



## **Mid Cornwall Moors SSSI Cornwall**

***Notification under section 28C of the Wildlife  
& Countryside Act 1981***

## **Goss and Tregoss Moors SSSI, Brenay Common SSSI and Red Moor SSSI**

***Proposed denotifications under  
section 28D of the Wildlife & Countryside Act 1981***

Issued by Natural England's Devon, Cornwall and Isles of Scilly Area Team on 23<sup>rd</sup> February 2017.

## Contact points and further information

This notification document is issued by Natural England's Devon, Cornwall and Isles of Scilly Area Team.

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[https://consult.defra.gov.uk/consultation\\_finder/](https://consult.defra.gov.uk/consultation_finder/)

Your contact point for enquiries relating to this notification is the **Mid Cornwall Moors SSSI Team** consisting of David Hazlehurst, Naomi Stratton, Federica Reitano and Alice Lord.

A second document (*Mid Cornwall Moors SSSI - supporting information*) is available on request from the address above. This contains information and extracts from relevant documents that have been used in the decision to notify this SSSI under Section 28C, and to propose the removal of notifications from parts of the previously notified Goss and Tregoss Moors SSSI, Breney Common SSSI and Red Moor SSSI under Section 28D.

The date of notification of the Mid Cornwall Moors SSSI is **23 February 2017**.

The date of proposed denotification of parts of the previously notified Goss and Tregoss Moors SSSI, Breney Common SSSI and Red Moor SSSI is **23 February 2017**.

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## 1. Summary

- 1.1 This document explains why the Mid Cornwall Moors is notified by Natural England as a Site of Special Scientific Interest (SSSI). This document also explains why Natural England is of the opinion that parts of the previously notified Goss and Tregoss Moors SSSI, Breney Common SSSI and Red Moor SSSI are not of special interest and, therefore, why Natural England is proposing to remove the SSSI notifications (a process known as 'denotification') from parts of them.
- 1.2 Natural England works proactively with partners in Mid-Cornwall, including Highways England (on award-winning habitat creation alongside infrastructure development), the Cornwall Wildlife Trust and Commoners Associations (on appropriate land management) and University of Exeter (on community engagement and responses to site protection). The SSSI is linked to the Mid Cornwall Moors EU LIFE Nature Project which has worked in partnership with land managers to increase the extent of suitable habitat for marsh fritillary butterfly *Euphydryas aurinia* in and around existing designations.
- 1.3 Mid Cornwall Moors SSSI supports a diverse mosaic of semi-natural habitats, including heaths, lowland fens, unimproved grasslands, broad-leaved woodlands, scrub, and species-rich hedgerows, with ponds and waterways. It is of special interest for the following nationally important features that occur within and are supported by the wider habitat mosaic: wet and dry lowland heaths; fens (including habitats often referred to as mires and swamps); fen woodlands in a mosaic with drier woodland types; unimproved neutral grasslands; flowering plants and ferns, invertebrates (including marsh fritillary); breeding willow tits *Poecile montanus*, and geological features.
- 1.3 Previously, six SSSIs have been notified in the Mid Cornwall Moors area: Retire Common SSSI, Breney Common SSSI, Red Moor SSSI, Goss and Tregoss Moors SSSI, Belowda Beacon SSSI and Tregonetha and Belowda Downs SSSI.
- 1.4 The Mid Cornwall Moors SSSI includes the majority of the area of these previously notified SSSIs. It also rationalises and clarifies the special interest of the overall area within a single landscape-scale designation covering 1,657.11 ha, combining and linking existing designations with substantial extensions (totalling 586.84 ha). This encompasses key elements of the local ecological network, including core areas of breeding habitat for the marsh fritillary butterfly, and secures connectivity between these areas by identifying key linkages and 'stepping stones'.
- 1.5 Twenty-eight small areas (totalling 8.98 ha) within the previously notified Goss and Tregoss Moor SSSI, Breney Common SSSI and Red Moor SSSI, are not considered to be of special interest and are proposed for denotification.
- 1.6 The Annexes to this document comprise the legal papers that detail the interest of Mid Cornwall Moors SSSI and the management required to maintain that interest, as well as maps showing the land proposed for denotification. You have a right to make representations or objections to the notification of Mid Cornwall Moors SSSI and to the proposed denotification of parts of the previously notified SSSIs. Part 3 of this document explains how to do this.
- 1.7 Natural England's consent is required by owners and occupiers before the operations listed in *Annex 3* can be carried out. We will work closely with owners and managers, as well as other bodies, to ensure that existing operations and new works that are not considered likely to damage the special features of the SSSI can be carried out as usual.

## 2. The legal background

- 2.1 Belowda Beacon SSSI is enlarged under section 28C of the Wildlife and Countryside Act 1981 and is now known as the Mid Cornwall Moors SSSI. The Mid Cornwall Moors SSSI includes land within and extending beyond Belowda Beacon SSSI (as previously notified in

1996) and the boundary incorporates all of Retire Common SSSI (as notified in 1985) and Tregonetha and Belowda Downs SSSI (as notified in 2000), and the majority of Breney Common SSSI (as notified in 1986), Goss and Tregoss Moors SSSI (as notified in 1988) and Red Moor SSSI (as notified in 1986).

- 2.2 With effect from the date of this notification under section 28C of the Wildlife and Countryside Act 1981, the previous notification of Belowda Beacon SSSI given in 1996 ceases to have effect (section 28C(5) of the Wildlife and Countryside Act 1981). The previous notifications of Retire Common SSSI, Breney Common SSSI, Goss and Tregoss Moors SSSI, Tregonetha and Belowda Downs SSSI and Red Moor SSSI do not cease to have effect from the date of this notification but, subject to the confirmation of this notification under Section 28(5) of the Wildlife and Countryside Act 1981, Natural England will treat the previous notifications (insofar as they overlap with the Mid Cornwall Moors SSSI) as though they do cease to have effect.
- 2.3 Parts of the previously notified Goss and Tregoss Moors SSSI, Breney Common SSSI and Red Moor SSSI are not within the land subject to the notification under section 28C. In the opinion of Natural England these areas are not of special interest and they are notified as such under section 28D of the Wildlife and Countryside Act 1981. Removal of these areas from these SSSIs is not effective until the date of confirmation of the notifications under section 28D(5).
- 2.4 Part 9 of this notification document contains the following legal papers required by sections 28C and 28D of the Wildlife and Countryside Act 1981:
- a citation detailing the reasons for notification under section 28C (*Annex 1*)
  - a statement of Natural England's views on the management of the SSSI (*Annex 2*)
  - a list of operations requiring Natural England's consent (*Annex 3*)
  - maps identifying the land subject to the notifications under sections 28C and 28D (*Annex 4*).
- 2.5 The notification of the SSSI under section 28C has several effects. The key ones can be summarised as follows:
- owners and occupiers must give Natural England notice before carrying out, causing or permitting to be carried out any of the activities in the list of operations at *Annex 3*;
  - owners of land included in the SSSI have a legal obligation to notify Natural England within 28 days if the ownership or occupancy of the land changes;
  - it is an offence for any person intentionally or recklessly to destroy or damage the special features of the SSSI or to disturb any of the fauna; and
  - other public bodies must consult Natural England before carrying out or authorising any works that may damage the SSSI.
- 2.6 The notifications under Section 28D of parts of the previously notified Goss and Tregoss Moor SSSI, Breney Common SSSI and Red Moor SSSI, which in the opinion of Natural England are not of special interest, have several effects. The key ones can be summarised as:
- they provide the opportunity for you to make representations or objections to the proposed removal of the SSSI notifications from these parts;
  - they do not take effect unless and until they are confirmed by Natural England (with or without modification), and until such time these parts of the sites remain subject to the effects of the previous notifications (the same effects as set out in 2.5 above); and
  - if confirmed (with or without modification), the land subject to the notifications under section 28D shall no longer be part of the previously notified SSSIs and therefore shall no longer be subject to the effects set out in 2.5 above.

