

## TECHNICAL APPENDIX 9.3

### Strathy South Wind Farm Deer Population and Habitat Impact Assessment Report 2019



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## REPORT

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## Contents

<b>Executive Summary</b> .....	<b>4</b>
<b>1 INTRODUCTION</b> .....	<b>5</b>
1.1 Background.....	5
1.2 Aims.....	6
<b>2 METHODS</b> .....	<b>7</b>
2.1 Deer Population Assessment.....	7
2.2 Assessment of Herbivore Impacts to the SAC.....	7
<b>3 RESULTS</b> .....	<b>9</b>
3.1 Effective Deer Utilisation (Population) Estimates.....	11
3.2 Deer Population Control.....	12
3.3 Herbivore Impact Assessment within the SAC.....	13
<b>4 DISCUSSION AND RECOMMENDATIONS</b> .....	<b>16</b>

## Tables

Table 9.3.1: Basic EDU Calculation Results for Different Sections of the Survey Area .....	11
Table 9.3.2: EDU Calculation Results for Different Habitats and Deer Species across the Survey Area taking into Account Deer culled during the Return Time .....	11
Table 9.3.3: Cull Records for Estimating Recruitment to the Red Deer Population within the Strathy South Conifer Plantation .....	12

## Figures

Figure 9.3.1: Deer Population Assessment and Herbivore Impact Assessment Survey Area (2019)

## EXECUTIVE SUMMARY

RPS was commissioned by SSE to assess deer utilisation of the Strathy South conifer plantation and a surrounding 1 km buffer of the main site<sup>1</sup>. In parallel to this assessment, a separate assessment of the current herbivore impacts to the surrounding Caithness and Sutherland Peatlands Special Area of Conservation (SAC) was completed at those assessment locations in the 1 km buffer used to determine the current effect of the deer population to qualifying interests of the designated site.

Deer surveys followed a two-visit survey methodology with the initial visit completed in January and February 2019 and a follow up visit in April and May 2019. Herbivore Impact Assessments were completed during the second visit in May 2019 at all survey locations within the Caithness and Sutherland Peatlands SAC.

Surveys found there to be approximately 284 deer using the Strathy South conifer plantation at any one time, with approximately 245 deer utilising the 1 km buffer of the surrounding SAC. These figures are in line with those assessments completed in 2010 for the Consented Scheme.

Impacts to qualifying habitats of the surrounding Caithness and Sutherland Peatlands SAC were completed following best practice guidance provided by Scottish Natural Heritage (SNH)<sup>2</sup>. Herbivore impacts were assessed as light for the indicative parameters monitored.

Records of the deer culls undertaken for the past four shooting seasons were assessed to ascertain the current level of recruitment and the cull requirements in the context of the Proposed Varied Development and the phased felling of Strathy South conifer plantation from the main site. On average annual deer culls were 22 deer per year, but recruitment into the population is predicted as 30% (c.130 deer per year). Consequently, for an enclosed population the current cull effort would be insufficient to maintain a stable population and deer numbers would increase exponentially. However, the permeable nature of the deer fence surrounding the Strathy South conifer plantation allows dispersal of the excess deer numbers to the surrounding landscape; as such, populations have been stable between 2010 and 2019.

Given the timings of the proposed phased forest removal for the main site, this natural dispersal may not be sufficient during this period to reduce deer levels sufficiently. As such, cull levels within the Strathy South conifer plantation would be increased prior to felling commencing to ensure mass dispersal does not occur at the start of construction activities for the Proposed Varied Development. If not, this could lead to a measurable impact to the qualifying habitats of the SAC.

Monitoring of deer populations and their effects to habitats of the SAC would be repeated in 2024 following construction of the Proposed Varied Development. These post-construction surveys would provide feedback on the management practices implemented and allow alterations to these to be made as necessary to ensure the ongoing protection of the surrounding qualifying habitats of the SAC.

<sup>1</sup> The 'main site' refers to land within the U-shape only (including Yellow Bog Track)

<sup>2</sup> <https://www.bestpracticeguides.org.uk/impacts/> (accessed 08.04.2020)

## 1 INTRODUCTION

### 1.1 Background

In April 2018, the proposed Strathy South Wind Farm in Sutherland was granted Section 36 consent and deemed planning permission under the Town and Country Planning (Scotland) Act 1997. The deemed planning permission was subject to a number of planning conditions. Of relevance to this report is Condition 24 relating to deer:

*“Deer Management Plan – 24.1 No development shall commence until a Deer Management Plan has been submitted to and approved in writing by the planning authority in consultation with SNH [Scottish Natural Heritage]. The deer management plan shall set out proposed long term management of deer using the wind farm site to safeguard adjacent areas of the Caithness and Sutherland Peatlands Special Area of Conservation (SAC). It shall also provide for the monitoring of deer numbers on the wind farm and of impacts from deer grazing and trampling on SAC habitats within and adjacent to the wind farm site from the period from commencement of the development until the date of completion of restoration.”*

This Condition was imposed to ensure that there would be no significant effects on the qualifying habitats of the Caithness and Sutherland Peatlands SAC from grazing or trampling by deer displaced following forest felling at the Strathy South conifer plantation, during either wind farm construction or operation.

