



Assessment of plans and projects under regulations 24 or 63 of the Habitats Regulations 2017 ('Habitats Regulations Assessment')

Casework Tracker/ Application reference 2017-28602-SCI-SCI

Case/Application title Proposed application for a licence under section 16(1)(a) of the Wildlife and Countryside Act (as amended) to take hen harriers for research purposes and as part of a trial brood management scheme forming part of the Joint Hen Harrier Action Plan (January 2016)

Assessment made by Natural England **Date:** 19 December 2017

European Site(s):

- Bowland Fells SPA;
- North Pennines SPA;
- North York Moors SPA;
- Peak District Moors (South Pennine Moors phase 1) SPA;
- South Pennine Moors phase 2 SPA;
- Holburn Lake and Moss SPA;
- North Pennines SAC;
- Moorhouse – Upper Teesdale SAC;
- Ingleborough Complex SAC;
- North York Moors SAC;
- Asby Complex SAC;
- South Pennine Moors SAC;
- Lake District High Fells SAC;
- Border Mires, Kielder-Butterburn SAC;
- Simonside Hills SAC;
- Harbottle Moors SAC;

Component SSSI(s):

Many



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Assessment Contents:

Summary (*where appropriate*)

- Part A – Introduction and information about the plan or project and initial assessment of credible risk to sites
- Part B – Information about the European Site(s) likely to be affected
- Part C – Screening of the plan or project
- Part D – Appropriate assessment and conclusions on site integrity (*where required*)
- Part E – Permission decision with respect to European Sites

This document takes account of:

- Information provided in the licence application including, as additional material, a Proposed HRA with Annexed 'Description of Brood Management Trial'; Disease Risk assessment'; 'Brood Management Release protocol'
- Response to Further Information Request received from applicant on 26th April 2017 titled: 'Document6 AJ clean copy April 26th 17'
- Information supplied as part of the updated project plan received on 15th Sept 2017.

Document Control

V4 – Updated in light of requests for further information

Appendices (*where appropriate*)



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Assessment Summary

[Optional, delete this page if not appropriate; adviser to insert text – see User Notes for an example]



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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 as competent authority and in accordance with the assessment and review provisions of the Conservation of Habitats and Species Regulations 2017 ('the Habitats Regulations').

The plan/project requires Natural England as a statutory regulator to make a decision as to whether to permit, assent, license or authorise an operation or operations contained within it (hereby referred to as 'the plan' or 'the project') to be carried out, caused or permitted to be carried out.

Where such a proposal might affect a European Site, **Regulation 63** of the Habitats Regulations requires an assessment to be made of such proposals by a competent authority.

In making this HRA as the competent authority in this case, 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 64 and 68 of the Habitats Regulations 2017 can be satisfied.

A2. Details of the plan or project

Location (including grid references):

The trial brood management scheme ('the BMS') to which this application relates would take place in the 'northern uplands of England above the Moorland Line, showing as *The Trial Area* in Map1 of the final project plan. This includes land in the protected sites listed at the head of this document which are considered to hold habitat potentially suitable for breeding hen harrier, in addition to a wider suite of sites which are considered not to hold suitable habitat. Because of the nature of the trial (see description at appendix 1) the applicants do not consider it possible to describe the exact location from which eggs will be collected or where fledged birds will be released back into the wild.

The main caveat relating to location is that the applicants have stated that the removal of hen harrier eggs or chicks from the wild will only take place on land within a landscape unit that includes land managed as driven grouse moor.



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The sites for subsequent release will be 'near' to the areas from which the eggs or chicks were collected and in the case of SPA birds will be in the same designated site.

Name of applicant: [REDACTED]

It is understood that the licence applicant is a member of a wider stakeholder group overseeing the proposed project. They are acting as licence applicants on behalf of that group as they are the party who would undertake the licensable actions associated with the BMS trial proposal. The wider project board includes representation from Defra, Natural England, Moorland Association, GWCT, ICBP, Hawk and Owl Trust, and Aberdeen University. Information on delegated responsibilities within the project structure has been provided.

Description of the plan or project and its constituent elements:

As one of a number of measures designated to promote the increase of the English hen harrier population, Action 6 of the [Joint Hen Harrier Action Plan](#) (Defra, 2016) recommends the development of a Hen Harrier Brood Management Scheme. The BMS would '*to remove harrier broods from driven grouse moors once breeding numbers had reached a density at which they would impact significantly on [red] grouse numbers*' (page 11). The aim of which would be to reduce the drivers behind illegal persecution which is considered to be a major constraint on hen harrier populations in the UK.

The licence application received by NE and subject to this HRA assessment refers to the licensable activity associated with a trial of a Brood Management Scheme (hereafter 'BMS') for Hen Harrier. Hen Harrier is a Schedule 1 (Wildlife and Countryside Act 1981 as amended), section 41 (Natural Environment and Rural Communities Act 2000) and Annex 1 (EU Birds Directive) species. It is also an interest feature of some Upland SPAs, including the Bowland Fells and the North Pennines.

The framework of the BMS trial has been communicated in the form of a project plan and additional supplementary information. To inform the development of a future BMS scheme, the proposal is that a trial would first be operated for a limited period of 5 years. The objective of this trial would be to test and assess whether hen harrier brood management, as an intervention, would be likely to (1) increase the numbers of hen harriers present in the uplands of England through ameliorating the drivers for illegal persecution whilst (2) also protecting the economic viability of grouse moors.

A start date for the trial has not been identified in the application, only that its duration is limited to 5 years. It is assumed by NE that the ambition is to commence the trial in the 2018 breeding season.

The BMS trial has been submitted to Natural England for licencing under section 16(1)(a) of the 1981 Wildlife and Countryside Act (as amended) for scientific, research or educational purposes. Where BMS trial activities also affect designated sites it will need to be licenced in accordance with Designated Site legislation in particular [The Conservation of Habitats and Species Regulations 2017](#) for SPAs and SACs and Wildlife and Countryside Act 1981 (as amended and inserted by section 75 and Schedule 9 of the Countryside and Rights of Way Act 2000) for SSSIs. This document acts a



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record of the assessment against SPA and SAC interests as required by the Habitats Regulations 2017.

In broad terms, the proposed BMS trial would, subject to landowner agreement, consist of;

- The collection and removal of hen harrier eggs and/or broods from nests in a landscape unit that includes land manage as grouse moor, if there are nests are located less than 10km apart (only one nest of such a pair to be subject to BMS), and the transfer of the eggs/chicks to a rearing facility;
- The hatching of eggs and/or (hand) rearing of chicks in captivity at a remote facility;
- The transfer of mature chicks to a release facility, consisting of a specially-constructed temporary pens erected within suitable hen harrier habitat, and subsequent release of fledged birds back to into the 'general area' from where the eggs or chicks were collected;
- The fitting of satellite tags to young hen harriers to measure subsequent movement and survival.

The location of release sites will be dependent on the location of nesting attempts subject to BMS trial management, as they will be located 'close' to areas from which broods have been collected. As a consequence the applicants are unable to identify definite locations for either brood collection or release. However, the applicants have identified some prospective release sites in for which they have secured permission, for captive reared birds to be returned to the wild. It is stated that more sites may be identified and agreed in due course as the trial progresses.

The applicants note that sites are chosen primarily for presence in the landscape unit of suitable habitat for hen harrier nesting and foraging but chosen sites also need to fulfil further logistical characteristics. They state that flexibility on release sites is required on an annual basis as it is not thought helpful to release chicks in close proximity to nests being left to fledge their own young. No detail is provided on how sites will be selected with reference to designated site interests including breeding birds other than hen harrier, sensitive habits and non-avian species. However they state that suitable prey surveys will be carried out to confirm suitability for meeting foraging requirements.

Potential release sites with agreement identified by the applicants:

Site	Owner/manager	Grid Ref/Post Code	Designated site
			Moor House and Teesdale SAC; North Pennines SPA
			Ingleborough Complex SAC
			Not designated



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North York Moors SAC; North York Moors SPA

The licence application identifies (at 7b) that permissions have been received from the applicant from 'all designated site owners'; however, only five owner/occupiers are specifically identified in the application (see above). It is unclear if all land owners on the SSSIs have given permission or just those identified. It is also unclear if the permissions relate to all aspects of the BMS trial or just certain activities eg. monitoring or brood removal. It is also identified that release sites will need to have sympathetic neighbours.

In addition to the trial proposal documentation which focuses on the mechanics and governance of the project, information has been provided that sets out the research framework of the social-science aspects of the trial and how this work will be conducted and managed. This will be managed by Dr Freya St. John, University of Kent, and Prof Steve Redpath, University of Aberdeen. Although aspects of the governance and execution of the ecological research have been referred to, no comparable study framework has been received relating to this aspect of the trial. Limited information has been supplied relating to ecologically comparable work involving the captive hatching, rearing and release of harriers, and the likely efficacy of the proposed approach as effective.

Key points relating to the proposal include:

- The intention of the application is to trial a 'Brood Management Scheme as identified in Defra's 2016 *Joint action plan to increase the English hen harrier population*'. The hypothesis being tested is that by lowering the degree of conflict that arises between harriers and grouse moor management during the chick provisioning period, breeding productivity will increase and non-breeding mortality will decrease as a consequence of a cessation in illegal persecution.
- The aim is not reduce the number of birds fledged but to avoid predation of grouse chicks during food provisioning part of the breeding cycle. It is aimed to maintain, and potentially increase fledging, by reducing levels of chick loss in BMS trial broods. The cumulative impact of this anticipated increase in productivity and decrease in mortality being that the English Hen harrier population will increase.
- The location of the proposed trial (the uplands of northern England where moorland is managed as grouse moor) includes land within a number of upland SPAs and upland SACs (and their constituent SSSI's).
- A disease risk assessment has been undertaken and a protocol put in place to guard against any disease risks associated with the translocation and housing of hen harrier eggs and chicks.

- The nature of the proposal – the physical movement of hen harrier eggs and/or chicks during the bird breeding season to a rearing facility away from their moorland habitat and the construction of temporary release pens - may inherently affect (either directly or indirectly) some of the qualifying features of SPA and SAC sites including, but not limited to, ones designated for hen harrier.

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.