If you require any further information or advice on how these notifications affect you, please do not hesitate to contact Natural England at the address shown at the beginning of this notification document.

### **3. Making representations**

You have a legal right to make objections and representations about these notifications. Any representations (including those supporting the notification and proposed denotifications) or objections should be made in writing by **23 June 2017** to Natural England's Devon, Cornwall and Isles of Scilly Area Team. Representations can be sent by post, e-mail or online to the addresses shown on page 2. You may wish to seek legal or independent advice and your representative may wish to write to us on your behalf.

- 3.1 Natural England's Devon, Cornwall and Isles of Scilly Area Team will consider your objections or representations and will try to resolve them. If there are no unresolved objections, approval to confirm the notifications will be considered by an appropriate Natural England Director within nine months of these notifications.
- 3.2 Any unresolved objections or representations will be considered by the Board of Natural England within nine months of this notification. Following consideration of objections and representations, the Board of Natural England may confirm or withdraw all or part of these notifications. In reaching its decision the Board will consider whether, in light of the objections and representations received, Natural England remains of the opinion that the site is of special scientific interest. The desirability of the notifications (for instance, for socio-economic reasons) will not form part of the Board's decision.
- 3.3 If you wish to emphasise any of your objections or representations to the Board in person, you should tell us when you write to us. You will then be advised of the date and location of the Board meeting.
- 3.4 Natural England will accept correspondence relating to unresolved objections up to seven days prior to the Board meeting at which the confirmation is due to be considered. Correspondence received after this date will only be presented to the Board in very exceptional circumstances and you will be expected to provide justification as to why there has been a delay in providing the information. The decision whether this information will be submitted to the Board is entirely at Natural England's discretion. The reason that there is a seven day cut off is to allow Board members sufficient opportunity to consider all of the issues and read all the relevant paperwork before they meet to take their decision.
- 3.5 If there are unresolved objections, confirmation of these notifications is likely to be considered at the Board meeting provisionally scheduled for September 2017.
- 3.6 Natural England has a policy of openness, which reflects our obligations under the Environmental Information Regulations 2004 and the Freedom of Information Act 2000. This legislation provides a legal right of access to information held by public bodies. This means that we will provide information on how we make our decisions on SSSIs to any person on request. This includes details of objections and representations received. We will assume, therefore, that your representation or objection can be made publicly available unless you indicate with clear and valid reasons which (if any) part(s) of these you wish to be excluded from this arrangement. However, you should be aware that the requirements of the legislation may mean that we cannot comply with your request that this information be withheld. We do, however, respect people's privacy and will take all reasonable steps to consult you before reaching a decision on disclosure of the information.
- 3.7 As an individual or organisation with an interest in the Mid Cornwall Moors SSSI, your information will be stored and processed on a computer database that will be operated within the Data Protection Act 1998. This Act gives individuals the right to know what data we hold on them, how we use it and to which third parties it is disclosed. For the purposes of the Data Protection Act, the data controller is Natural England, Foss House, Kings Pool, 1-2 Peasholme Green, York, YO1 7PX.

## 4. Reasons for notification

4.1 The Mid Cornwall Moors SSSI comprises a diverse mosaic of semi-natural habitats, centred on extensive areas of lowland heath and a complex of valley and basin wetlands. There are transitions from these to other drier habitats, including species-rich grasslands, broad-leaved woodlands, scrub and species-rich hedgerows, as well as open water habitats such as ponds and streams. The site is of special interest for the following nationally important features that occur within and are supported by the wider habitat mosaic:

- **Wet and dry lowland heath**

Lowland heath, characterised by dwarf shrubs, is one of the principal vegetation communities found across the site. On higher ground and drier slopes the heathland is characterised by western gorse *Ulex gallii*, bristle bent *Agrostis curtisii*, heather *Calluna vulgaris* and bell heather *Erica cinerea*. Where the ground conditions are wetter, species associated with areas of wet heath include cross-leaved heath *Erica tetralix*, deergrass *Trichophorum germanicum*, heather, bog moss *Sphagnum* species, purple moor-grass *Molinia caerulea* and the locally notable white beak-sedge *Rhynchospora alba*. Lowland heathland is included in the Government's list of priority habitats and species that are of principal importance for the conservation of biodiversity in England<sup>1</sup>.

- **Fens (including habitats often referred to as mires and swamps)**

The wetter parts of the site support a wide variety of fen types. They are predominantly basin fen and bog pool communities, valley fens associated with the wet and dry heath and wet woodland communities, and others located around the margins of open water bodies. These communities often support taller tussocky fen vegetation in complex mosaics with important transitions to wet heath, marshy grassland, woodland and open water. The fens in the Mid Cornwall Moors include communities that are parts of the 'lowland fens' and 'purple moor-grass and rush pastures' priority habitats.

One of the main fen types is characterised by tall tussocks of purple moor-grass with black bog rush *Schoenus nigricans* and bog myrtle *Myrica gale*. In the water filled hollows between the tussocks, bog mosses, bog asphodel *Narthecium ossifragum*, common cotton-grass *Eriophorum angustifolium* and sharp flowered rush *Juncus acutiflorus* are locally abundant. Another fen type is dominated by tussocks of purple moor-grass with tormentil *Potentilla erecta* and cross-leaved heath.

In valley bottoms, permanently waterlogged nutrient-poor conditions have favoured the abundant growth of bog mosses and the formation of a rare type of valley mire, characterised by bog asphodel, bog mosses, round-leaved sundew *Drosera rotundifolia* and the locally notable bladderwort *Utricularia australis* and lesser bladderwort *U. minor*. Very wet mires with an unstable 'quaking' surface occur in waterlogged situations where the vegetation is dominated by tall sedges and rushes mixed with a wide range of herbs, over a ground layer of bog mosses or brown mosses, including *Calliergon* species. Bog pool communities are generally recognised by smaller stands of wetter vegetation, where shallow water overlies mats of sphagnum and sedge species. These stands tend to pick out lower lying areas where water levels remain at or near the surface for much of the year, some of which possibly represent previous areas of open water.

- **Woodland**

Extensive willow *Salix* carr or fen woodland has developed over many parts of the site, in particular along stream courses and in the central parts of Goss Moor and Criggan Moor. The canopy is dominated by grey willow *Salix cinerea* ssp. *oleifolia* with ash *Fraxinus excelsior*, alder *Alnus glutinosa* and downy birch *Betula pubescens* locally common. The ground is waterlogged and supports a rich flora with abundant ferns.

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<sup>1</sup> Under section 41 of the Natural Environment and Rural Communities Act 2006.

These wet woodlands, which are a priority habitat, exhibit transitions to standing water and aquatic vegetation and to drier woodland and associated fen and heath vegetation.

Drier woodland dominated by pedunculate oak *Quercus robur* fringes some of the site boundaries. Wood anemone *Anemone nemorosa*, bluebell *Hyacinthoides non-scripta*, the locally notable southern wood-rush *Luzula forsteri* and the nationally Near Threatened greater butterfly-orchid *Platanthera chlorantha* are often locally common in the ground flora which is rich in ferns and bog mosses where wet hollows occur. More acid conditions are indicated by the presence of bilberry *Vaccinium myrtillus*. These drier woodlands are part of the 'lowland mixed deciduous woodland' priority habitat.

