Assessment of plans and projects under regulations 21 and 61 of the Habitats Regulations 2010 as amended ('Habitats Regulations Assessment')

Casework Tracker/ Application reference	**220942**
Case/Application title	**Crag Estate Moorland Plan 2017-2023**
Assessment made by	[redacted] **Date:** **7 July 2017**

European Site(s): ***SOUTH PENNINE MOORS SAC (UK0030480)***
PEAK DISTRICT MOORS (SOUTH PENNINE MOORS PHASE 1) SPA (UK9007021)

Component SSSI(s): ***LEEK MOORS SSSI***

Assessment Contents:

Assessment Summary

- The Crag Estate Moorland Restoration Plan (2017 – 2023) sets out a shared vision and multiple outcomes for grouse moor management, farming, biodiversity and the natural environment (carbon and water management). It includes a programme of blanket bog restoration and some moorland infrastructure works across the Estate.
- Although a number of the proposed works are directly connected with and necessary for the conservation/restoration of SAC and SPA moorland features to favourable conservation status, there are elements of the plan which cannot be screened out as specifically for these purposes and further Habitats Regulations Assessment was required.
- The main elements for consideration are;
    - The use of cutting to remove heather dominated vegetation and aid restoration
    - The use of burning as a restoration intervention
    - The seeding of blanket bog indicator species and inoculation with Sphagnum
    - The construction of a line of semi-sunken butts
    - The use of burning and pesticides in the restoration of *Molinia* dominated vegetation
    - Fencing works
- The seeding of blanket bog indicator species and inoculation with Sphagnum are considered necessary for the management of the site as part of restoration works to achieve favourable, functioning blanket bog.
- The use of burning and herbicide in the restoration of Molinia dominated areas, heather cutting, and fencing works are not directly connected and necessary for the conservation/restoration of SAC and SPA moorland features to favourable conservation status) and are considered unlikely to have a significant effect on the SAC and SPA features (either alone or in combination with other plans or projects), on the understanding that these works are undertaken by the Estate in strict accordance with the principles and specifications in Sections 4-7 of the Plan. Burning as part of the restoration of Molinia dominated vegetation is not considered to result in an adverse effect on the notified interest. The burning only removes the Molinia tussocks and facilitates the introduction of blanket bog species, thereby resulting in a beneficial effect.
- The use of burning as a restoration intervention and the construction of semi-sunken and slightly raised butts are not directly connected and necessary for the conservation/restoration of SAC and SPA moorland features to favourable conservation status) and the likelihood of a significant effect could not be ruled out. Therefore they were considered likely to have a significant effect on the SAC and SPA features (either alone or in combination with other plans or projects) and an Appropriate Assessment undertaken.
- The Appropriate Assessment concluded that permission could be given for restoration burning as this involves a one-off burn, followed by Sphagnum inoculation, only in a defined sward type following detailed principles and specifications set out in the agreement. No further burning is permitted without written agreement with Natural England. The agreement also includes a monitoring and review process that allows for

evidence based amendments to be made. It is considered that, using the best available evidence, and by defining the sward type and specification for restoration burning there will not be an adverse effect on the SAC and SPA features, and the intention is that it will result in a beneficial effect. It also concluded that permission could be given for the construction of one line of semi-sunken and slightly raised butts as the agreement includes measures to minimise the impact on the peat resource and hydrology such that there is no significant adverse effect.

PART A:
Introduction and Information about the plan or project and an initial assessment of credible risk to European Sites

A1. Introduction

This is a record of the Habitats Regulations Assessment ('HRA') undertaken by Natural England in its role of competent authority and in accordance with the assessment and review provisions of the Conservation of Habitats and Species Regulations 2010 (as amended) ('the Habitats Regulations').

The plan/project requires Natural England as a statutory regulator to make [or to review] a consent decision under section 28E(1)(a) of the 1981 Wildlife and Countryside Act (as amended) on whether an SSSI owner or occupier can carry out, cause or permit to be carried out an operation or operations listed by a SSSI notification and which:

a) does not fulfil the conditions in section 28E(3)(b) or (c) and,
b) appears to be either a 'project' or part of a 'plan or project' which may affect a European Site (hereby referred to as either 'the plan' or 'the project').

Where such a proposal may affect a European Site, **Regulation 21** of the Habitats Regulations requires an assessment to be made of such proposals.

In making this HRA as competent authority, Natural England may only undertake or give its consent, permission, assent or authorisation to the plan or project where it is able to ascertain *either*:

a) that it will not have a likely significant effect on a European site (either alone or in-combination with other plans and projects), or;
b) that it will have no adverse effect on the integrity of a European Site following an appropriate assessment.

If such effects cannot be ruled out, the proposal cannot proceed unless the further tests given in Regulations 62 and 66 of the Habitats Regulations can be satisfied (see Natural England's HRA Operational Standard for further details on how to proceed further).

A2. Details of the plan or project

Location (including grid references): The plan is centred around SK020705 in an area known as Axe Edge on the western side of Buxton. See Map1 of the plan.

Name of applicant: Earl of Derby

Description of the plan or project and its constituent elements:

The plan takes an Outcomes Approach and describes a shared vision between the Estate and Natural England. There are three key sections 1) Site Specific Interventions, 2) Longer term Management, and 3) Shooting butts, track and fencing.