An early assessment of risk against supplied information suggests that in relation to designated sites two activities associated with the project under assessment pose a credible risk to them:

- Hen harrier egg/chick collection, captive husbandry and subsequent chick release
- Construction and servicing of release aviaries within a designated site

This is because;

- The proposal may potentially affect individual hen harriers present on SPAs by introducing a risk of deterioration in their fitness and survival whilst in captivity or post release; modifying their behaviour; or affect their long term fecundity and site loyalty (‘philopatry’). This applies to both BMS trial chicks and the adults associated with managed broods.
- There are potentially indirect risks to other SPA features (including incidental disturbance arising from the collection of harrier eggs/chicks) and to SAC habitat features (from the construction of release pens on SAC habitat, and associated management including the movement of vehicles across habitats).
- Given site loyalty, in the event of the trial being successful, it would be logical to expect birds to return to breed in the vicinity of release-pen locations.
- Given the current low hen harrier population in England compared to neighbouring areas, recent poor population productivity, and the fact the England potentially acts as a population sink, the proposal is not considered likely to generate credible risks to SPAs in



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Wales or Scotland, nor to Ramsar sites in the Isle of Man that have Hen Harrier as an interest feature.

- There is some winter dispersal of birds from Scotland to England but most return to their natal area to breed (S. Murphy *pers com*; Watson 1977). There is considered to be little if any recruitment into the Scottish and or Welsh populations from England particularly given the very low English population.

Given the above, a number of upland SACs and SPAs (within the uplands of northern England where moorland is managed as grouse moor) have been identified as requiring further screening (see the list in section B1).

There are also a number of wetland, woodland and grassland SACs in the trial area including: River Eden; River Ehen; River Derwent & Bassenthwaite Lake; River Kent; Roman Walls Lough; Yewbarrow Woods; North Pennine Dales Meadows; Morecambe Bay Pavements; Helbeck and Swindale Woods; Wastwater SACs. These sites have been screened out or eliminated from further assessment as they do not support habitat that would support breeding hen harrier or interest feature species likely to be otherwise affected by the proposals as Natural England currently understands them. If in carrying out the trial work is necessary that may impact on these sites this HRA assessment will need to be revisited.

It should be noted that these sites are also Sites of Special Scientific Interest. Given their separate and varying interest features consideration is given to the features of these sites elsewhere, and not as part of this HRA document. No English SSSIs are notified in their own right for breeding hen harrier, although breeding hen harrier is a component 'scoring species' in some Upland Bird Assemblages which are notified SSSI features and consequently presence of hen harrier can contribute towards the assessment of SSSI condition. It is considered good practise to treat SPA features as if they were SSSI features in SSSI site assessment.

Conclusion

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 [*continue to Part B*]



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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;

- Bowland Fells SPA;
- North Pennine Moors SPA;
- North York Moors SPA;
- Peak District Moors (South Pennine Moors phase 1) SPA;
- South Pennine Moors phase 2 SPA;
- Holburn Lake and Moss SPA;
- North Pennine Moors SAC;
- Moorhouse – Upper Teesdale SAC;
- Ingleborough Complex SAC;
- North York Moors SAC;
- Asby Complex SAC
- South Pennine Moors SAC;
- Lake District High Fells SAC;
- Border Mires, Kielder-Butterburn SAC;
- Simonside Hills SAC;
- Harbottle Moors SAC;

The individual habitats, species and/or assemblage of species for which the sites have been designated or classified as SAC or SPA (the qualifying features) are outlined in Natural England's published advice on their Conservation Objectives and listed below (see section B2 below).



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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. According to the Habitats Regulations, a site's Conservation Objectives (including any Supplementary Advice which may be available) provides 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 site's 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 particular 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. These documents can be found online at:

Bowland Fells SPA Conservation Objectives and Citation at <http://publications.naturalengland.org.uk/publication/5922368258048000?category=4582026845880320>

North Pennine Moors SPA Conservation Objectives and Citation at <http://publications.naturalengland.org.uk/publication/6079716435951616?category=4582026845880320>

North Pennine Moors SAC Conservation Objectives and Citation at <http://publications.naturalengland.org.uk/publication/6361191412662272>

Moor House – Upper Teesdale SAC Conservation Objectives and Citation at <http://publications.naturalengland.org.uk/publication/5889740972752896>

North York Moors SPA Conservation Objectives and Citation at <http://publications.naturalengland.org.uk/publication/6207512114102272>



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Peak District Moors (South Pennine Moors phase 1) SPA Conservation Objectives and Citation at <http://publications.naturalengland.org.uk/publication/6145889668169728>

South Pennine Moors (Phase 2) SPA Conservation Objectives and Citation at <http://publications.naturalengland.org.uk/publication/4885083764817920>

Ingleborough Complex SAC Conservation Objectives and Citation at <http://publications.naturalengland.org.uk/publication/5091524186472448>

North York Moors SAC Conservation Objectives and Citation at <http://publications.naturalengland.org.uk/publication/6048216608931840>

Asby Complex SAC Conservation Objectives and Citation at <http://publications.naturalengland.org.uk/publication/4873120351518720>

South Pennine Moors SAC Conservation Objectives and Citation at <http://publications.naturalengland.org.uk/publication/4973604919836672>

Lake District High Fells SAC Conservation Objectives and Citation at <http://publications.naturalengland.org.uk/publication/6383727470968832>

Border Mires, Kielder-Butterburn SAC Conservation Objectives and Citation at <http://publications.naturalengland.org.uk/publication/6193461195702272>

Simonside Hills SAC Conservation Objectives and Citation at <http://publications.naturalengland.org.uk/publication/6170875439087616>

Harbottle Moors SAC Conservation Objectives and Citation at <http://publications.naturalengland.org.uk/publication/5708012316524544>

Production of Supplementary Advice to support the Conservation Objectives for these European Sites is part of an ongoing programme and currently only published for a few of these sites.

The SPAs that are the subject of this HRA include two that qualified under **Article 4.1** of the Directive (79/409/EEC) by supporting breeding populations of hen harrier - Bowland Fells SPA and North Pennine Moors SPA. In the absence of more detailed Supplementary Advice the breeding populations at classification, as recorded on the site citations, can be used to infer the population abundance objectives to maintain or restore site integrity. These populations are;

- At least 11 breeding pairs or 2.3% of the GB population within North Pennine Moors SPA
- At least 12 breeding pairs or 2.3 & of the GB population within Bowland Fells SPA.



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Designated site interest;

SPA sites which include breeding hen harrier as an interest feature:

North Pennine Moors SPA:

This site qualifies under Article 4.1 of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive:

During the breeding season;

- Hen Harrier *Circus cyaneus* 11 pairs representing 2.3% of GB population (data 1993 and 1994)
- Golden Plover *Pluvialis apricaria*, 1,400 pairs representing at least 6.2% of the breeding population in Great Britain
- Merlin *Falco columbarius*, 136 pairs representing at least 10.5% of the breeding population in Great Britain
- Peregrine *Falco peregrinus*, 15 pairs representing at least 1.3% of the breeding population in Great Britain

This site also qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species:

During the breeding season;

- Curlew *Numenius arquata*, 3,930 pairs representing at least 3.3% of the breeding European population (1992-94 survey)
- Dunlin *Calidris alpina schinzii*, 330 pairs representing at least 3.0% of the breeding Baltic/UK/Ireland population (Estimate based on 1992-94 counts)

Bowland Fells SPA:

This site qualifies under **Article 4.1** of the Directive (79/409/EEC) by supporting populations of European importance of the following species listed on Annex I of the Directive:

During the breeding season;

- Hen Harrier *Circus cyaneus* 12 breeding pairs representing 2.3% of GB population (data 1986-90)
- Merlin *Falco columbarius*, 20 pairs representing up to 1.5% of the breeding population in Great Britain (Three year mean, 1994-1996)

This site also qualifies under **Article 4.2** of the Directive (79/409/EEC) by supporting populations of European importance of the following migratory species:



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During the breeding season;

- Lesser Black-backed Gull *Larus fuscus*, 13,900 pairs representing up to 11.2% of the breeding Western Europe/Mediterranean/Western Africa population (Minimum 1998; 13,900-16,300 pairs)

SPAs which do not include Hen harrier as an interest feature:

North York Moors SPA

The site qualifies under article 4.1 of the Directive (79/409/EEC) as it is used regularly by 1% or more of the Great Britain population of two species listed in Annex I in any season:

- Merlin *Falco columbarius* 35 - 40 pairs representing 2.7 - 3.1 % of the breeding population in Great Britain
- Golden Plover *Pluvialis apricaria* 526 - 706 pairs representing 2.3- 3.1 % GB of the breeding population in Great Britain

Peak District Moors (South Pennine Moors phase 1) SPA

The site qualifies under article 4.1 of the Directive (79/409/EEC) as it is used regularly by 1% or more of the Great Britain population of a species listed in Annex I, in any season:

- Merlin *Falco columbarius* 30 - 36 pairs breeding representing 2.3 - 2.8% of the breeding population in Great Britain (1990/1998)
- Golden Plover *Pluvialis apricaria* 435 - 445 pairs breeding representing 1.9 - 2.0% of the breeding population in Great Britain (1990/1998)
- Short-eared Owl *Asio flammeus* 22 - 25 pairs – breeding representing 2.2 - 2.5% of the breeding population in Great Britain (1990/1998)

South Pennine Moors (Phase 2) SPA

The site qualifies under article 4.1 of the Directive (79/409/EEC) as it is used regularly by 1% or more of the Great Britain population of a species listed in Annex I, in any season:

- Merlin *Falco columbarius* 28 pairs breeding representing 4.3% of the breeding population in Great Britain
- Golden Plover *Pluvialis apricaria* 292 pairs breeding representing 1.2% of the breeding population in Great Britain

This site also qualifies under Article 4.2 of the Directive (79/409/EEC) by supporting in the breeding season:



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- A breeding assemblage representing breeding birds of moorland and moorland fringe habitats including golden plover, lapwing, dunlin, snipe, curlew, redshank, common sandpiper, short-eared owl, whinchat, wheatear, ring ouzel and twite.