- **Neutral grassland**

A damp, heathy form of species-rich neutral grassland occurs as small patches contiguous with or surrounded by heath and fen. The grass composition includes frequent common bent *Agrostis capillaris*, creeping bent *Agrostis stolonifera*, Yorkshire fog *Holcus lanatus* and cock's-foot *Dactylis glomerata*, with crested dog's-tail, red fescue *Festuca rubra* and heath-grass *Danthonia decumbens*. Ribwort plantain *Plantago lanceolata*, cat's ear *Hypochaeris radicata*, bird's foot trefoil *Lotus corniculatus*, creeping cinquefoil *Potentilla reptans*, marsh thistle *Cirsium palustre*, red clover *Trifolium pratense* and selfheal *Prunella vulgaris* are frequent associates. Tormentil *Potentilla erecta*, heath wood-rush *Luzula multiflora* and heather add a heathy element. These grasslands fall within the 'lowland meadows' priority habitat.

- **Flowering plants and ferns**

The extensive mosaic of semi-natural habitats supports an outstanding assemblage of at least 12 nationally rare<sup>2</sup> and nationally scarce<sup>3</sup> flowering plant and fern species. Populations of two nationally rare priority species are of national importance in their own right: Cornish eyebright *Euphrasia vigursii*, an endangered species endemic to England, and coral-necklace *Illecebrum verticillatum*, listed as vulnerable to extinction in Great Britain. The assemblage also includes ten nationally scarce species: yellow centaury *Cicendia filiformis*, marsh clubmoss *Lycopodiella inundata*, pale dog-violet *Viola lactea*, pillwort *Pilularia globulifera*, three-lobed crowfoot *Ranunculus tripartitus* (all priority species), wavy St John's-wort *Hypericum undulatum*, round-leaved mint *Mentha suaveolens*, Cornish moneywort *Sibthorpia europaea*, marsh fern *Thelypteris palustris* and the south-western form of marsh violet *Viola palustris* subsp. *juressi*.

The site also supports nationally important populations of five species that are more widespread but nevertheless declining and threatened with extinction in England or more widely in Great Britain: chamomile *Chamaemelum nobile*, lesser butterfly-orchid *Platanthera bifolia* (both priority species), chaffweed *Centunculus minimus*, lesser water-plantain *Baldellia ranunculoides* and allseed *Radiola linoides*.

- **Invertebrates**

The complex network of semi-natural habitats in the Mid Cornwall Moors supports a diverse range of invertebrates, including threatened and range-restricted species. Foremost amongst these is the marsh fritillary butterfly *Euphydryas aurinia*, a priority species for which the site is of national and European importance. Marsh fritillaries in the Mid Cornwall Moors breed primarily in damp acidic grassland where the larval food plant, devils'-bit scabious *Succisa pratensis*, can be abundant. Optimal breeding areas are typically a patchwork of short vegetation and long tussock grasses dominated by cattle-grazed purple moor-grass *Molinia caerulea*. Adult marsh fritillary butterflies survive in 'meta-populations' formed by a number of linked sub-populations or colonies which may frequently die out and re-establish through re-colonisation. Connected

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<sup>2</sup> Nationally rare species are recorded in 1-15 10 km x 10 km squares in the British national grid.

<sup>3</sup> Nationally scarce species are recorded in 16-100 10 km x 10 km squares in the British national grid.

habitats, within a 1-2 km radius of one another support fluctuating meta-populations, which support more distant dispersal and robustness of the population overall.

The Mid Cornwall Moors also supports a nationally important assemblage of invertebrates chiefly associated with scrub heath and moorland. The assemblage is typical of low nutrient, humid heathy soils and is characterised by beetle, fly, spider, true bug, butterfly and moth species which demonstrate a high fidelity to this habitat type.

In addition, there are nationally important populations of three species representative of water's edge habitats: the vulnerable water beetle *Hydrochus nitidicollis*, the nationally scarce mud snail *Omphiscola glabra* (a priority species) and the nationally rare and near threatened slender amber snail *Oxyloma sarsii*.

- **Breeding willow tit *Poecile montanus***

The wet woodlands and scrub in the SSSI are important for breeding willow tit. In southern England this priority species has virtually disappeared from large parts of its former range and has declined nationally by an estimated 81% since the mid-1990s. It is red-listed<sup>4</sup> as a species of the highest conservation concern in Britain.

- **Geology**

At Belowda Beacon, a partially collapsed shallow mine adit (used by early prospectors searching for mineral veins) includes exposures of a granitic rock with many fine crystals of topaz, tourmaline and quartz. Small dumps at the mouth of the adit also contain large pieces of topaz-bearing rock. These granites were formed 280 million years ago from molten rock that pushed its way up from great depths in the earth. Along with the molten rock were other hot liquids and gases enriched in chemicals including boron and fluorine. This rich chemical cocktail cooled and solidified to form a diverse suite of rare and interesting minerals; in this case the topaz-tourmaline-quartz rock at Belowda Beacon. The occurrence is very unusual and the site is of national importance for research and teaching purposes because it clearly demonstrates the mineralisation which occurs at the latest stage of granitic emplacement. It also helps scientists to understand the processes that have formed Cornwall's present landscape.

## **5. Reasons for notifications under section 28D (de-notifications)**

- 5.1 In the opinion of Natural England, small parts of three of the previously notified SSSIs are not of special interest. Accordingly these areas are proposed for 'de-notification', the effects of which are described in section 2.6. In total, there are 28 areas totalling 8.98 ha, affecting parts of the previously notified Goss and Tregoss Moors SSSI, Breney Common SSSI and Red Moor SSSI described below (and as shown on the maps at *Annex 4*).
- 5.2 Twenty-three areas previously notified as part of Goss and Tregoss Moors SSSI are not considered to be of special interest. The special interest of six areas within the footprint of the recently realigned A30 dual carriageway and an overwintering cattle pad (an outcome of the Mid Cornwall Moors EU LIFE Nature Project) has been destroyed as a result of lawful operations (consented developments). Two of these additionally resulted in the severance of small areas of scrub from the main body of the site, reducing its connectivity and structural interest. Five areas relate to railway crossings which were originally included as a result of historical cartographical errors when the site was previously notified. The remaining twelve areas are further errors that have been identified as a result of more accurate mapping: two areas of improved farmland, two parts of residential gardens and parts of road verges associated with the 'old' A30, an A30 flyover and the B3274.

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<sup>4</sup> Eaton MA, Aebischer NJ, Brown AF, Hearn R, Lock, L, Musgrove AJ, Noble, DG, Stroud, DA & Gregory RD 2015. Birds of Conservation Concern 4: the population status of birds in the United Kingdom, Channel Islands and the Isle of Man. *British Birds* **108**: 708-746. <https://www.britishbirds.co.uk/wp-content/uploads/2014/07/BoCC4.pdf>

- 5.3 Three areas previously notified as part of Breney Common SSSI are not considered to be of special interest. The boundary has been realigned to features such as fences, which it did not follow previously due to cartographical errors. This results in the proposed exclusion of an area of improved grassland and two sections of road and associated verge.
- 5.4 Two areas previously notified as part of Red Moor SSSI are not considered to be of special interest. More accurate mapping has resulted in the proposed removal of small parcels of improved farmland.

