MacArthur Green Ltd

PROPOSED WHITEHOUSE WIND TURBINE DEVLEOPMENT

ORNITHOLOGICAL STUDY

Technical Report & Impact Appraisal

Prepared by: Jon Seller
Reviewed by: David MacArthur Date: 03 June 2011

Tel: 0141 221 6873
Email: jon.seller@macarthurgreen.com
Web: www.macarthurgreen.com

Address: 24A Argyle House | 1103 Argyle Street | Glasgow | G3 8ND

Contents

EXECUTIVE SUMMARY

MacArthur Green Ltd was commissioned by Land Use Consultants (LUC) to complete ornithological surveys at the proposed Whitehouse wind turbine site, Argyll & Bute (referred to hereafter as 'the Site').

These surveys are required to inform an appraisal into the likely impacts of the proposed wind turbine on bird populations occupying the Site and its surrounds.

Surveys informing this report were conducted between December 2010 and mid-May 2011 during weather conditions conducive to a range of bird survey methods. A full year of surveys will be completed by November 2011.

At the time of reporting, the following Annex 1/Schedule 1/Red Data List species had been recorded on Site:

- Common Crossbill sp.

The Site is assessed as being of negligible use to Target Species (i.e. those birds of increased nature conservation importance deemed sensitive to the impacts of wind farm developments), with overall levels of flight activity across the Site, by all bird species, being very low.

This technical report details the methods that have been employed on the Site together with the results up to the submission of this report. Detailed legislation information, methodologies and survey data is included within Appendices A-D, with results illustrated in Figures 1 to 3 of this report and Figures 1 to 2 of Appendix B.

1 INTRODUCTION

MacArthur Green Ltd was commissioned by Land Use Consultants (LUC) to carry out bird surveys at the proposed Whitehouse wind turbine site, near Kennacraig at the north of the Kintyre peninsula, Argyll & Bute (hereafter referred to as 'the Site').

The surveys were commissioned to inform an appraisal into the likely ornithological impacts that would arise should the development progress through the planning process. A number of survey methods were employed in order to establish as thorough a baseline dataset as possible.

The Site covers an area of approximately 96ha and is situated approximately 2km south east of Kennacraig (see Appendix B, Figure 1).

Following a screening exercise, in which Argyll & Bute Council (in consultation with Scottish Natural Heritage (SNH)) deemed that the development did not require a full Environmental Impact Assessment (EIA), it was decided that a more concise appraisal of the potential ornithological issues on Site would be sufficient. The Council requested that the following specific issues be addressed[1]:

- Impacts upon the Kintyre Goose Roosts SPA;
- Impacts upon the local population of Red-Throated Diver;
- Impacts upon Hen Harrier, Merlin and Golden Eagle; and
- Impacts upon Black Grouse, Crossbill and Barn Owl.

2 LEGAL PROTECTION

All wild birds and their eggs are protected by law. Specific levels of protection are determined by a species' inclusion on certain lists. Appendix A details the various levels of legal protection afforded to UK bird species.

3 METHODOLOGIES

3.1 Consultations and Desk-Based Study

The following resources were consulted with regards the ornithological interests on and adjacent to the Site:

- Published papers relevant to this study;
- RSPB Black Grouse Officer;
- Scottish Natural Heritage (SNH) Site Link (www.snh.gov.uk/sitelink) – Data on designated sites; and
- NBN Gateway (www.searchnbn.net) – Information relating to Schedule 1, Annex 1 and Red and Amber List bird species in OS Tile NR86.

3.2 Field Survey

Given the limited extent of the development proposals (i.e. a single turbine and an upgrade of an existing access track), and following discussions with SNH, a scaled down (from current SNH guidance requirements) bird survey programme was agreed in order to address the potential

[1] Argyll & Bute Council Wind Turbine Development, Whitehouse Burn - 'Screening Opinion'. 11/03/2011.

ornithological issues. The following surveys were undertaken at the Site. These adhered to standard field method guidelines and are described in detail within Appendix B:

- Flight Activity Vantage Point Survey (VP);
- Upland Breeding Bird Survey (BBS);
- Woodland Point Count;
- Diurnal Breeding Raptor Survey; and
- Black Grouse Survey.

The VP survey extents were based upon recommendations described within SNH guidance (2010), with alterations made to reflect the limited nature of the development proposals. It was agreed that halving the total amount of time spent undertaking these surveys would be sufficient (i.e. 18 hours per VP per survey season). It was also agreed that this survey effort would be subject to review should initial findings suggest greater coverage would be required.

Each of the above surveys was carried out beyond the Site extents for a distance specific to that method – e.g. 2km buffer for the breeding raptor survey. Details of these extents are listed within Appendix B and illustrated within Figure 1 of Appendix B. These extents are hereafter referred to as the 'survey area' within this document.

The relative importance of the data collected was determined by the specific level of protection assigned to those species recorded, coupled with their perceived susceptibility to impacts by the wind farm. The resulting 'Target Species' and 'Secondary Species' lists are a standard assessment tool for wind farm ornithological studies (see Appendix B). Following consultation with the relevant guidance (SNH, 2006) and by virtue of the accepted reduced risk of collision posed to certain species, the Common Crossbill has been removed from the Target Species list for the purposes of collision risk assessments within this report.

3.3 Survey Constraints

At the time of writing this report, surveying had been ongoing for five months. Data from the remaining seven months of the year is to be collected and as such represents an information gap at this point. The results and conclusions that follow are therefore subject to review within the context of an incomplete data set, and this is addressed as appropriate.

Commercial forestry operations commenced on Site during Spring 2011 (albeit approximately 600m from the proposed turbine location) and it is recognised that this may have created a bias in the results given the disturbance that will have arisen from the forestry activities and the subsequent change in local bird distribution. The results are discussed in this context within Section 5 – Conclusions.

4 RESULTS

4.1 Consultations and Desk-Based Study

Information gathered from the consultation exercise revealed the presence of a known Golden Eagle territory, with the territory centre approximately 5km to the east of the Site. In addition, information provided by the RSPB suggests the presence of several Black Grouse leks within 5km of the Site, with the closest being approximately 1km to the south. Finally, the NBN Gateway and BTO's Bird Tracker service suggested the presence of the following Target Species within the Site and its environs:

- Barn Owl (within 10km)

- Crossbill (10km)
- Tern species (10km)
- Wader species (10km)
- Peregrine Falcon (10km)
- Red Kite (2km)
- Short-eared Owl (10km)
- White-tailed Eagle (2km)

Information obtained from a source local to the Site suggests the likely presence of the following additional species within 2km of the Site:

- Golden Eagle
- Hen Harrier
- Diver Species

4.2 Field Survey

Survey work commenced on the 15th December 2010 and is ongoing. To date, both the winter and spring migration seasons have been completed. All surveys have been undertaken by suitably qualified and experienced surveyors, and during suitable weather conditions (as described within Appendix B – Survey Methodologies). The Schedule 1/Annex 1 surveys were carried out by an appropriately licensed surveyor.

The results of the field surveys and consultation exercise are illustrated within the Figures 1 - 3. The individual survey methods revealed the following results:

4.2.1 Flight Activity (Vantage Points (VPs))

A total of five species have recorded during the VP surveys, including two Target Species. The Target Species observed were Golden Eagle (eight flights) and Hen Harrier (one flight) (Figures 2 & 3). None of these observations were from within 250m of the Site. The full results are detailed within Appendix D.

