# TA6.7 Deer Management Plan

# Glenshero Wind Farm

# Deer Management Plan

# Technical Appendix 6.7


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## EXECUTIVE SUMMARY

MacArthur Green was commissioned by RES Ltd on behalf of Simec Wind One Ltd to produce the following Deer Management Plan (DMP) for the proposed Glenshero Wind Farm (hereafter referred to as the 'proposed development').

The proposed development is located on the Glenshero Estate in an area of treeless upland and montane habitat in the southern Monadhliath mountains of the Scottish Highlands.

Glenshero Estate contains red, roe and sika deer and is one of a number of estates in the area managed by the Monadhliath Deer Management Group (MDMG). The MDMG has shown that the density of red deer across the Glenshero Estate was 16 per $km^2$ in 2013 which was approximately triple the recommended level for natural woodland regeneration and for blanket bog sites recommended by SNH guidelines, but close to the average across the MDMG area.

There are nine ecological designated sites within 10 km of the proposed development (Glenshero Wind Farm Environmental Impact Assessment Report (EIAR), Volume 2: Chapter 6: Ecology, section 6.3). One of these sites, the Monadhliath Special Area of Conservation (SAC) (underlain by the Monadhliath Special Site of Scientific Interest (SSSI)), borders the eastern proposed development site boundary and could be adversely impacted by increased deer trampling pressures during construction of the proposed development.

Deer welfare could be adversely impacted by the proposed development due to potential increased collision risks with construction vehicles and machinery during construction.

A Habitat Management Plan (HMP) would be in place for the proposed development and an Outline HMP is included in EIAR Volume 4: Technical Appendix 6.5. The HMP would increase the extent of active blanket bog within the Glenshero Estate (outside of the proposed turbine area) by improving an area of degraded bog that is at least 4x larger than the area affected by the proposed development. The HMP would also increase native woodland and dwarf heath areas at a lower altitude with in the Glenshero Estate, thereby relieving some trampling/grazing pressures on more sensitive higher altitude habitats.

The MDMG has a Strategic Deer Management Plan (SDMP) in place between 2015-2024 to manage the red deer in the MDMG area. Key objectives from the SDMP for Glenshero Estate include a hind reduction plan and investigation into mechanisms to reduce deer impact on designated sites.

The recommendations of this DMP are consistent with the aims and objectives of the SDMP as well as introducing further aims of alerting construction vehicles and road users to the presence of potentially displaced deer during construction.

# 1 INTRODUCTION

MacArthur Green was commissioned by RES Ltd on behalf of Simec Wind One Ltd to produce a Deer Management Plan (DMP) for the proposed Glenshero Wind Farm (the 'proposed development'), located on land approximately 8 km west of the village of Laggan, in the Highlands (hereafter referred to as the 'site'). The DMP has been prepared as a Technical Appendix to the ecological assessment in Chapter 6: Ecology of the Environmental Impact Assessment Report (EIAR).

This report has been produced by MacArthur Green and in accordance with Scottish Natural Heritage (SNH) guidelines. All staff contributing to this technical appendix have undergraduate and/or postgraduate degrees in relevant subjects, have deep professional ecological impact assessment and ecology survey experience, and hold professional membership of the Chartered Institute of Ecology and Environmental Management (CIEEM). The report has been reviewed and approved by David MacArthur of MacArthur Green and a copy of his CV is included in Technical Appendix 1.2.

The overall aim of the DMP is to provide a framework in which to manage the deer population within the proposed development site so that it meets requirements for deer welfare, surrounding habitat conservation, local communities and social/economic requisites.

The DMP consists of the following sections:

Section 2: Provides details of the proposed development location;

Section 3: Presents the results of preliminary consultations and desk-based exercise;

Section 4: Presents potential impacts associated with deer interactions with the development; and

Section 5: Provides recommendations.

# 2 PROPOSED DEVELOPMENT LOCATION

The proposed development covers an area of C. 35 km$^2$. It is located approximately 5 km north of the A86 and 8 km west of the village of Laggan on the Glenshero Estate (142 km$^2$ of land[1]) in the southern Monadhliath Mountains of the Scottish Highlands. The site reaches an elevation of 862 m above sea level at Meall na h-Aisre. The Beauly-Denny 400 kV overhead line intersects the site on its southern boundary, and the site lies immediately north of an undesignated length of General Wade's Military Road.