The Site Specific Interventions aim to restore "white ground" and degraded blanket bog employing specific techniques tailored to the individual areas. These include:

- The use of herbicide to control invasive grass species
- Burning to remove the dead grass litter
- Overseeding areas of bare peat with blanket bog species
- The use of cutting to remove the dwarf shrub/cottongrass canopy to allow the introduction of other blanket bog species
- Introduction of blanket bog species e.g. heather, cross-leaved heath, bilberry, cranberry and *Sphagnum*

The Longer term Management addresses the management of heather dominated swards across the Estate and the restoration of good quality, functioning blanket bog. This involves:

- Using cutting as a tool to remove the heather dominated canopy to allow the introduction of *Sphagnum* and other appropriate blanket bog species
- The use of restoration burning as a one-off treatment where cutting is not possible to remove the heather dominated canopy (as defined in a decision tree) and allow the introduction of *Sphagnum,* and other appropriate blanket bog species
- The introduction of *Sphagnum* and other blanket bog species

The Shooting butts, track and fencing section covers:

- The replacement of one line of traditional shooting butts for safety reasons
- Installation of one new line of shooting butts on the SSSI and two new lines outside the SSSI
- Repair and maintenance of a track outside the SSSI
- Fencing repair and installation to facilitate management

The plan also includes information about trajectories and monitoring, and how the plan is to be reviewed.

Has the plan or project, or any aspect of it, already been subject to assessment under the Habitats Regulations by another competent authority? No

A.3 Initial assessment of risks to European Sites

This section sets out the potential ways in which the plan or project might credibly affect European Site(s) based on a rapid assessment of location, proximity, type, scale, extent, duration, frequency and timing of the operations / activities which might take place if implemented. The available advice provided by Natural England's Impact Risk Zones and /or statutory Advice on Operations for European Marine Sites should be considered as appropriate to inform this risk assessment.

The plan includes some operations that could have a negative impact on the European Sites e.g. cutting, burning, use of vehicles, construction of butts and use of pesticides, and therefore need assessing in Part C for Likely Significant Effect.

With reference to the information above and before undertaking a more detailed screening assessment, **on the basis of professional judgment;** Natural England has concluded;

- ☐ There is or may be a credible risk that the plan or project subject to an assessment might undermine the conservation objectives of a European Site. Further Habitats Regulations assessment is therefore necessary

PART B:
Information about the European Site(s) which could be affected

B1. Brief description of the European Sites(s) and their Qualifying Features

There is or may be a credible risk that the plan or project subject to an assessment might undermine the conservation objectives of the following European Sites;

South Pennine Moors Special Area of Conservation SAC
Annex I habitats that are a primary reason for selection of this site

- H7130 Blanket bogs* (*priority habitat type)
- H4030 European dry heaths
- H91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

Designated under Article 4(4) of the Habitats Directive for the above natural habitats and/or species listed in Annex I and II of the Directive (priority features are denoted by an asterix (*)).
Annex I habitats present as a qualifying feature, but not a primary reason for selection of this site

- H4010 Northern Atlantic wet heaths with *Erica tetralix*
- H7140 Transition mires and quaking bogs

European Site: South Pennines Moor SAC

This SAC represents **blanket bog** in the South Pennines, the most south-easterly occurrence of the habitat in Europe. The bog vegetation communities are botanically poor. Hare's-tail cottongrass *Eriophorum vaginatum* is often overwhelmingly dominant and the usual bog-building Sphagnum mosses are scarce. Where the blanket peats are slightly drier, heather *Calluna vulgaris*, crowberry *Empetrum nigrum* and bilberry *Vaccinium myrtillus* become more prominent. The uncommon cloudberry *Rubus chamaemorus* is locally abundant in bog vegetation. Bog pools provide diversity and are often characterised by common cottongrass *E. angustifolium*. As with the blanket bog habitat, the **dry heath** represents the habitat's most south-easterly upland location in the UK. The dry heath covers extensive areas, occupies the lower slopes of the moors on mineral soils or where peat is thin, and occurs in transitions to acid grassland, wet heath and blanket bogs. The upland heath of the South Pennines is strongly dominated by heather *Calluna vulgaris*. However it is limited to gulley/clough sides on the Crag Estate and is a minor component of the plan. Wet heath occurs on shallow peat with impeded drainage and is found in the transition between dry heath or other dry, acid habitats and blanket bog. As with dry heath, the extent of wet heath on the Estate is limited. There are no old, sessile oak woodlands covered by the plan. (Source: SAC citation on JNCC website http://jncc.defra.gov.uk/protectedsites/sacselection/sac.asp?EUcode=UK0030280).

European Site: Peak District Moors (South Pennine Moors Phase 1) SPA
Classified under Article 4.1 of the Wild Birds Directive for:

- A098 Breeding population of Merlin – *Falco columbarius 77 pairs representing at least 5.9% of the breeding population in Great Britain.*
- A140 Breeding population of Golden Plover – *Pluvialis apricarius 752 pairs representing at least 3.3% of the breeding population in Great Britain (Count as 1990)*
- A103 Breeding population of Short-eared owl – *Asio flammeus 25 pairs representing at least 2.5% of the breeding population in Great Britain.*

B2. European Site Conservation Objectives (including supplementary advice)

Natural England provides advice about the Conservation Objectives for European Sites in England in its role as the statutory nature conservation body. These Objectives (including any Supplementary Advice which may be available) are the necessary context for all HRAs.