4.2.2 Breeding Raptor Survey

No breeding raptors were identified as being present on Site. A single Sparrowhawk was observed during surveying, but no evidence of breeding recorded.

A pair of Golden Eagles were frequently observed around the triangulation point approximately 2km to the north east of the Site however they were not found to be breeding within the vicinity of the Site.

4.2.3 Breeding Birds Survey

The upland BBS recorded two breeding species and three non-breeding species. No Annex 1 or Schedule 1 breeding birds were recorded (full details are presented in Appendix D).

4.2.4 Woodland Point Counts

Woodland point counts were undertaken at 10 locations (see Figure 1), and recorded the presence of eight bird species. These included non-breeding Common Crossbill and Lesser Redpoll in forestry

surrounding the proposed turbine location (Point Count locations 4, 5, 7 and 10). Full details are presented in Appendix D.

4.2.5 Black Grouse

No Black Grouse have been observed from within the survey area.

4.2.6 Migratory Movements

No notable migratory movements were recorded during the surveys.

5 CONCLUSIONS

The findings of the ornithological survey work carried out at Whitehouse between December 2010 and May 2011 suggest that the Site is of negligible importance to Target Species, both in terms of flight activity and nesting. The only species of nature conservation importance recorded on Site has been the Common Crossbill, with a small non-breeding population observed. Both Golden Eagle and Hen Harrier have been observed off Site, in excess of 2km from the proposed turbine locations.

The habitat on Site is assessed as being unsuitable for colonisation by any of the Target Species considered during such studies, with monoculture plantation forestry being exclusively dominant. The wider area appears suitable for Black Grouse, and it is possible that the species may utilise the plantations in the area for feeding and shelter, although none were recorded during surveys.

It has been recognised that the data collected thus far only represents a proportion of the data required to accurately assess the use of a site across a full year. However, given the lack of overall activity observed, and especially during key periods (i.e. migration and early breeding season), it is considered unlikely that the development will have any significant impacts upon any bird populations in the area.

In addressing the specific concerns raised in response to initial correspondences with Argyll and Bute Council (see Section 1 – Introduction), the following appraisals are made:

Impacts upon the Kintyre Goose Roosts SPA:

No geese have been recorded overflying the Site and it is therefore considered that the proposed development will have no impact upon any of the populations for which the SPA is designated.

Impacts upon the local population of Red-Throated Diver:

No divers were observed during any of the surveys and it is therefore considered that the proposed development will have no impact upon any diver species.

Impacts upon Hen Harrier, Merlin and Golden Eagle:

Both Hen Harrier and Golden Eagle were observed outwith the Site (in excess of 2km from the proposed turbine location), with no flight activity recorded over the Site. In addition, no breeding activity of any raptor was observed from within 2km of the Site. It is therefore considered that the development will have no impact upon any raptor species.

Impacts upon Black Grouse, Crossbill and Barn Owl:

No Black Grouse or Barn Owl were observed during surveying, with habitat generally unsuitable for the latter. It is therefore considered that the development will have no impact upon either species.

Common Crossbill were observed within the forestry surrounding the proposed Site, feeding amongst the Sitka spruce on what was a relatively bountiful seed crop. It is recommended that pre-construction surveys are undertaken on trees within the development footprint to ensure that active nest sites are identified and are protected from disturbance (through micro-siting and/or sympathetic timing of works to avoid the breeding period for the species). With the application of these mitigation measures, and given the relatively low-level habitat loss planned (5ha of land to be developed), it is considered that the proposed development will have no impact upon the Common Crossbill population on Site.

As discussed within Section 3.3 – Survey Constraints, the commencement of forestry operations to the south west of the proposed turbine location was identified as having the potential to cause a change in local bird behaviour and distribution, and subsequently impact the bird survey results. Given the lack of activity prior to the commencement of these works, especially within the vicinity of the affected area, it is considered unlikely that the works will have caused a significant bias to the bird survey results.

6 REFERENCES

Brown, A. F. & Shepherd, K. B. (1993) A method for censusing upland breeding waders. *Bird Study*, 40: 189-195.

Gilbert, G., Gibbons, D. W. & Evans, J. (1998) *Bird Monitoring Methods*. RSPB, Sandy.

Hardey, J., Crick, H., Wernham, C., Riley, H. & Thompson, D. (2005 in prep): *Raptors: a field guide to survey and monitoring*. Edinburgh: The Stationery Office.

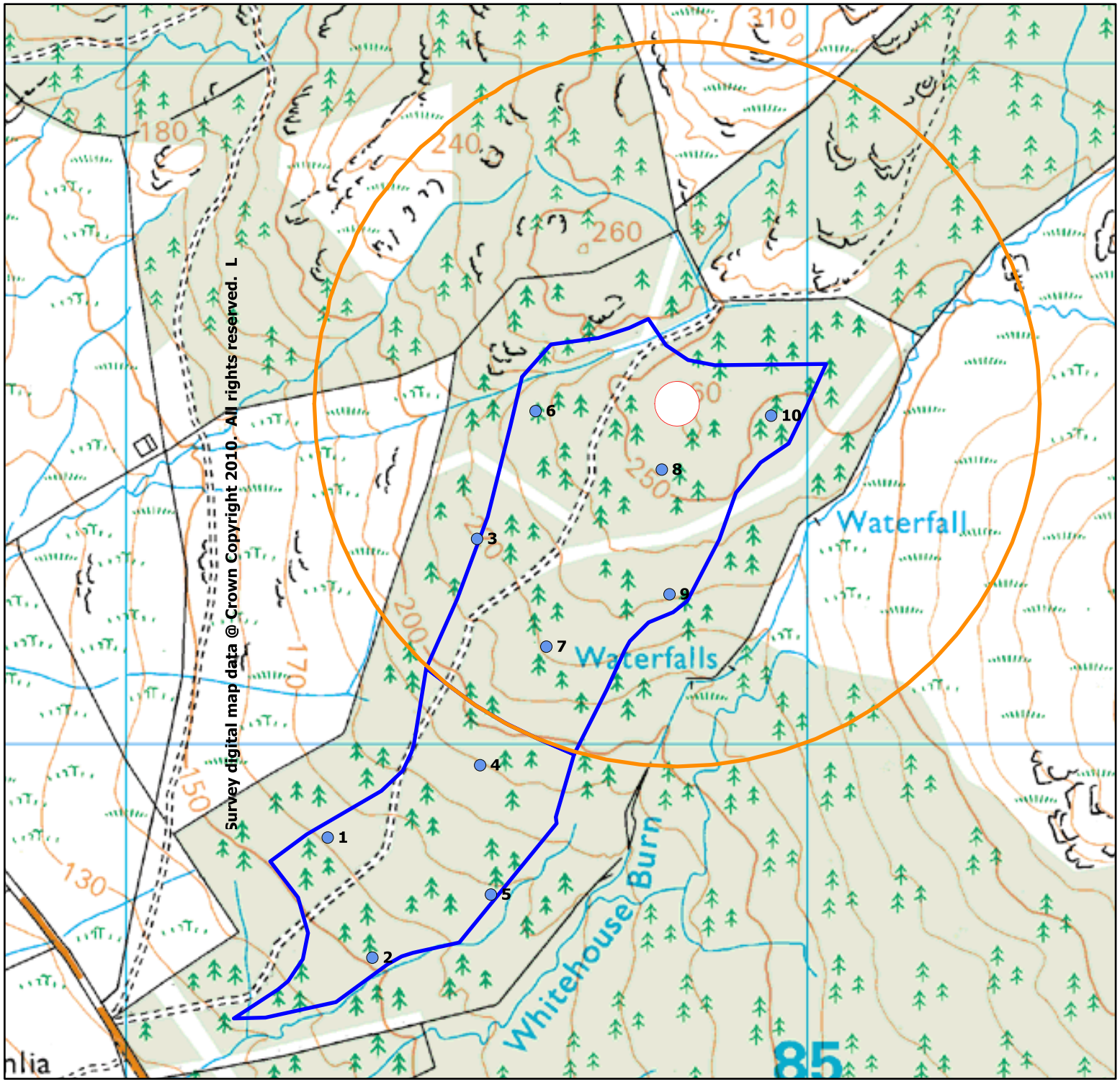
Langston, R.H.W & Pullan, J.D. (2003) *Windfarms and birds: analysis of Windfarms on birds, and guidance on environmental assessment criteria and site selection issues.* Royal Society for the Protection of Birds/Report by bird life international to the Council of Europe (Bern Convention), Council of Europe Report T-PVS/Inf (2003) 12.