SAC sites potentially affected by the proposal:

North Pennine Moors SAC

H4030 European Dry Heath
H5130 *Juniperus communis* formations on heaths or calcareous grasslands
H7130 Blanket Bogs
H7220 Petrifying springs with tufa formation
H8220 Siliceous rocky slopes with chasmophytic vegetation
H910A Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles

Moorhouse – Upper Teesdale SAC

H3140 Alpine and Boreal Heaths
H5130 *Juniperus communis* formations on heaths or calcareous grasslands
H6130 Calaminarian Grasslands of the *Violetalia calaminariae*
H6150 Siliceous alpine and boreal grasslands
H6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (*festuco-Brometalia*)
H6410 *Molinia* Meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*)
H6430 Hydrophilious tall herb fringe communities of plains and of the montane to alpine levels
H6520 Mountain Hay Meadows
H7130 Blanket Bogs
H7220 Petrifying springs with tufa formation (*Cratoneurion*)
H7230 Alkaline Fens
H7240 Alpine pioneer formations of the *Caricion bicoloris-atrofuscae*
H8110 Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*)
H8120 Calcareous and calcshist screes of the montane to alpine levels (*Thlaspietea rotundifolii*)
H8210 Calcareous rocky slopes with chasmophytic vegetation
H8220 Siliceous rocky slopes with chasmophytic vegetation
S1015 Round-mouthed whorl snail *Vertigo genesii*
S1528 Marsh Saxifrage *Saxifraga hirculus*

Ingleborough Complex SAC

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- H5130 *Juniperus communis* formations on heaths or calcareous grasslands; Juniper on heaths or calcareous grasslands
- H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*); Dry grasslands and scrublands on chalk or limestone
- H6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*); Purple moor-grass meadows
- H7130 Blanket bogs*
- H7220 Petrifying springs with tufa formation (*Cratoneurion*); Hard-water springs depositing lime*
- H7230 Alkaline fens; Calcium-rich springwater-fed fens
- H8210 Calcareous rocky slopes with chasmophytic vegetation; Plants in crevices in base-rich rocks
- H8240 Limestone pavements*
- H9180 *Tilio-Acerion* forests of slopes, screes and ravines; Mixed woodland on base-rich soils associated with rocky slopes*

North York Moors SAC

- H4010 Northern Atlantic wet heaths with *Erica tetralix*; Wet heathland with cross-leaved heath
- H4030 European dry heaths
- H7130 Blanket bogs*

Asby Complex SAC

- H3140 Hard oligo-mesotrophic waters with benthic vegetation of *Chara* spp.; Calcium-rich nutrient-poor lakes, lochs and pools
- H4030 European dry heaths
- H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (*Festuco-Brometalia*); Dry grasslands and scrublands on chalk or limestone
- H6410 *Molinia* meadows on calcareous, peaty or clayey-silt-laden soils (*Molinion caeruleae*); Purple moor-grass meadows
- H7210 Calcareous fens with *Cladium mariscus* and species of the *Caricion davallianae*; Calcium-rich fen dominated by great fen sedge (saw sedge)*
- H7220 Petrifying springs with tufa formation (*Cratoneurion*); Hard-water springs depositing lime*
- H7230 Alkaline fens; Calcium-rich springwater-fed fens
- H8240 Limestone pavements*
- S1013 *Vertigo geyeri*; Geyer’s whorl snail
- S1393 *Drepanocladus (Hamatocaulis) vernicosus*; Slender green feather-moss

South Pennine Moors SAC

- H 7130 Blanket bogs*
- H 4030 European dry heaths
- H4010 North Atlantic wet heaths with *Erica tetralix*; Wet heathland with cross-leaved heath
- H910A Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles. (Western acidic oak woodland)



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H7140 Transition mires and quaking bogs. (Very wet mires often identified by an unstable 'quaking' surface)

Lake District High Fells SAC

H3130 Oligotrophic to mesotrophic standing waters with vegetation of the *Littorelletea uniflorae* and/or of the *Isoëto-Nanojuncetea*; Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels

H4010 Northern Atlantic wet heaths with *Erica tetralix*; Wet heathland with cross-leaved heath

H4030 European dry heaths

H4060 Alpine and boreal heaths; Alpine and subalpine heaths

H5130 *Juniperus communis* formations on heaths or calcareous grasslands

H6150 Siliceous alpine and boreal grasslands; Montane acid grasslands

H6230 Species-rich *Nardus* grassland, on siliceous substrates in mountain areas (and submountain areas in continental Europe); Species-rich grassland with mat-grass in upland areas *

H6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels

H7130 Blanket bogs *

H7230 Alkaline fens; Calcium-rich springwater-fed fens

H8110 Siliceous scree of the montane to snow levels (*Androsacetalia alpinae* and *Galeopsietalia ladani*); Acidic scree

H8210 Calcareous rocky slopes with chasmophytic vegetation; Plants in crevices in base-rich rocks

H8220 Siliceous rocky slopes with chasmophytic vegetation; Plants in crevices on acid rocks

H91A0 Old sessile oak woods with *Ilex* and *Blechnum* in the British Isles; Western acidic oak woodland

S1393 *Drepanocladus (Hamatocaulis) vernicosus*; Slender green feather-moss

Border Mires, Kielder-Butterburn SAC

H7130 Blanket bogs

H7220 Petrifying springs with tufa formation (*Cratoneurion*). (Hard-water springs depositing lime)*

H4030 European dry heaths

H4010 Northern Atlantic wet heaths with *Erica tetralix*. (Wet heathland with cross-leaved heath)

H7140 Transition mires and quaking bogs. (Very wet mires often identified by an unstable 'quaking' surface)

Simonside Hills SAC

H4030 European dry heaths

H7130 Blanket bogs

Harbottle Moors SAC

H4030 European dry heaths

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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 either directly connected with or necessary to the (conservation) management (of the European Site’s qualifying features)?

Site	Feature	Connected with or necessary to the (conservation) management?
North Pennine Moors SPA	Hen Harrier	No*
	Golden Plover	No
	Merlin	No
	Peregrine	No
	Curlew	No
Bowland Fells SPA	Dunlin	No
	Hen Harrier	No*
	Peregrine	No
	Merlin	No
North York Moors SPA	Lesser Black-backed Gull	No
	Merlin	No
	Golden plover	No
Peak District Moors (South Pennines Phase 1) SPA	Merlin	No
	Golden plover	No
	Short-eared Owl	No
South Pennines (Phase 2) SPA	Merlin	No
	Golden plover	No
	Upland breeding bird assemblage	No
North Pennines SAC	4030 European Dry Heath	No
	5130 <i>Junipererus communis</i> formations on heaths or calcareous grasslands	No
	7130 Blanket Bogs	No
	7220 Petrifying springs with tufa formation	No



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Site	Feature	Connected with or necessary to the (conservation) management?
	8220 Siliceous rocky slopes with chasmophytic vegetation	No
	910A Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles	No
Moor House – Upper Teesdale SAC	3140 Alpine and Boreal Heaths	No
	5130 <i>Juniperus communis</i> formations on heaths or calcareous grasslands	No
	6130 Calaminarian Grasslands of the <i>Violetalia calaminariae</i>	No
	6150 Siliceous alpine and boreal grasslands	No
	6210 Semi-natural dry grasslands and scrubland facies on calcareous substrates (<i>festuco-Brometalia</i>)	No
	6410 <i>Molinia</i> Meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>)	No
	6430 Hydrophilious tall herb fringe communities of plains and of the montane to alpine levels	No
	6520 Mountain Hay Meadows	No
	7130 Blanket Bogs	No
	7220 Petrifying springs with tufa formation (<i>Cratoneurion</i>)	No
	7230 Alkaline Fens	No
	7240 Alpine pioneer formations of the <i>Caricion bicoloris-atrofuscae</i>	No
	8110 Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>)	No
	8120 Calcareous and calcshist screes of the montane to alpine levels (<i>Thlaspietalia rotundifolii</i>)	No
	8210 Calcareous rocky slopes with chasmophytic vegetation	No
	8220 Siliceous rocky slopes with chasmophytic vegetation	No
	1015 Round-mouthed whorl snail <i>Vertigo genesii</i>	No
	1528 Marsh Saxifrage <i>Saxifraga hirculus</i>	No
Ingleborough Complex SAC	5130 <i>Juniperus communis</i> formations on heaths or calcareous grasslands	No
	7230 Alkaline Fens	No
	8210 Calcareous rocky slopes with chasmophytic vegetation	No



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Site	Feature	Connected with or necessary to the (conservation) management?
	8240 Limestone Pavements	No
North York Moors SAC	H4010. Northern Atlantic wet heaths with <i>Erica tetralix</i> ; Wet heathland with cross-leaved heath	No
	H4030. European dry heaths	No
	H7130. Blanket bogs	No
Asby Complex SAC	H3140 Hard oligo-mesotrophic waters with benthic vegetation of <i>Chara</i> spp.; Calcium-rich nutrient-poor lakes, lochs and pools	No
	H4030 European dry heaths	No
	H6210 Semi-natural dry grasslands and scrubland facies: on calcareous substrates (<i>Festuco-Brometalia</i>); Dry grasslands and scrublands on chalk or limestone	No
	H6410 <i>Molinia</i> meadows on calcareous, peaty or clayey-silt-laden soils (<i>Molinion caeruleae</i>); Purple moor-grass meadows	No
	H7210 Calcareous fens with <i>Cladium mariscus</i> and species of the <i>Caricion davallianae</i> ; Calcium-rich fen dominated by great fen sedge (saw sedge)*	No
	H7220 Petrifying springs with tufa formation (<i>Cratoneurion</i>); Hard-water springs depositing lime*	No
	H7230 Alkaline fens; Calcium-rich springwater-fed fens	No
	H8240 Limestone pavements*	No
	S1013 <i>Vertigo geyeri</i> ; Geyer`s whorl snail	No
	S1393 <i>Drepanocladus (Hamatocaulis) vernicosus</i> ; Slender green feather-moss	No
South Pennine Moors SAC	7130 Blanket bogs*	No
	4030 European dry heaths	No
	H4010 North Atlantic wet heaths with <i>Erica tetralix</i> ; Wet heathland with cross-leaved heath	No
	910A Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles. (Western acidic oak woodland)	No
Lake District High Fells SAC	H3130 Oligotrophic to mesotrophic standing waters with vegetation of the <i>Littorelletea uniflorae</i> and/or of the <i>Isoëto-Nanojuncetea</i> ; Clear-water lakes or lochs with aquatic vegetation and poor to moderate nutrient levels	No
	H4010 Northern Atlantic wet heaths with <i>Erica tetralix</i> ; Wet heathland with cross-leaved heath	No
	H4030 European dry heaths	No
	H4060 Alpine and Boreal heaths; Alpine and subalpine	No