The recently consented Stronelairg Wind Farm is located immediately to the north of the proposed development, with turbines very close to the boundary on the northern slopes of Carn Fraoich (765 m). The consented Stronelairg Wind Farm comprises 66 turbines.

# 3 BASELINE INFORMATION

## 3.1 Deer Species and Numbers

A desk-based study was undertaken in order to determine the deer species and numbers present within the site and the wider Glenshero Estate. This study consisted of a consultation of the 'Deer

[1] Haydn, T (2017). Glenshero Estate Environmental Recommendations Report

Distribution Survey 2016' results by the British Deer Society which revealed records of red, roe and sika deer within the area in which the proposed development is located[2]. Macarthur Green have witnessed incidental sightings of red deer in and around the site during baseline ecological surveys.

In order to obtain information about the number of red deer using the Glenshero Estate, the Strategic Deer Management Plan (SDMP[3]) for 2015-2024 was consulted. The SDMP was produced by the Monadhliath Deer Management Group (MDMG), of which the Glenshero Estate is a member, and which is supported by SNH. Aerial surveys, which give a more accurate count of deer numbers than ground counts, were organised by MDMG during the winter of 2004 and again in 2013 over the Red Deer Management Area (RDMA) which includes the Glenshero Estate, amongst others[3]. Even though aerial counts are more accurate than ground counts, the counts may still represent an underestimate in the number of deer given the extent of concealing woodland present in the RDMA (67 $km^2$ within c. 1502 $km^2$). From the aerial survey counts over Glenshero Estate, a total of 2,867 deer were recorded in 2004 (1,279 stags, 1,176 hinds and 412 calves) and this had reduced to 2,264 in 2013 (1,163 stags, 815 hinds and 286 calves). The Glenshero Estate land covers an area of approximately 142 $km^2$ and therefore the density of deer was 20 and 16 per $km^2$ in 2004 and 2013 respectively. This is a high density compared to some surrounding estates, but close to the average across the MDMG[1].

Aerial count data collected by the MDMG provides evidence for the way in which red deer use the RDMA seasonally, suggesting the majority of deer (>95%) are likely to be found utilising habitats below 600 m for long periods of the winter, but in the summer, a considerable proportion of the red deer herd are likely to be found utilising the montane habitats above 600 m.[3]

## 3.2 Sources of Food and Shelter within the proposed development site

The proposed development site covers an extensive area of treeless upland and montane habitat. The area is broadly characterised by a complex mix of summits, knolls and ridges of dry heath and montane communities, with transitional areas and wet heaths on slopes, giving way to areas of mainly blanket bog in basins. There are a number of small standing waterbodies and numerous small streams. Two main watercourses, the Allt Coire Iain Oig and the Allt Gilbe, run southwards off the highest ground on the site and join the River Spey on the site's southern boundary.

There are sections of coniferous plantation woodland located within the central southern part of the site, between the Allt Coire Iain Oig and the Allt Gilbe and on the southern site boundary, which could provide shelter for deer. The majority of the site comprises open moorland used for grazing livestock and for rearing grouse, and these areas could also provide sources of food and shelter.

A full report of National Vegetation Classification (NVC) habitats found within the proposed development can be seen in the National Vegetation Classification & Habitats Survey (EIAR Volume 4: Technical Appendix 6.1) and are illustrated in EIAR Volume 3: Figure 6.3.

## 3.3 Sources of Food and Shelter outwith the proposed development site

Generally, the RDMA lacks woodland for deer to shelter in during winter. This lack of woodland cover is primarily a result of historic deforestation in past millennia[3].