SNH Guidance to developers of onshore wind farms (SNH, 2018)<sup>3</sup> states the following within their checklist of requirements:

*“26. Wild Deer – If wild deer are present on or will use the development site, an assessment of the potential impacts on deer welfare, habitats, neighbouring and other interests (e.g. access and recreation, road safety, Etc.) should be presented. Where significant impacts may be caused, a draft deer management statement will also be required to address the impacts.”*

Deer population surveys were completed in 2010 for the main site of the Consented Scheme coupled with habitat impact assessment surveys of the surrounding Caithness and Sutherland Peatland SAC; details of the survey results provided in Appendix 4 of RPS (2012)<sup>4</sup>. This assessment formed the baseline against which future potential effects from removal of the Strathy South conifer plantation would be assessed. Since the 2010 assessment was completed (RPS, 2012), construction of the Strathy North Wind Farm has been completed with the associated forest felling this has entailed. Monitoring of the effects of forest felling at Strathy North Wind Farm, in line with the development’s Deer Management Plan, is ongoing with the most recent assessment completed in 2016 (RPS, 2016)<sup>5</sup>. The assessment found, when compared to a pre-construction baseline, that whilst the Strathy North Wind Farm’s utilisation by deer species has decreased, impacts to the surrounding SAC (which forms the west and southern boundaries of the development) have not increased from dispersal effects.

Given that surrounding landscape conditions have altered since the previous Strathy South Wind Farm deer surveys were completed, the Applicant deemed it prudent to update the baseline with regards to the deer use of the main site and surrounding SAC. This would allow ongoing effects to be monitored, and if necessary, deer to be managed effectively, to ensure no adverse impacts are caused by deer to the qualifying interests of the surrounding SAC from construction and operation of the Proposed Varied Development.

<sup>3</sup> SNH (2018) SNH general pre-application / scoping advice to developers of onshore wind farms.

<https://www.nature.scot/sites/default/files/2018-02/SNH%20General%20pre-application%20and%20scoping%20advice%20to%20developers%20of%20onshore%20wind%20farms.pdf> (accessed 08.04.2020)

<sup>4</sup> RPS (2012) Strathy South Wind Farm : Report 5. An Assessment of Impact of Access Track Construction and Deer Grazing on the Caithness and Sutherland Peatlands Special Area of Conservation. November 2012.

<sup>5</sup> RPS (2016) Strathy North Wind Farm Deer Management Report.

### 1.2 Aims

This report aims to estimate deer densities (Effective Deer Utilisation [EDU]) both within the main site and across a surrounding 1 km buffer within the SAC; the survey area is shown in Figure 9.3.1: Deer Monitoring Survey Overview. EDU is used to express the density of deer likely to be present at any one time within an area. As the areas being assessed are not an enclosed population, whilst the density can be used to give an indication of the number of deer present, the population will fluctuate dependent on weather conditions and food resources, with deer using different parts of their range throughout the survey period.

Impacts to habitats within the SAC by herbivores will similarly be assessed to provide a baseline of effects against which future monitoring, post-construction, can be compared. This would enable an assessment regarding the effects of the construction and operation of the development on the surrounding SAC to be completed.

## 2 METHODS

### 2.1 Deer Population Assessment

Surveys to assess the utilisation of the proposed site and a 1 km surrounding buffer within the Caithness and Sutherland Peatlands SAC by deer species followed the Faecal Accumulation Rate (FAR) method as outlined in the Swanson *et al.* (2008)<sup>6</sup>. All transects were 80 m in length, and 1 m wide on open ground and 1.5 m wide within standing forestry giving a total survey area for each transect of 80 m<sup>2</sup> and 120 m<sup>2</sup> respectively. All transects were placed at random bearings in order to avoid bias in the results.

A grid of 104 transect points covered the 42.63 km<sup>2</sup> survey area, 36 transects falling within the afforested site and 68 in the surrounding SAC. Spacing between all transect points was 645 m. Regular spacing was used ensuring all habitats were represented according to their extent within the survey areas to avoid bias. Total areas surveyed both within and outwith the Site boundary were 4,320 m<sup>2</sup> and 5,440 m<sup>2</sup> respectively (a total survey area of 9,760 m<sup>2</sup>). All transect locations can be seen in Figure 9.3.1: Deer Monitoring Survey Overview.

The FAR method requires two visits to each plot, the first visit marking all pellet groups present within the survey area of each transect. The second visit assesses the number of pellet groups deposited in the intervening period between visits (the return time). Initial visits were conducted between the 21<sup>st</sup> January and 8<sup>th</sup> February 2019, with return visits conducted between the 30<sup>th</sup> April and 21<sup>st</sup> May 2019. This gave an average return time of 82 days for locations within the SAC and 88 days for those within the main site.