The overarching Conservation Objectives for every European Site in England are to ensure that the integrity of each site is maintained or restored as appropriate, and that each site contributes to achieving the aims of the Habitats and/or Wild Birds Directive, by either maintaining or restoring (as appropriate):

- The extent and distribution of their qualifying natural habitats,
- The structure and function (including typical species) of their qualifying natural habitats,
- The supporting processes on which their qualifying natural habitats rely,
- The supporting processes on which the habitats of their qualifying features rely,
- The population of each of their qualifying features, and
- The distribution of their qualifying features within the site.

Where Conservation Objectives Supplementary Advice is available, which provides further detail about the features' structure, function and supporting processes mentioned above, the implications of the plan or project on the specific attributes and targets listed in the advice will be taken into account in this assessment.

In light of the European Sites which could be affected by the plan or project, this assessment will be informed by the following site-specific Conservation Objectives, including any available supplementary advice;

http://publications.naturalengland.org.uk/publication/6145889668169728?category=6071598712881152
http://publications.naturalengland.org.uk/publication/4885083764817920?category=6071598712881152

PART C:
Screening of the plan or project

To check whether a detailed appropriate assessment is necessary, there are two screening tests required by the assessment provisions of the Habitats Regulations;

C1. Is the plan or project directly connected with or necessary to the (conservation) management (of the European Site's qualifying features)?

The Crag Estate Plan sets out a shared vision and multiple outcomes for grouse moor management, farming, biodiversity and the natural environment (carbon and water management). It includes a programme of blanket bog restoration dry heath restoration comprises a minor element of the plan) and some moorland infrastructure works across the Estate. Although a number of these are directly connected with and necessary for the conservation/restoration of SAC and SPA moorland features to favourable conservation status, there are elements of the plan which cannot be screened out as specifically for these purposes and which are capable of having a likely significant effect on these features (see Table C1).

SAC features

It is considered that functioning **blanket bogs** in good condition can be generally regarded as a near-natural or climax habitat, which means that the nutrient poor and waterlogged vegetation has reached a steady natural state and a naturally diverse structure and can sustain itself without grazing, burning or any other interventions. Where previous damage has occurred, some areas of blanket bog may require restoration of natural hydrology (i.e. rewetting) to restore its naturally peat-forming ability. Additional measures may also be required to reduce the dominance of species such as heather and purple moor-grass. Blanket bog is defined in the Blanket Bog Restoration Strategy 2015 as areas with a peat depth of at least 40cms. When blanket bog is damaged, carbon sequestration is likely to be halted or reduced and carbon can be released through oxidation, particulate and solute erosion.

Burning regimes are known to affect bog/mire habitats, leading to reductions in or loss of key species (both plants and animals), reduced structural diversity and a greater dominance of species which are less typically associated with the habitat in question (i.e. areas of deeper peat becoming dominated by *Calluna*, cottongrasses or grasses such as *Molinia*).It is considered possible that a single, one-off and highly-controlled burn can contribute to the restoration of blanket bog habitat (for example, as an initial treatment) in order to revert degraded bog vegetation now dominated by heather or purple moor-grass to bog habitat. Therefore, in these very specific circumstances, where the operation has the necessary safeguards built in and forms part of an agreed restoration plan (that includes other necessary restoration or conservation measures) it may be considered appropriate for the management of the site.

The management of wildfire risk may require the use of burning to create effective firebreaks to limit the risk of damage to blanket bog from uncontrolled fire. It is important that these are targeted in high risk areas as part of a wildfire risk management plan.

Cutting may be a more appropriate technique in removing heather dominated canopies to facilitate additional restoration interventions, such as *Sphagnum* inoculation. There is emerging evidence regarding the impacts of burning and cutting on the restoration of blanket bog, with benefits of cutting with regard to water table depth compared with burning in some situations. However, cutting of dwarf shrub can create heather-dominant swards if not linked to other restoration interventions. Other potential impacts of cutting that should be considered include soil compaction, particularly on sensitive habitats such as blanket bog and wet heath, scalping vegetation and peat layers, and damage to hummocks. Damage to sensitive habitats and vegetation can be mitigated by avoiding vehicle access to 'Sensitive Areas'.

It is considered that **North Atlantic wet heaths with *Erica tetralix*** on shallow peat (less than 40cms) is a plagio-climax community which requires light grazing to maintain its state and prevent its ecological succession to woodland. Burning should be avoided, as this favours more competitive species over more characteristic species.

European dry heaths are also considered a plagio-climax community that can require some form of management intervention, either light grazing with livestock or careful burning, to maintain its open state and prevent ecological succession to woodland in local circumstances. Most dry heaths are managed by extensive grazing or in the uplands as grouse moors.

Both wet and dry heath communities are very limited in extent on the Estate, the majority of the habitat comprising blanket bog.