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Site	Feature	Connected with or necessary to the (conservation) management?
	heaths	
	H5130 <i>Juniperus communis</i> formations on heaths or calcareous grasslands	No
	H6150 Siliceous alpine and boreal grasslands; Montane acid grasslands	No
	H6230 Species-rich <i>Nardus</i> grassland, on siliceous substrates in mountain areas (and submountain areas in continental Europe); Species-rich grassland with mat-grass in upland areas *	No
	H6430 Hydrophilous tall herb fringe communities of plains and of the montane to alpine levels	No
	H7130 Blanket bogs *	No
	H7230 Alkaline fens; Calcium-rich springwater-fed fens	No
	H8110 Siliceous scree of the montane to snow levels (<i>Androsacetalia alpinae</i> and <i>Galeopsietalia ladani</i>); Acidic scree	No
	H8210 Calcareous rocky slopes with chasmophytic vegetation; Plants in crevices in base-rich rocks	No
	H8220 Siliceous rocky slopes with chasmophytic vegetation; Plants in crevices on acid rocks	No
	H91A0 Old sessile oak woods with <i>Ilex</i> and <i>Blechnum</i> in the British Isles; Western acidic oak woodland	No
	S1393 <i>Drepanocladus (Hamatocaulis) vernicosus</i> ; Slender green feather-moss	No
	Border Mires, Kielder-Butterburn SAC	H7130 Blanket bogs
H7220 Petrifying springs with tufa formation (<i>Cratoneurion</i>). (Hard-water springs depositing lime)*		No
H4030 European dry heaths		No
H4010 Northern Atlantic wet heaths with <i>Erica tetralix</i> . (Wet heathland with cross-leaved heath)		No
H7140 Transition mires and quaking bogs. (Very wet mires often identified by an unstable ‘quaking’ surface)		No
Simonside Hills SAC	H4030 European dry heaths	No
	H7130 Blanket bogs	No
Harbottle Moors SAC	H4030 European dry heaths	No

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* It is considered that as an identified component of the Defra Hen Harrier Action Plan, the trial proposal can be accepted to be connected to conservation management of Hen Harrier at a species level. However, it is not concluded that the proposal is directly connected with or necessary for conservation management of hen harrier at the individual site-level because:

- the action plan framework and SPA requirements differ, for example proposed BMS densities and designated site objective populations do not align;
- the brood management proposal is simply a trial to test and ascertain efficacy rather than a demonstrated and agreed approach;
- a stated aim is to study changes in social attitudes by those involved in upland land management to the presence of Hen Harriers on grouse moors with a brood management scheme in place.
- efficacy in delivering conservation outcomes may be dependant on the technical detail of the proposals;
- The application has been made under scientific rather than conservation licencing provision

Therefore it is concluded that the proposals cannot be considered exempt from further assessment due to them being necessary or directly related to the site's conservation management.

Conclusion:

Conclusion:

~~As the plan or project is directly connected with or necessary to the management of all of the European site(s)'s qualifying features, it is considered to be exempt from further Habitats Regulations assessment [go to C3]~~

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 [continue to C2]

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.

In accordance with case law, this HRA has considered an effect to be 'likely' if it '*cannot be excluded on the basis of objective information*' and to be 'significant' if it '*undermines the conservation objectives*'. In accordance with recent 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. that



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there is a risk or a possibility of such an effect) which could undermine the achievement of the site's conservation objectives.

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 screening assessment for each site in light of the qualifying features within the scope of this HRA are as follows:



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SPAs classified for Hen Harrier (Breeding)

European Sites: Bowland Fells; North Pennine Moors SPAs Qualifying feature: Hen Harrier (Breeding)					
SPA Conservation Objective attribute(s)	Project element	Risk and the mechanism/pathway	Does the project already include reliable measures which would avoid/mitigate the potential effects? (Y/N) If Yes provide details	Likely Significant Effect alone (LSE)? (Yes/No/Uncertain)	Comment
Population abundance;	collection and removal of hen harrier eggs/chicks from nests within the SPA	Disturbance to adult birds at the nest during collection caused by associated people/vehicles	Yes – time at nest will be limited to time take to remove eggs, “candle” them to check health and carefully place in mobile incubator. Staff visiting the nest will be experienced in working with raptors and their numbers will be kept to a minimum.	No	No, on the assumption that time spent at the nest would be comparable to that associated with the routine nest monitoring that already takes place (under licence). While this activity is disturbing in its own right, for nests where BMS trial management is initiated, its impacts are likely to be less severe than from the consequent removal of eggs (see below).
		Risk that loss of nest reduces adults birds likelihood to breed in SPA in future years	No	Yes	From an ecological perspective the proposal will increase the rate of individual nest failure. In terms of adult behaviour this can be expected to increase the number of adult birds exhibiting behavioural responses associated with nest predation/failure.



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European Sites: Bowland Fells; North Pennine Moors SPAs Qualifying feature: Hen Harrier (Breeding)					
SPA Conservation Objective attribute(s)	Project element	Risk and the mechanism/pathway	Does the project already include reliable measures which would avoid/mitigate the potential effects? (Y/N) If Yes provide details	Likely Significant Effect alone (LSE)? (Yes/No/Uncertain)	Comment
					<p>It is not clear if ‘failed’ pairs will return to the designated site in future years or relocate elsewhere.</p> <p>In some site-loyal species, eg peregrine falcon (Craig et al 1988), clutch removal has been used as a technique to encourage pairs to relocate to alternative nesting areas. This suggest that adult relocation may be a consequence of BMS trial activity.</p> <p>If likely response not established, this may require marking of adult birds to clarify impact.</p> <p>In species recovery programmes involving nest harvesting it has been considered important to not remove eggs from the nests of ‘first time’ breeders to allow them to learn for future nesting attempts (eg. Walton and Thelander (1988) and Jones <i>et al</i> (1991) cited in Sutherland <i>et al</i> (2004))</p>



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European Sites: Bowland Fells; North Pennine Moors SPAs Qualifying feature: Hen Harrier (Breeding)					
SPA Conservation Objective attribute(s)	Project element	Risk and the mechanism/pathway	Does the project already include reliable measures which would avoid/mitigate the potential effects? (Y/N) If Yes provide details	Likely Significant Effect alone (LSE)? (Yes/No/Uncertain)	Comment
					<p>Mitigation such as partial, chick-stage, brood removal to increase likelihood of adult harriers remaining loyal to the nest site avoid site desertion might be appropriate conservation interventions but is precluded by trial approach.</p> <p>Applicants have confirmed that the proposal is to remove whole broods at the late egg stage. At this stage relaying probability is reduced. Egg removal at an earlier stage may result in lower captive hatching success, but population level impacts be off-set by potential for re-laying.</p> <p>The trial does not have an endpoint target relating to hen harrier population or site populations.</p>
		Loss or damage to eggs during handling and transfer from	Yes - Egg removal will be carried out by experienced staff from the IBPC following very strict protocol set out in the	No	Project plan includes an exit strategy through which steering group will assess any HH mortality and adapt project to reduce subsequent risks.



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European Sites: Bowland Fells; North Pennine Moors SPAs Qualifying feature: Hen Harrier (Breeding)					
SPA Conservation Objective attribute(s)	Project element	Risk and the mechanism/pathway	Does the project already include reliable measures which would avoid/mitigate the potential effects? (Y/N) If Yes provide details	Likely Significant Effect alone (LSE)? (Yes/No/Uncertain)	Comment
		natal moor to rearing facility	Disease risk assessment		
		Disruption of annual population growth in already low population as a consequence of reduced recruitment of young birds to the SPA population.	Yes - Reintroduction of fledged birds back into or adjacent to natal SPA/moorland area.	Yes	<p>Note Bowland identified a possible source site but not an identified release site. To avoid reducing site-based productivity young BMS birds would need to be returned to their natal SPA in accordance with project proposals.</p> <p>Applicants consider it likely that the growth and survival rates of fledglings will be, on average, greater than wild birds.</p> <p>Given applicant's knowledge of raptor rearing in captivity, and assuming disease protocols are sufficient, it is reasonable to assume that the number of birds reared to fledged will, on average, be greater than the number that would have fledged naturally due to removal of risks such as predation and poor food provision.</p>



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European Sites: Bowland Fells; North Pennine Moors SPAs Qualifying feature: Hen Harrier (Breeding)					
SPA Conservation Objective attribute(s)	Project element	Risk and the mechanism/pathway	Does the project already include reliable measures which would avoid/mitigate the potential effects? (Y/N) If Yes provide details	Likely Significant Effect alone (LSE)? (Yes/No/Uncertain)	Comment
					<p>Some papers suggest that the species exhibits low natal philopatry, potential reducing the risk from movement off the SPA before release, but it is unclear if these studies reflect favourable (where all territories may be claimed) or unfavourable (as is the current situation in English HH SPAs) populations and whether this affects expectations.</p> <p>Intervention nest densities are below those to be expected for sites to meet designation population threshold for Bowland (0.075 pr/km²). The North Pennine Moors SPA includes extensive areas of the SPA that do not support nesting habitat. At classification most nests were on the Geltsdale & Glunedale Fells SSSI where densities would have exceeded those for Bowland SPA.</p>



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European Sites: Bowland Fells; North Pennine Moors SPAs Qualifying feature: Hen Harrier (Breeding)					
SPA Conservation Objective attribute(s)	Project element	Risk and the mechanism/pathway	Does the project already include reliable measures which would avoid/mitigate the potential effects? (Y/N) If Yes provide details	Likely Significant Effect alone (LSE)? (Yes/No/Uncertain)	Comment
	Rearing of eggs/chicks in captivity until fledging	Loss or deterioration in physical fitness of eggs/chicks whilst in captivity	Yes – Taking eggs at a late stage of natural incubation is recognised as reducing risk of egg failure to hatch.	No	Applicants are recognised as being specialists in the field of captive-rearing of birds of prey.
		Loss or deterioration in physical fitness of eggs/chicks through disease	Yes - Strict Disease Risk Management practices are to be followed	No	The proposed Protocols do not appear to be as stringent as in other programmes or NE licences and ZSL review suggests that not of best practice or to the standard associated with other programmes NE is involved with. However, disease risks have been identified and sufficient management measures specified. Applicants are recognised as being specialists in the field of captive rearing of birds of prey.
		Risk of imprinting on humans as a consequence of	Yes – Rearing protocol to be followed to maximise likelihood of appropriate natural	No	Approach described in additional information response (Appendix 6) appears appropriate and sets out approach to be followed.