## **6. Site boundaries and relationships with other SSSIs**

- 6.1 The boundary has been drawn to include land supporting the features of special interest and those areas required to ensure the viability and long-term sustainability of these features; in particular the marsh fritillary butterfly which is critically dependent on the presence of a connected network of patches of suitable habitat within 1-2km of each other.
- 6.2 The boundary of the SSSI has been drawn to follow the nearest physical feature on the ground where possible. This usually follows existing walls, fence lines, ditches, drains, tracks and roadsides. Further clarification of the precise location of the boundary in specific parts of the SSSI can be obtained from Natural England's Devon, Cornwall and Isles of Scilly Area Team at the address on page 2 of this document.
- 6.3 As a general principle, the boundary follows management units, such as enclosure and property boundaries. Where the boundary follows a road, the inner edge of the road has been used and the road has therefore been excluded from the site. Land within railway lines has been excluded from the site. Where the boundary is drawn to a stream, ditch or drain, the outer bank has been used therefore including the stream, ditch or drain in the site. Where there is no mapped feature that can be used to delineate the extent of an interest feature, the boundary has been drawn as a straight line from one point distinguishable on the ground to another.
- 6.4 North of the A30, the SSSI boundary includes areas of heathland, fen, grassland and wet woodland at Quoit Farm, Ennisworrey, Tregonetha and Belowda Downs, and Retire Common. The boundary encompasses the common land at these latter two sites and generally follows fence lines, Cornish banks and tracks that separate the semi-natural habitats of the SSSI from the more improved habitats of adjacent countryside. Tregonetha Downs is crossed by the B3274 where the road forms the boundary with the Downs and with the southern edge of Belowda Beacon.
- 6.5 Quoit Farm is situated 1km south-east of St. Columb Major and comprises three field enclosures bounded by a series of Cornish hedges. Ennisworrey comprises an irregularly shaped parcel of land located to the south-east of Ennisworrey Farm; the south western extent is situated approximately 250 metres to the east of Mons Tenament and is subdivided and partly bound by a series of Cornish hedges.
- 6.6 South of the A30, the SSSI includes heathland, fen, grassland and wet woodland associated with Goss and Tregoss Moors, Breney Common and Red Moor. These habitats also occur at Carbis Moor, Criggan Moor, Molinnis Downs, Hallel, Chark Moor, Lockengate Moor and Treskilling. The boundary generally follows the route of the old A30 at Goss and Tregoss Moors and A391 at Lockengate and Criggan Moor, where it incorporates the common land, as well as at Bowidick Downs, Lowertown Moor and Breney Common. Elsewhere the boundary generally follows fence lines, ditches, tracks, disused railway lines and minor roads that separate these sites from adjacent improved farmland. Land within the corridor of the A30 has also been included where contiguous blocks of heathland and species-rich grassland occur adjacent to areas outside of the road corridor.
- 6.7 Carbis Moor is situated approximately 1 km to the east of the village of Roche, and approximately 2 km to the south of the A30. It lies 2 km to the east of Goss Moor and is continuous with the much larger mire at Criggan Moor (located between the village of Bugle and the A30). It is crossed by a minor road, which divides an area of woodland to the south

and a single small field to the north with ditches running along its field boundaries. Molinnis Downs is situated along a very shallow sloping valley bottom approximately 0.5 km to the north east of the village of Bugle, east of the A391 around Minorca Lane.

- 6.8 Chark Moor is situated 1.5 km to the north-west of Lostwithiel and forms part of an ecological unit with the much larger areas of Red Moor and Breney Common to the west.
- 6.9 There are two SSSIs in close proximity to the Mid Cornwall Moors. The Brynn Moor section of the River Camel Valley and Tributaries SSSI lies between Belowda Beacon and Retire Common. Its southern tip is 15 metres from land within the A30 road corridor that is part of the Mid Cornwall Moors SSSI. The habitats present (woodland, heathland and fens) complement those of the Mid Cornwall Moors. Luxulyan Quarry SSSI is 170 metres south of the southern tip of Breney Common and is of special interest for its geological features.

## **7. Management of the SSSI**

- 7.1 This notification includes at *Annex 2* a statement of the management that Natural England considers is needed to conserve and enhance the features of special interest. Different management may be appropriate in different parts of the site and this statement is not intended to detail the exact requirements at specific locations. The statement is intended to explain how we can work with and support owners and managers in continuing to achieve positive management of the SSSI.
- 7.2 This notification also includes a list of the operations requiring Natural England's consent at *Annex 3*. The basis for the selection of these operations is set out in the supporting information document. Some of the operations may already be taking place and where they do not cause any damage they will be given consent. We will work with landowners and managers to agree lists of such existing and planned activities, which can be approved.
- 7.3 Where an operation has been granted a consent, licence or permission from another public body a separate consent will not generally be required from Natural England. However, other public bodies are required to consult Natural England before such consents, licences or permissions are issued.
- 7.4 In particular, we recognise the important roles of the owners and managers of the land in managing this site. We will work with them to develop means to secure the continued sustainable management of Mid Cornwall Moors SSSI.

## **8. Supporting information**

- 8.1 The detailed information, which has been used to assess the importance of this SSSI, is available on request from the address on page 2 of this document.

## **9. Legal documents**

- 9.1 Attached at *Annexes 1 - 4* are the legal documents that are required by section 28C of the Wildlife and Countryside Act 1981.



## ***Annex 1***

### **Citation**

This is a legal document on which you have a right to make objections or representations, as explained in part 3 of this notification document



**Site Name:** Mid Cornwall Moors SSSI                      **Unitary Authority:** Cornwall

**Status:** Site of Special Scientific Interest (SSSI) notified under section 28C of the Wildlife and Countryside Act 1981

**Local Planning Authority:** Cornwall Council

**National Grid reference:** SW948598                      **Area:** 1657.11 ha

**Ordnance Survey Sheets:** **1:50,000:** 200                      **1:10,000:** SW95, SW96, SX05, SX06

**Notification date:** 23 February 2017

#### Reasons for notification:

The Mid Cornwall Moors SSSI supports a diverse mosaic of semi-natural habitats, including heaths, fens, grasslands, woodlands, scrub and species-rich hedgerows, with ponds and waterways. It is of special interest for the following nationally important features that occur within and are supported by the wider habitat mosaic:

- wet and dry lowland heathland;
- lowland fens (including habitats often referred to as mires, swamps and bogs);
- wet and dry broad-leaved woodlands;
- species-rich neutral grasslands;
- an assemblage of nationally rare and nationally scarce flowering plants and ferns;
- populations of Cornish eyebright *Euphrasia vigursii*, coral-necklace *Illecebrum verticillatum*, chamomile *Chamaemelum nobile*, lesser butterfly-orchid *Platanthera bifolia*, chaffweed *Centunculus minimus*, lesser water-plantain *Baldellia ranunculoides* and allseed *Radiola linoides*;
- marsh fritillary butterfly *Euphydryas aurinia*;
- assemblage of invertebrates chiefly associated with scrub heath and moorland;
- populations of the water beetle *Hydrochus nitidicollis*, the mud snail *Omphiscola glabra* and the slender amber snail *Oxyloma sarsii*;
- breeding willow tit *Poecile montanus*; and
- geological features that demonstrate the mineralisation which occurs at the latest stage of granitic emplacement.

#### General description:

The Mid Cornwall Moors SSSI is a network of 14 areas of semi-natural habitat, all within close proximity to one another, extending for 17 km from Quoit Farm in the west to Chark Moor in the east. The site is underlain predominantly by calcareous slate, grits, shales and thin limestones of the Lower Devonian Mead-foot beds. This bedrock is overlain by extensive granite gravels with well drained, gritty loam soils rich in organic matter on higher ground and alluvial deposits along stream valleys giving rise to peaty acidic soil.