Scottish Natural Heritage (2010) *Survey Methods for Use in Assessing the Impacts of Onshore Windfarms on Bird Communities.*

Scottish Natural Heritage (2006) *Assessing significance of impacts from onshore Windfarms on birds outwith designated areas.*

Scottish Natural Heritage (2009) *Environmental Statements and Annexes of Environmentally Sensitive Bird Information.*

Scottish Natural Heritage (2009) *Strategic Locational Guidance for Onshore Wind Farms in Respect of the Natural Heritage.* Policy Statement No. 02/02 (First published 2002 and updated March, 2009).



MacArthur Green Ltd

Whitehouse

Key

- Woodland point count survey boundary
- Woodland point count samples
- BBS survey/Winter walkover (500m buffer)
- Maximum potential windfarm boundary

N

0 250 m

Scale 1:8,000 at A4

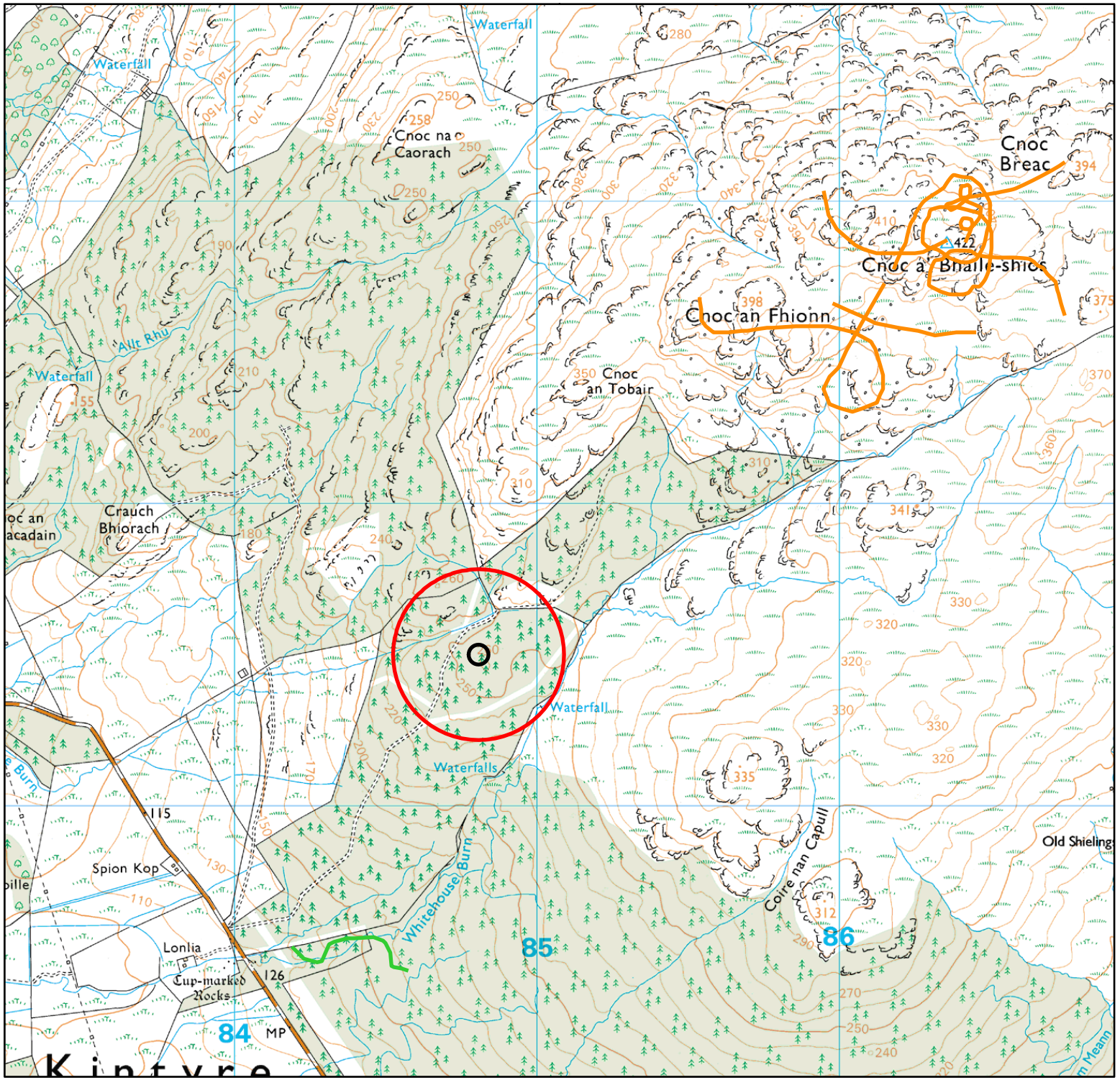
Produced: AR
Reviewed: JS
Approved: DM

Date: 16/12/2010

Ref: Whitehouse/02

Whitehouse

FIGURE 1



MacArthur Green Ltd

Whitehouse Ornithological Study

Key

- Hen harrier
- Golden eagle
- Maximum potential windfarm boundary
- 250m buffer zone

