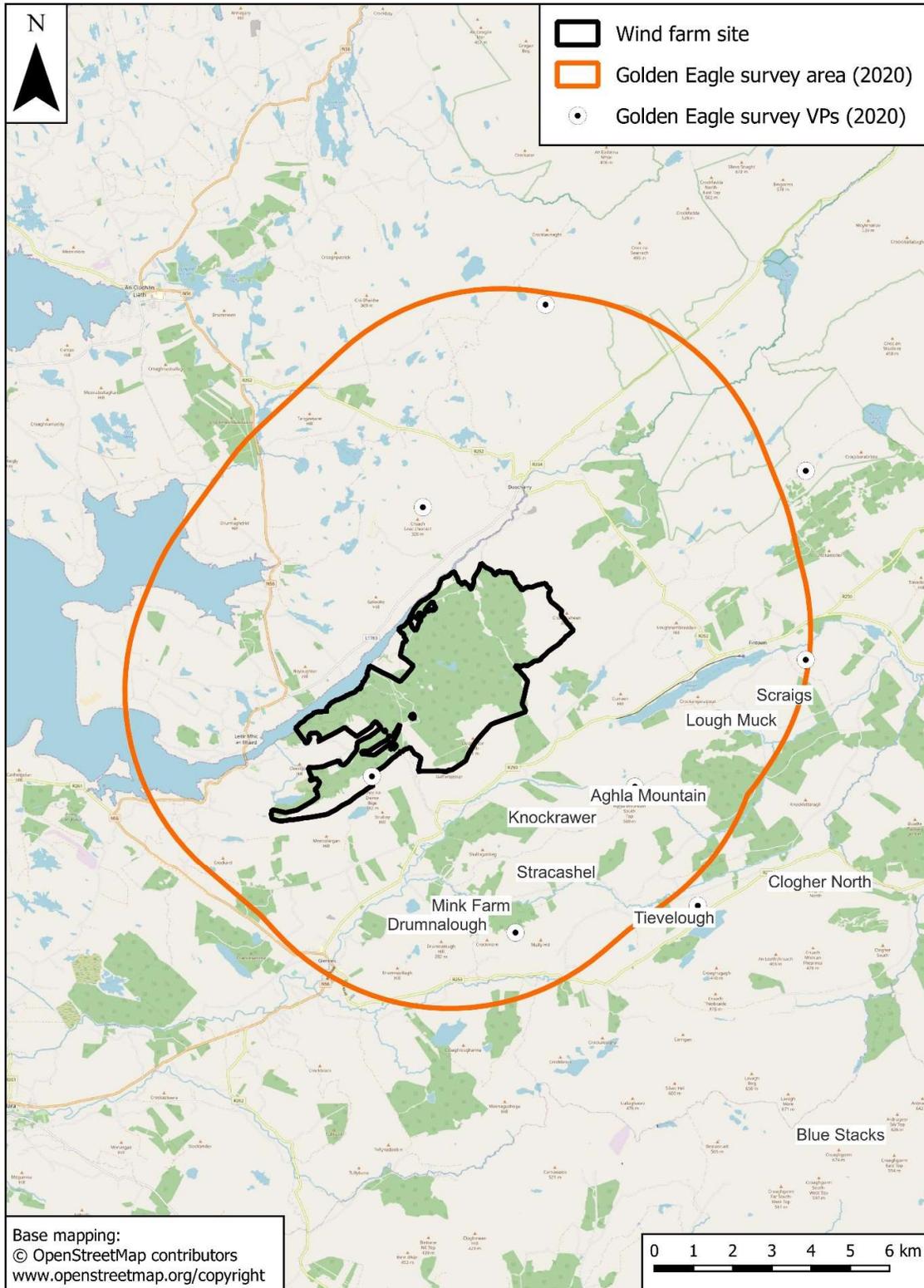


Figure A7.4.3 Locations referred to in the text (2020).