SPA features

Upland habitats support internationally and nationally important numbers of birds. The long term aim is to create blanket bog that is in balance, supporting a diverse sward and structure, without the need for repeated management intervention. It is generally regarded that no upland bird species has a specific requirement for moorland that is intensively managed by burning or cutting. However, in the restoration phase of a degraded blanket bog interventions that provide structural and vegetation diversity may be beneficial on a temporal basis. Restoration burning or cutting on blanket bog may be considered appropriate where it is part of the restoration programme for the blanket bog. If such interventions are proposed specifically for the benefit of SPA species, it must be clearly demonstrated that there are no other suitable habitats that the species will and can use instead, and that burning/cutting is a key element of maintaining a population that would otherwise be in unfavourable condition at the site level. The retention of unmanaged/taller dwarf shrubs for species such as merlin and short-eared owl must also be provided for. If burning or cutting is undertaken in spring these operations can kill/injure or disturb birds and their nests, eggs and young.

European Site: South Pennine MoorsSAC and Peak District Moors (South Pennine Moors Phase 1) SPA				
Proposed activity/element of the project	**European site qualifying feature**	**Necessary for conservation management ? Y/N**	**Reasons for decision**	**Carry forward activity to LSE test?**
Heather cutting on blanket bog	Blanket bog SAC Breeding populations of SPA birds: Merlin, Golden Plover, Short-eared owl	N	This activity is proposed for management of grouse moor activities and protection against wildfire. Cutting is also being used to facilitate inoculation with Sphagnum. This activity is not generally necessary for the management of blanket bog habitat.	Y
Restoration burning on blanket bog	Blanket bog SAC Breeding populations of SPA birds: Merlin, Golden Plover, Short-eared owl	N	This activity is proposed for management of grouse moor activities and protection against wildfire. Burning is also being used to facilitate inoculation with Sphagnum, and the restoration of the blanket bog habitat. The burning is intended to assist with restoration management, but there is not yet the evidence to confirm that it is beneficial.	Y
Herbicide to control invasive grasses	Blanket bog SAC Breeding populations of SPA birds: Merlin, Golden Plover, Short-eared owl	N	This activity is proposed to facilitate the conversion of *Molinia* dominant swards to habitat for grouse with significant heather cover. This activity is not routinely required for the management of blanket bog. The activity is also proposed for the conversion of mat grass dominated sward to dry heath.	Y
Burning to remove dead grass litter	Blanket bog SAC Breeding populations of SPA birds: Merlin, Golden Plover,	N	This activity is proposed to facilitate the conversion of *Molinia* dominant swards to habitat for grouse with significant heather cover. This activity is not routinely	Y

	Short-eared owl		required for the management of blanket bog. The activity is also proposed for the conversion of mat grass dominated sward to dry heath.	
Seeding with blanket bog species	Blanket bog SAC Breeding populations of SPA birds: Merlin, Golden Plover, Short-eared owl	Y	This activity is proposed to re-vegetate areas of bare peat, or areas of low diversity, with blanket bog species thereby moving the habitat into more favourable condition.	N
Sphagnum inoculation	Blanket bog SAC Breeding populations of SPA birds: Merlin, Golden Plover, Short-eared owl	Y	This activity is proposed to re-introduce Sphagnum moss into blanket bog thereby moving the habitat into more favourable condition.	N
Construction of shooting butts	Blanket bog SAC Breeding populations of SPA birds: Merlin, Golden Plover, Short-eared owl	N	This activity is specifically for the purposes of grouse shooting and not required for the management of the notified habitats or species.	Y
Fencing repair and new	Blanket bog SAC Breeding populations of SPA birds: Merlin, Golden Plover, Short-eared owl	Y	Fencing is required to manage grazing across the Estate to facilitate the restoration of habitats. However, there is potential to disturb SPA species during construction.	Y

Conclusion:

- ☐ As the plan or project is not directly connected or necessary to the management of all of the European site(s)'s qualifying features, further Habitats Regulations assessment is required

C2. Is there a likelihood [or risk] of significant [adverse] effects ('LSE')?

This section details whether those constituent elements of the plan or project which are (a) not directly connected with or necessary to the management of the European Site(s) features and (b) could conceivably adversely affect a European site, would have a **likely significant effect,** either alone or in combination with other plans and projects, upon the European sites and which could undermine the achievement of the site's conservation objectives.

In accordance with European case law, this HRA has considered an effect to be 'likely' if it '*cannot be excluded on the basis of objective information'* and is 'significant' if it *'undermines the conservation objectives'*. In accordance with Defra guidance on the approach to be taken to this decision, in plain English, the test asks whether the plan or project '*may'* have a significant effect (i.e. there is a risk or possibility of such an effect).

Each of the project elements has been tested against each of the relevant European site qualifying features. An assessment of potential effects using best available evidence and information has been made in the following sections below.

Measures that would avoid or reduce the risk or likelihood of significant effects arising and which are already integral to the nature of the plan or project as submitted have been taken into account at this stage.

C2.1 Risk of Significant Effects Alone

The first step is to consider whether any elements of the project are likely to have a significant effect upon a European site 'alone' (that is when considered in the context of the prevailing environmental conditions at the site but in isolation of the combined effects of any other 'plans and projects'). Such effects do not include those deemed to be so insignificant as to be trivial or inconsequential.