N

0 500 m

Scale 1:18,000 at A4

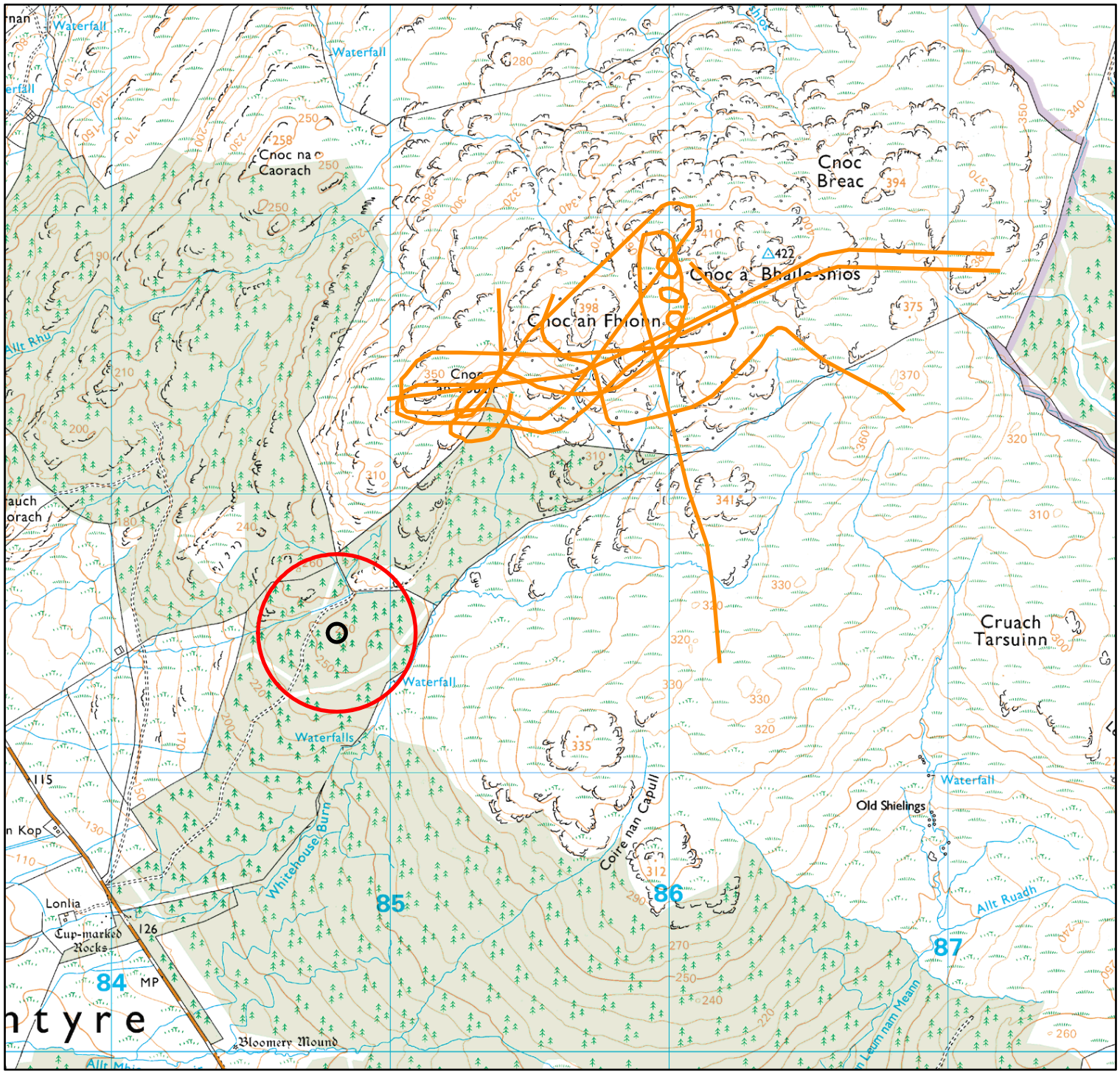
Produced: AR
Reviewed: JS
Approved: DM

Date: 16/05/2011

Ref: Whitehouse/NBS/1

Whitehouse Ornithology: Non breeding season (12/10 - Mid 3/11)

FIGURE 2



MacArthur Green Ltd

Whitehouse Ornithological Study

Key

- Golden eagle
- Maximum potential windfarm boundary
- 250m buffer zone

N

0 500 m

Scale 1:20,000 at A4

Produced: AR
Reviewed: JS
Approved: DM

Date: 3/06/2011

Ref: Whitehouse/BS/1

Whitehouse Ornithology: Breeding season (4/11-5/11)

Figure 3

APPENDIX A, LEGAL PROTECTION

In Scotland, all wild birds are protected under the Wildlife and Countryside Act 1981, as amended by the Nature Conservation (Scotland) Act 2004. This protection also extends to their eggs and nests, with it being an offence to*:

- Intentionally or recklessly kill, injure or take any wild bird;
- intentionally or recklessly damage or destroy the nest of any wild bird while it is being built or used;
- intentionally or recklessly take or destroy an egg of any wild bird, or to cause or permit any of these acts; and
- have in possession or control any live or dead wild bird or any part thereof; or any egg or part of an egg of any wild bird.

Further special protection under this legislation is afforded to those species listed on Schedule 1 of the Act. For these species, it is an offence to:

- intentionally or recklessly disturb any wild bird listed on Schedule 1 while it is nest building, or at a nest containing eggs or young, or disturb the dependent young of such a bird;
- intentionally or recklessly disturb any wild birds included on Schedule 1 which leks, while it is doing so. In Scotland the Capercaillie is the only bird this offence applies to;
- intentionally or recklessly harass any wild bird included in Schedule 1A. In this case a White-tailed Eagle is the only bird listed though more may be added; and
- intentionally or recklessly take, damage, destroy or otherwise interfere with any nest habitually used by bird on Schedule A1 at any time. The White-tailed Eagle is also the only bird on Schedule A1 at this time.

Further protection is described under the EU Birds Directive which requires member states to maintain wild bird species in favourable conservation status** and promote the conservation of bird species listed within Annex 1 through the protection of their habitat. This is achieved via the designation of Special Protection Areas (SPAs).

Red List bird species are those deemed to be globally threatened and to be suffering population declines within the UK. Although not legally enforceable, the conservation of Red List bird species represents a material consideration, in planning terms.

*Exceptions to these offences exist under various circumstances (e.g. controlling pest species; taking birds during specific seasons; and killing sick or injured birds etc.)

**While the term 'favourable conservation status' is not used in the Birds Directive, EU court cases over recent years have progressively interpreted the concept as meaningful in a Birds Directive context (SNH, 2006).

APPENDIX B: BIRD SURVEY METHODOLOGIES

A range of ornithological surveys have been carried out at the proposed Whitehouse wind turbine site. The methodologies used in these surveys are summarised in the sections below; more detailed descriptions can be consulted in the SNH Guidance (2010).

Figures 1 and 2 to this Appendix detail the various survey areas and Vantage Point location and coverage.

B1. Flight Activity Vantage Point Surveys

The aims of these surveys are: (1) to record flight activity within the vicinity of the proposed development in order to identify areas of importance to birds; and (2) to quantify flight activity within 250m of the proposed turbine in order to estimate the likelihood of collision (SNH, 2010. P.13).

Timing

- A survey period of 36 hours is recommended as the minimum level of sampling intensity at each VP for each season (breeding, non-breeding, migratory) (SNH, 2010. P.15). However, in light of the limited extent of this development, and following consultation with SNH, it was agreed that a survey period of **18 hours** would be sufficient.

- Watches have been spread as evenly throughout the year as possible to ensure that temporally representative data is collected (see Annex A). Specific consideration has been given to the period around dawn and twilight for breeding waders and to changing raptor behaviour across seasons (SNH, 2010. P.16 and P.19);

- During the winter season (December to mid March) and migration season (March to mid-May) a total of **at least 18 hours** from the vantage point was collected;

- Watches have been suspended and resumed to take account of changes in visibility (e.g. fluctuations in cloud base). Watches have been undertaken in conditions of good ground visibility when the cloud base has been higher than the most elevated ground being observed; and

- Watches have been conducted in a range of weather conditions and were spread throughout the day (see Annex A and Appendix D).

Field methods

- Reconnaissance surveys were undertaken to establish potential VP locations;

- View-shed analysis was then conducted using Arc GIS to confirm suitable VP locations and their associated visible areas;

- The VP location and associated view shed are detailed in Figure 2; and

- Care was taken to maximize the area visible whilst minimising disturbance to birds.