Much of the site has been subject to past disturbance as a result of extensive tin streaming, gravel extraction and peat cutting. Evidence of this can be seen in the hummock-hollow complex, series of ditches and other workings found throughout the site, which has a markedly undulating micro-topography. Past soil disturbance and the influence of calcareous bedrock has resulted in a diverse range of wetland areas on low-lying ground with extensive tracts of wet woodland, ponds in various stages of succession, acid bog communities, valley mire and fen communities and, on higher ground, large tracts of dry and wet heath, acid grassland and drier woodland communities.

The landscape scale of the network is enhanced by the location of individual areas which provide ecological linkages for mobile species populations of national and European importance. This applies especially to the marsh fritillary butterfly *Euphydryas aurinia*, which requires a network of suitable habitat patches sufficiently close to one another to allow re-colonisation.

### Wet and dry lowland heath

On higher ground and drier slopes the heathland is characterised by western gorse *Ulex gallii*, bristle bent *Agrostis curtisii*, heather *Calluna vulgaris* and bell heather *Erica cinerea*. Cross-leaved heath *Erica tetralix* and purple moor-grass *Molinia caerulea* can be frequent and plants typically associated with this heathland include tormentil *Potentilla erecta*, heath milkwort *Polygala serpyllifolia*, wood sage *Teucrium scorodonia* and the locally notable slender eyebright *Euphrasia micrantha*.

Species associated with areas of wet heath include cross-leaved heath, deergrass *Trichophorum germanicum*, heather, bog moss *Sphagnum* species, purple moor-grass and the locally notable white beak-sedge *Rhynchospora alba*. Species such as bog asphodel *Narthecium ossifragum*, devils'-bit scabious *Succisa pratensis*, common cotton-grass *Eriophorum angustifolium* and carnation sedge *Carex panicea* occur frequently. Creeping willow *Salix repens* and mat-grass *Nardus stricta* are common in some areas.

Heathland and scrub habitats support a range of breeding birds including cuckoo *Cuculus canorus*, nightjar *Caprimulgus europaeus*, tree pipit *Anthus trivialis*, stonechat *Saxicola torquata*, Dartford warbler *Sylvia undata* and grasshopper warbler *Locustella naevia*.

### Fens (including habitats often referred to as mire, swamps and bogs)

Wetter parts of each site, that receive much of their water from groundwater seepage and springs often support taller tussocky fen vegetation in complex mosaics with important transitions to wet heath, marshy grassland, woodland and open water. The transition mires demonstrate a range of successional stages, from fringing margins of floating plants at the edge of the many pools present, through to waterlogged fen peats with no open water.

One of the main fen types is characterised by tall tussocks of purple moor-grass with black bog rush *Schoenus nigricans* and bog myrtle *Myrica gale*. Tormentil, cross-leaved heath, western gorse and other species requiring drier conditions occur frequently in the tussocks. In the water filled hollows between the tussocks bog mosses, bog asphodel, common cotton grass and sharp flowered rush *Juncus acutiflorus* are locally abundant. Other species of note include bog pimpernel *Anagallis tenella*, pale butterwort *Pinguicula lusitanica*, heath spotted-orchid *Dactylorhiza maculata* ssp. *ericetorum*, round-leaved sundew *Drosera rotundifolia*, lesser skullcap *Scutellaria minor* and tawny sedge *Carex hostiana*, flea sedge *C. pulicaris*, star sedge *C. echinata* and the locally notable white sedge *C. canescens*.

Another fen type is dominated by tussocks of purple moor-grass with tormentil and cross-leaved heath. Bog asphodel, bog mosses, creeping willow, devils'-bit scabious, heather, saw-wort *Serratula tinctoria* and the uncommon royal fern *Osmunda regalis*, are commonly associated with this fen type.

In valley bottoms, permanently waterlogged conditions with more nutrient poor water have favoured the abundant growth of bog mosses and the formation of a rare type of valley mire. This is characterised by bog asphodel and bog mosses, particularly *Sphagnum papillosum*, common cotton grass, round-leaved sundew and the locally notable bladderwort *Utricularia australis* and lesser bladderwort *U. minor*. Other species which occur include oblong-leaved sundew *Drosera intermedia*, pale butterwort, lesser water-plantain *Baldellia ranunculoides* and a locally notable subspecies of early marsh-orchid *Dactylorhiza incarnata* ssp. *pulchella*.

Very wet mires characterised by an unstable 'quaking' surface also occur in waterlogged situations where they receive water from the surrounding catchment as well as from rainfall. The vegetation is typically dominated by tall sedges and rushes mixed with a wide range of herbs, over a ground layer of bog mosses or brown mosses, including *Calliergon* species.

Bog pool communities are generally recognised by smaller stands of wetter vegetation, where shallow water overlies mats of sphagnum and sedge species. These stands tend to pick out lower lying areas where water levels remain at or near the surface for much of the year, some of which possibly represent previous areas of open water.

## Woodland

Extensive willow *Salix* carr or wet woodland has developed over many parts of the site, in particular along stream courses and in the central parts of Goss Moor and Criggan Moor. The canopy is dominated by grey willow *Salix cinerea* ssp. *oleifolia* with ash *Fraxinus excelsior*, alder *Alnus glutinosa* and downy birch *Betula pubescens* locally common. The ground is waterlogged and supports a rich flora of herb species including water mint *Mentha aquatica*, the nationally scarce marsh violet *Viola palustris* ssp. *juressii*, marsh pennywort, round-leaved water crowfoot *Ranunculus omiophyllus*, water horsetail *Equisetum fluviatile*, shore horsetail *E. x litorale*, leafy rush *Juncus foliosus*, smooth stalked sedge *Carex laevigata*, bogbean *Menyanthes trifoliata*, ragged robin *Lychnis flos-cuculi*, yellow pimpernel *Lysimachia nemorum*, bog mosses, greater tussock-sedge *Carex paniculata* and the locally notable corky-fruited water-dropwort *Oenanthe pimpinelloides*. These wet woodlands exhibit transitions to standing water, aquatic vegetation, drier woodland and associated fen and heath vegetation. Abundant ferns include broad buckler-fern *Dryopteris dilatata*, lady fern *Athyrium filix-femina* and royal fern which grows extensively in some places where it forms an understorey.

Drier woodland fringes the boundaries in places and is dominated by pedunculate oak *Quercus robur*, with holly *Ilex aquifolium* and coppiced hazel *Corylus avellana*, Guelder-rose *Viburnum opulus*, ivy *Hedera helix*, bramble *Rubus fruticosus*, and honeysuckle *Lonicera periclymenum*. Wood anemone *Anemone nemorosa*, bluebell *Hyacinthoides non-scripta*, the locally notable southern wood-rush *Luzula forsteri* and the 'near-threatened' greater butterfly-orchid *Platanthera chlorantha* are often locally common in the ground flora which is rich in ferns and frequent bog moss species where wet hollows occur. More acid conditions are indicated by the presence of bilberry *Vaccinium myrtillus*. Dormouse *Muscardinus avellanarius* occurs in a range of habitats throughout the site but is particularly associated with woodland (and ancient species-rich hedgerows), especially where hazel *Corylus avellana* is common and there is a good diversity of flowering and fruiting shrubs that are not intensively managed.