The results of this assessment for each qualifying feature are as follows:

Proposed activity/element of the project	Qualifying feature likely to be affected	Potential effect	The mechanism/ pathway of the effect	Does the project include measures which would mitigate the potential effects? (Y/N) If Yes provide details	Likely Significance of the Effect alone (LSE)? (Yes/No/ Uncertain*)
Heather cutting	H7130 Blanket bog	Soil compaction	Use of inappropriate machinery in unsuitable conditions i.e too wet	Yes – Cutting will avoid 'Sensitive Areas' as described in Section 6 of the Plan. Only a low ground pressure ATV-mounted power shredder (1.5m wide, with flotation tyres) will be used when weather & ground conditions are suitable. This enables access and operation with negligible impact on the soil structure. Avoidance of cutting along gully sides, by maintaining at least a 5m buffer. Also commitment to avoid very wet areas where damage to peat soils may occur.	No
		Heather dominance	Cutting heather for grouse moor management and wildfire risk	Yes – Proposals include follow up treatments of sphagnum inoculation and other blanket bog species e.g. cross-leaved heath, bilberry. This, in conjunction with cutting heather dominated swards, should reduce the	No

				competitive advantage of heather and allow a more diverse sward to develop. See Section 4 of the Plan. Representative areas subject to such one-off cutting will be carefully monitored afterwards in accordance with Section 7 of the Plan.	
		Risk of losing structural diversity in the sward	Cutting heather for grouse moor management and wildfire risk	Yes – Cutting will be targeted to ensure that a representative age range of dwarf shrub is maintained (at least 10% in late mature-degenerate stage). In the long-term, in conjunction with sphagnum inoculation and the existing grip blocking, the aim is to develop a functioning blanket bog habitat that does not require routine management to maintain structural diversity. Representative areas subject to such one-off cutting will be carefully monitored afterwards in accordance with Section 7 of the Plan.	No
	A098 Merlin A140 Golden plover A103 Short-eared owl	Disturbance to nesting birds	Use of machinery in bird nesting season	Yes - Cutting will only be done outside the main bird nesting season.	No
		Risk of temporary change in habitat structure	Cutting heather for grouse moor management and wildfire risk	Yes – Cut plots may provide suitable nesting habitat for golden plover. At least 10% of heather dominant areas in the late mature-degenerate stage will be retained across the moor. Thick, old heather will not be cut. In the long-term the regeneration of	No

				vegetation and functioning blanket bog will provide increased opportunities for typical blanket bog plants to flourish and will provide diversification of habitat structure to support SPA bird populations through improved breeding and feeding opportunities and cover.	
Restoration burning	H7130 Blanket bog	Damage to peat structure and function – drying out of peat surface and decrease in water table depth, alteration to nutrient status of the peat	Burning for grouse moor management, blanket bog restoration and wildfire risk	Yes – Burning is only to be used where it is not possible to use cutting to remove the canopy in heather dominated swards as part of a restoration process. Burns will not damage the bryophyte layer or peat and will always be followed up by Sphagnum inoculation (and other blanket bog species where appropriate) as set out in Sections 4 and 5 of the Plan. The removal of the heather canopy is needed to facilitate the introduction of other blanket bog species that are required to restore the functionality and diversity of the bog. Each burn will be a one-off with no repeated burning allowed. There is not yet the evidence available to confirm that restoration burning is beneficial for the blanket bog feature.	Yes

		Promotion of heather (or other fire tolerant species) dominance – fire tolerant species including heather, purple moor grass and cottongrass may be advantaged with loss of diversity of vegetation composition and structure. Also concerns that heather dominated sward may increase the wildfire risk.	Burning for grouse moor management, blanket bog restoration and wildfire risk	Yes – Burning stimulates the regeneration of heather from seed and could promote a heather dominated sward. In this Plan the burning is part of a restoration process to remove the heather canopy and introduce Sphagnum and other key blanket bog species. The long-term aim is to restore a diverse sward with active peat formation. The burns will not be repeated, as stated above.	Yes
	A098 Merlin A140 Golden plover A103 Short-eared owl	Disturbance to nesting birds	Burning in bird nesting season	Yes - Burning will only be done outside the main bird nesting season.	No
		Risk of temporary change in habitat structure – shorter vegetation may provide suitable habitat for golden plover. Reduction in the extent of tall heather for nesting merlin/short-eared owl and of prey (meadow pipit). Burning may promote drying out of the peatland surface,	Burning for grouse moor management, blanket bog restoration and wildfire risk	Yes – Burn plots may provide suitable nesting habitat for golden plover. At least 10% of heather dominant areas in the late mature-degenerate stage will be retained across the moor. Thick, old heather will not be burned. In the long-term the regeneration of vegetation and functioning blanket bog will provide increased opportunities for typical blanket bog plants to flourish and will provide diversification of habitat structure to support SPA bird populations through improved breeding and feeding opportunities and cover.	No

		reducing the abundance and availability of invertebrate prey for golden plover. Burning may encourage the development of dense *Calluna* stands that may increase the risk of wildfire and mortality or nest destruction if fires occur within bird breeding season.			
Herbicide to control invasive grasses	H7130 Blanket bog	Impact on blanket bog species	Use of herbicide	Yes – Non-selective herbicide will only be used in areas that are Molinia or mat grass dominated with none, or very few, blanket bog species present. Selective (graminoid specific) herbicide will be used where the sward contains ocassional to frequent blanket bog species and it has been agreed that control of the Molinia or mat grass is appropriate – see Section 4 of the Plan. There will be follow treatments applying Sphagnum and other blanket bog species as appropriate as set out in Section 4 of the Plan. The aim is to restore diverse, functioning blanket bog where Molinia or mat grass has	No