Appendix 7.4 – Golden Eagle Survey, 2020 and 2021

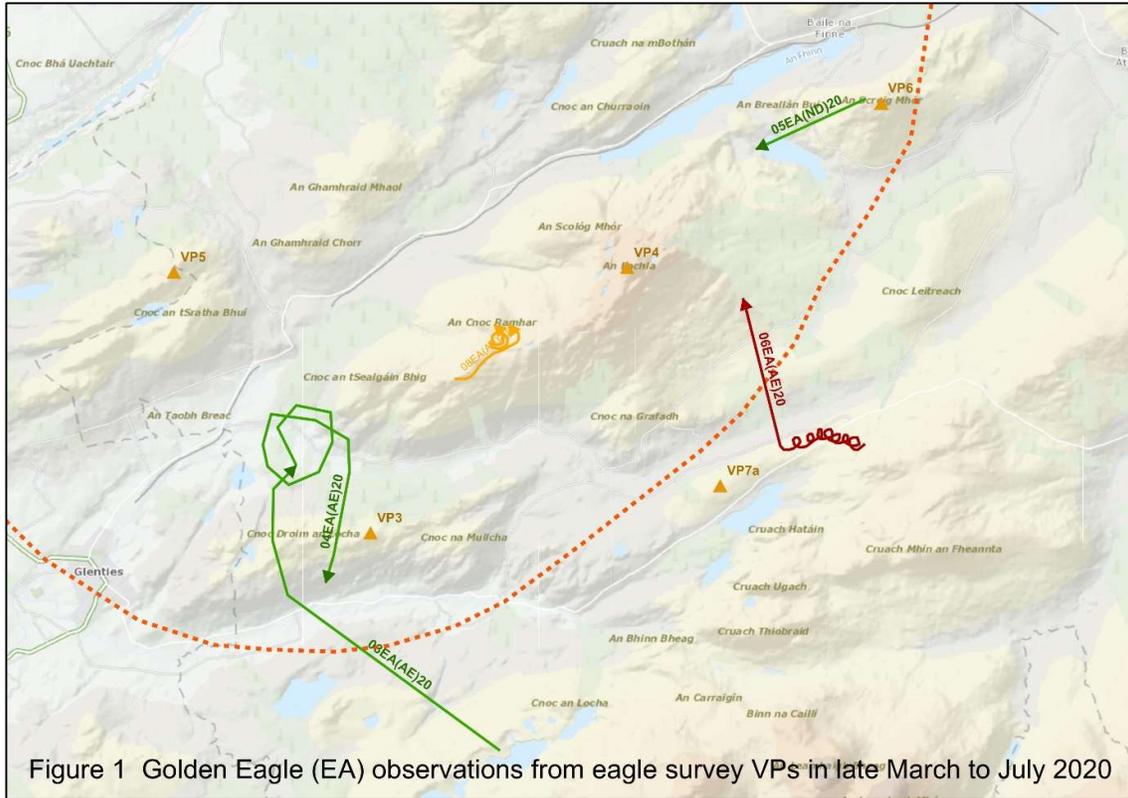


Figure 1 Golden Eagle (EA) observations from eagle survey VPs in late March to July 2020

*Figure A7.4.4 Golden Eagle flightlines recorded during the Golden Eagle survey (2020).*



## ANNEX 7.4.1 - GOLDEN EAGLE SURVEY DATA (2020)



### Appendix 7.5 – Golden Eagle Survey, 2020 and 2021

Obs Ref (OBS)	Date	EA Survey VP	Start Time	End Time	EA Obs Time	Duration (sec)	Golden Eagle Observations
03EA20 (AE)	26/03/2020	EA3	10:00	16:30	15:10	150	1ST SIGHTING- Single adult viewed through binoculars and telescope. Some primary feathers missing on right wing. Seen leaving from direction of Carnaween ( Blue Stack Mts) and heading in a NW direction towards the Glen Rd (R253).I am certain that this is the same bird recorded at 15. 45 hrs.
04EA20 (AE)	26/03/2020	EA3	10:00	16:30	15:45		2ND SIGHTING- Single adult viewed through binoculars and telescope. Some primary feathers missing on right wing. Appeared north of original sighting and over the 'Wee Glen' from behind Crockmore. The bird circled the area close to the Mink Farm and then disappeared back behind Crockmore. I am certain that this is the same bird recorded at 15. 10 hrs.
05EA20 (ND)	27/03/2020	EA8	10:00	16:30	14:35	6	Two large birds flew fast from Scraigs SW towards Aghla Mt. 4km away south from VP8. Too shakey in strong wind to get a decent obs for ID. Possible eagle sighting.
(ND)	28/03/2020	EA1	11:30	18:00			nil
03EA20 (AE)	26/03/2020	EA3	10:00	16:30	15:10	150	1ST SIGHTING- Single adult viewed through binoculars and telescope. Some primary feathers missing on right wing. Seen leaving from direction of Carnaween ( Blue Stack Mts) and heading in a NW direction towards the Glen Rd (R253).I am certain that this is the same bird recorded at 15. 45 hrs.
04EA20 (AE)	26/03/2020	EA3	10:00	16:30	15:45		2ND SIGHTING- Single adult viewed through binoculars and telescope. Some primary feathers missing on right wing. Appeared north of original sighting and over the 'Wee Glen' from behind Crockmore. The bird circled the area close to the Mink Farm and then disappeared back behind Crockmore. I am certain that this is the same bird recorded at 15. 10 hrs.
05EA20 (ND)	27/03/2020	EA8	10:00	16:30	14:35	6	Two large birds flew fast from Scraigs SW towards Aghla Mt. 4km away south from VP8. Too shakey in strong wind to get a decent obs for ID. Possible eagle sighting.
(ND)	28/03/2020	EA1	11:30	18:00			nil
(ND)	18/04/2020	EA6	11:00	17:30			Nil
	20/04/2020	EA4	10:00	16:00			nil
(ND)	22/04/2020	EA2	15:00	18:00			nil