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European Sites: Bowland Fells; North Pennine Moors SPAs Qualifying feature: Hen Harrier (Breeding)					
SPA Conservation Objective attribute(s)	Project element	Risk and the mechanism/pathway	Does the project already include reliable measures which would avoid/mitigate the potential effects? (Y/N) If Yes provide details	Likely Significant Effect alone (LSE)? (Yes/No/Uncertain)	Comment
		captive rearing	behaviour.		
	Release of fledglings raised in captivity back into SPA	Poor survival of released fledglings in post-release period	Yes - The Release Protocol and Disease Risk Management documents identify measures to ensure low disease risk and manage risks of targeting of birds for illegal persecution.	No	<p>Disease risk up to fledging covered by husbandry protocols, while post-release monitoring has the potential to detect if birds are immunologically naïve.</p> <p>Release-site security will need to be established and maintained until chicks have dispersed, but the need to engage and secure support from neighbouring landowners has been identified.</p> <p>No detail provided in initial application on post release monitoring programme, or on control group birds. It will be necessary to monitor BMS birds through to first breeding at least to ascertain fitness and oversight of programme will need to ensure lack of post-release impacts on birds.</p> <p>All birds subject to BMS trial rearing will be fitted with</p>



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European Sites: Bowland Fells; North Pennine Moors SPAs Qualifying feature: Hen Harrier (Breeding)					
SPA Conservation Objective attribute(s)	Project element	Risk and the mechanism/pathway	Does the project already include reliable measures which would avoid/mitigate the potential effects? (Y/N) If Yes provide details	Likely Significant Effect alone (LSE)? (Yes/No/Uncertain)	Comment
					<p>satellite tags which would allow post-fledging monitoring of behaviour. This will allow both comparison of trial birds with non-trial birds and real-time monitoring of individuals to allow variations from normal behaviour to be investigated and learnt from.</p> <p>Project has exit strategy to review post BM mortality and Halt trial if poor survival of released fledglings is detected.</p>
		Loss of supporting habitat through construction of temporary release pens on site	Yes - Release pens will be temporary structures to be dismantled at the end of the trial period and there is discretion on exactly where they are placed so that they can be positioned to avoid sensitive habitats.	Uncertain	<p>Impact on foraging habitat likely to be negligible, but associated infrastructure and site management disturbance also need to be considered.</p> <p>Footprint of any release facility likely to be small in relation to extent of habitat, but both facility and associated activity may act as a source of disturbance for non-BMS trial birds, preventing access to habitat.</p>



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European Sites: Bowland Fells; North Pennine Moors SPAs Qualifying feature: Hen Harrier (Breeding)					
SPA Conservation Objective attribute(s)	Project element	Risk and the mechanism/pathway	Does the project already include reliable measures which would avoid/mitigate the potential effects? (Y/N) If Yes provide details	Likely Significant Effect alone (LSE)? (Yes/No/Uncertain)	Comment
		Introduction of disease from captive bred birds into wild population	Yes - Detailed in Disease Risk Management document	No	Zoological Society of London review of early draft DRA suggests that DRA protocols do not appear to be as stringent as in other programmes that NE licences. Although not of best practise format associated with other projects, the DRA does assess disease risks and propose suitable control mechanisms, which should be sufficient.
		Disturbance to adult birds during release	No	No	There is discretion on exact location of release pens so they can be positioned away from other nesting Harriers. Hen Harriers are semi colonial nesters and the arrival of other fledglings would not be unusual in a natural population.
		Harm to young birds from satellite tagging	Yes - The tagging process is well tested and has been used on many birds.	Uncertain	Unclear from application if necessary BTO approval has been given for tagging in association with trial. If tagging requirements have been met then it can be assumed that there will be no LSE from the tagging process as all individuals licenced to attach devices will have had to be approved for fitting the harnesses. Note individual licence holders are not identified in application.



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European Sites: Bowland Fells; North Pennine Moors SPAs Qualifying feature: Hen Harrier (Breeding)					
SPA Conservation Objective attribute(s)	Project element	Risk and the mechanism/pathway	Does the project already include reliable measures which would avoid/mitigate the potential effects? (Y/N) If Yes provide details	Likely Significant Effect alone (LSE)? (Yes/No/Uncertain)	Comment
		Disruption of annual site population growth though poor fitness and low survival of reintroduced birds	No	Uncertain	<p>Although potential recruitment to site population may be increased it is unclear if recruitment back to natal site will be affected.</p> <p>Although improved productivity and survival to fledging is predicted with a positive effect on population abundance, securing population maintenance/recovery is also dependant on maintenance of post-fledging survival rates, subsequent return to SPA sites and successful breeding of in the SPA.</p> <p>Level of risks, such as immunological naivety arising as a consequence of rearing in sterile facilities, and potential impact on likely survival rates are unclear.</p> <p>Security of release site, and nearby areas into which young birds are likely to disperse on release may be an issue given species persecution. Application does identify need to have</p>



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European Sites: Bowland Fells; North Pennine Moors SPAs Qualifying feature: Hen Harrier (Breeding)					
SPA Conservation Objective attribute(s)	Project element	Risk and the mechanism/pathway	Does the project already include reliable measures which would avoid/mitigate the potential effects? (Y/N) If Yes provide details	Likely Significant Effect alone (LSE)? (Yes/No/Uncertain)	Comment
					<p>support of both release site and neighbouring landowners.</p> <p>References on harrier fitness post-captivity eg. Amar et al (2000) refer to birds taken as developed chicks from the wild not eggs.</p> <p>It is not clear from the application how post-fledging survival and subsequent recruitment into the breeding population may be affected by the rearing process.</p>
		Altered distribution of hen harrier within the SPAs.	No	Yes	<p>Although the aim is stated of releasing fledgling harriers close to their brood site, distances involved are not specified and sites identified for release are either not the SPA (Bowland) or a part of the SPA (North Pennines) from which BMS trial broods are likely to have been sourced.</p> <p>Given species philopatry young birds can be expected to return to release aviary locations to breed. This may also</p>



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European Sites: Bowland Fells; North Pennine Moors SPAs Qualifying feature: Hen Harrier (Breeding)					
SPA Conservation Objective attribute(s)	Project element	Risk and the mechanism/pathway	Does the project already include reliable measures which would avoid/mitigate the potential effects? (Y/N) If Yes provide details	Likely Significant Effect alone (LSE)? (Yes/No/Uncertain)	Comment
					attract other individuals to the area. As a result release site may determine future distribution of hen harriers in site.
	Trial intervention densities	Failure to attain target populations due to trial parameters	No	Yes	<p>Hen Harrier nesting density for the Geltsdale and Glunedale fells part of North Pennines SPA (where all nesting pairs were located at classification (R. Saunders <i>pers com</i>)) was 0.13 nest/km² (11pr in 7,967ha) and in Bowland 0.07 nest/km² (12pr in 16,002ha), compared to the BMS intervention threshold of 0.0125nests/km².</p> <p>Adherence to trial protocols may limit (suppress?) the number of nests that can progress naturally from nest establishment to fledging to well below target levels.</p>



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SPAs classified for other qualifying features:

European Sites: Bowland Fells, North Pennine Moors, South Pennine Moors (Phase 2), Peak District (South Pennine Moors Phase1), North York Moors SPAs					
Qualifying feature: Breeding Merlin (all sites); Peregrine (North Pennines, Bowland); Golden plover (North Pennines, South Pennines, Peak District, North York Moors); Dunlin (North Pennines, Peak District); Curlew (North Pennines); Lesser Black-backed Gull (Bowland); upland breeding bird assemblage (Peak District)					
SPA Conservation Objective attribute(s)	Project element	Risk and the mechanism/pathway	Does the project include reliable measures which would avoid/mitigate the potential effects? (Y/N) If Yes provide details	Likely Significant Effect alone (LSE)? (Yes/No/Uncertain)	Comment
Population abundance / diversity	Collection and removal of hen harrier eggs/chicks from the SPA	Disturbance to other breeding birds during collection of chicks caused by associated people/vehicles	Yes - Time at nest/ on moorland will be limited kept to a minimum and numbers of staff will be limited to those necessary to the undertake the task	No	Likely to be <i>de minimis</i> but no clarity on how proposals will vary from background site use. But only merlin and curlew likely to be at risk as other species are associated with different habitat types to nesting hen harrier.
	Release of fledglings back into SPA	Disturbance to breeding birds caused by release pens and associated	Yes - There is discretion on exact location of release pens so they can be positioned away from other nesting Bird features	Uncertain	Likely to be <i>de minimis</i> but no clarity on how proposals will vary from background site use or that infrastructure will be sited to avoid sensitive features. Only merlin and curlew likely to be at risk as other species are associated with different habitat types to



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	Release of fledglings back into SPA	activity Disturbance to breeding birds from harriers being released back into SPA	Yes timing of release will be post wader breeding season. Hen Harriers are part of natural moorland bird community	No	nesting hen harrier.
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SACs

<p>European Site: North Pennine Moors, Moor House – Upper Teesdale, Ingleborough Complex, North York Moors, Asby Complex, South Pennine Moors, Lake District High Fells, Border Mires, Kielder-Butterburn, Simonside Hills, Harbottle Moors SAC’s</p> <p>Qualifying features: All habitat and non-avian species</p>					
SAC Conservation Objective attribute(s)	Project element	Risk and the mechanism/pathway	Does the project already include reliable measures which would mitigate the potential effects? (Y/N) If Yes provide details	Likely Significant Effect alone (LSE)? (Yes/No/Uncertain)	Comment
All attributes	Collection and removal of hen harrier eggs/chicks from the SAC	Damage to soft habitat by trampling / vehicles	Yes - Visit to nests will be carried out either via existing tracks or on foot. If this is not practicable only low ground pressure vehicles will be used.	No	
	Release of hen harriers back into SAC	Loss of habitat through construction of	Yes – Release pens will be temporary structures to be dismantled at the end of the trial	Uncertain	Likely to be <i>de minimis</i> but not possible to confirm without location identified or confirmation that site survey will occur and sites agreed with NE.



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		<p>release pens and accessing pens whilst in use</p>	<p>period and there is discretion on exactly where they are placed so that they can be positioned to avoid sensitive habitats.</p>	<p>It is however reasonable to exclude the SAC habitats features as being at no risk (freshwater habitat, alpine habitats, woodland forest habitat).</p> <p>It is not clear if release pens have to be sites on particular habitat types (eg. deep heather) or simple located in an upland landscape, or the extent of associated infrastructure.</p> <p>Defra action plan (p12) suggests release pens should be on heather which could limit concerns to Dry Heath (North Pennines) and Blanket Bog (North Pennines and Moor House-Upper Teesdale). Note that Ingleborough Complex not notified for heather habitats - are any on site and does this affect site suitability?</p> <p>Regardless access to site and other infrastructure need to be accounted for. Would pens move from year to year or be at one site per upland block for the duration of the project?</p>
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Conclusion:

X 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); Hen Harrier. Uncertainty exists regarding breeding curlew and merlin and grassland, bogs, mires and fen habitat features

~~☐ The plan or project alone is unlikely to have a significant effect on the following qualifying features of the European Site(s); Hen Harrier, European Dry Heath, Blanket Bog~~

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’.