Cull records for the survey period were obtained for stalking activities within the survey area from Fountains Forestry. Any deer culled within the survey area during the return time period need to be taken into account, as pellet groups deposited during this time may be from deer which have subsequently been removed from the population. Without taking this into account, it could artificially inflate the EDU calculated.

### 2.2 Assessment of Herbivore Impacts to the SAC

The Herbivore Impact Assessment examines a variety of features which can be used to gauge the impacts that large herbivores are causing to particular habitat types. These have been used by SNH to monitor the status of designated sites throughout the Highlands with methods based on standardised monitoring techniques listed at SNH's Best Practice website<sup>1</sup>.

Along each 80 m deer monitoring transect three 2 m x 2 m quadrats were placed at the 0 m, 40 m and 80 m points. Each quadrat was sub-divided into 16, 0.5 m x 0.5 m mini-quadrats numbered sequentially from left to right starting with 1 in the top-left and 16 in the bottom-right corner facing along the transect line. Within each of these quadrats the following assessments were made:

- The National Vegetation Classification community code;
- The presence or absence of trampling or stem breakage by large herbivores across the 2 m x 2 m quadrat;
- The presence or absence of the following criterion within each of the 16 mini-quadrats as a proportion of the entire 2 m x 2 m quadrat were recorded:
  - Pellets from large herbivores;
  - Bog moss (exclusively Sphagnum), and trampled bog moss (exclusively Sphagnum);
  - Bare peat, and trampled bare peat;

<sup>6</sup>Swanson, G. Campbell, D. Armstrong, H. (2008) Estimating deer abundance in woodlands: the combination plot technique. Bulletin 128: Forestry Commission.

- Within mini-quadrats 1, 4, 10, 13, 16 the following criterion were recorded:
  - Four handfuls of heather were assessed for browsing, with the quantity of browsed shoots defining the grouping as either Light (<33%), Moderate (33 – 66%) or Heavy (>66%);
  - Vegetation sward height;
  - Field signs of large herbivore and the species;
- Photograph of each 2 m x 2 m quadrat.

Quadrats were only assessed if they fell within habitats classified as Annex 1 Biotopes within the EC Habitats Directive and the Habitats Regulation 1994 (as amended). These include blanket mire, wet and dry heath, and acidic flush habitats as recognised within JNCC (2010) Phase 1 Habitat survey nomenclature<sup>7</sup>.

<sup>7</sup> JNCC, (2010), Handbook for Phase 1 habitat survey – a technique for environmental audit, JNCC, Peterborough, ISBN 0 86139 636

### 3 RESULTS

The method for calculating the EDU across a study area is detailed in Swanson *et al.* (2008)<sup>5</sup>, a summary of which is given below:

**Calculation of EDU or an enclosed population**

Pellet group data are converted to number of pellets per km<sup>2</sup>:

$$(\text{Sum of all pellet groups} / \text{Sum of total transect area (ha)}) \times 100 = \text{Number of pellet groups per km}^2$$

The number of groups which would be deposited by a single deer during the course of the return time is calculated:

$$\text{Number of dung accumulation days} \times \text{species defecation rate} = \text{Total number of groups per deer}$$

The number of deer per km<sup>2</sup> is then calculated:

$$\text{Number of groups per km}^2 / \text{Total number of groups per deer} = \text{deer per km}^2$$

The EDU or enclosed population for an area can then be calculated:

$$\text{Deer per km}^2 \times \text{Total area of the survey site} = \text{EDU} / \text{population}$$

During the survey period if deer culls were on-going, both within the wind farm boundary or across estates within the vicinity of the site, the loss of individuals within the system were taken into account when calculating the actual EDU for the site. Failure to account for such losses would result in an over estimation of the EDU at the end of the survey period due to a number of pellet groups deposited during the return time belonging to individuals removed from the population. Details of the methods used for accounting for culled individuals can be found in the Swanson *et al.* (2008)<sup>5</sup>.

More advanced calculations of EDU also take into account the overlap of pellet size between different species. For the purposes of surveying, all pellets >10 mm were classified as red deer, whereas all pellets <10mm were classified as roe deer (no differentiation is made during the survey accounting for different ages of individuals depositing the pellets). The calculations used take the overlap between species pellet size into account based on the population structure from ratios of deer culled throughout the year. Further details of this adjustment can be found in Campbell *et al.* (2004)<sup>8</sup>.

To ensure that surveyors are accurately assessing the total width of the transect during dung surveys, a histogram summarising the total pellet groups found within distance bands from the centre line of the transect was created (0 being the centre line, 50 cm or 75 cm being the out edge of the transect). If a significant drop is noted in the number of groups found at the extremities of the transect band where a level distribution of groups should be seen throughout, this could suggest an inconsistent survey effort. The below histogram provides the results of this analysis for the data collected during the 2019 surveys.

<sup>8</sup> Campbell, D. Swanson, G. Sales, J. (2004) Methodological Insights: Comparing the precision and cost-Effectiveness of Faecal Pellet Group Count Methods. *Journal of Applied Ecology*.