Appendix 7.5 – Golden Eagle Survey, 2020 and 2021

Obs Ref (OBS)	Date	EA Survey VP	Start Time	End Time	EA Obs Time	Duration (sec)	Golden Eagle Observations
06EA20 (AE)	22/04/2020	EA7a	10:00	16:00		540	Single adult viewed through binoculars and telescope at a distance of 1 km. Unable to see detail of plumage etc due to heat haze. Bird was originally soaring in a westward direction at a height of about 200 m. It was then mobbed by 2 Buzzards that caused it to take evasive action in a northerly direction. Contact was lost when the bird was close to Loch Muck (about 5 km).
(ND)	24/04/2020	EA5	11:30	18:00			nil
(AE)	24/04/2020	EA3	10:00	16:00			nil
(AE)	26/04/2020	EA8	00:00	00:00			nil
(ND)	28/04/2020	EA2	10:00	13:00			nil
(ND)	04/05/2020	EA1	11:00	17:30			nil



## ANNEX 7.4.2 - GOLDEN EAGLE SURVEY DATA 2021



## Appendix 7.5 – Golden Eagle Survey, 2020 and 2021

*Survey effort and eagle observations*

Observation Reference	Date	EA Survey VP	Start Time	End Time	Observation Time	Duration (sec)	Eagle / Golden Eagle Observations
EA (AE)	19/03/2021	casual incidental					Golden Eagle (male) seen from AE's garden. Valley south-east of VP-I.
(AE)	21/03/2021	EA-A	10:00	16:00			No eagle observations.
01EA/WE(ND)21	21/03/2021	EA-M	11:00	17:00	14:27 - 14:35	480	2 eagles circling / soaring to north >4 km away; uncertain whether Golden Eagle or White-tailed Eagle. Finally flew apart in opposite directions, one to west first, then other to NE after several minutes. Can't be certain about eagle ID due to distance. Appeared heavy set and broad-winged, proportions like White-tailed Eagle. However, in retrospect, more likely to have been Golden Eagle.
(AE)	22/03/2021	EA-J	09:30	15:30			No eagle observations
(AE)	24/03/2021	EA-Ba	09:50	15:50			No eagle observations
(AE)	30/03/2021	EA-I	09:30	15:30			No eagle observations
02EA(JB)21	30/03/2021	EA-G	09:30	12:45	12:14 - 12:35	1260	2 Golden Eagles. First disturbed a flock of 15 Golden Plover, then were soaring for 21 minutes, rising 100 m until out of view behind skyline. One bird then seen alone, 12:42 for 1 min until out of view below skyline.
03EA(JB)21	30/03/2021	EA-G	13:15	16:00	13:23	5	1 Golden Eagle seen briefly flying over hill, then lost visual below skyline.
04EA(JB)21	30/03/2021	EA-G	13:15	16:00	14:54 - 15:07		1 Golden Eagle seen at distance over north face of hill, observed making dives, rising and soaring then making long descent glide to NE and low over hill. Lost visual against background.
05EA(JB)21	30/03/2021	EA-G	09:30	12:45	15:10 - 15:17		1 sub-adult Golden Eagle flew around over EA-G, then away to NE (photo).
06EA(JB)21	31/03/2021	EA-D	11:45	18:15	16:00		2, then 3 eagles seen flying, circling together about 8 km SE of EA-D.
07EA(JB)21	31/03/2021	EA-D	11:45	18:15	16:14		Further to previous, 1 Golden Eagle seen flying NW into valley from ridge line.
08EA(JB)21	31/03/2021	EA-D	11:45	18:15	16:21		Further to previous, 1 Golden Eagle seen circling over ridge.
09EA(JB)21	31/03/2021	EA-D	11:45	18:15	17:42		1 Golden Eagle seen flying over low over edge of hill, 2 km NNW of EA-D.