				become dominant due to past inappropriate management e.g overgrazing, burning.	
		Soil compaction	Use of inappropriate machinery	Yes - Only a low ground pressure ATV-mounted sprayer or knapsack sprayer will be used when weather and ground conditions are suitable.	No
	A098 Merlin A140 Golden plover A103 Short-eared owl	Disturbance to nesting birds	Application of herbicide	Yes – All herbicide application will be done outside the main bird breeding season.	No
Burning to remove dead grass litter	H7130 Blanket bog	Damage to peat structure and function Burning may promote dominance of Molinia or mat grass	Burning to remove dead grass outside the requirements of the Heather & Grass Burning Code	Yes – Burning will done under an out of season burning licence (Regulation 6 (1) of the Heather and Grass etc Burning (England) Regulations 2007) in September when the grass litter is dry and the peat wet. Burns will be 'cool' and will always be followed up by Sphagnum inoculation (and other blanket bog species where appropriate) as set out in Sections 4 and 5 of the Plan. The burns will be a one-off operation. The use of selective herbicide will reduce the vigour of Molinia or mat grass allowing the blanket bog/heath species to succeed resulting in a more diverse sward.	No

	A098 Merlin A140 Golden plover A103 Short-eared owl	Disturbance to nesting birds	Burning to remove dead grass outside the requirements of the Heather & Grass Burning Code	Yes – Burning will be done under licence, as above, outside the bird nesting season.	No
Shooting butts	H7130 Blanket bog	Damage to peat through construction of semi-sunken traditional butts on Axe Edge.	Digging out of the base of semi-sunken butts and cutting of turves to cover the top part of the butts. Placing of slightly raised butts on peat. Installation of drainage.	Yes – the minimum number of butts are to be re-located (see section 6). One butt will be left *in situ.* The existing locations will be restored. The amount of peat affected by the digging out of the butts and the installation of the drainage is kept to a minimum. The maximum amount of peat to be dug out is 9.72m^3 . The drainage is designed to maintain a net amount of water in the bog i.e. not allowing exit from the system via a watercourse. Three of the butts will not require drainage. These are the only butts to be constructed in this way. The other line of butts that lie within the designated site comprise wooden hurdles with no associated drainage.	Yes
Fencing for livestock exclusion and management	A098 Merlin A140 Golden plover A103 Short-eared owl	Disturbance to nesting birds.	Disturbance associated with installation of the fence in proximity to nesting birds.	Yes – some fencing may need to be finished in the bird nesting season. Machinery will not be used in the nesting season and working periods kept to a minimum in should any nests of SPA species be located within 400m of the fence.	No

Conclusion:

☐ The plan or project alone is likely to have a significant effect (or *may* have a significant effect) on the following qualifying features of the European Site(s); Blanket bog SAC, Breeding populations of Merlin, Golden Plover, Short-eared owl (SPA).

C2.2 Risk of Significant Effects in-combination with effects from other plans and projects

From the section above, if there are no likely significant effects 'alone' upon a qualifying feature, any elements of the project deemed to have an effect(s) but which is/are **not significant on their own** must now be considered for their potential to have an effect in-combination with other effects. Such effects do ***not*** include those deemed to be so insignificant as to be trivial or inconsequential.

The effects of this plan/project not considered to be significant alone have therefore been considered alongside any similar effects of other currently live plans and projects to check whether these can add up to a significant effect 'in-combination'.

The results of the assessment for each qualifying feature are as follows: In combination:

SAC and SPA features

Extensive grazing is part of the relevant HLS agreements and constitutes a separate project for the purpose of this assessment. These include measures to exclude livestock from restoration areas, and elsewhere the use of appropriate stocking rates to facilitate restoration/maintenance of blanket bog and dry heath habitats.

Restoration and re-wetting of the blanket bog, by encouraging a more diverse mosaic of vegetation akin to that of a natural blanket bog, may influence any future grazing regime, but it is not considered likely in the timescale of this plan. Therefore the current grazing regime is considered compatible with proposals subject to this HRA.

The in-combination effect of these projects is **not** likely to have a significant effect on the integrity of the site.

Conclusion:

☐ The plan or project, in combination with other plans and projects, is unlikely to have a significant effect on the following qualifying features of the European Site(s); Blanket bog SAC, Breeding populations of Merlin, Golden Plover, Short-

eared owl.

C3. Overall Screening Decision for the Plan/Project

On the basis of the details submitted, Natural England has considered the plan or project under Regulation 21(1) or 61(1)(a) of the Habitats Regulations and made an assessment of whether it will have a likely significant effect on a European site, either alone or in combination with other plans and projects.

In light of sections C1 and C2 of this assessment above, Natural England has concluded:

☐ As the plan or project is likely to have significant effects (or *may* have significant effects) on some or all of the Qualifying Features of the European Site(s) 'alone', further Habitats Regulations assessment of the project 'alone' is required **[*go to Part D*]**.

PART D:
Appropriate Assessment and Conclusions on Site Integrity

D1. Scope of Appropriate Assessment

In light of the screening decision above in section C3, this section contains the appropriate assessment of the implications of the plan or project in view of the conservation objectives for the European Site(s) at risk.

The Sites and the Qualifying Feature for which significant effects (whether 'alone' or 'in combination') are likely or cannot be ruled out and which are initially relevant to this appropriate assessment are;

- H7130 Blanket bogs* (*priority habitat type).