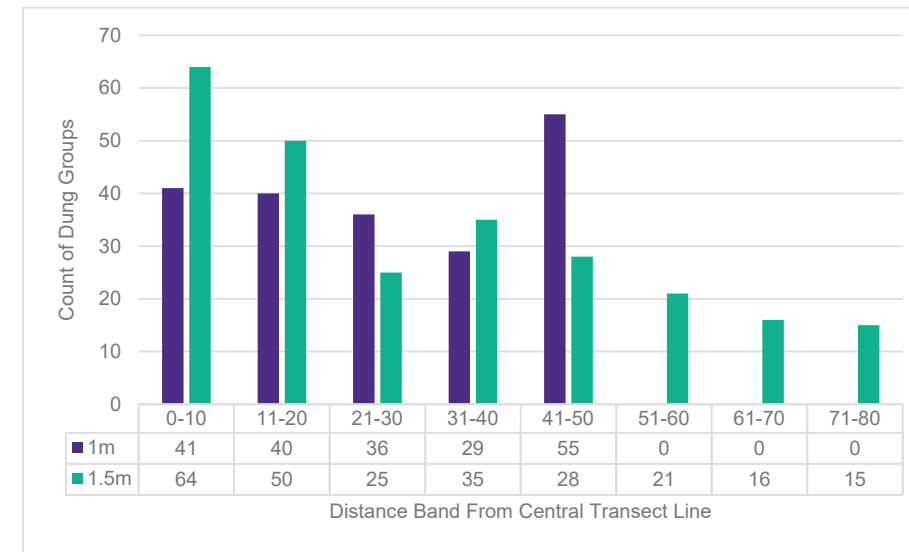


Plate 9.3.1 – Analysis of distribution of deer pellet group found within all transect assessed

The results of a Chi square test on the count results for the above bands for the 1 m transects returned a result of 9.025 for 4 degrees of freedom. Using the appropriate table this equates to P<0.06. Consequently, there is no statistical difference in the distribution of the data collected across differing distance bands of the transects.

The results of a Chi square test on the count results for the above bands for the 1.5 m transects returned a result of 65.748 for 7 degrees of freedom. Using the appropriate table this equates to P<0.0001. Consequently, there is statistical difference in the distribution of the data collected across differing distance bands of the transects which might indicate a bias towards assessing the central section for the transect. As can be seen from Plate 9.3.1, there is a tail-off in recording of pellet groups in band 51-60 cm and above. As such, for the purpose of the analysis it has been assumed that all transects were 1 m in total width, and any pellet groups recorded out with this band width has been disregarded. This follows the approach as per Swanson *et al.* (2008)<sup>5</sup>.

In addition to the above analysis, it is vital that pellet groups deposited during the return time have not degraded and are therefore no longer present during the second survey visit. All pellet groups marked during the initial visit are given a decay status of 1-5 (1 recently deposited, 5 most decayed). Pellet groups recorded during visit 1 are then reassessed during the second visit for their continued decay status (1 – XXG). If pellet groups recorded with decay status of 1 are found to be no longer present (status XXG during visit 2), there is the possibility that pellet groups deposited during the return time may similarly have been lost. This will affect the EDU estimates, artificially lowering these and giving inaccurate estimates of deer density.

Of the 236 pellet groups recorded during visit 1 of the surveys within the revised 1 m transect width, one pellet group was found to have completely decayed and was not present during visit 2, whilst a further seven pellet groups were unable to be relocated. None of these pellet groups were decay state 1; recently deposited at the time of the visit 1 surveys. Consequently, it can be assumed that any pellet groups deposited during the return time should not have disappeared and should be present during the second survey visit.

The total transect areas for the survey have also been reviewed. Due to the predetermined random bearings which the transects use in the field, a number of the 10 m sections in some transects were in ground which could not be surveyed, reasons including the presence of bog pools or watercourses, or snow cover on the ground during visit 1 surveys. As such, these sections are excluded from the analysis. In total 26 sections of transect could not be assessed. The revised total transect areas taking into account both the reduction in transect width and sections surveyed are:

- Caithness and Sutherland SAC – 68 transects and a total area of 5,410 m<sup>2</sup>
- Strathy South conifer plantation – 36 transects and a total area of 2,650 m<sup>2</sup>

### 3.1 Effective Deer Utilisation (Population) Estimates

Table 9.3.1 below details the basic EDU for the entire survey area. This calculation is then further divided up into the two survey areas:

- across the 1 km buffer from the Strathy South conifer plantation within the Caithness and Sutherland Peatland SAC – termed SAC; and
- across the Strathy South conifer plantation – referred to as “Site”.