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Observation Reference	Date	EA Survey VP	Start Time	End Time	Observation Time	Duration (sec)	Eagle / Golden Eagle Observations
10EA(ND)21	02/04/2021	EA-Hb	11:30	18:30	15:32 - 15:40		1 Golden Eagle, thought male (size), spotted at about 50 m high over local terrain, flying north, slow and meandering flight, then glides, weaving, in NW direction, tracked far to over Gweebarra Bay and descended in long glide towards dunes at Dooley near coast.
(JB)	02/04/2021	EA-K	11:30	14:30	11:30 to 11:35		
11EA(JB)21	02/04/2021	EA-K	08:00	14:30	11:58 - 12:14		2 Golden Eagles (pair) circling / soaring to north c.8 km away then flew NE.
12EA(JB)21	02/04/2021	EA-K	08:00	14:30	13:27	100	1 Golden Eagle flew south (while second Golden Eagle seen flying to north - next observation), then out of view. Long range observation >5 km. Probably same pair as in previous observation.
13EA(JB)21	02/04/2021	EA-K	08:00	14:30	13:29		1 Golden Eagle (second bird to above) flew NW. Different bird to (12EA(JB)21) above.
14EA(JB)21	02/04/2021	EA-K	08:00	14:30	13:36		1 Golden Eagle (presumed same as last observation) observed making swoops and dives display flight, then flew E/NE, out of view.
15EA(JB)21	02/04/2021	EA-K	08:00	14:30	14:02		2 Golden Eagles soaring.
16EA(JB)21	02/04/2021	EA-K	08:00	14:30	14:08		1 sub-adult Golden Eagle flew around mountain from N to south below EA-K, being mobbed by Raven, fast flight away to south. Sheep carcass attended by HC, Raven, GB is likely to have attracted this Golden Eagle and bird flew from this location.



### Appendix 7.5 – Golden Eagle Survey, 2020 and 2021

Observation Reference	Date	EA Survey VP	Start Time	End Time	Observation Time	Duration (sec)	Eagle / Golden Eagle Observations
17EA(AE)21	10/04/2021	EA-J	10:00	16:00	14:50	1200	2 Golden Eagles first seen flying close to crag north east of EA-J. My impression was that both birds had been perched on the rocky crags where some formed distinct ledges. One bird flew east and behind the aforementioned crag and disappeared from sight. The second bird flew towards EA-J in a south-westerly direction following the line of high ground out of the glen. It was pursued by a Raven, and both flew past EA-J at eye-level observed through binoculars. I watched them for a few minutes as they disappeared into the distance to SW. A few minutes later the Golden Eagle returned following a similar flight line and height but on its own. In doing so, it commenced displaying by flying up a short height and then diving with folded wings. It did this 3-4 times and appeared to be using the up-draught created by the wind as it hit the slopes of EA-J. It disappeared out of sight close to where both birds were initially seen. Observation time was 20 mins overall.
18EA(AE)21	10/04/2021	EA-J	10:00	16:00	15:56	400	2 large birds of prey seen circling, slowly flying high above peaks, located c. 5 km north of EA-J. Observation and identification hampered by heavy snow but possible that one of the birds was swooping as if displaying. This observed at distance exceeding 5 km through a telescope. Observation time about 5-8 mins.
(AE)	11/04/2021	EA-A	09:45	12:45			No Golden Eagles.
19EA(ND)21	14/04/2021	EA-Hc	11:00	17:00	14:50	250	2 Golden Eagles: 1 Golden Eagle seen flying out from the crag, then joined in flight by a second eagle, just spotted (its mate which just arrived). Interactive with dives, maybe food pass. Fly around together for few minutes, then 1 Golden Eagle returns to crag, while other Golden Eagle circles and rising over ridge now mobbed by Kestrel or Merlin, then HC also Ravens later about.
20EA(ND)21	14/04/2021	EA-Hc	11:00	17:00	14:55 to 15:20		Golden Eagle (continued from last observation above) presumed male, continued to circle, and ascend over ridge, mobbed by Kestrel, then possibly Merlin and after by HC for a long while when the Golden Eagle ascended higher and higher. Shifting position in an easterly direction away from over hills and finally over EA-Hc, now soaring about 1 km high over ground. Drifted southward, then visual contact lost as bird very high and hard to follow/track against full sun.