At this stage, it is considered that the assessment of the risks ‘alone’ as identified above is sufficient to trigger an appropriate assessment of this application. At this stage no further consideration of in-combination effects is therefore considered necessary.

We have been unable to identify any plans or projects that might have any negative in combination effects.

- Birds visiting the project areas may include non-breeding birds from the Hen Harrier recovery project at Langholm in Scotland, but these should not be affected by the proposals and may benefit if the postulated reduction in illegal persecution in the trial area occurs.
- The applicants state that the proposals have been discussed with the Golden Eagle project in Southern Scotland and have concluded that there is no mechanism by which an in combination effect could arise.

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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 63(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 directly connected with or necessary to the management of all the qualifying features of the European Site(s), no further Habitats Regulations assessment is required [~~delete Part D and go to Part E~~]~~

OR

~~As the plan or project is unlikely to have significant effects (either alone or in combination with other plans or projects) on any Qualifying Features of the European Site(s), no further Habitats Regulations assessment is required [~~delete Part D and go to Part E~~]~~

X 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) either alone or in-combination, further Habitats Regulations assessment of the project is required [*go to Part D*].



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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:

- **Breeding hen harrier at North Pennine Moors and Bowland Fells SPAs**
- **Breeding curlew and merlin on other SPAs**
- **Grassland, bogs, mires and fen features on all SACs**

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 Assessment of likely significant effect has identified a number of areas where, based on an initial screening of the proposal, as submitted, it is not possible to discount likely impacts on designated features of the SAC and SPA sites identified in the application. These are discussed below.

Hen Harrier:

Hen Harriers are a breeding interest feature of two SPAs identified in the application – Bowland Fells and North Pennine Moors. Both are large upland sites and both have a history of regular breeding of hen harrier.

At the time of their classification the sites supported 2.3% of GB population or 11 pairs (North Pennines) and 2.3% of GB population or 12 pairs (Bowland). In addition the citation for Bowland Fells SPA identifies that at classification additional hen harrier pairs bred on areas close to the SPA boundary and used the SPA for foraging. As hen harriers can exhibit varying nesting systems including both polyandry and polygyny, in addition to conventional pairing, it is assumed that the term 'pairs' actually refers to nests.

Current populations are much reduced in comparison to these figures at designation with only 7 nesting attempts in England in 2017 and none in either the Bowland Fells or the North Pennines SPAs (RSPB press release 2017).



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In Natural England's opinion, both SPAs are not currently meeting their Conservation Objectives with regard to this qualifying feature. Using the indicator of population-abundance, the hen harrier feature can be described as being in an unfavourable condition on both SPAs. This condition status is not currently improving or recovering as a result of conservation management measures; only 4 pairs were recorded attempting to breed in England in 2016 (RSPB 2016). The conservation objective is therefore to restore the abundance of the breeding hen harrier population at both SPAs to a minimum of 11-12 nesting pairs or 2.3% of the GB population.

It is considered that the habitat necessary to support breeding hen harriers is present on the SPAs and is in suitable condition for the species providing both nesting habitat (deep heather stands) and a food supply (in the form of small mammals and birds). Issues driving the low population in England, including the SPAs, are considered to be poor breeding productivity, linked to anthropogenic disturbance and illegal persecution, and high levels of mortality in the non-breeding season as a consequence of the impact of illegal persecution on top of mortality from natural causes (see Natural England (2008, 2014 and Fielding *et al.* (2011) for more details).

The BMS trial, as proposed, would be initiated according to a threshold density where the hen harrier population is predicted to start having a negative impact on the economics of grouse moor management. The trial as proposed is explicitly predicated on thresholds that are determined on socio economic grounds linked to grouse shooting business interests, with intervention thresholds being designed to keep impacts on red grouse populations at about 3%, based on the modelling of Elton *et al* (2015). This threshold density is not determined with reference to designated site population expectations and so although the BMS approach could in principle be used as a conservation tool (by maximising population recruitment by theoretically lowering egg and chick mortality to zero and promoting relaying of clutches in keeping with approach taken with other species), in the context of this trial it is not.

Elton *et al.* (2014) identify on the basis of modelling that: '*At harrier [nest] densities of or below 0.025 km^{-1.2}, harrier impacts were predicted to reduce autumn grouse densities by <10%, suggesting that a quota scheme could theoretically support coexistence between grouse shooting and harrier conservation.*' It should be noted that the Elton work was modelled based on a red grouse population recovering from a population minima of 10 pairs per km². A hen harrier nest density of 0.025 nests per km² equates to one nest per 40km² or a distance between nests of about 6.325km (square measure) or 7.13km (circular measure). In this trial it proposed to set an intervention threshold of 10km between nests, a density of one nest per 100km² (0.01nest/km², square measure) or 78.54km² (0.013nest/km², circular measure), this figure is guided by the 0.0125nests per km² modelled in Elton *et al* (2014). In the Elton paper at this nest density reduction in red grouse populations is anticipated to be around 3%.

This is a much lower nesting density than would be considered as likely to meet minimum SPA requirements.

- Based on classification populations of 12pr on 16,002ha (160km²) this is a density of 0.07nests/km² in Bowland.



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- The situation in the North Pennines is more complex as it is a large site not all of which is suitable for hen harrier. At classification birds were largely restricted to Geltsdale and Glunedale Fells SSSI. As such density was in the order of 0.13 nests/km² (11pr in 7,967ha (79.6km²)).

For the proposed trial BMS approach to be valid as a species management approach it would potentially have to allow a BMS approach being applied to all SPA nests surplus to the trial threshold. These thresholds are:

Site	@ 0.025nests per km ²	@ 0.0125nest per km ²
Bowland	4 nests	2 nests
Geltsdale and Glunedale	2 nests	1 nest

With reference to designated sites, the ambition of the trial is not to deliver a project that would return harriers to SPA classification levels on the sites designated for breeding hen harrier (and achieve the SPA conservation Objectives) – only to test whether it could raise it from effectively extinct to an unfavourable but recovering trajectory whilst allowing continuity of grouse moor management. The key question is whether this 5 year temporary trial is likely to hinder, delay or undermine the long-term achievement of SPA objectives / favourable condition

It can be argued that the SPA classification is based on breeding 'pairs' or nesting attempts. This would correspond to a within year pre BMS trial intervention population. As such BMS thresholds would be considered independent of classification thresholds. The classification unit is nests, not nests that go on to be productive.

However, to accept this we would be agreeing to the proposal that it is acceptable in an SPA to subject a significant proportion of the interest feature species to a clearly unnatural process, which would hopefully increase productivity, but to a socio-economic framework. The BMS approach, which involves taking birds into captivity for rearing on and release, is further along the continuum from 'natural process' to 'active management' than is currently practised in hen harrier conservation, where the most active licenced intervention is supplementary feeding at nest sites, which has been enacted either to maximise fledging success by provisioning surplus food to that which parent birds can provision through hunting, or can be designed to offset socio-economic issues such as grouse-chick predation. Given that average clutch size in hen harriers is 4.63 eggs per nest, to satisfy both SPA and trial requirements the applicants are in theory seeking to subject to BMS up to 92 chicks per annum (based on difference between classification numbers and trial thresholds of 10 nests per SPA), before the two hen harrier SPAs could be considered to be meeting classification population thresholds.

Given that a (a) significant proportion of the land mapped as the trial area, including areas in the SPAs, would not meet trial criteria – non-grouse moor; not managed by landowners who are signed up to the trial etc and (b) under certain conditions harriers can nest in relatively high densities (including polygamous systems where the number of nests in an area can be greater than the number of 'pairs') it is possible that SPA classification thresholds can be met from upland areas

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within the SPAs but outside the trial area. For example classification threshold for Langholm-Newcastleton Fells SPA suggest that breeding densities can reach 0.1725nests per km² (13 nests on 75.39km²) which could theoretically permit the ability to secure classification totals from only 69 km² in Bowland or 64km² in the North Pennines. However, as well as not having details of landowners who are signed up to the trial (and note at 7c on the licence application the applicants claim to have received permission from all the designated site owners) we do not have details of land that would 'not qualify', or how birds nesting on 'not qualifying', but foraging on 'qualifying' land would be treated.

The current trial is set out as a five-year project to test the practicality and validity of a BMS approach and should therefore be capable of delivering ecological knowledge to underpin the development of a subsequent BMS scheme.

The current application has not provided evidence to clearly demonstrate that it is following best conservation practise to maximise hen harrier survivorship from egg stage through the trial to recruitment into the breeding population (though this is supported by the reputation of the applicants); and has not provided evidence of science oversight to ensure that species conservation lessons will be learnt from the trial, in particular as relate of modification of adult behaviour or post-release fitness through to breeding.

Complementary conservation management interventions to maximise productivity such as: egg collection at an early stage to maximise the chance of double clutching; supplementary feeding to maximise non-managed chick survival; partial brood removal; avoidance of first time breeders etc, are by design not part of the trial – limiting its conservation scope. This is valid as an experimental scientific-trial approach but it inherently limits the conservation gain or knowledge the trial seeks, and therefore limits the scope to take wider conservation outcomes into account in the HRA

Some papers suggest that the species exhibits low natal philopatry (Fielding *et al.* 2011; Etheridge *et al.* 1997)., potentially reducing the risk from movement off the SPA before release, but it is unclear if these studies reflect favourable (where all territories may be claimed) or unfavourable (as is the current situation in English hen harrier SPAs) populations and whether this affects expectations. Other information (S. Murphy *pers comm* in this licence application; Watson 1977) suggest that some birds, in particular juvenile females, may show high levels of natal philopatry, this being the case it will be important to ensure birds are released within their natal SPA (Bowland) or in an appropriate sector of their natal SPA (North Pennines).