[2] https://www.bds.org.uk/index.php/research/deer-distribution-survey [June 2018]

[3] Strath Caulaidh (2015). Monadhliath Deer Management Group: Strategic Deer Management Plan for 2015-2024

The majority of the Glenshero Estate is composed of upland moorland, but it currently contains approximately 11 km$^2$ of woodland, of which 7.5 km$^2$ is commercial conifer and 3.5 km$^2$ is native woodland[4] that could be used by deer for feeding and sheltering. The majority of commercial woodland is located in the central glen, following the River Spey, with Wade's Road providing access for forestry operations. Across the Glenshero Estate, pockets of ancient pinewood and birch mark the remnants of past forest areas. Much of the native woodland has been lost and natural regeneration of woodland is restricted by grazing pressure from deer and sheep. The wide glens and mountain slopes offer potential for expansion of native woodland and existing plans for woodland regeneration on the Glenshero Estate include the expansion of native woodland cover to 8.5 km$^2$ to link existing woodland areas[1]. Woodland in the Glenshero Estate is managed by Bidwells LLP on behalf of the Estate. Plans for future development are outlined in the 2014 Glenshero Estate Forest Plan[5].

## 3.4 Designated Sites

SNH's SiteLink website[6] was checked for ecological designated sites which are likely to occur within 10 km of the proposed development and could therefore be affected by any deer management plan. Table 6.7.1 below, and EIAR Vol 3: Figure 6.1 present the results of the data search:

**Table 6.7.1: Designated Sites within 10 km of the proposed development**

| Site | Distance | Qualifying Feature |
|---|---|---|
| **Monadhliath SAC** | 105 m from nearest new infrastructure (Turbine 35) | Blanket bog |
| **Monadhliath SSSI** | 105 m from nearest new infrastructure (Turbine 35) | Black mountain moth<br>Blanket bog<br>Upland assemblage<br>Vascular plant assemblage |
| **River Spey SAC** | 3.25 km from nearest new infrastructure (Turbine 5). | Atlantic salmon,<br>Freshwater Pearl Mussel,<br>Otter,<br>Sea Lamprey |
| **River Spey SSSI** | 3.25 km from nearest new infrastructure (Turbine 5). | Atlantic salmon<br>Freshwater Pearl Mussel<br>Otter<br>Sea Lamprey |

[4] https://www.forestry.gov.uk/datadownload [June 2018]

5 Bidwells LLP, (2014). Glenshero Estate Forest Plan. Long Term Forest Plan for the period 2014-2034 Submitted by Bidwells LLP on behalf of Rio Tinto Alcan Highland Estate

[6] http://gateway.snh.gov.uk/sitelink/

| Site | Distance | Qualifying Feature |
|---|---|---|
| **Creag Meagaidh SAC** | 4.5 km from nearest new infrastructure (Turbine 21). | Acidic scree<br>Alpine and subalpine heaths,<br>Blanket bog<br>Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels<br>Dry heaths<br>Montane acid grasslands<br>Mountain willow scrub<br>Plants in crevices on acid rocks<br>Plants in crevices on base-rich rocks<br>Tall herb communities<br>Wet heathland with cross-leaved heath |
| **Creag Meagaidh SSSI** | 4.5 km from nearest new infrastructure (Turbine 21). | Rocky slopes (includes inland cliff, rocky outcrops, chasmophytic vegetation)<br>Upland assemblage<br>Upland birch woodland<br>Vascular plant assemblage |
| **Ness Woods SAC** | 6.9 km from nearest new infrastructure (Turbines 1 & 40). | Mixed woodland on base-rich soils associated with rocky slopes<br>Otter<br>Western acidic oak woodland |
| **Glen Tarff SSSI** | 6.9 km from nearest new infrastructure (Turbines 1 & 40). | Beetle (*Bolitophagus reticulatus*)<br>Upland mixed ash woodland |
| **Creag Dhubh SSSI** | 10.3 km from nearest new infrastructure (Turbine 35). | Upland birch woodland |

## 3.5 Further Areas of Interest

Other areas of interest that could be affected by deer management activity either within the proposed development site or in the surrounding area, include tourism and sporting activities. The Glenshero Estate lies at the western edge of the Cairngorm National Park, the largest National Park in the UK and a very popular area for visitors. Located within the site itself, Meall na h-Aisre is a Corbett in the Monadhliath Mountains, an area popular with walkers. Loch Ness is located 12.4 km away. Glenshero Estate is one of many estates covered by the MDMG that supports deer stalking/hunting as well as red grouse shooting and trout fishing.