## Species-rich neutral grassland

A damp, heathy form of species-rich neutral grassland occurs within the site at Retire Common, Criggan Moor and Carbis Moor where it occurs as small patches contiguous with or surrounded by heath and fen. The grass composition includes frequent common bent *Agrostis capillaris*, creeping bent *Agrostis stolonifera*, Yorkshire fog *Holcus lanatus* and cock's-foot *Dactylis glomerata*, with crested dog's-tail, sweet vernal grass *Anthoxanthum odoratum*, red fescue *Festuca rubra* and heath-grass *Danthonia decumbens*. Ribwort plantain *Plantago lanceolata*, cat's ear *Hypochaeris radicata*, bird's foot trefoil *Lotus corniculatus*, creeping cinquefoil *Potentilla reptans*, marsh thistle *Cirsium palustre*, red clover *Trifolium pratense* and selfheal *Prunella vulgaris* are frequent associates. Tormentil *Potentilla erecta*, heath wood-rush *Luzula multiflora* and heather add a heathy element, while meadowsweet *Filipendula ulmaria* occurs in areas adjacent to heathland.

## Flowering plants and fens

The extensive mosaic of semi-natural habitats supports an outstanding assemblage of at least 12 nationally rare and nationally scarce flowering plant and fern species. Populations of two nationally rare species are of national importance in their own right: Cornish eyebright *Euphrasia vigursii*, an 'endangered' species endemic to England, and coral-necklace *Illecebrum verticillatum*, listed as 'vulnerable' to extinction in Great Britain. The assemblage also includes ten nationally scarce species: yellow centaury *Cicendia filiformis*, marsh clubmoss *Lycopodiella inundata*, pale dog-violet *Viola lactea*, pillwort *Pilularia globulifera*, three-lobed crowfoot *Ranunculus tripartitus*, wavy St John's-wort *Hypericum undulatum*, round-leaved mint *Mentha suaveolens*, Cornish moneywort *Sibthorpia europaea*, marsh fern *Thelypteris palustris* and the south-western form of marsh violet *Viola palustris* subsp. *juressi*.

The site also supports nationally important populations of five species that are more widespread but nevertheless declining and threatened with extinction in England or more widely in Great Britain: chamomile *Chamaemelum nobile*, lesser butterfly-orchid *Platanthera bifolia*, chaffweed *Centunculus minimus*, lesser water-plantain *Baldellia ranunculoides* and allseed *Radiola linoides*.

Other notable plant species on the site include shepherd's cress *Teesdalia nudicaulis*, bog orchid *Hammarbya paludosa* and ivy-leaved bellflower *Wahlenbergia hederacea*.

### Invertebrates

The complex network of semi-natural habitats in the Mid Cornwall Moors supports a diverse range of invertebrates, including threatened and range-restricted species. Foremost amongst these is the marsh fritillary butterfly *Euphydryas aurinia*, for which the site is of national and European importance. Marsh fritillaries in the Mid Cornwall Moors breed primarily in damp acidic grassland where the larval food plant, devil's-bit scabious *Succisa pratensis*, can be abundant. Optimal breeding areas are typically a patchwork of short vegetation and long tussock grasses dominated by cattle-grazed purple moor-grass *Molinia caerulea*. Adult marsh fritillary butterflies survive in 'meta-populations' formed by a number of linked sub-populations or colonies which may frequently die out and re-establish through re-colonisation. Connected habitats, within a 1-2 km radius of one another support fluctuating meta-populations, which support more distant dispersal and robustness of the population overall.

The Mid Cornwall Moors also supports a nationally important assemblage of invertebrates chiefly associated with scrub heath and moorland. The assemblage is typical of low nutrient, humid heathy soils and is characterised by beetle, fly, spider, true bug, butterfly and moth species which demonstrate a high fidelity to this habitat type. The following are examples of the many scrub heath and moorland invertebrates recorded in sampling from wet heath and transition mire in the Mid Cornwall Moors: a spider *Agroeca proxima*, the ground beetles *Bembidion mannerheimii*, *Notiophilus germinyi* and *Pterostichus rhaeticus*, heather fly *Bibio pomonae*, heath bumble bee *Bombus jonellus*, a snail *Columella aspera*, small heather weevil *Micrelus ericae*, a rove beetle *Olophrum piceum*, a ground bug *Scolopostethus decorates*, the beetles *Sitona regensteinensis* and *Sitona striatellus*, and ground crab spider *Xysticus audax*.

In addition, there are nationally important populations of three species representative of water's edge habitats: the vulnerable water beetle *Hydrochus nitidicollis*, the nationally scarce mud snail *Omphiscola glabra* and the nationally rare and near threatened slender amber snail *Oxyloma sarsii*.

### Willow tit *Poecile montanus*

The SSSI is important for breeding willow tits, which occur in the wet woodland and scrub habitats across the site.

### Geology

At Belowda Beacon, a partially collapsed shallow mine adit (used by early prospectors searching for mineral veins) includes exposures of a granitic rock with many fine crystals of topaz, tourmaline and quartz. Small dumps at the mouth of the adit also contain large pieces of topaz-bearing rock. These granites were formed 280 million years ago from molten rock that pushed its way up from great depths in the earth. Along with the molten rock were other hot liquids and gases enriched in chemicals including boron and fluorine. This rich chemical cocktail cooled and solidified to form a diverse suite of rare and interesting minerals; in this case the topaz-tourmaline-quartz rock at Belowda Beacon. The occurrence is very unusual and the site is of national importance for research and teaching purposes because it clearly demonstrates the mineralisation which occurs at the latest stage of granitic emplacement. It also helps scientists to understand the processes that have formed Cornwall's present landscape.

## ***Annex 2***

### **Views about Management**

This is a legal document on which you have a right to make objections or representations, as explained in part 3 of this notification document.





## **Views About Management**

Wildlife and Countryside Act 1981 Section 28(4) as inserted by  
Schedule 9 to the Countryside and Rights of Way Act 2000

### **A statement of Natural England's views about the management of Mid Cornwall Moors Site of Special Scientific Interest (SSSI)**

This statement represents Natural England's views about the management of the SSSI for nature conservation. This statement sets out, in principle, our views on how the site's special conservation interest can be conserved and enhanced. Natural England has a duty to notify the owners and occupiers of SSSI of its views about the management of the land.

Not all of the management principles will be equally appropriate to all parts of the SSSI. Also, there may be other management activities, additional to our current views, which can be beneficial to the conservation and enhancement of the features of interest.

This Statement does not constitute consent for any of the 'operations requiring Natural England's consent'. The written consent of Natural England is required before carrying out any of those operations. Natural England welcomes consultation with owners, occupiers and users of the SSSI to ensure that the management of this site conserves and enhances the features of interest, and to ensure that all necessary prior consents are obtained.

### **Background**

The Mid Cornwall Moors SSSI comprises an intricate mosaic of diverse and extensive wet and dry lowland heathland, fen (including valley fens and mires, transition mires, quaking bog and bog pool communities), wet and dry woodland, species-rich neutral grassland, and open water habitats. This mosaic of habitats supports many plants and animals, including rare and scarce flowering plants and ferns, invertebrates, breeding willow tits and internationally important meta-populations of marsh fritillary butterflies. The site is also of further importance for its geological interest.

The particular importance of the site is a function of both its large overall extent across a number of patches in close proximity and also the juxtaposition of different habitats that complement each other to support important species populations. This is particularly true of the marsh fritillary which relies on patches of suitable breeding habitat (with the larval food plant devil's-bit scabious) of adequate size and in close proximity to other suitable patches, as well as flower-rich habitat to support feeding adult butterflies. Areas with these characteristics enable the persistence of the butterfly at the landscape scale, with local extinctions on individual patches and re-colonisation from nearby sub-populations.