### Appendix 7.5 – Golden Eagle Survey, 2020 and 2021

Observation Reference	Date	EA Survey VP	Start Time	End Time	Observation Time	Duration (sec)	Eagle / Golden Eagle Observations
21EA(ND)21	14/04/2021	EA-Hc (adjusted south)	11:00	17:00	16:02 to 16:09	420	Observer (ND) moved position, walking SW over ridge to get a view into glen. Golden Eagle (subsequent to last observation above presumed male), seen flying east along south side of ridge and then over valley 50 m over contours, then away, but then returning along the north side of ridge. Commenced a series of display flights with steep ascents and vertical dives (sky dancing) along the top edge of the ridge line, first NE to SW, then repeated after a break in the opposite direction (several times). Finally, a long display flight towards SW petered out to level flight about 20 m high over terrain; then Golden Eagle turned and flew a line to the NE passing 200 m north of EA-Hc and continuing; visual contact lost at this point. Note the bird was then seen at 16:11 and tracked by JB observing with a good scope from EA-Kestrel See 25EA(JB)21.
(ND)	14/04/2021	from vehicle	11:00	17:00	17:50	10	No Golden Eagles.
22EA(JB)21	14/04/2021	EA-K	10:30	17:00	11:01		1 Golden Eagle (c.10 km S of EA-K) circling, then flying to SE.
23EA(JB)21	14/04/2021	EA-K	10:30	17:00	11:25		1 Golden Eagle c.6 km S of EA-K, flying to E in descending flight into valley, out of view.
24EA(JB)21	14/04/2021	EA-K	10:30	17:00	12:08		1 Golden Eagle c.10 km S of EA-K, soaring.
25EA(JB)21	14/04/2021	EA-K	10:30	17:00	16:11		1 Golden Eagle c.10 km W of EA-K, flying, to over WD4 forestry then circling very high and lost visual contact. Same bird as 21EA(ND)21, spotted by JB at EA-Kestrel Likely surveillance reaction by territorial Golden Eagle to ND, who was in the territory/home range of displaying Golden Eagle.
26EA(JB)21	14/04/2021	EA-K	10:30	17:00	16:28		1 Golden Eagle making a travelling, long descending flight westward. Out of view low in front of forestry. Likely the same bird as above, returning to breeding territory. Quite likely the same Golden Eagle as last observation, 25EA(JB)21, returning to occupied territory.
27EA(AE)21	15/04/2021	EA-Ba	09:30	15:30	11:50	540	Male and female adult Golden Eagles viewed through binoculars and telescope at a distance of 3 km. One eagle was distinctly bigger than the other and was presumed a female. The birds appeared together and were slowly soaring over the terrain. Both eagles were mobbed by two Ravens forcing evasive action. Female eagle attempted to fight off the Ravens. The mobbing caused the eagles to veer east and fly in the direction they had come from, disappearing behind a hill.



### Appendix 7.5 – Golden Eagle Survey, 2020 and 2021

Observation Reference	Date	EA Survey VP	Start Time	End Time	Observation Time	Duration (sec)	Eagle / Golden Eagle Observations
28EA(AE)21	15/04/2021	EA-Ba	09:30	15:30	11:50	540	2 Golden Eagles (time observed: 14:59 for 4-5 mins).
29EA(JB)21	15/04/2021	EA-G	10:30	17:00	12:03	1020	1 adult Golden Eagle being mobbed by Raven at 150 m height, then circling. Flew NE to river where heavily mobbed by 2 Buzzard, circled gaining height to 500 m+, then flew NE before descending where it was lost from view against hill, or it landed.
30EA(JB)21	15/04/2021	EA-G	10:30	17:00	14:42	1080	1 adult Golden Eagle. Mobbed by Buzzard, flew NE then circled high 500 m+ then gliding flight SW (7-8km) till out of view
	17/04/2021	EA-C	13:45	17:30		300	1 immature Golden Eagle.
31EA/WE(JB)21	22/04/2021	EA-L	12:30	19:00	14:49	360	1 Golden Eagle / White-tailed Eagle Drifting flight then moving S.
32EA/WE(JB)21	22/04/2021	EA-L	12:30	19:00	15:18	8	1 Golden Eagle / White-tailed Eagle. Brief view flying in close to hill (showed some white against hill), looked as if it landed on crags.
33EA/WE(JB)21	22/04/2021	EA-L	12:30	19:00	16:32	480	1 White-tailed Eagle. Near adult. Faint terminal band on white tail. Circling east of EA-L then flew south out of view.
34EA/WE(JB)21	22/04/2021	EA-L	12:30	19:00	16:48	15	1 Golden Eagle/White-tailed Eagle. Brief view
35EA(ND)21	23/04/2021	EA-Hc	12:00	18:00	12:56 to 13:20	350 (flight)	Golden Eagle flew east over ridge, mobbed by 2 HC, then mobbed by Kestrel Landed at top of slope south of summit and remained for 20 mins (did not monitor constantly and bird not observed leaving). Possible roost site.
36EA(ND)21	23/04/2021	EA-Hc	12:00	18:00	15:53 to 16:00	400	1 Golden Eagle probably same bird as previous, mobbed by HCs, flew west to east passing close (c. 200 m) over ridge and flew on, making display vertical ascents, dives, and swoops. Stalled flight, then glided off.
37EA(ND)21	23/04/2021	EA-Hc	12:00	18:00	16:58 to 17:10	250 (flight)	1 Golden Eagle, probably same bird as previous, flying (return flight) from NE to SW, through valley, then mobbed by Kestrel, flew over western slope of hill and to ground landing out of view behind a lateral rocky outcrop ridgeline, still mobbed by Kestrel which dived and swooped at the eagle. Golden Eagle did not re-appear. Possible roost site.
AE	25/04/2021	EA-I	10:00	16:00			No eagle observations.
38EA(ND)21	26/04/2021	EA-Ha	15:00	16:00	15:18	180	1 Kestrel spotted first, then 1 Golden Eagle spotted airborne flying away from crags to NE, soon mobbed by 2 Kestrel and HC. Slow direct flight out in NE direction, until view obscured. Observed from west point on the approach road.