## 3.6 Current Impacts on Deer

The MDMG, has set a strategic objective towards reducing hind densities across the Monadhlaith[3]. As part of this plan, Glenshero Estate has agreed to increase the annual hind cull and reduce their winter 2013 hind count of 815 by up to 100 individuals; Glenshero Estate has already reduced total deer densities from 20 deer per km² in 2004 to 16 deer per km² in 2013. Culling patterns for Glenshero Estate presented in the SDMP, show a five-year average cull between 2008-2013 of 143 stags, 117 hinds and 28 calves[3]. The latest cull data presented for Glenshero Estate between 2013-2014 was 116 stags, 126 hinds and 30 calves[3].

There are records of 7 Deer Vehicle Collisions (DVCs) along the 20 km stretch of the A86 between Laggan and Kinloch Laggan between 2003 to 2013[7,8]. This stretch of road sits to the south/south eastern side of the proposed development site and is located approximately 5.36 km from the southernmost point of the site boundary.

## 3.7 Local Deer Management Groups

The site falls under the management of the MDMG which oversees deer management in the RDMA in partnership with SNH. The MDMG is one of the largest Deer Management Groups in the UK. Situated south of Inverness and north-east of Spean Bridge in the Scottish Highlands, the area of red deer range actively managed by the group over the RDMA comprises approximately 1,502 km$^2$ [1].

The MDMG set out the 2015-2024 SDMP in order to apply an integrated approach to jointly manage the deer herd in a way that maintains appropriate local deer densities for sporting activities, while delivering public benefits and ensuring long-term sustainability[1]. Actions promoted by the MDMG are undertaken on a voluntary basis by estates. The actions provide a strategic overview and encourage partnership towards meeting estate goals.

Four project aims were created in the 2015-2024 SDMP, which with careful management, can be considered as a basis for the Glenshero Wind Farm Outline Habitat Management Plan (OHMP) (EIAR Volume 4: Technical Appendix 6.5) as well as the DMP to benefit both sensitive habitats and red deer.

- expansion of woodland cover;
- increase deer access to lower ground;
- expand heather at middle altitudes; and
- improve blanket bog condition.

Key 2015-2024 SDMP objectives relating to Glenshero include[1]:

- strategic habitat enhancement to improve the condition of deer and the supporting environment, including native woodland expansion, increased heather cover, and opening up mature forest;
- deliver a minor reduction in hind numbers in the Western Monadhliath to produce a 1:1 adult sex ratio;
- investigate feasibility and mechanisms of reducing deer impact on designated sites and blanket bog habitats; and
- resolve concerns over availability of current and future sporting stags due to culling in neighbouring estates.

The Glenshero DMP should follow the general management guidance practices in the SDMP as follows:

[7] http://www.deercollisions.co.uk/ [June 2018]

[8] https://gateway.snh.gov.uk/natural-spaces/index.jsp [June 2018]

- ensure that the person(s) preparing the new DMP are familiar with the contents of the SDMP and its background (i.e. the Review); and
- consult with its neighbours and with the MDMG in respect of any associated changes to cull plans proposed OR significant changes to deer distribution predicted. It should be remembered that the Review identified disturbance due changing land management practices and patterns of land use (e.g. significant reduction in the number of sheep and the switch in land management practice for grouse shooting) around the periphery of the eastern Monadhliath estates as a possible cause of the increased numbers recorded by SNH on the Monadhliath SAC.

# 4 POTENTIAL ISSUES/EFFECTS

Any potential issues that could arise due to changes in deer numbers and movement as a consequence of the proposed development are outlined below, as well as any potential effects on the deer themselves.

## 4.1 Deer Populations

SNH guidance[9] states that "*sustainable deer densities of <3-5 deer per km$^2$ may be appropriate for woodland establishment and for blanket bog sites, while <8-12 deer per km$^2$ may be appropriate for some less susceptible moorland habitats"*. As previously noted, the deer density on Glenshero Estate was 16 deer per km$^2$ in 2013, meaning the deer density is approximately triple the recommended level for natural woodland regeneration and for blanket bog sites recommended by SNH guidelines. This is likely to be reflected in the effects on blanket bog within the site, which is eroding and severely degraded. Large areas are characterised by severely hagged and eroding bog with localised peat re-distribution and areas of bare peat. In these areas much of the typical blanket bog vegetation is restricted to the tops of the peat haggs.