- The single VP was selected with the aim of achieving coverage of all of the survey area such that no point is greater than 2km from a VP. Given the limited extent of the Site, this was easily achieved;

- A maximum 180˚ view arc was scanned. This rule did not however apply when tracking migratory waterfowl, divers or raptors across the site;

- Although all points within the survey area were required to be within the 2km of the VP, observations from the VP were not constrained to a 2km radius (i.e. birds are recorded regardless of their distance from the VP). SNH (2010. P.46); and

- Each watch lasted a maximum of three hours but was suspended and then resumed to take account of changes in visibility (e.g. fluctuations in the cloud base).

For species of high nature conservation importance (target species) the following data has been recorded (SNH, 2010. P.44):

- The flight lines by individual birds;

- The time spent flying over a defined survey area;

- The proportion of flying time spent at approximate rotor height (20-125m);

- In the case of hen harriers, the location of any display flights observed were recorded, together with details of the duration of display, number of oscillations and the estimated maximum and minimum flying height;

- Time the target bird was detected and flight duration were recorded;

- The route followed was plotted in the field onto 1:25 000 scale maps;

- The birds flight height were recorded at the point of detection and at 15 second intervals thereafter;

- Flight heights were classified in bands depending on rotor blade dimensions and rotor hub height (<20, 20-125, and >125);

- For secondary species, activity summaries sub-divided into 5 minute periods at the end of which the number and activity of all secondary species were recorded;

- If a target species was being tracked during a 5 minute period, then the activity summary for that period should be abandoned and a new one started once observations of the target species have ended;

- Observation of target species took priority over recording secondary species;

- The number of birds recorded were the minimum number of individuals that could account for the activity observed; and

- Observers only recorded perched birds and birds on water-bodies once only on arrival at the VP. Thereafter only flying birds and newly noticed perched/swimming birds were included in the activity summaries.

B2. Upland Breeding Bird Surveys

Upland breeding bird survey methodology was employed as detailed within SNH Guidance (SNH, 2010. P.14, 15). In summary, this will involve the following:

- Open upland (to include hedgerows, scrub, isolated trees and copses) was surveyed using an intensive version of the Brown and Shepherd (1993) method for upland bird survey;
- The objectives were to map the distribution of breeding bird territories and estimate the approximate size of breeding bird populations;
- The survey covered all areas **within 500m** of the proposed development (Figure 1); and
- All upland wader species were recorded during the breeding bird survey (with the addition of meadow pipit and skylark, which were also noted).

Timing

- The site was surveyed twice during April and May;
- Fieldwork was undertaken between sunrise and sunrise + 6 hrs; and
- Fieldwork was not undertaken in conditions considered likely to affect bird detection rates, for example strong winds (greater than Beaufort Scale Force 4), persistent precipitation, poor visibility (less than 300m), or in unusually hot weather.

Field methods

- Walk-routes were used that optimised ground visibility;
- Surveyors paused at appropriate vantage and listening points;
- Isolated trees, copses and patches of scrub were approached and examined;
- Streams, ditches and hedgerows were walked;
- All other areas were approached to within 100m; and
- Registrations were mapped at the first location that behaviour indicative of breeding was observed. BTO activity codes were used.

B3. Woodland Point Counts

A summary of the key elements of the methodology employed is provided below. SNH guidance provides full details on this methodology (SNH, 2010. P.25).

- The objective of this survey is to describe the species composition of the woodland bird community;
- Hedgerows, patches of scrub, isolated trees and copses were surveyed as part of the breeding bird survey of open habitats (see above); and
- Woodland/forest breeding birds were surveyed at a sample of woodland count points stratified spatially across the relevant area.

Timing

- Each sample point was visited twice (08 April and 25 May 2011);
- The first survey visit is designed to capture resident species and potentially some migrants. The second visit should record later migrants possibly missed in the first visit;
- Surveys were completed between sunrise and sunrise + 6 hrs; and
- Surveys were not undertaken in conditions considered likely to affect bird detection rates, for example strong winds (greater than Beaufort Scale Force 4), persistent precipitation, poor visibility (less than 300m), or in unusually hot weather.

Field methods

- Counts were delayed for a few minutes after the observer arrives at a point to minimise any disturbance effects; and
- All birds seen and heard during a 5-minute recording period were noted, together will details of any breeding behaviour.

B4. Breeding Diurnal Raptors

The aims are to determine the distribution of occupied nests within 2km of the proposed development (6km in the case of eagles) and record breeding success (SNH, 2010. P.17). Species such as buzzard, sparrow hawk and kestrel were included in a survey within 1 km of the proposed site. Survey areas are detailed in Figure 1.

Surveys were undertaken by experienced field ornithologists. Extreme care was taken to avoid unnecessary disturbance to breeding birds.

These methods are summarised in SNH guidance (SNH, 2010. P16-18).

Hen Harrier

- Areas of suitable habitat were observed during March to May, and behaviour indicative of breeding recorded; and

- Unsuitable areas include land above 600m; improved pasture and arable land; extensive areas of degraded land with no heather cover and low vegetation; the vicinity of cliffs, rocky outcrops, boulder fields and scree; areas within 100m of hill farms and occupied dwellings.

Merlin

- Areas of suitable nesting habitat (including forest edge where trees >5m high) were closely observed during April and May;

- Boulders, fence lines, isolated posts, stone dykes, grouse butts, hummocks, stream banks, crags, trees and recently burnt areas of heather were checked for signs of occupation (e.g. plucked prey, moulted feathers, pellets and faeces);

- If Merlin were observed, or signs found, areas were visited at least twice to verify occupation of the site; and

- Potential nest areas were watched for 4-6 hours if necessary.

Peregrine

- Potential nest sites were visited and checked for evidence of occupation in March to May;
- Sites checked included crags and steep banks identified from OS maps and searches of the survey area;
- Surveyors checked for signs of occupation (e.g. faecal splash, fresh plucked prey);
- If occupied sites were found they would have been re-visited to verify incubation; and
- Searches were made for eyries. Where this was not possible sites were watched from a suitable vantage point for 3-4 hours or until a nest is located.

A5. Black Grouse

The survey methodology used is detailed in SNH Guidance (SNH, 2010. P24). A summary is provided below.

- Breeding black grouse were surveyed within 1.5km of the proposed development by counting total numbers of males and females at leks, most lekking activity taking place at or soon after dawn in spring.
- Known lek sites and other areas of suitable habitat which can host leks were identified and visited during April within 2 hours of dawn on calm dry days with good visibility;
- Visits involved listening and scanning for lekking blackcock from strategic VPs (avoiding disturbance of leks) and during walks between these VPs ensuring that all potential habitat was covered;
- The maximum count of males in the 2 hours around dawn gives the standard count estimate but the maximum number of females seen should also be presented; and
- Leks that were at least 200m apart were treated as separate leks.