### **Management principles**

All of the habitats require management to maintain their suitability for the interest features and the most important principles are to maintain: water quality and quantity; approximate relative proportions of woodland, scrub and more open fen, heathland and grassland habitats but with some flexibility around the precise distribution of these habitats over time; and the maintenance of connectivity for key populations of mobile species, most notably marsh fritillary butterfly. In many cases the habitats and the species they support rely on fundamentally similar management (maintenance of high water levels, extensive grazing and targeted scrub/tree clearance) whilst some have more specific or specialist requirements.

### **Heathland**

On this site, a mosaic of both wet and dry heath communities occur. Heathland supports the greatest diversity of plants and animals where management maintains the open nature of the heath and by promoting a varied structure of uneven-aged stands of native heathers and other

characteristic plants such as Western gorse. It is generally beneficial if all stages of the heather life cycle are present. Without such management, heathland becomes progressively dominated by bracken, European or western gorse and, on wet ground, purple moor-grass tussocks. Eventually scrub and trees may invade. The precise management requirements will vary both between and within sites according to the needs of the different heathland interests present and site conditions.

Low intensity grazing is a suitable means of managing areas of dry heath. Generally areas of wet heath require limited management but light grazing may also be useful for maintaining the variation in vegetation composition and structure, and for controlling invasive grasses such as purple moor-grass. By feeding selectively in different areas and on different plants, free-roaming livestock help to maintain variation in the vegetation composition and structure. They can also slow scrub encroachment and provide some light poaching to create small pockets of bare peat and sandy ground that are of benefit to a variety of specialised plants, invertebrates and reptiles. Cattle grazing is an acceptable method of management but hardy ponies may also be used, although care must be taken to avoid damage to the heather by trampling. An appropriate stocking rate must take into account local conditions and the timing and length of grazing, but an off-take of between 30-40% of the current growth increment is desirable. Heavy grazing must be avoided on wet heath as it can lead to a decline in characteristic dwarf shrub cover in favour of grass and sedge species, as well as excessive poaching and erosion of the underlying peat.

Cutting or mowing may be useful options for managing dry heath where a mosaic of patches of heather of different ages is desired. The cut material must be removed to avoid nutrient accumulation and to allow the cut plants to re-sprout successfully. However, mowing or cutting may not be suitable on wet heath or on mature stands of dry heath of importance for rare reptiles.

Prescribed burning can also be a useful tool for maintaining the structural diversity of some dry heathlands and for re-establishing areas of pioneer heath required by certain species, but special care is required when sensitive species are present and burning should not be used on wet heath vegetation. Burning if required must be used with caution, as inappropriate burning can be very damaging to both plant and animal communities and careful consideration should be given to the timing of the burn in accordance with the Heather and Grass Burning Code.

There is some benefit in retaining a few scattered individual trees and some small patches of scrub. However, this must not encroach on the open nature of the habitat, and mechanical control or manual cutting followed by the careful application (spot application on areas of wet heath) of a suitable herbicide may be necessary to prevent this. Bracken invasions may need to be controlled in the same way.

Where European gorse is present, scattered stands with a bushy structure rather than large continuous blocks are of greater benefit to the characteristic bird and invertebrate species associated with gorse scrub. For example, Dartford warbler require areas of open heath (with less than 25 trees per hectare) with over 50% cover of mature heather (preferably over 30 cm tall) and patches of dense, compact, mature gorse bushes (0.5-3m tall) to be maintained. Winter cutting of 'leggy' stands of European gorse and the removal of cut material will maintain gorse at different stages of re-growth and avoid nutrient accumulation in the soil. Western gorse is generally scattered with varying cover depending on management but tends to be more dense within these heaths. Where Western gorse and European gorse occur together, the combined total of both species should be no more than 50%. However, in Cornwall, the relative abundance of Western gorse is not necessarily an indication that the site is badly managed.

Although careful maintenance of existing ditches and drains may be acceptable, the deepening of ditches or drains should be avoided. Water levels within areas of wet heath should be maintained to avoid adverse changes to the characteristic plant composition of the habitat. In some instances it may be appropriate to restore natural drainage where this is possible.

#### Fens (including mires, swamps and bogs)

Fens often develop within valleys and the origins and movement of the water within the fen give rise to a number of different vegetation zones. The variety of plant and animal life in the valley mire is closely linked to the number and type of zones it contains. Fens also occur in topographic depressions. These depressions fill with water to form water-bodies, which can eventually develop

into basin fen or transitional mires and quaking bogs. If the vegetation builds up above the groundwater level, the fen will be fed by rainwater only and develop as ombrotrophic bog. Scrub and trees may eventually take over and dry out the surface, thus changing the fen into woodland. This is a natural succession, and intervention may be necessary to maintain a particular stage.

Transitional mire and quaking bog vegetation forms where the process of colonisation of the open water surface, by a floating raft of vegetation (that sinks to form a layer of peat), is repeated to form a semi-floating structure of alternate layers of peat and semi-liquid material. The vegetation of transitional mires and quaking bogs is affected by groundwater and its level relative to the land surface, fluctuations in groundwater level and its constituents.

Swamp habitats develop on the fringes of open water, or in shallow depressions with permanent standing water. The plants may be rooted in the submerged soil or form a floating mat of intertwined roots, rhizomes and stems. Swamps usually consist of a dominant single species of plant (e.g. reeds, tussock sedges, reed-mace, reed sweet-grass, reed canary-grass and bulrushes) with a few other species thinly distributed among them. In common with most other types of wetland, swamps represent a transient stage in the change from open water to dry land.

Management should aim to maintain the water quality and quantity according to the requirements of the wetland communities present, though the quantity is not likely to be naturally constant throughout the seasons or between wet and dry years. Drainage schemes must not intercept the sources of ground and surface water to the fen. In valley mires, the bed of the watercourse should not be lowered, nor should its water level be artificially raised, other than as part of a well thought-out conservation scheme. This will ensure the various vegetation components of the valley mire are maintained in their ideal proportions, and that 'head-ward' erosion is not triggered, in which increased flow gradually erodes the peat and silt on which the valley mire has developed.

The groundwater is often susceptible to contamination by agricultural fertilisers, or by pollution leaking from landfill sites. Where swamp is in continuity with a water-body, the water quality in the water-body will affect the swamp. While some communities, such as reed swamp are unlikely to be very sensitive to nutritional enrichment, others, such as tussock sedge and narrow-leaved reed mace, will be out-competed by other species (e.g. common reed or reed sweet-grass) where any increase in the amount of nutrient present occurs.

The characteristics of the water supply giving rise to that particular type of fen must be maintained. It is essential to exclude undue concentrations of nitrogen and phosphorus, any increase in which would result in eutrophic fen replacing the type for which the site is valued. It is also important to ensure that the mean, upper and lower limits of the water level are sufficient to maintain the vegetation as fen rather than to allow succession to woodland. The desirability of the change from one fen type to another (that might also occur naturally as peat accumulates) should be evaluated by looking at the scarcity of the different communities both in the locality and nationally.

Although the surface of the fen vegetation may be above groundwater level, the deeper rooting plants may remain in contact with the aquifer. It is common for the land around a basin fen to slope towards it, so management must ensure that the local surface water that drains into the fen via ditches, or by seeping through permeable soils such as sand, is of appropriate quality.