References identified on harrier fitness post-captivity, eg. Amar *et al* 2000, and protocols associated with raptor reintroduction programmes in the UK (eg. red kite, white-tailed eagle, golden eagle) involve birds taken as developed chicks from the wild not eggs. Conclusions drawn from these studies on first year survival and future reproductive behaviour may therefore not be transferable to the current proposed scheme with its differences in rearing approach. Other programmes both domestically and internationally have harvested eggs as a source of birds for reintroduction (eg. crane; curlew; great bustard) but it is not clear if this approach has been found represent best practise in raptors. Some raptor programmes have involved egg rearing as part of species restoration programmes (eg. peregrine falcon; Mauritius kestrel) but these were as part of a wider programme

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for measures. Recent work on Cirl Bunting found low fitness in birds reared from eggs and abandoned this approach in favour of collection of chicks (Jefferies *et al* 2016). Some issues have been had in Crane reintroduction (where birds were reared in captivity from wild harvested eggs) with captive reared birds returning to rearing sites rather than release sites to breed.

Hen harriers are generally considered to be semi-colonial; with a consequently aggregated rather than random distribution as a result their distribution would not be expected to be evenly spread across a given site. Given that the SPAs have a numerical population expectation this may, necessitate population densities that are locally higher than the site average to allow for a set population to be achieved. This pattern was exhibited in the North Pennines SPA at classification where most nests were in the Geltsdale & Glunedale Fells SSSI. The scale (individual moor, SPA block, Upland Block) at which the BMS population density would be initiated is not set out in the application. Instead nearest-neighbour distances are to be applied (10km between nests), with an attributed density of (0.0125 nests per km²) starting with the first two nests. For context a density of 0.0125nests per km² in Bowland SPA would equate to two nests and in Geltsdale and Glunedale Fells SSSI 1 nest.

The Bowland Fells SPA is a continuous upland block and is largely composed of land above the fell wall in the Forest of Bowland AONB which is suitable for hen Harrier. The North Pennines Moors by contrast is a very extensive site made up of a series of upland blocks stretching from Ilkley in Yorkshire to near Brampton in Cumbria. Within the more extensive upland chain Hen Harrier distribution has been traditionally biased to certain SSSI blocks, in particular the Geltsdale and Glunedale SSSI, which could as a consequence be considered to constitute the natural range of this species in the North Pennines. However, extensive areas of apparently suitable, and occasionally used, habitat are present in other parts of the SPA.

The areas of the two SPAs are approximately 1472 km² for the North Pennines and 160km² for the Forest of Bowland. With reference to populations given in the respective SPA citations across the sites as a whole this gives a nest density of 0.007nests/km² in the North Pennines and 0.075 nests/km² in the Bowland Fells to meet SPA classification figures. However, the North Pennines birds at classification were restricted to the Geltsdale and Glunedale SSSI portion of the site, here their density will have been in the order of 0.13nests/km². This minimum density to achieve nest density at classification for the Bowland Fells SPA exceeds the intervention density of the proposed BMS (of 0.025nests/km²) by a three-fold margin, and the Geltsdale and Glunedale Fells SSSI part of the North Pennines SPA by a seven-fold margin.

Since classification numbers in the two SPAs for which Hen harrier are a breeding feature have declined, in parallel with declines outside the designated sites in England. This is largely attributed to illegal persecution. In 2017 the number of nesting attempts in England as a whole was seven, with the English population varying between 13 (2015) and 1 (2012) in recent years (RSPB published data online).

Other features

Although the focus of this proposal is hen harriers the activities associated with the project may impact other features of the designated sites. In particular the construction and management of the release aviaries and their associated infrastructure. The release aviaries are described in the application annexes, but are temporary structures. They will have a footprint on the ground and will be subject to daily activity during the period when the harriers are being kept in them.

While there are no fundamental reasons why release site requirement should not be compatible with designated site interest, there is potential in release operations both to cause damage to areas around the release aviaries, and to cause disturbance of interest feature species as a consequence of the requirements of site maintenance and bird husbandry.

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

D2.1 Assessment of potentially adverse effects and consideration of additional mitigation measures

Hen Harrier

Focusing on areas identified as LSE or uncertain, the principal risks associated with the proposal as identified in the Assessment of Likely Significant Effect are:

Decreased hen harrier breeding population as a consequence of:

- Decreases site loyalty of adults
- Decreased site recruitment of young birds into the breeding population

The pathways by which these may occur include:

- Decreased adult site philopatry
- Decreased juvenile site philopatry
- Decreased juvenile fitness/survival through to breeding
- Capping of hen harrier nest density at a level below that necessary to achieve population based site conservation objectives

It is considered possible to mitigate some risks that are identified at 2.1 by applying further mitigation measures, as restrictions or modifications, to the BMS trial project. These are set out in the table below. However it is recognised that some potential mitigation impacts may not be compatible with the scientific trial parameters, but maybe applicable in individual situations.

Where the impacts associated with some risks are currently uncertain, a review of existing literature may clarify concerns and potentially allow for a conclusion of no likely impact on integrity to be concluded. However, for others that literature may not be established (eg. relative fitness of captive reared vs wild reared but temporarily housed vs wild reared birds).



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At present a background review to confirm best practise is absent from the proposals and it is unclear if any literature exists that could clarify risk. To resolve these risks an ecology-orientated monitoring and evaluation plan may be needed (to complement the socio-economic one). It should be that this trial can act as a data source for that purpose in order for it to inform the development of a fully Brood Management Scheme , but this would require appropriate protocols and study methodologies to be established from the outset. As a consequence, we recommend that the proposal should also be overseen by the establishment of an ecological scientific review process to allow for adaptive management associated with this research to be implemented, further reducing risk.

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Table D2.1

European Sites: Bowland Fells and North Pennine Moors SPAs				
Qualifying feature: Hen Harrier (Breeding)				
SPA Conservation Objective attribute(s)	Project element	Risk and the mechanism / pathway	Assessment of potentially adverse effects	Could additional mitigation measures ascertain no adverse effect?
Population abundance; disturbance from human activity	collection and removal of hen harrier eggs/chicks from the SPA	Risk that loss of nest reduces likelihood of adult birds impacted by BMS to breed on the SPA in future years Decreased	From an ecological perspective the proposal will increase the rate of individual nest failure as experienced by adult birds over a 5 year period. In terms of adult behaviour this can be expected to increase the number of adult birds exhibiting behavioural responses associated with nest predation/failure. It is not clear if ‘failed’ pairs will return in future years or relocate. Some identified mitigation such as rotation of BMS pairs between years would rely on both (a) being able to confidently identify adults from year to year and (b) having universal land owner	Yes, potential mitigation could include: <ul style="list-style-type: none"> • Take only partial broods of older chicks; • Take only eggs at an early stage to encourage relaying and avoid BMS of relayed clutches • Do not apply BMS to first time breeders/pairs occupying territory for the first time;



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		adult and juvenile site philopatry	<p>agreement. It is unclear if either of these requirements are established.</p> <p>If likely response is not established by prior research, this may require marking of adult birds to clarify impact.</p> <p>Conservation measures such as partial brood removal at chick stage to avoid site desertion may be appropriate, or avoidance of harvesting broods of first-time breeders, could mitigate risks, but these have not been proposed.</p>	<ul style="list-style-type: none"> Do not apply BMS on two successive nesting attempts (in year, or year to year) by pair of hen harrier;
	Rearing of eggs/chicks in captivity until fledging	<p>Disruption of annual population growth in already low population through impacts on immature birds</p> <p>Decreased juvenile fitness/survival</p>	<p>Although improved productivity and juvenile survival to fledging is predicted with a positive effect on population abundance in absolute numbers at the end of the breeding season it is unclear if this can be assumed to run through to a neutral or positive impact on individual fitness through to first breeding.</p> <p>This is dependent on a combination of factors. Some measures, eg. steps to reduce disease risk in captivity; steps to reduce imprinting risk on remote rearing facilities; measures to limit risk of captive birds being</p>	<ul style="list-style-type: none"> Release site to be located on ‘natal’ SPA for Bowland or appropriate SSSI section of ‘natal’ SPA for North Pennines; Ensure young birds are trained to hunt and are able to self-provision by monitoring until they have dispersed from area of release pens; Ensure security of release site and adjacent areas to which young birds first disperse;

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		<p>through to breeding</p>	<p>targeted for persecution; establishment of appropriate philopatric behaviour, have been identified in management protocols other areas of risk associated with the need to achieve fitness through to first breeding need to be incorporated.</p> <p>Of particular concern is the fact that Bowland SPA is identified a possible source site but not, at the current time, an identified release site, precluding any possibility of site learning and development of philopatric association with the SPA.</p> <p>As the licencing body for ringing and marking of birds in the UK it is unclear from the application if necessary BTO approval has been given for Schedule 1 activity and in particular tagging in association with trial.</p>	<ul style="list-style-type: none"> • Monitor post-dispersal to ensure fitness with recovery protocols that allow for assessment of factors such as immunological naivety as a result of captive breeding • Operatives tagging juvenile harriers to hold appropriate endorsements from the BTO.
		<p>Limitation of population size due to regulation of numbers i.e. Capping</p>	<p>The identified study parameters do not take into account site conservation objective populations. For Bowland - 0.075 nests/km² to meet classification population vs. 0.0125nests/km² to trigger BMS trial activity.</p>	<ul style="list-style-type: none"> • Set site based minimum population thresholds that must be met before a BMS trial can commence ie. At least 11 nests in North Pennines SPA and 12 in Bowland SPA, regardless of whether local densities exceed this level;

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		<p>of hen harrier nest density at a level below that necessary to achieve population based site conservation objectives</p>	<p>It is less clear-cut what the density expectation of the North Pennines SPA is, as extensive areas of the SPA do not support nesting habitat, however, the 10km inter-nest distance would be less than that required to recover population size and distribution at classification, where hen harrier were largely restricted to the component Geltsdale and Glunedale Fells SSSI. Hen Harriers are known to be semi-colonial so areas of higher and lower density can be expected to occur, and it cannot be assumed that BMS trial management of birds in areas of higher density will result in redistribution to a more dispersed nest arrangement within the designated site.</p> <p>One possible outcome from this is that to meet trial protocols it becomes a trial necessity to run a BMS on almost all SPA nests if densities exceed BMS threshold but SPA population fail to achieve site thresholds. This would require a large (potentially over 90%) proportion of the population to be subject to a clearly unnatural chick-rearing process.</p>	<ul style="list-style-type: none"> • Limit the proportion of nests that can be subject to BMS within the SPA; • 'Refuge areas' be established within which that trial will not harvest nests and where populations will be allowed/managed to achieve densities sufficient to maintain designated site requirements; • Conditioning BMS trial approach use on the SPAs until a site based recovery plan is drawn up (which may or may not include the use of BMS within the site boundary) that we are satisfied could result in conservation objectives being achieved, for example by including alternate conservation interventions to maximise productivity from non-BMS intervention nests in the SPA.
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			<p><i>Elston et al</i> identified a higher density of hen harrier nests than that proposed by the trial that may be compatible with commercial grouse moor management. The appropriateness of the more restrictive density proposed in the trial protocol has been justified in the application by reference to the recommendation in <i>Elston et al</i> that “it may be advisable to initially take a precautionary approach”. A precautionary approach here meaning using a lower intervention threshold in order to make initial progress with trialling a BMS.</p>	