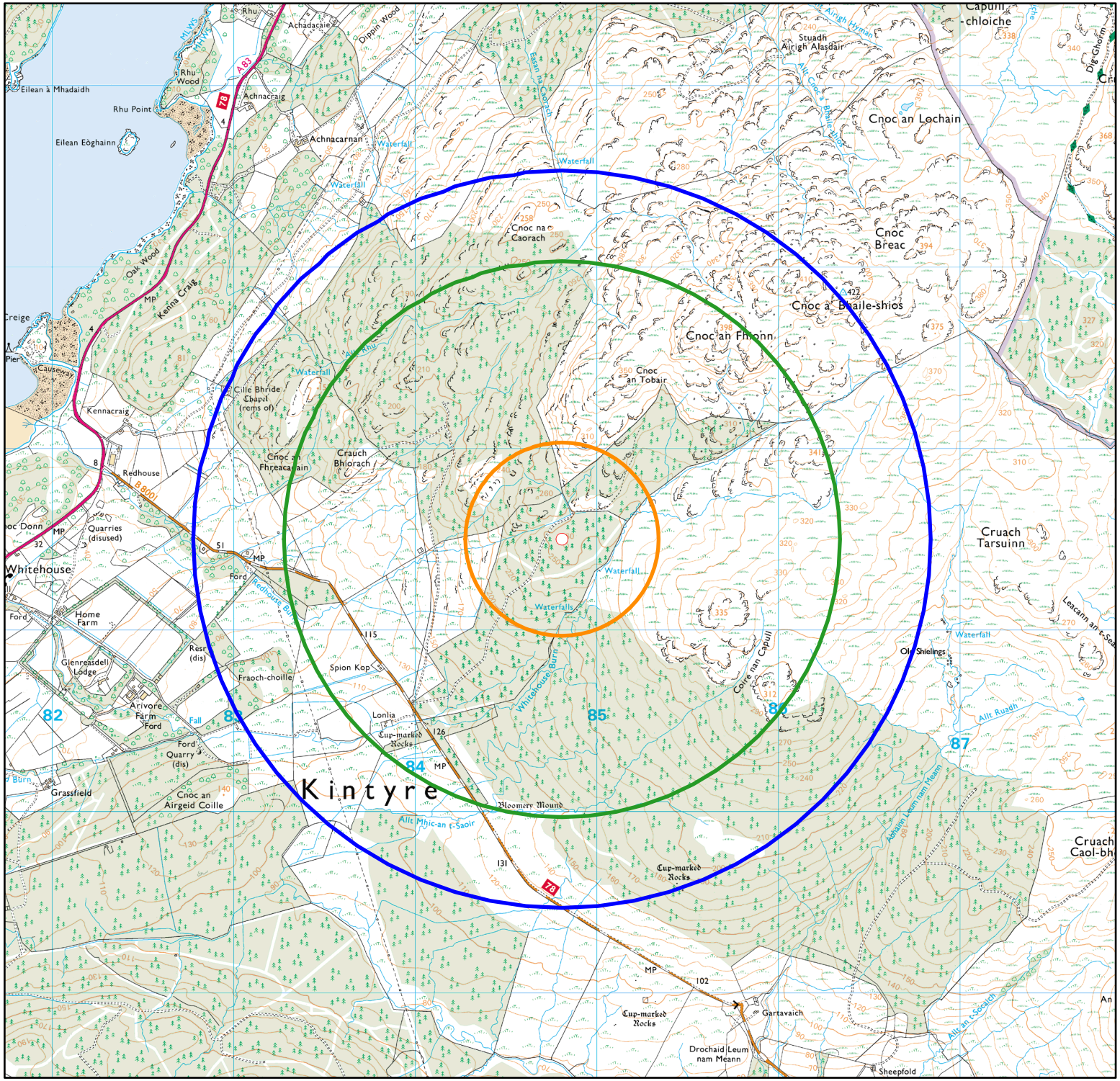
Annex A

Table A.1 VP hours Per Season

	VP1	Average hours per VP per Season
Winter (November to March)	16	16
Spring (March to present)	21	21

Table A.2 Total VP Sample Effort by Month and VP

Month	VP1	Total Hours
December	4	4
January	4	4
February	8	8
March	8	8
April	5	5
May	8	8
Total Hours	37	37



MacArthur Green Ltd

Whitehouse Ornithological Study

Key

- BBS survey/Winter walkover (500m buffer)
- Black grouse survey area (1.5km buffer)
- Breeding raptor survey area (2km buffer)
- Maximum potential windfarm boundary

N

0 1000 m

Scale 1:35,000 at A4

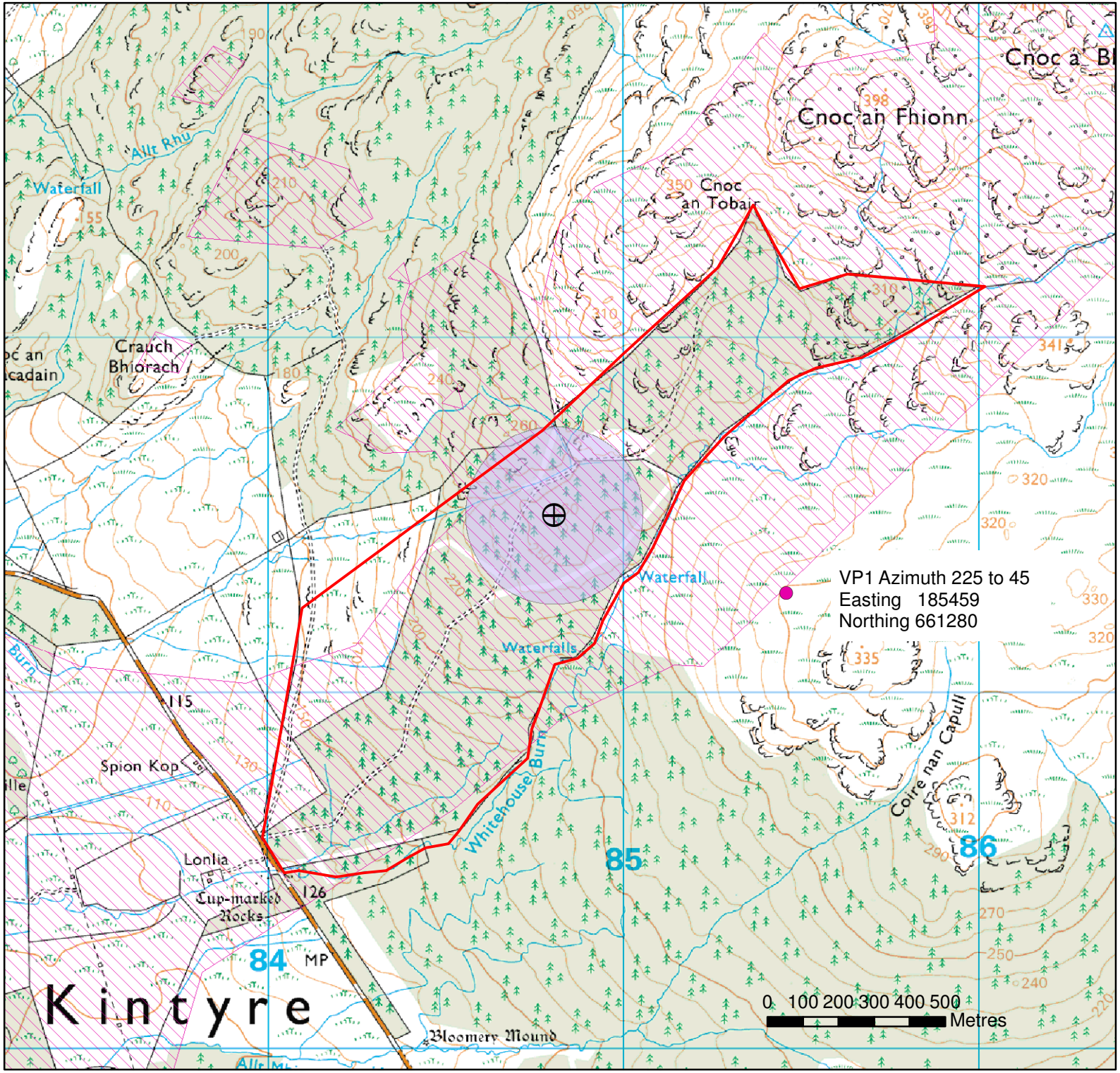
Produced: AR
Reviewed: JS
Approved: DM

Date: 16/12/2010

Ref: Whitehouse/SB/1

Whitehouse Ornithology: Survey Boundaries

Figure 1



MacArthur Green Ltd

Key

- Maximum Potential Windfarm Boundary
- Vantage Point 1
- Area Visible from VP1
- Turbine
- 250m buffer zone