D.1.1 Contextual statement on the current status, influences, management and condition of the European Site and those Qualifying features affected by the plan or project

The Crag Estate comprises approximately 800ha of the South Pennine Moors SAC and Peak District Moors (South Pennines Phase 1) SPA. The main habitat represented is blanket bog and this is assessed as "unfavourable" by Common Standards Monitoring (JNCC, 2009[2] http://jncc.defra.gov.uk/page-2237). It is considered to be on a trajectory towards recovery due to past and existing works and management to improve condition. The main issues that need to be addressed are hydrological function, heather dominance and lack of Sphagnum mosses.

The Estate has blocked all the grips (works started in 2006) and the benefits to hydrological function and vegetation are evident. All grazing was removed over a large part of the Estate for approximately 7 years to allow regeneration of dwarf shrubs and other blanket bog species. Extensive summer grazing has now been reintroduced (2016). There has been rotational burning of heather for grouse management – this practice stopped in 2016 and there is no extant consent. The proposals in this plan only allow burning where it is shown to be necessary for restoration purposes, and is done in conjunction with additional interventions, such as Sphagnum inoculation, which are required to progress condition towards favourable, functioning blanket bog. Cutting has been used for several years as an alternative means of heather management and this is the preferred option where removal of a heather dominated canopy is needed to facilitate restoration. Burning for restoration purposes will only be used where it is not possible to cut (Fig.1 of the plan). The proposals are based on the currently available best evidence and knowledge around the most effective restoration management to address heather dominance and lack of Sphagnum. This assessment covers one-off burns, followed by Sphagnum inoculation, as part of restoration of the blanket bog feature, following a detailed specification set out in the agreement. It is anticipated that this will result in no adverse effect, and actually facilitate a beneficial effect on condition. The monitoring and review which is built into the plan will add to the evidence base and inform future decisions.

The plan includes the re-location of a line of old semi-sunken shooting butts which is needed for safety reasons as they are currently very poorly aligned with a minor road that crosses the Estate.

There are two HLS agreements that cover the European features. These agreements focus on the grazing management of the site, and any capital works required for restoration of the blanket bog. They do not have any provision for burning on blanket bog.

D2 Assessment of potential adverse effects considering the plan or project 'alone'

The results of this assessment are shown in Table D2.1

D2.1 Assessment of potentially adverse effects without additional mitigation measures

Project element and impact	Likely effect on Conservation Objectives attribute(s)	Extent or scale of effect	Likelihood of an adverse effect on the feature	Degree of uncertainty
Construction of semi-sunken and slightly raised shooting butts	Damage to peat, including hydrology, through construction of semi-sunken and slightly raised traditional butts on Axe Edge.	The footprint of the 8 butts is 25.92m^2. Three of the butts will not involve the removal of any peat. The maximum volume of peat involved in the construction of the other five butts is 9.72m^3. The area of peat that may be affected by hydrological impacts is likely to be small as measures to limit the impact are included.	The proposals may have an adverse impact on the peat resource and its functionality. The re-location of a line of butts, includes restoration of the old locations. In addition measures are being proposed to ameliorate the potential impacts of the new butts. These include the installation of an impermeable membrane at the cut face of the five semi-sunken butts to hold water in the blanket bog. Drainage will use a perforated pipe to allow seepage into the surrounding peat and any outfall will be directed into natural hollows/low lying	Low

			ground and not into grips, gulleys or other drainage channels to avoid any net loss of water from the system. The other three butts do not require any digging out of peat or drainage. The footprint of the new butts comprises approximately 26m^2, and the amount of excavated peat approsimately 10m^3.	
Restoration burning	Damage to peat structure and function – drying out of peat surface and decrease in water table depth Promotion of heather (or other fire tolerant species) dominance – fire tolerant species including heather, purple moor grass and cottongrass may be advantaged with loss of diversity of vegetation composition and structure. Also concerns that heather		As above, burning is shown to have damaging impacts on blanket bog[1]. However, the burning is considered appropriate (where cutting is not possible) to remove a heather dominated canopy to allow the introduction of key blanket bog species, particularly Sphagnum. Sphagnum inoculation will be done in <u>every</u> burn. All restoration burns will be mapped,	Low – on the basis of the best information reasonably available, consider that the one-off restoration burning in conjunction with Sphagnum inoculation, when done in accordance with the specification in the agreement (e.g 5.2), will not have an adverse effect (and this is the subject of the assessment). However, there is a higher risk of uncertainty regarding the

	dominated sward may increase the wildfire risk. Nutrient enrichment resulting from burning.		monitored and there is a review process built into the Section 7 agreement that allows for amendments where the targets and milestones are not being achieved by the current interventions. The agreement is time limited and there are no extant consents for burning in this case.	positive, beneficial effects of the intervention as this is currently unproven.

D2.2 Where necessary, assessment of potentially adverse effects with additional mitigation measures underpinned by legally enforceable conditions/restrictions

Not necessary. The management Agreement contains a series of principles, specifications and legal terms and conditions to avoid/minimise potentially adverse effects. Therefore no additional mitigation measures are applicable.

D3 Assessment of potentially adverse effects considering the project 'in combination' with other plans and projects [*complete only where applicable*]

D3.1 Assessment of potentially adverse effects without additional mitigation measures

Not necessary as no residual effects have been identified. The management Agreement contains a series of principles, specifications and legal terms and conditions to avoid/minimise potentially adverse effects.