## Appendix 7.5 – Golden Eagle Survey, 2020 and 2021

Observation Reference	Date	EA Survey VP	Start Time	End Time	Observation Time	Duration (sec)	Eagle / Golden Eagle Observations
39EA(ND)21	30/04/2021	EA-F	13:00	17:30	14:04 to 14:09		1 Golden Eagle spotted circling over the westward slopes of hill (c. 3 km east of EA-F) at mid-altitude relative to the hill. Circling repeatedly as bird moved across the slopes, flight altitude increasing and variable. Lost visual contact. This area was targeted and observed following display observed in March and frequent occupancy.
39EA(ND)21	30/04/2021	EA-F	13:00	17:30	14:15 to 14:29		1 Golden Eagle circling as above; continued observation when visual contact regained. Now circling at higher altitude. Noted that a group of four hillwalkers were making their way over the summit of the hill, in NE direction along the ridge. This may be a cause of the Golden Eagle behaviour. Circling flight is a noted reaction to any disturbance or intrusion into a breeding site (Hardey et al, 2009 in 3.3 on p147).
40EA(ND)21	30/04/2021	EA-F	13:00	17:30	17:10 to 17:15		1 Golden Eagle spotted from road in vehicle. This may be the same bird observed earlier from EA-F.
41EA(ND)21	13/06/2021	EA-Hc/d	10:00	15:00	11:12	20	2 Golden Eagle spotted in flight; flew westward fast and close over ridge, past the end of the ridge, turned right 270° and flew directly into crag at identified eyrie site. The crag was watched intensively thereafter (2 hours) before advancing to EA-Hd, which is a little closer affording improved visual definition, but field of vision is narrower. A Golden Eagle appeared perched on top of overhang rock, but motionless so not absolutely certain. After moving to EA-Hd there appeared to be no bird perched at same location. No other certain features of nest or contents could be discerned at this distance. There were no further observations today by way of corroboration of occupancy.
42EA(JB)21	17/06/2021	EA-Hd	08:15	14:15	13:45	900	Golden Eagle flew in from NW low behind eyrie crag to reappear above crag and land at the east end. After being mobbed by HC for 10 mins it flew briefly east to land again before flying low NW low into valley out of view. Both sightings today presumably same bird.
43EA(JB)21	17/06/2021	EA-Hd	08:15	14:15	14:03	480	Golden Eagle circling over eyrie crag then flew low along ridge, did a fly by over EA-Hd (checking me out! - a reaction to human presence) then on to circle over hill gaining height before moving south out over valley. Out of view as it glided lower. Missing P5/6 on left wing.
44EA(JB)21	19/06/2021	EA-F	09:45	15:45	12:34	25	Eagle species flying SE low over ridge. Bad view due to heat haze.



Appendix 7.5 – Golden Eagle Survey, 2020 and 2021

Observation Reference	Date	EA Survey VP	Start Time	End Time	Observation Time	Duration (sec)	Eagle / Golden Eagle Observations
45EA(JB)21	19/06/2021	EA-F	09:45	15:45	13:28	3720	Golden Eagle flying in and out of view then flying SW to where it was joined by a second Golden Eagle circling gaining height to 300 m. Birds flew W, one doing swoops and dives, then SW to where more swoops and dives before circling gaining height. Birds flew NE to more circling then over EA-F, circling high 700/800 m. Lost sight of one bird but the other made a fast direct gliding flight back and continued on until out of view.
(ND)	23/06/2021	EA-F	13:00	15:00			No Golden Eagles seen or detected. Unable to conduct a VP watch due to weather conditions.
(ND)	23/06/2021	EA-Ha	16:00	17:00			No Golden Eagles seen or detected. Unable to attain visual monitoring for observation of eyrie site.
(ND)	26/06/2021	EA-F	10:00	16:00			No Golden Eagles seen or detected. No indications of Golden Eagle breeding activity at present time.
(JB)	27/06/2021	EA-E	10:00	16:00	None		New VP position to observe eyrie. No eagles recorded.