N

Scale 1:15,000 at A4

Prepared by CM
Checked by DM

Date: 13/12/2010

Whitehouse Burn Wind Farm Vantage Point and Viewshed

Figure 2

APPENDIX C: SURVEY EFFORT AND GENERAL INFORMATION

C1. Vantage Point Surveys

A series of vantage point (VP) surveys were undertaken following the methodology set out in Scottish Natural Heritage (SNH) Guidance (2010) but tailored to be more appropriate for a site of this small size, following consultation with SNH (see Appendix B). The VP surveys set out to record the presence and activity of pre-defined Target Species and Secondary Species. The details of the VP watches undertaken at one strategic VP are detailed below.

Details of generic VP watches

Date	VP	VP Start	VP Finish	VP Hours
15/12/2010	1	925	1125	2
15/12/2010	1	1140	1340	2
21/01/2011	1	1125	1325	2
21/01/2011	1	910	1110	2
02/02/2011	1	855	1055	2
08/02/2011	1	1505	1705	2
12/02/2011	1	935	1135	2
15/02/2011	1	830	1030	2
01/03/2011	1	1230	1430	2
02/03/2011	1	1220	1420	2
06/03/2011	1	1440	1640	2
06/03/2011	1	1645	1845	2
10/04/2011	1	1330	1600	2.5
10/04/2011	1	1035	1305	2.5
04/05/2011	1	1025	1255	3
04/05/2011	1	1325	1555	3
25/05/2011	1	1240	1540	3

Key to Meteorological conditions recorded during VP watches

W-Speed		Rain		Cloud Cover		Cloud Height		Visibility	
Calm	0	None	0	In eighths		<150m	0	Poor (<1km)	0
Light air	1	Drizzle/Mist	1	*e.g.*	3/8	150-500m	1	Moderate (1-2km)	1
Light breeze	2	Light showers	2			>500m	2	Good (>2km)	2
Gentle breeze	3	Heavy showers	3						
Mod. breeze	4	Heavy rain	4						
Fresh breeze	5								
Strong breeze	6	**Snow**		**Frost**					
Mod. gale	7	None	0	None	0				
Fresh gale	8	On site	1	Ground	1				
Strong gale	9	High ground	2	All day	2				
Whole gale	10								
Storm	11								
Hurricane	12								

Meteorological conditions during generic VP watches (conditions per hour of survey)

Date	VP	Start	Finish	Survey Hour	Wind Speed	Wind Direction	Rain	Cloud Cover	Cloud Height	Visibility	Frost	Snow
15/12/2010	1	925	1125	1	3	N	0	7/8	1	2	0	0
15/12/2010	1	925	1125	2	4	N	0	8/8	1	2	0	0
15/12/2010	1	1140	1340	1	4	N	1	8/8	1	2	0	0
15/12/2010	1	1140	1340	2	5	N	1	8/8	1	2	0	0
21/01/2011	1	1125	1325	1	3	W	0	8/8	2	2	0	0
21/01/2011	1	1125	1325	2	2	W	0	8/8	2	2	0	0
21/01/2011	1	910	1110	1	2	W	0	8/8	2	2	0	0
21/01/2011	1	910	1110	2	1	SW	0	8/8	2	2	0	0
02/02/2011	1	855	1055	1	5	SW	3	8/8	0	1	0	0
02/02/2011	1	855	1055	2	5	SW	3	8/8	0	1	0	0
08/02/2011	1	1505	1705	1	3	S	0	7/8	2	2	0	1
08/02/2011	1	1505	1705	2	4	S	0	8/8	1	2	0	1
12/02/2011	1	935	1135	1	3	S	2	8/8	0	2	0	0
12/02/2011	1	935	1135	2	3	S	0	7/8	1	2	0	0
15/02/2011	1	830	1030	1	5	E	0	6/8	1	2	1	1
15/02/2011	1	830	1030	2	5	E	0	7/8	1	2	1	1
01/03/2011	1	1230	1430	1	3	SW	1	8	0	2	0	0
01/03/2011	1	1230	1430	2	3	SW	0	7	1	2	0	0
02/03/2011	1	1220	1420	1	4	S	0	6	1	2	0	0
02/03/2011	1	1220	1420	2	4	S	0	5	1	2	0	0
06/03/2011	1	1440	1640	1	3	SSE	0	8	1	2	0	0
06/03/2011	1	1440	1640	2	3	S	0	8	1	2	0	0
06/03/2011	1	1645	1845	1	3	S	0	8	1	2	0	0
06/03/2011	1	1645	1845	2	3	S	0	8	1	2	0	0
10/04/2011	1	1330	1600	1	3	S	0	1	2	2	0	0
10/04/2011	1	1330	1600	2	3	S	0	1	2	2	0	0

10/04/2011	1	1330	1600	3	3	S	0	1	2	2	0	0
10/04/2011	1	1035	1305	1	3	S	0	2	2	2	0	0
10/04/2011	1	1035	1305	2	3	S	0	2	2	2	0	0
10/04/2011	1	1035	1305	3	3	S	0	1	2	2	0	0
04/05/2011	1	1025	1255	1	3	E	0	3	2	2	0	0
04/05/2011	1	1025	1255	2	3	E	0	3	2	2	0	0
04/05/2011	1	1025	1255	3	3	E	0	3	2	2	0	0
04/05/2011	1	1325	1555	1	3	E	0	4	2	2	0	0
04/05/2011	1	1325	1555	2	3	E	0	4	2	2	0	0
04/05/2011	1	1325	1555	3	3	E	0	4	2	2	0	0
25/05/2011	1	1240	1540	1	5	SW	0	7	1	2	0	0
25/05/2011	1	1240	1540	2	5	SW	1	8	1	2	0	0

In accordance with SNH Guidance (2010), target species are those which may be considered to be at risk from the potential effects of wind farms. For example, large raptors or wildfowl, whose typical behaviour may put them at risk of either collision with turbines, or being displaced by the presence of the turbines. Particular emphasis is placed upon those species which are afforded legislative protection or represent a qualifying interest of a protected site. The species considered Target Species and Secondary Species observed at Whitehouse are listed below.

List of Target Species

Golden Eagle
Hen Harrier

List of Secondary Species

Buzzard
Kestrel
Sparrowhawk
Raven

APPENDIX D: SURVEY RESULTS

D1a. Target Species Recorded During VP Watches

All flights of target species within the proposal site and the surrounding area were mapped and details of each flight recorded. Observations of target species were recorded on data sheets and maps. Information on species, time of observation, flight height (in bands), location, and the length of each observation was recorded. The details are given below.