D3.2 Where necessary, assessment of potentially adverse effects with additional mitigation measures underpinned by legally enforceable conditions/restrictions

Not necessary as no residual effects have been identified. The management Agreement contains a series of principles, specifications and legal terms and conditions to avoid/minimise potentially adverse effects. Therefore no additional mitigation measures are applicable

D4. Conclusions on site Integrity

Because the plan/project is not wholly directly connected with or necessary to the management of the European site and is likely to have a significant effect on that site (either alone or in combination with other plans or projects), Natural England carried out an Appropriate Assessment as required under Regulation 21 or 61 of the Habitats Regulations 2010 to ascertain whether or not it is possible to conclude that there would be no adverse effect on the integrity of a European Site(s).

Natural England has concluded that:

☐ It **can be ascertained** that the plan or project will not have an adverse effect on the integrity of the following site(s), either alone or in combination with other plans and projects; *a permission can be given without conditions*

South Pennine Moors SAC, Peak District Moors (South Pennine Moors Phase 1) SPA

PART E:
Permission decision with respect to European Sites

As the relevant competent authority, Natural England has carried out a HRA of the submitted plan or project as required by Regulation 21 or 61 of the Habitats Regulations 2010 and has decided that, with regard to European Sites and their qualifying features;

☐ **Consent/Permission/Assent/Authorisation may be given***

The reasons for this decision are as follows:

- **Construction of semi-sunken and slightly raised shooting butts.** While there may be adverse impacts associated with the construction of semi-sunken and slightly raised butts the mitigation measures proposed are considered acceptable for the following reasons:

    - The number of butts where excavation of peat and drainage is required has been kept to a minimum (5). Measures are proposed that limit the loss of water/impact on the hydrology e.g.. use of impermeable membrane at the cut face to prevent seepage/loss of water from the adjacent peat; use of perforated drainage pipe which is kept to a minimum length and outflows into natural hollows/low lying ground. The amount of peat that will be excavated is considered to be *de minimus* (maximum $10m^3$ in 800 ha of blanket peat with a depth that ranges from 40cm to at least 2m). The three slightly raised butts will not involve any excavation of peat, or drainage, but will impact the area of peat included in the footprint of the butt and possibly a limited adjacent area. This amounts to approximately $10m^2$ in 800 ha of blanket bog and is therefore considered within acceptable limits.
    - In addition, there will be restoration of the old line of butts, therefore there should be no net loss/negative impact of the proposals.
    - The shooting butts in their current location pose a Health & Safety risk for people using the Thatchmarsh Road. Their re-location is considered important to address this issue. This Health & Safety aspect of the proposal has not been used as part of the decision making process. Only the impact on the notified European features forms the basis for this assessment, but the Health & Safety implications provide some context for the plan.

- **Restoration burning.** On balance it is considered that one-off restoration burning in conjunction with Sphagnum inoculation, carried out in accordance with the agreement will not, on the basis of the best information and knowledge reasonably available, have an adverse effect on the notified features. This is substantiated by the following:

- The best available evidence and knowledge has been used to develop the proposals for the use of burning as a restoration intervention. Monitoring and review will contribute to the evidence base and inform future decisions.
- Burning is only permitted to remove a dense, heather dominated canopy where this is necessary to facilitate the inoculation of key blanket bog species that are currently lacking. Sphagnum will be inoculated into every burn using agreed methodologies as set out in the plan at 5.3. These methodologies are devised using the best knowledge available to achieve a high coverage of Sphagnum in 5 years.
- Burning will only be used in this way where it is not possible to cut the heather dominated canopy, as set out in Figure1 of the plan.
- Restoration burns will be monitored to ensure that progress is being made towards the milestones set out in section 8 of the plan.
- This is a Section 7 agreement (NERC Act) with formal reviews built in which allows for amendments to be made if the agreed interventions are not enabling progress towards the agreed outcomes, following the trajectories and milestones.

* Where it has been concluded that a permission may be given, the Habitats Regulations Assessment of the implications of this plan or project on European Sites has been completed. **Written permission should not be issued by Natural England until there has been a separate and additional consideration of the plan or project's likely impacts on those features of special interest for which the relevant SSSI(s) has been notified.**

References to Evidence

[1]DAVID GLAVES et al 2013. The effects of managed burning on upland peatland biodiversity, carbon and water (NEER004) Natural England publications

[2]JNCC 2009. Common Standards Monitoring for Upland Habitats (Version July 2009)

Appendices

Document Control

Assessment prepared and completed by	[redacted]	[redacted] *Peak District Team*
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Peer-reviewed by	[redacted]	[redacted]
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FOR HIGH-RISK CASES AND/OR REFUSED OR CONDITIONED SSSI CONSENTS ONLY [see User Notes]		
HRA checked and referred to Legal Team by: Sara Barrett	[redacted]	Principle Specialist
Date	*26 June 2017*	
Advice given by Protected Sites Team:	[redacted]	Protected Sites Team, Terrestrial Biodiversity
Date	*May 2017*	
Case referred to High Risk Casework Panel by	*Yes*	*Insert role / job title and Team*
Date	*8 May 2017*	
Consent/Assent/ Permission/ Authorisation issued by:	[redacted]	[redacted] East Midlands
Date	18 July 2017	