## 4.2 Deer Welfare

Construction activities could cause displacement of deer from the proposed development to surrounding land and there are potential collision risks with construction vehicles, machinery and equipment during construction.

There is the possibility that the construction work carried out on the proposed development site could have an adverse impact on the deer populations through disturbance or fragmentation of their grazing habitat. However, it is likely that this impact will be low, as there is a large area of suitable grazing moorland surrounding the proposed development site that the deer can move into. Displacement impacts are unlikely to continue into the operational phase of the proposed development, as maintenance activities, and therefore disturbance, will be greatly reduced. Studies in Norway have suggested that red deer may avoid wind farm areas during construction but show no apparent avoidance during operation[10].

[9] SNH, (2016). Planning for development: What to consider and include in deer assessments and management at development sites.

[10] Reksten, S.S., (2016). The effect of a wind farm on native vegetation and area use of three cervid species – A case study in the planning and ecological effects of constructing a wind power plant in Southern Norway. Master's Thesis, The Department of Ecology and Natural Resource Management (INA).

## 4.3 Habitats

There are nine designated sites present within 10 km of the proposed development site (see Table 6.7.1). As there are potentially high densities of deer on the site, there is a chance that displaced deer could move into these designated sites. The majority of designations relate to species and habitats that would not be directly impacted by increased trampling and grazing by deer. However, the blanket bog associated with Monadhliath Special Area of Conservation (SAC) (underlain by the Monadhliath SSSI which borders the eastern site boundary, could be adversely impacted by increased deer trampling pressures. The nearest new infrastructure is 105 m from the designated site and therefore dispersal of deer into the designated site could be in sufficient numbers to cause significant adverse impacts to the blanket bog.

However, the HMP, which would take into account the project aims of the SDMP, will be in place to mitigate for the effects of direct and indirect habitat loss. With the implementation of the HMP, blanket bog will be improved within the Glenshero Estate (outside of the proposed turbine area) at a ratio of 4 parts replacement: 1 part loss, thereby improving an area of degraded bog that is at least 4x larger than the area affected by proposed development. Furthermore, the OHMP (EIAR Volume 4: Technical Appendix 6.5) aims to increase native woodland cover (in two areas at least 1.2 $km^2$ each) and also increase heather and dwarf shrub cover (in two areas at least 1.5 $km^2$ each). The areas chosen for woodland and heather habitat improvement are located at lower altitudes and will, over the long-term, provide habitat suitable for deer, thereby relieving some trampling/grazing pressure on higher slopes hosting more sensitive montane, bog and heath habitats, including those within the Monadhliath SAC/SSSI.

Furthermore, as stated above, the Glenshero Estate has agreed to increase the annual hind cull as part of the MDMG strategic objective towards reducing hind densities across the Monadhlaith[3]; a deer cull will reduce the number deer being displaced into designated sites.

## 4.4 Impacts of Neighbours, Local Communities and Other Interests

Glenshero Estate borders nine other estates, with a wide range of objectives, from sporting and tourism to environmental restoration. It has been noted that red deer hinds will remain in an area of a few square kilometres, whereas red stags can range up to 40 km per year[11]. Construction activities on the proposed development site could cause disturbance to normal deer movements across and within the Glenshero Estate. Disturbance caused during construction could displace deer to properties around the Glenshero Estate more frequently, and as deer populations are suggested to be high, the added pressure on neighbouring properties could be significant during the construction phase. However, as deer numbers are already controlled through coordinated culling by the Glenshero Estate, it is unlikely that displaced deer will have a large impact on any neighbouring properties.