## Appendix 7.4 – Golden Eagle Survey, 2020 and 2021

*Other species*

Date	EA Survey VP	Other Species of Note
21/03/2021	EA-A	2 Red Grouse and 1 Golden Plover.
21/03/2021	EA-M	Male Red Grouse male flew by, calling.
22/03/2021	EA-J	1 Buzzard, 4 Red Deer.
24/03/2021	EA-Ba	2 Buzzard.
30/03/2021	EA-I	4 Buzzard, 1 Sparrowhawk, 3 Red Deer.
30/03/2021	EA-G	2 Buzzards flying near EA-G. Two flocks of Whooper Swans migrating north (total 70 Whooper Swans).
31/03/2021	EA-D	1 Merlin female seen while driving to EA-D.
31/03/2021	EA-D	1 Golden Plover and 1 Red Grouse put up on walk near EA-D.
02/04/2021	EA-Hb	Kestrel hovering just east of main crags. Remains of gulls (immature gull feathers, no carcass) along ridge.
02/04/2021	EA-K	2 Peregrine: 1 Peregrine on the ground above large cliff; possible breeding site. A second Peregrine making display dive while first Peregrine calling from the ground. Peregrine attempted breeding in 2020 and 2021 on cliffs. Also (11:39), Buzzard foraging over forest.
10/04/2021	EA-J	1 Sparrowhawk, 1 Jack Snipe put up on walk to EA-J.
11/04/2021	EA-A	1 Red Grouse, hare tracks.
14/04/2021	EA-Hc	Female Red Grouse put up walking SW along ridge.
14/04/2021	EA-Hc	
14/04/2021	EA-Hc (adjusted south)	Female Red Grouse put up walking SW along ridge.
14/04/2021	from vehicle	Merlin (male) flew across road from forestry and away. Possible breeding site.
14/04/2021	EA-K	1 Sparrowhawk circling high east over WD4.
14/04/2021	EA-K	1 Buzzard circling high over WD4.
14/04/2021	EA-K	1 Buzzard flying south of EA-K over WD4, into valley (11:50). 1 Sparrowhawk circling high, south of EA-K (11:59)
14/04/2021	EA-K	1 Sparrowhawk circling high, mobbed by Raven. 1 Sparrowhawk circling very high >300 m.
15/04/2021	EA-Ba	4 Buzzards, 1 Sparrowhawk
15/04/2021	EA-G	2 Buzzards showing territorial behaviour. Plenty of Red Grouse droppings seen on way to VP.
15/04/2021	EA-G	1 Buzzard showing territorial behaviour.
17/04/2021	EA-C	1 Red Deer.
22/04/2021	EA-L	Sparrowhawk, Kestrel.
22/04/2021	EA-L	2 Buzzards over forestry to S of VP.
23/04/2021	EA-Hc	Male Kestrel mobbing Golden Eagle.
25/04/2021	EA-I	3 Red Deer, 4 Buzzards and 1 Sparrowhawk.
26/04/2021	EA-Ha	Male Kestrel male mobbing Golden Eagle.
30/04/2021	EA-F	Raven plus Raven, 8 Red Deer, and Peregrine seen from road.
30/04/2021	EA-F	Male Peregrine flew across road.



## Appendix 7.4 – Golden Eagle Survey, 2020 and 2021

Date	EA Survey VP	Other Species of Note
13/06/2021	EA-Hc/d	Male Merlin flying fast, low to ground, from SW to NE direction, passing close to observer (13:00). Seen from EA-Hd.
17/06/2021	EA-Hd	Buzzard.
19/06/2021	EA-F	Buzzard, Merlin, Peregrine.
26/06/2021	EA-F	2 Ravens over ridge to E, later 2 Ravens to S, 1 Cormorant flew from N to S over ridge. Family of fledged Redpolls in trees at wall stead at EA-F.
27/06/2021	EA-E	Buzzard.

### Weather conditions

Observation Reference	Date	EA Survey VP	Conditions	Other comments
EA (AE)	19/03/2021	casual incidental	Fine, sunny (foggy early / at times).	
(AE)	21/03/2021	EA-A	Excellent visibility; wind NW3 fresh and cool, visibility very good.	
01EA/WE(ND)21	21/03/2021	EA-M	Sunny, cloud 50%, wind W2, good visibility.	
(AE)	22/03/2021	EA-J	Wind SW4, cloud high-med 90%, rain nil, visibility very good	
(AE)	24/03/2021	EA-Ba	Wind W5, intermittent rain, cloud 100% high to low variable, visibility good (occasionally poor in rain).	
(AE)	30/03/2021	EA-I		
02EA(JB)21	30/03/2021	EA-G	Wind SSW4, cloud 7/8, visibility good 4/5.	
03EA(JB)21	30/03/2021	EA-G	Wind SSW4, cloud 7/8, visibility good 4/5.	
04EA(JB)21	30/03/2021	EA-G	Wind SSW4, cloud 7/8, visibility good 4/5.	
05EA(JB)21	30/03/2021	EA-G	Wind SSW4, cloud 7/8, visibility good 4/5.	
06EA(JB)21	31/03/2021	EA-D	Wind F2, cloud 8, visibility 4.	
07EA(JB)21	31/03/2021	EA-D	Wind F2, cloud 8, visibility 4.	
08EA(JB)21	31/03/2021	EA-D	Wind F2, cloud 8, visibility 4.	
09EA(JB)21	31/03/2021	EA-D	Wind F2, cloud 8, visibility 4.	
10EA(ND)21	02/04/2021	EA-Hb	Excellent visibility; wind SE2, clear sun, cloud 2.	Extensive walkover of the area done (photos).
(JB)	02/04/2021	EA-K	Good visibility. Wind NE2. High cloud 0-33%. Sunny.	
11EA(JB)21	02/04/2021	EA-K	as above	
12EA(JB)21	02/04/2021	EA-K	as above	
13EA(JB)21	02/04/2021	EA-K	as above	
14EA(JB)21	02/04/2021	EA-K	as above	
15EA(JB)21	02/04/2021	EA-K	as above	