Some of the mitigations listed above may be incompatible with running an experimental BMS trial in a context where few, if any, nesting hen harriers, are currently present within the SPAs. In particular, those possible mitigations that would decrease the opportunity to commence the BMS trial may not be appropriate in the trial, such as taking only partial broods of older chicks, taking only eggs at an early stage to encourage relaying and not applying BMS to first time breeders. However, with current knowledge, these mitigations are not all necessary to be able to conclude no adverse effect. Furthermore, overall mitigation of any possible adverse effect on integrity is provided by the operation of an exit strategy and the time-restricted nature of the trial. These aspects of the trial will allow for the early identification of any possible unforeseen



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adverse effects on hen harrier population dynamics and the avoidance of these having a long-term impact on the recovery of the populations of the SPAs.

Similarly, the actions identified to mitigate against capping of the HH population below the conservation objective target might be appropriate in future considerations of a full BMS, but are not necessary for this limited initial trial.



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Other Features:

Aside from hen harrier, which is the focus of this application, the designated site risks can be aggregated into two categories:

- Risks to other SPA avian species as a consequence of disturbance
- Risks to SAC habitat or non-avian species as a consequence of the installation or operation of the release pens

It is anticipated that with increased clarity on how the proposal will be managed on-site impacts on the interest feature habitats and species, can be avoided. A simple site location protocol would be sufficient to eliminate all habitat risks associated with SAC interests, and SPA interests other than hen harrier.

The applicants anticipate that the installation of release pens and initiation of associated management will happen after identification of hen harrier broods for the BMS trial. While it would be prudent to have some sites identified in advance this allow time to ensure that release site requirements can be aligned with designate site interest.

However it is considered that in the absence of further detail, additional mitigation measures to ascertain no adverse effect are possible. It is considered that an approach where NE is consulted before action is taken that may affect interest feature habitats or species, and NE's advice is acted upon would remove risks associated with most, if not all, SAC and SPA interest features other than hen harrier. These are;

- Agreement of a release-site selection protocol for the identification of a suitable location for the establishment of release pens – this could in advance remove risk of impact on SAC an SPA features other than Hen Harrier.

A potential protocol would also include:

At a landscape level it is identified that the release site will contain open habitats including heath and rough grassland communities, with transitions to forestry and with physical features such as ridges, walls and gullies.

At a scale of release pens plus 50m working boundary:

- Potential release sites will be surveyed for breeding bird species, and release pen infrastructure will avoid areas where they may cause significant disturbance from the operation of the release pens. Recommend 300m with line of sight from active nest of wader species and 1km of interest feature raptor species.
- Construct release pens in chosen locations prior to the onset of breeding bird activity to avoid disturbance from construction



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- No new vehicle access routes to be established – routes to release pens should follow existing routes.
- Release pen infrastructure, and any non-vehicle access, not to be sited on: any wetland habitat, including blanket bog, flushes and wet heath; grassland. woodland;
- A methodology and timescale for the dismantling and removal of the release pen at the end of the trial period or as appropriate

Note: Infrastructure located on species-poor grasslands and/or dry heath communities are likely to be least risky.

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

No additional 'in combination' impacts are anticipated.

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

No additional 'in combination' impacts are anticipated.

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

No additional 'in combination' impacts are anticipated.

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 63 of the Habitats Regulations 2017 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 with regard to *Hen Harrier as a feature of Bowland Fells SPA and North Pennines SPA:*

~~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~~

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, taking into account the incorporated mitigation measures and subject to the following additional restrictions and/or conditions:

- Restrictions are in place to ensure that pairs are not subject to brood management on successive nesting attempts (to manage risk of site abandonment by adults)
- Arrangements are in place to ensure security of release site and areas to which harriers are likely to initially disperse (to ensure no elevated risk of illegal persecution)
- Individuals fitting satellite tags to be appropriately licenced by the BTO (to ensure welfare and fitness of BMS chicks.

~~It cannot be ascertained that the plan or project will not have an adverse effect on the integrity of the following site(s) for the following reasons; a permission cannot be given at this stage~~

Natural England has concluded that with regard to *additional sites and features other than Hen Harrier in Bowland Fells SPA and North Pennines SPA;*

~~It can be ascertained that the plan or project will not have an adverse~~

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~~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~~

X 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, taking into account the incorporated mitigation measures and subject to the following additional restrictions and/or conditions;

- Agreement of release-site protocols (to include location, construction, operation and decommissioning) prior to the commencement of the BMS trial with Natural England

~~It cannot be ascertained that the plan or project will not have an adverse effect on the integrity of the following site(s) for the following reasons; a permission cannot be given at this stage~~

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 63 of the Habitats Regulations 2017 and has decided that, with regard to European Sites and their qualifying features;

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

Permission may be given but only subject to the strict implementation of the following conditions or restrictions*:

- The trial is implemented in accordance with the information submitted as part of the Licence Application including, as additional material, ‘Disease Risk assessment’; ‘Brood Management Release protocol’; Response to Further Information Request received from applicant on 26th April 2017 titled: ‘Document6 AJ clean copy April 26th 17’; information supplied as part of the updated project plan received on 15th Sept 2017.
- Restrictions are in place to ensure that pairs are not subject to brood management on successive nesting attempts (to manage risk of site abandonment by adults)
- Arrangements are in place to ensure security of release site and areas to which harriers are likely to initially disperse (to ensure no elevated risk of illegal persecution)
- Individuals fitting satellite tags to be appropriately licenced by the BTO (to ensure welfare and fitness of BMS chicks)
- Agreement of release-site protocols with Natural England (to include location, construction, operation and decommissioning) prior to the commencement of the BMS trial

~~Consent/Permission/Assent/Authorisation may not be given (subject to regulation 64
(‘consideration of imperative reasons of overriding public interest’))~~

A summary of the reasons for this decision are as follows:

- The licence application as received did not contain enough detail to conclude no adverse impact on integrity of the designated sites involved. However, it is recognised that through improved knowledge and identification of successful approach the proposals could, if the trial is successful, contribute towards recovery of hen harrier population on North Pennines Moors SPA and Bowland Fells SPAs. As part of a time-limited trial and with appropriate conditions in place, to reflect Conservation Objectives for the sites, it is concluded that the

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project can be compatible with the conservation interests of the designated sites and no adverse effect on site integrity can be ascertained.

- Similarly, for non-hen harrier SAC and SPA features that may be impacted by the proposals, the licence application as received does not contain enough detail to conclude no impact on integrity of the designated sites involved. However, with appropriate conditions in place, the trial requirements are not incompatible with SPA and SAC conservation objectives and no adverse effect on site integrity can be ascertained.

* 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

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Document Control

Assessment prepared and completed by	██████████	Lead Adviser, ██████████ Area team
Date	15/12/2017	
Peer-reviewed by		
Date		
FOR HIGH-RISK CASES AND/OR REFUSED OR CONDITIONED SSSI CONSENTS ONLY [see User Notes]		
HRA checked and referred to Protected Sites Team by:	██████████	██████████ Area team
Date	18/12/2017	
Advice given by Protected Sites Team:	██████████	Protected Sites Team, Strategy Implementation
Date	20 December 2017	
Case referred to High Risk Casework Panel by	<i>If necessary</i>	<i>Insert role / job title and Team</i>
Date		
Consent/Assent/Permission/Authorisation issued by:	<i>Insert name</i>	<i>Insert role / job title and Team</i>
Date		



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NOTE : SSSI assessment and consent

Impact Assessment

No SSSI's in the Project area are individually notified for breeding hen harrier, although the component Sites of the Bowland Fells SPA and North Pennine Moors SPA have Favourable Condition Targets associated with breeding hen harrier as a consequence of their SPA interest. For these sites and this feature SSSI concerns will mirror the content of this HRA assessment.

A number of Upland SSSI 's are notified for upland breeding bird assemblages for which hen harrier are a scoring species. To contribute to SSSI assemblage scoring only a single pair needs to be present on the designated site. Triggering of BMS –trial management is dependent on there being two pairs (or nests) present, therefore the hen harrier would not be removed as a scoring feature as a consequence of this trial. The only exception would be if the two nests that triggered BMS trial activity were on adjacent SSSI's, where a nest on one SSSI could allow the brood management on the other. To prevent this impacting on SSSI condition an additional condition / restriction could be applied stating that:

For any SSSI where hen harrier contributes to breeding bird assemblage scores and only a single pair/nest is present this should not be subject to BMS trial management.

For other features it is only the release pen infrastructure and management that is likely to raise concerns, these risks can be assessed at a later date in tandem with HRA assessment of release site provision.

Conditioning activity

Under the provisions of the Countryside and Rights of Way Act 2000 Natural England must consent operations that may cause damage to a SSSI. The removal of bird eggs or chicks from a SSSI is an operation that may damage the interest of the site. It therefore requires the SSSI consent of Natural England in addition to any other licencing provisions.

Legally a consent may only be issued to the landowner of the SSSI land on which the licensable activity is taking place.

The SSSI affected by the proposed Hen Harrier Brood Management Scheme will be determined by the distribution of nesting hen harriers, and therefore it is impossible to be certain ahead of time which landowners will require consent to permit the trial to happen.

With the conditions/restrictions set out above and as (1) it is impossible to determine where hen harriers will nest and when criteria to permit brood management to occur will be met ahead of time, and (2) there may be short window of time in which to organise and carry out egg/chick collection. Natural England has prepared a 'Notice and Consent' pro-forma to allow the trial to proceed, subject to landowner agreement and species licence conditions being met. This does not permit any activity to occur without landowner permission.



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Release pens will also require consent but this can be managed in tandem with the SSSI and HRA assessment of the pens.