The nearest residential properties are located to the south of the site, alongside the minor road which leads from Strathmashie to Glenshero Lodge and Garva Bridge. No residential properties are located within the site boundary. Deer are generally kept off the low ground outside the RDMA through the use of extensive perimeter fencing around the RDMA. This was installed to keep red deer, and particularly stags, from moving down into agricultural or forestry land[3]. Although it is possible that

[11] http://www.thedeerinitiative.co.uk/uploads/guides/168.pdf [June 2018]

displaced deer could venture towards the nearest community, the impact is thought to be minimal as any potential displacement is likely to be towards the vast area of moorland to the east of the site.

## 4.5 Social and Economic Benefits

Tourism activity is high outside the RDMA to the east and also to a lesser extent on the southern and western perimeters, but opportunities to generate economic activity from it seem to be relatively limited inside the RDMA. Within the RDMA, the overwintering deer herd provides a significant stalking resource for both Glenshero Estate and neighbouring estates. Sport hunting (including red grouse shooting and fishing for brown trout) is one of the major economic activities at the Glenshero Estate, and brings a number of key benefits including estate income from hunting and employment.

The impact of construction on the proposed development on stalking activities on Glenshero Estate is thought to be minimal, and management of deer prior to construction and during construction will reduce any possibility of deer using the proposed development site as a sanctuary, although as previously discussed, it is more likely that deer will avoid the proposed development site during construction[9]. During the stalking season, the area will be controlled through access permission for stalkers. The impact of construction on farming will be minimal due to the presence of fences around the perimeter of the RDMA[3].

## 4.6 Cumulative Impacts

Of all the potential impacts considered for the proposed development, increased deer trampling in the adjacent Monadhliath SAC/SSSI has been identified as the only potentially significant impact.

As the Stronelairg Wind Farm will be operational by the time Glenshero Wind Farm is constructed, there will be no cumulative construction effects on the deer population. As deer displacement impacts are unlikely to continue into the operational phase[9], it is unlikely that Stronelairg Wind Farm will add any cumulative impacts to the Glenshero Wind Farm assessment. During construction and operation of the proposed development, impacts of deer on sensitive habitats are expected to reduce over time with the creation of woodland and reduction in deer numbers. Bidwells have plans to increase the native woodland cover on Glenshero Estate from 3.5 $km^2$ to 8.5 $km^2$ which will link existing woodland areas[1,5]. Furthermore, the OHMP recommends that native woodland is created over two areas of a minimum size of 1.2 $km^2$ each (EIAR Volume 4: Technical Appendix 6.5). These woodland areas will relieve some grazing and trampling pressures on more sensitive higher altitude habitats as deer will utilise the woodland for shelter once sufficiently mature, particularly during the winter. Ongoing deer management already takes place on the Glenshero Estate and the hind reduction plan aims to maintain deer densities at an acceptable level[3], thus further reducing pressures on high altitude habitats.

# 5. RECOMMENDATIONS

Specific measures to reduce the potential disturbance and mortality of the deer as well as potential damage to surrounding habitats from displaced deer resulting from the construction activities on the site are provided below. The implementation of these measures should be focussed on the summer months of the year when red deer are more likely to be above 600 m and therefore more likely to be disturbed by the proposed development:

- General guidance and specific objectives for Glenshero Estate set out in the SDMP (see section 3.7) should be followed;
- Construction traffic should not go beyond the identified construction site boundary in order to minimise the disturbance to deer along corridors between gullies and patches of woodland; and
- Construction on the proposed development site could increase deer movement across the roads that border the area. Signs alerting vehicles to deer movement should be placed on either side of the proposed development entrance. Signs should be visible between 15th April to 15th June (peak juvenile dispersal period) and from 15th July to 15th August (peak rut period) in order to minimise deer vehicle collisions.

Proactive management prior to construction commencement, and during construction would be necessary in order to reduce the possibility of deer seeing the site as a sanctuary and then adversely affecting numbers on neighbouring estates. Deer stalking, when carried out properly, is of low concern to the health and safety of people involved (i.e. deer stalkers and construction staff). Stalking during the construction process will require access permissions for stalkers.

Monitoring for deer on the site will be done under the MDMG.

**Please note:**

The above Deer Management Plan is a live document and as such could be updated over time following monitoring results, unexpected events or evolving guidance. Approval by the MDMG for any amendments must occur before revised measures are implemented.