Details of Target Species recorded during VP surveys

Date	VP	VP Start Time	Flight Time	Spp Code	No. of Birds	Duration / Seconds	< Buffer: Sec. <20m	<Buffer: Sec.20 to 125m	<Buffer: Sec. >125	> Buffer: Sec. <20m	>Buffer: Sec.20 to 125m	> Buffer: Sec. >125
08/02/2011	1	1505	1522	HH	1	25				25		
08/02/2011	1	1505	1528	EA	1	80				5	75	
08/02/2011	1	1505	1531	EA	1	60					60	
02/03/2011	1	1220	1326	EA	2	120				15	105	
02/03/2011	1	1220	1330	EA	1	90				45	45	
02/03/2011	1	1220	1346	EA	1	20				20		
10/04/2011	1	1330	1336	EA	1	285				15	45	225
10/04/2011	1	1330	1542	EA	1	230				30	200	
04/05/2011	1	1325	1555	EA	1	405				80	90	235
04/05/2011	1	1325	1555	EA	1	390					225	165
04/05/2011	1	1325	1555	EA	1	450				15	255	80

Species Codes as used in Appendix D1a/b above:

EA Golden Eagle **HH** Hen Harrier

D2. Secondary Species

Secondary Species were recorded to give an indication of the use of the site by these species and to allow 5 minute activity summaries to be calculated. Details of the VP, species, minimum number present, the flight height (in bands), and location in relation to the site were all recorded (i.e. on site, within the buffer area, or out-with the buffer area). The data collected in the course of undertaking VP watches is provided below.

Details of Secondary Species recorded during VP surveys

Date	VP	VP Start Time	VP Finish Time	5 Min Recording Block (Start Time)	BTO Spp Code	Minimum No.	Height Band*	On Site**	In Buffer**	Beyond Buffer**
15/12/2010	1	925	1125	1035	RN	1	2			1
21/01/2011	1	910	1110	900	RN	3	2	1	1	1
21/01/2011	1	910	1110	950	RN	1	1			1
02/02/2011	1	855	1055	920	BZ	1	2			1
08/02/2011	1	1505	1705	1435	RN	1	2	1	1	1
12/02/2011	1	935	1135	1035	RN	1	1			1
15/02/2011	1	830	1030	840	BZ	1	2			1

15/02/2011	1	830	1030	915	K.	1	1			1
15/02/2011	1	830	1030	925	RN	2	1			1
01/03/2011	1	1230	1430	1320	BZ	1	2			1
01/03/2011	1	1230	1430	1335	RN	2	1			1
01/03/2011	1	1230	1430	1350	RN	2	2			1
01/03/2011	1	1230	1430	1405	RN	1	1		1	1
02/03/2011	1	1220	1420	1240	RN	3	2			1
02/03/2011	1	1220	1420	1315	RN	1	2			1
02/03/2011	1	1220	1420	1325	RN	2	2			1
02/03/2011	1	1220	1420	1350	RN	2	1		1	1
06/03/2011	1	1440	1640	1440	RN	2	1			1
06/03/2011	1	1440	1640	1510	RN	3	2			1
06/03/2011	1	1440	1640	1550	RN	2	2	1	1	1
06/03/2011	1	1440	1640	1555	K.	1	2		1	1
06/03/2011	1	1645	1845	1650	RN	4	2			1
06/03/2011	1	1645	1845	1720	RN	4	2	1	1	1
06/03/2011	1	1645	1845	1805	RN	1	2		1	1
10/04/2011	1	1330	1600	1335	BZ	1	2			1
10/04/2011	1	1330	1600	1335	RN	2	2			1
10/04/2011	1	1330	1600	1540	RN	3	2	1	1	1
10/04/2011	1	1035	1305	1255	BZ	1	2	1	1	1
04/05/2011	1	1225	1255	1110	RN	2	3	1	1	1
25/05/2011	1	1240	1540	1325	RN	2	2		1	1

* Three flight heights bands: 1 = <20m, 2 = 20-125m, 3 = >125m (NB. Where several height bands were recorded or ambiguity existed the worst case scenario was adopted i.e. height band 2 (rotor blade swept area).

** A ‘1’ indicates presence of the bird in that particular area or zone. More than one area can be recorded per recording block as birds fly across the site.

BTO Species Codes as used in Appendix C2 above:

RN	Raven	**BZ**	Buzzard
K.	Kestrel		

D4. Upland Breeding Bird Survey

Upland breeding bird surveys were undertaken in line with methodology described by Brown & Shepherd (1993).

Moorland Breeding Bird Survey results by species (number of pairs)

Species	Estimated number of breeding pairs
	Visit 1*
Meadow Pipit	11
Skylark	2

* 8th April.

D5. Woodland Point Counts

A series of Woodland Point Counts were conducted on the 08/04/2011 and 25/05/2011 and the results obtained are presented below.

Point Count Number	Grid Reference	Species Present		Number of Birds	
		08/04/11	25/05/11	08/04/11	25/05/11
1	NR 85249 62050	0	Willow Warbler	0	
2	NR 85214 61900	Wren	0	1	
3	NR 85125 61697	Robin	Robin	1	
			Willow Warbler		
4	NR 84882 61636	Robin	Chaffinch	1	
		Lesser Redpoll	Willow Warbler	3	
		Common crossbill	Lesser Redpoll	2	
			Robin		
5	NR 84730 61515	Robin	Common Crossbill	2	
		Common Crossbill	Chaffinch	1	
		Lesser Redpoll		1	
6	NR 84688 61377	Coal tit	Chaffinch	1	
		Chaffinch	Coal Tit	1	
			Willow Warbler		
7	NR 84597 61235	Chaffinch	Robin	1	
		Robin	Chaffinch	1	
		Lesser Redpoll	Goldcrest	1	
		Goldcrest		1	
		Common Crossbill		1	
		Coal Tit		1	
8	NR 84506 61159	Chaffinch	Chaffinch	1	
		Gold crest		1	
9	NR 84469 61065	Coal tit	0	1	
10	NR 84417 61006	Chaffinch	0	4	
		Gold crest		2	
		Common crossbill		1	

	Coal tit	1

D6. Black Grouse Survey Data

Data collected from Black Grouse surveys are presented below.

Black Grouse Survey Data

Survey Area	Date	Survey Period	Cloud Cover (in eights)	Wind	Wind Direction	Black Grouse	Comments
1	9/4/2011	0530 - 1300	2/8	Gentle Breeze	S	None	
	21/04/2011	0510 - 1245	1/8	Light Air	SE	None	
	03/05/2011	0430 - 1100	5/8	Light Air	SE	None	
	04/05/2011	0510 - 1015	3/8	Light Air	E	None	

D7. Raptor Survey Information

Four raptor surveys have been completed at Whitehouse and the results are detailed below.

Raptor Survey Information

Species	Estimated No. Breeding Pairs	Approx Breeding Territory Location	Comments
Buzzard	n/a	n/a	Not breeding
Sparrow Hawk	n/a	n/a	Not breeding

D9. Bird Species Index

A total of 17 bird species were recorded at, or adjacent, the Whitehouse site during the undertaking of various ornithological surveys. The table below comprises a list of all these species.

Bird species recorded at Whitehouse (15/12/2010 – 25/05/2011)

Buzzard
Chaffinch
Common Crossbill
Coal tit
Goldcrest
Golden Eagle
Grey Wagtail
Hen Harrier
Kestrel
Lesser Redpoll
Meadow Pipit
Raven
Robin
Skylark
Sparrowhawk
Willow Warbler
Wren