**Table 9.3.1: Basic EDU Calculation Results for Different Sections of the Survey Area**

Habitat type	Number of transects	Total area of surveyed transect (m <sup>2</sup> )	Average return time (days)	Number of new groups in Visit 2	Deer density (deer/km <sup>2</sup> )	Estimated deer utilisation (number of deer present)*
All Survey Area	104	8,060	89.7	165	12.5	533
Site Area	36	2,650	101.1	86	17.6	284
SAC Areas	68	5,410	83.6	79	9.6	245

Table Note

Mean defecation rate of 18.25 groups per day was used in the above calculation. This is based on the mean of red and roe deer defecation rates, however this will have led to any overestimate given the ratio of red deer to roe deer groups found.

\* Due to the way in which mean values are used for calculating the All Survey Area EDU against the EDU for each specific area, it is not accurate to sum separate area values to create the all survey area value.

Note, during the survey period 16 red deer were culled (16.01.19- 25.05.19), all within the site, thus the above estimate is potentially a slight over-estimation of the actual EDU.

Table 9.3.2 below separates the estimated EDU by species based on the pellet size recorded during the surveys.

**Table 9.3.2: EDU Calculation Results for Different Habitats and Deer Species across the Survey Area taking into Account Deer culled during the Return Time**

Habitat type	Number of transects	Total area of surveyed transect (m <sup>2</sup> )	Average return time (days)	Number of new groups in Visit 2	Deer density (deer/km <sup>2</sup> )	Estimated deer utilisation (number of deer present)*
<b>Roe Deer</b>						
All Survey Area	104	8,060	89.7	5	0.38	18
Site Area	36	2,650	101.1	5	1.02	18
SAC Areas	68	5,410	83.6	0	0	0
<b>Red Deer</b>						
All Survey Area	104	8,060	89.7	162	8.44	472
Site Area	36	2,650	101.1	53	5.34	244
SAC Areas	68	5,410	83.6	109	11.77	231

Table Note

- Defecation rates of 16.5 and 20 groups per day were used for roe and red deer calculations respectively.
- Red deer predicted EDUs do not sum accurately as the mean return time for all survey areas is taken from those of the Site and SAC areas. Rounding of these figures has caused a degree of discrepancy within the calculated EDUs.
- EDU values are rounded to reflect real world scenarios.
- Due to the way in which mean values are used for calculating the All Survey Area EDU against the EDU for each specific area, it is not accurate to sum separate area values to create the all survey area value.

It should be noted that no roe deer have been culled in or surrounding the Strathy South conifer plantation through the period 2014 – 2019. The cross over when attributing a species to the pellet groups recorded during a survey is that all pellets under 10 mm in diameter are classified as roe deer and all pellets greater than 10 mm as red deer. This is from statistical analysis completed by (Campbell *et al.*, 2004)<sup>8</sup>. However, the lack of cull records for roe deer would suggest they are not present (or in extremely limited abundance) within the survey area. Consequently, it is assumed that all groups assigned to roe deer are from juvenile red deer, and the EDU values provided in Table 9.3.1 are more representative of the current scenario.

### 3.2 Deer Population Control

For the purposes of controlling deer numbers within the Strathy South conifer plantation and ensuring that the population remains within parameters which complement the Objectives set out within the site's Outline Habitat Management Plan (OHMP) (EIAR Volume 4: Technical Appendices - Technical Appendix 9.5 – Strathy South Outline Habitat Management Plan) and would not cause a Likely Significant Effect to the qualifying species of the Caithness and Sutherland Peatlands SAC, natural recruitment and loss within the population must be taken into account. Given the relatively long lifespan of deer species, natural loss of individuals for this purpose is minimal. Therefore, for the purposes of estimating population growth, only recruitment needs to be considered.

Recruitment of deer into a population can be deemed from the cull records. Culling of deer follows set rules and parameters, however, the cull records and the ratios of age classes and sexes of deer removed give a fair estimation of the population structure within any given area. Table 9.3.3 below shows the cull data for the past four shooting seasons within the Strathy South conifer plantation, the species and sex of deer removed during this period and an estimate of recruitment via this method into the population. No roe deer were present in any cull records received for the survey area.

**Table 9.3.3: Cull Records for Estimating Recruitment to the Red Deer Population within the Strathy South Conifer Plantation**

Season	Adult males	Adult females and juveniles	Predicted juveniles (50% of adult female / juvenile total)	Total deer culled	% Recruitment
2015-16	5	7	3	12	25%
2016-17	10	25	12	35	34%
2017-18	14	30	15	34	34%
2018-19	6	9	4	15	27%
16/01/2019 – 25/05/2019	9	7	3	16	19%
Mean	9	16	7	22	30%

Table Note

- Percentage recruitment within a population is the total number of juveniles divided by the total number of deer present.
- Cull figures have been provided by Fountains Forestry in December 2019.

Red deer culls across the Strathy South conifer plantation have varied between years, with a mean number of c.22 individuals removed from the population (a maximum of 35 were shot in 2016-17 season). Similarly, recruitment into the population appears to be relatively stable with a mean recruitment of c.30%. This recruitment level, if the EDU calculated in Table 9.3.1 is used, would predict approximately 165 additional deer born to the population. Given only 15 deer were shot during 2018-19, this cull is potentially insufficient to control deer numbers within the Strathy South conifer plantation and the surrounding area to maintain the population at a stable number.