**Appendix 7.4 – Golden Eagle Survey, 2020 and 2021**

Observation Reference	Date	EA Survey VP	Conditions	Other comments
17EA(AE)21	10/04/2021	EA-J	Sunny periods, Wind, N2. Snow falls, snow lying; c. 50 mm snow on ground. Visibility good to poor in snowfall.	
18EA(AE)21	10/04/2021	EA-J	as above	
(AE)	11/04/2021	EA-A	Excellent visibility, wind N4, Heavy snow.	
19EA(ND)21	14/04/2021	EA-Hc	Good visibility. Wind variable SE to NW2. High cloud 33-66%. Sunny.	
20EA(ND)21	14/04/2021	EA-Hc	as above	2 light aircraft earlier.
21EA(ND)21	14/04/2021	EA-Hc (adjusted south)	as above	
(ND)	14/04/2021	from vehicle	as above	
22EA(JB)21	14/04/2021	EA-K	as above	
23EA(JB)21	14/04/2021	EA-K	as above	
24EA(JB)21	14/04/2021	EA-K	as above	
25EA(JB)21	14/04/2021	EA-K	as above	
26EA(JB)21	14/04/2021	EA-K	as above	
27EA(AE)21	15/04/2021	EA-Ba	Excellent visibility, Wind SW4.	
28EA(AE)21	15/04/2021	EA-Ba	as above	
29EA(JB)21	15/04/2021	EA-G	Wind SSE4-5. Cloud 2 1/8. Dry. Visibility good.	
30EA(JB)21	15/04/2021	EA-G	as above	
	17/04/2021	EA-C	Excellent visibility, Wind SW2	
31EA/WE(JB)21	22/04/2021	EA-L	Wind SSE-S4-5. Cloud 2 1/8. Dry. Visibility good.	
32EA/WE(JB)21	22/04/2021	EA-L	as above	
33EA/WE(JB)21	22/04/2021	EA-L	as above	
34EA/WE(JB)21	22/04/2021	EA-L	as above	
35EA(ND)21	23/04/2021	EA-Hc	Good visibility, Wind SE5-3. Sunny periods. High cloud 33-66%.	
36EA(ND)21	23/04/2021	EA-Hc	Good visibility, haze-glare to S reduced clarity of distant objects. Wind ENE2-3 light. High cloud 0 to 33%. Full sun.	
37EA(ND)21	23/04/2021	EA-Hc	as above	
AE	25/04/2021	EA-I	Very good visibility, a little hazy. Light SE breeze F1-2.	
38EA(ND)21	26/04/2021	EA-Ha	Good visibility, hazy. Wind SE2 High cloud 7/8. Partial sunny breaks.	
39EA(ND)21	30/04/2021	EA-F	Sunny, light wind, high cloud 33-66%.	
40EA(ND)21	30/04/2021	EA-F	as above	



Appendix 7.4 – Golden Eagle Survey, 2020 and 2021

Observation Reference	Date	EA Survey VP	Conditions	Other comments
41EA(ND)21	13/06/2021	EA-Hc/d	Good visibility. Wind SW to NW3-5. High cloud 33-66%. Sunny periods.	1 light aircraft, farmers moving sheep.
42EA(JB)21	17/06/2021	EA-Hd	Wind SW3. Rain 0. Cloud height 2. Cloud cover 6/8. Visibility 4.	
44EA(JB)21	19/06/2021	EA-F	Wind SE2/3. Rain 0. Cloud height 2. Cloud cover 8/8. Visibility 4.	
45EA(JB)21	19/06/2021	EA-F	as above	
(ND)	23/06/2021	EA-F	Low cloud and fog slow to lift and clear.	Unable to conduct a VP watch.
(ND)	23/06/2021	EA-Ha	as above	
(ND)	26/06/2021	EA-F	Sunny, warm, Wind N2-3, cloud 33-66%.	
(JB)	27/06/2021	EA-E	Wind: N3. No rain. Cloud height 2. Cloud cover 3/8. Visibility 4.	