### 3.3 Herbivore Impact Assessment within the SAC

Assessments of herbivore impacts to a 1 km surrounding buffer of the Strathy South conifer plantation were completed in association with deer population assessment transects. Key parameters assessed were levels of browsing, trampling, bare ground present, ericoid height and Sphagnum species presence. Assessments and summaries follow methods as described on SNH Best Practice Website<sup>1</sup>. A comparison of the data allows the potential effects of deer displacement from the Strathy South conifer plantation on to the Caithness and Sutherland Peatlands SAC as a result of forest felling and construction activities for the Proposed Varied Development. Plate 9.3.2 – 9.3.5 below, summarise the results of the surveys.

For context to the surveys, Plate 9.3.2 provides a summary of the National Vegetation Communities which were found at the quadrat locations.

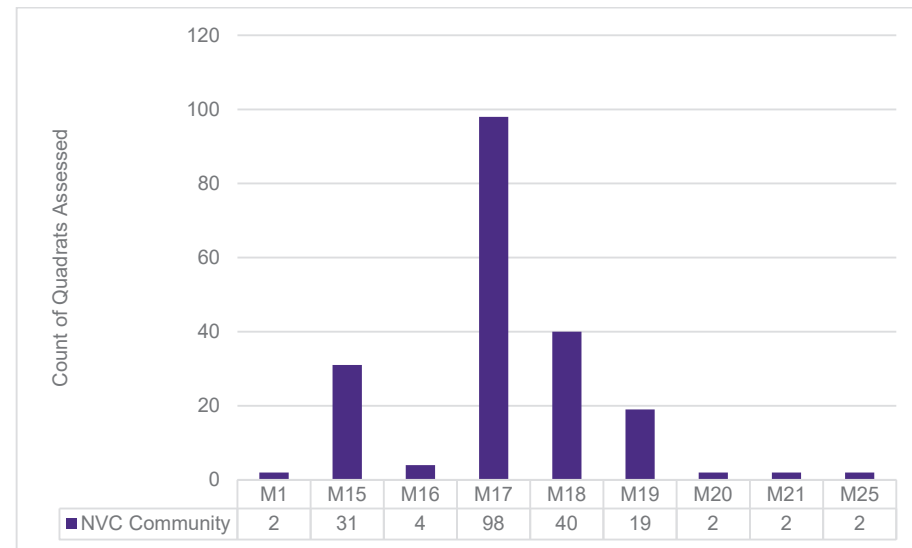


Plate 9.3.2 – NVC Communities which the quadrats assessed during the survey were located in

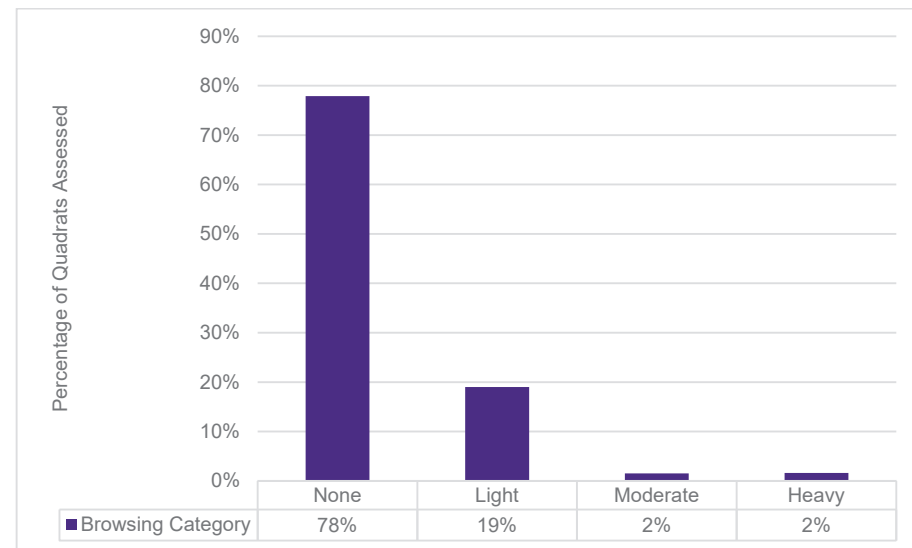


Plate 9.3.3 – Browsing levels across the SAC at monitoring locations in 2019

Browsing levels were determined as light (1-33% of shoots assessed having been browsed), moderate (34-66%) and heavy (67-100%). Where no browsing was found this was recorded as such to avoid skewing the light browsing category. The above plate indicates that browsing within the SAC surrounding the Strathy South conifer plantation is currently light.

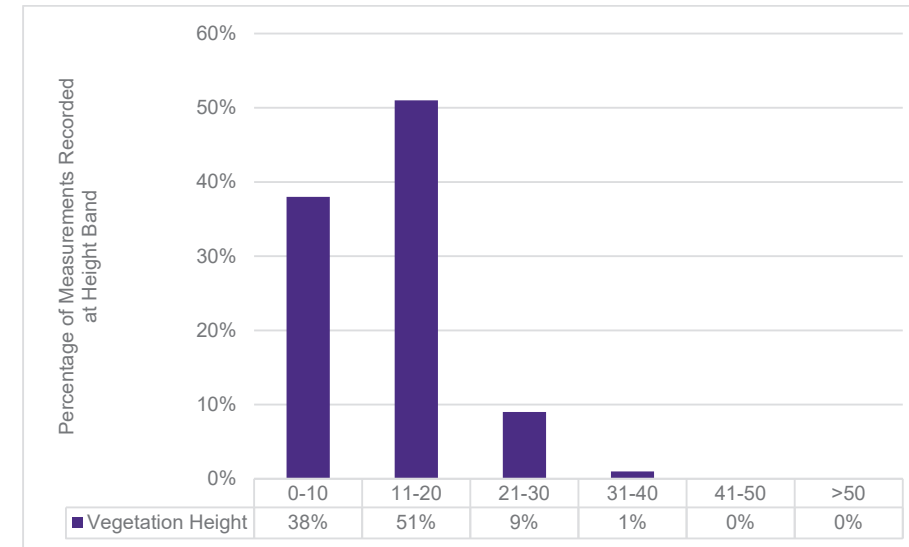


Plate 9.3.4 – Percentage of measured ericoids within designated height bands in 2013 and 2016

The majority of vegetation measurements fall in the lowest two height band categorises, consistent with blanket bog and wet heath vegetation communities. Limited vegetation was recorded in the top three bands (where one would expect higher grass species' or rush height measurements to place). This is consistent with peatland habitats in a favourable condition. This contrasts with the overall status of blanket bog and wet heath habitats for the Caithness and Sutherland Peatlands SAC which were last assessed in 2017 as being in an unfavourable condition<sup>9</sup>.

From the assessment completed at each quadrat location, 35% of these were found to contain hoof prints from the resident deer population. Poaching by deer is a key parameter which causes degradation to peatland habitats, expanding areas of bare peat and damaging Sphagnum carpets. Plate 9.3.5 below shows the percentage of quadrats that contained bare peat (a natural phenomenon within a peatland system), and of these bare peat areas the percentage of which exhibited signs of trampling by deer. The same parameter is also shown for Sphagnum present and percentage trampling.

<sup>9</sup> <https://www.environment.gov.scot/data/data-analysis/protected-nature-sites/?pagenumber=1&resetmap=true&siteid=8218> (accessed 08.04.2020)

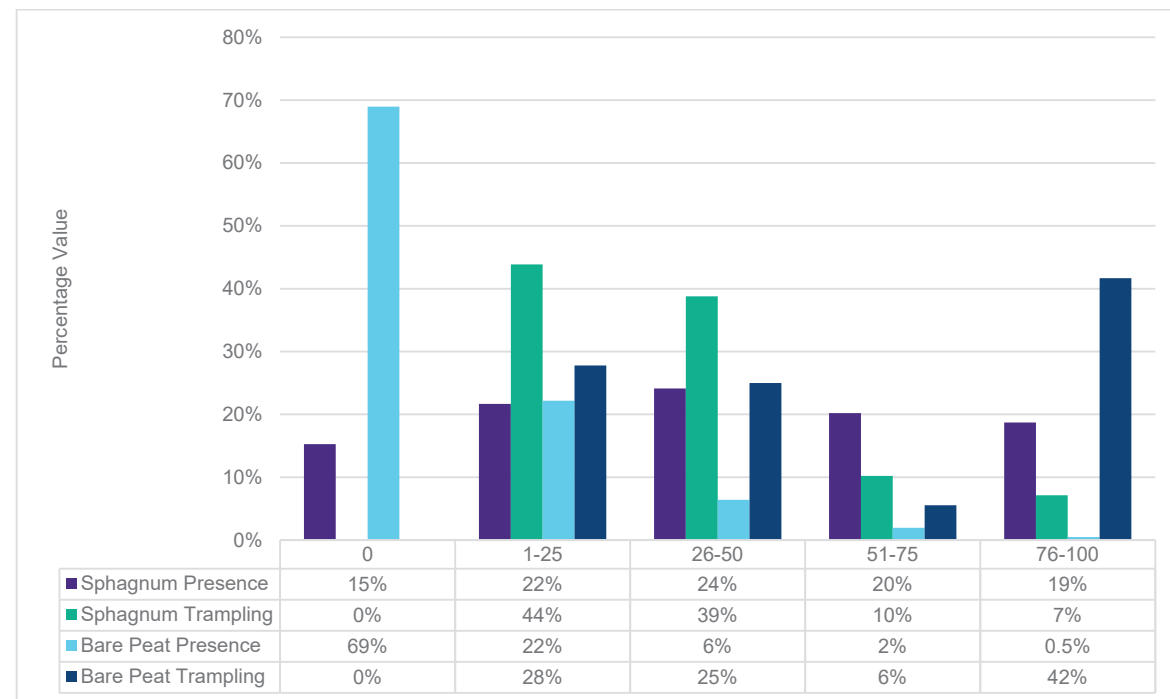


Plate 9.3.5 – Percentage of quadrats assessed containing signs of trampling by herbivores

Plate 9.3.5 shows that Sphagnum coverage across quadrats was evenly distributed between those with none present, to those exhibiting near complete ground coverage by these species. Where Sphagnum was recorded in quadrats, trampling was varied with those quadrats with the most limited amount of Sphagnum having the highest ratio of those areas trampled (44%), this indicates that where deer are present they are having a detrimental effect on the species.

Similarly, Plate 9.3.5 shows that the majority of the quadrats had little or no areas of bare peat, with 69% of quadrats having none, as would be expected of a healthy peatland environment. Distribution of the trampling data in areas which did have bare peat showed no correlation, potentially as such bare peat areas were too low in numbers of any meaningful correlation to be made. Monitoring of these trends following forest removal will be important in determining if the dispersal of deer from the site is causing an increase in poaching, a loss of Sphagnum and an increase in areas of bare peat.

## 4 DISCUSSION AND RECOMMENDATIONS

The EDU for the Strathy South conifer plantation is predicted as 284 red deer (17.6 deer/km<sup>2</sup>) with no roe deer currently present. These figures correlate with the 2010 surveys completed for the Consented Scheme which estimated the EDU as 269 deer within the Strathy South conifer plantation.

EDUs calculated for the 1 km buffer within the SAC surrounding the Strathy South conifer plantation are 245 red deer (9.6 deer/km<sup>2</sup>). This estimate is slightly higher than those calculated for the Consented Scheme in 2010 which used information from the Deer Council Scotland (DCS) (collected in 2006) which estimated EDUs as approximately 8 deer/km<sup>2</sup>, however the methods of assessment used differ.

Current cull and recruitment levels, as can be seen in Table 9.3.3, indicate that the current cull level is substantially below that of the recruitment for the area which would suggest an expanding population of approximately 130 deer per year. The EDUs for the Strathy South conifer plantation and surrounding SAC are above those at which impacts should be measurable (4 deer/km<sup>2</sup> for forestry and 8 deer / km<sup>2</sup> for open habitats (Putman *et al.*,2011)<sup>10</sup>), and whilst no impacts to the conifer crop were noted during the surveys (such as bark stripping) woody species within the Strathy South conifer plantation such as bog myrtle (*Myrica gale*) and blaeberry (*Vaccinium myrtillus*) were noted as heavily browsed during the 2019 NVC ground-truthing surveys (EIAR Volume 4: Technical Appendices - Technical Appendix 9.1 – Habitats and Protected Species Survey Update). Impacts to the surrounding SAC were light which would suggest that deer preferentially use the Strathy South conifer plantation; this corroborates with the EDU results.

To maintain appropriate deer populations and in the long-term aid in decreasing those present for the purpose of forest felling, habitat restoration and minimising disruption to the surrounding SAC from deer displacement, the cull level would be increased substantially in the course of the next two years. However, given the transient nature of the deer population associated with the Strathy South conifer plantation and the permeable nature of the current deer fence, the cull would be sustained as necessary to ensure that those deer removed from the plantation’s population are not replaced immediately by those from surrounding areas.

To assess the long-term effect of deer on the Caithness and Sutherland Peatlands SAC from construction of the Proposed Varied Development and the effect of any cull, repeat surveys would be completed in four years’ time on commencement of the Operational Phase of the Proposed Varied Development in 2024. This would allow a suitable period to ascertain if the cull levels implemented are having a desired effect, ascertain the current effect of displacement of deer through forest felling, and allow any improvement or decline in the quality of habitat within the SAC to be of a measurable extent. Similarly, monitoring would also allow any adjustment of management activities to be completed ensuring the ongoing protection of the surrounding designated habitats.

The approach outlined above has been successfully implemented in the neighbouring Strathy North wind farm where phased removal of the conifer plantation, to allow construction and operation of the wind farm, was completed through 2014. Pre and post-felling monitoring of the resident deer populations and the effects of dispersal of deer from the Strathy North wind farm site has found no measurable increase in the effects to sensitive habitats of the Caithness and Sutherlands Peatlands SAC<sup>11</sup>. Consequently, the Applicant is confident in the above approach to minimise effects of felling of the Strathy South conifer plantation and the potential associated displacement of the resident deer population.

<sup>10</sup> Putman, R. Langbein, J. Gree, P. Watson, P. Identifying threshold densities for wild deer in the UK above which negative impacts may occur. Mammal Review 2011.

<sup>11</sup> RPS (2016) Strathy North Wind Farm Deer Management Report 2016



## Figures

Figure 9.3.1 – Deer Monitoring Survey Overview