Grazing is important in the management of some fens, although basin and valley fens that support quaking vegetation need to be grazed with care. Open water with thin, floating rafts of peat can lead to the loss of stock and heavy trampling will damage the vegetation cover and its structure. However, light grazing of the margins can help maintain openness and prevent dominance of a few competitive species. Animals help to break up the tussocks of rank grasses such as purple moor-grass in valley mires, opening the sward up to a greater variety of plants. The precise timing and intensity of grazing will vary according to local conditions and requirements. Some (but not excessive) trampling is necessary to create open soil, for invertebrates, mosses and seedling establishment. If stock is present there should be no supplementary feeding on the fen (or upstream of valley mires); nor should there be any structures, such as animal shelters, likely to encourage stock to herd onto the fen (or upstream) and cause enrichment through dunging.

Management may be necessary to prevent the encroachment of trees and scrub that can affect the fen by removing essential water, and by drawing up nutrients from deep groundwater, and then

'enriching' the surface through leaf fall. Grazing limits the spread of willow, alder and birch carr, which naturally tend to develop around the central watercourse of a valley mire and should be restricted to this area. Elsewhere on fens, the proportion of trees and scrub should be carefully evaluated and in most cases restricted to a few small, scattered stands for the benefit of birds and invertebrates.

On marsh fritillary sites management should aim to maintain a patchwork of short and long grasses, ideally between 8 and 25cm high. Grazing in the spring and summer with cattle or ponies is the most effective way of achieving this. Stock should be removed if the sward height is reduced to below 8cm. Burning has traditionally been used in some areas to maintain damp grasslands but this will kill the marsh fritillary caterpillars. If absolutely necessary, burns should take place between January and March and not cover more than one third of the grassland.

In areas dominated by purple moor-grass a good rule of thumb is that stocking rates should result in the sward height across the majority of a field being over 2cm (at the end of the summer grazing period) with not more than a quarter of the area over 15cm (but see above for marsh fritillary sites). Light poaching can be beneficial but heavy poaching should be avoided.

Swamps are important for invertebrates and birds and the inclusion of some swamp vegetation, such as reed bed, within the mosaic of habitats present will add to the conservation value of the site. However, excessive spread of reeds, reed canary-grass, or reed sweet-grass is likely to be an indication of worsening water quality, the cause of which should be investigated and addressed to maintain the characteristic fen communities.

Management should either seek to retain swamp communities in the same place or should acknowledge the dynamics of succession by ensuring there is always a new niche for the swamp communities to develop in. Swamp habitats have often survived where the vegetation has traditionally been cut for a variety of purposes, including use as building materials or animal bedding. It may be beneficial to consider re-instating these traditional management practices where they are not in conflict with other nature conservation objectives, such as the specific requirements of certain birds or invertebrates.

#### Woodland and scrub

There may be several different ways in which the wood can be managed to best conserve its value for wildlife; by promoting an appropriate woodland structure, by ensuring regeneration and by maintaining the special features of the woodland. A diverse woodland structure with some open space, some areas of dense understorey, and an overstorey of more mature trees (which may be the standard trees under a coppice-with-standards regime) is important. A range of ages and species within and between stands is desirable.

Areas of wet woodland (mainly dominated by willow with some ash and alder) usually benefit from minimum intervention and are often best left undisturbed to limit damage to their fragile soils. This allows the development of old stands where individual trees reach maturity and collapse naturally to create gaps in the canopy, leading to a diverse woodland structure.

Some dead and decaying wood such as fallen logs, old hollow trees or old coppice stools is essential for providing habitats for fungi and dead wood invertebrates. Work may, however, be needed to make safe dangerous trees where they occur in areas of high public access.

Open space, either temporary gaps created by felling or coppicing, or more permanent areas such as rides and glades, benefit other groups of invertebrates such as butterflies. Open spaces should be of sufficient size to ensure that sunny conditions prevail for most of the day. Rides and glades may require cutting to keep them open. Where the woodland is spreading on to valuable open wetland habitat, it may be necessary to periodically clear areas of vegetation to allow temporary and permanent open space within the habitat. It is important that a sufficient area of wet woodland and scrub is available to at least retain the existing numbers of willow tits in optimal habitats while any adjacent areas are cut back.

Felling, thinning or coppicing may be used to create or maintain variations in the structure of the wood, and non-native trees and shrubs can be removed at this time. To avoid disturbance to breeding birds the work is normally best done between the beginning of August and the end of

February. Work should be avoided when the ground is soft, to prevent disturbing the soil and ground flora. Normally successive felling, thinning or coppicing operations should be spread through the wood to promote diversity but where there is open space adjacent plots should be worked to encourage the spread of species that are only weakly mobile.

Natural regeneration from seed or stump re-growth (as in coppice) is preferred to planting because it helps maintain the local patterns of species and the inherent genetic character of the site. Deer management and protection from rabbits or livestock are often necessary. Whilst light or intermittent grazing may increase woodland diversity, heavy browsing can damage the ground flora and prevent successful regeneration.

Scrub habitats are low-growing communities where the main woody components are bushes or small trees, such as European gorse, blackthorn and hawthorn. Scrub supports a wide variety of species and ecological communities, including invertebrates. In particular, the transitional zone between scrub and other habitats can be important for wildlife, especially birds and invertebrates.

Often, scrub is a transitional stage that will develop into woodland if unmanaged. Maintaining structural diversity and a mosaic of age classes within areas of scrub is important for maintaining the diversity of species the scrub is able to support. For example, hawthorn and blackthorn scrub supports the greatest variety of bird and insect species in the early and middle stages of growth. As scrub habitats mature they develop a tall, continuous cover which is unsuitable for a number of lowland scrub bird species.

In some locations it may be impracticable to manage scrub due to inaccessibility; in these circumstances this may create structural diversity and a mosaic of age classes without active management. Elsewhere, scrub can be managed by rotational cutting (which should aim to maintain a mosaic of patches at different stages of growth) or by burning and grazing.

Although it is entirely appropriate to maintain areas of scrub as part of the habitat mosaic it is also necessary to control the extent of scrub to prevent it heavily invading other habitats of nature conservation importance, particularly heathland and fens. In many locations it would be beneficial to reduce the amount of scrub cover, but to still maintain a small amount of scattered scrub rather than seeking to eradicate it entirely.

## Ponds

Both natural and artificial ponds can support a wide range of aquatic plants, and as many have few or no fish, they are often important habitats for amphibians and invertebrates. Some ponds may only contain water during certain periods of the year, and these temporary ponds are important for a specialised group of plants and animals which depend on the seasonal nature of the habitat. It is important that temporary ponds are not over-deepened or made into permanent ponds.

Ponds often require periodic management to prevent a build up of plants and silt which will reduce water depth and cause a build up of nutrients. However, on a site containing many ponds it may be desirable to maintain a range of ponds in various stages of succession, and some could be left to develop into damp muddy hollows whilst the value of the overall pond habitat may be maintained through the creation of new ponds nearby. Silt and plant material should only be removed from a portion of the pond at any one time, allowing sufficient time for recovery before other areas are dredged. A range of water depths should be retained and the importance of exposed muddy margins should not be overlooked. Management should aim to maintain the habitats associated with shallowly sloping margins as they are important for many species associated with ponds. When dredging artificial (and some natural) ponds, any impervious lining should not be broken.

The relatively small area and water volume of ponds means they are particularly vulnerable to pollution events, and accidental spillages may affect a whole pond. Increased nutrients may cause a loss of aquatic plants and increases in algal growth, whilst silt inputs may smother plants and lead to rapid infilling. Management of the pond and the surrounding areas should aim to maintain good water quality by limiting inputs of silt and nutrients.

The introduction of bottom feeding coarse fish, which uproot plants and disturb pond sediments, may also cause a loss of aquatic plants and increases in algal growth, as can the control or removal of aquatic plants. Ponds are also susceptible to invasion by non-native aquatic plants such

as Australian swamp stonecrop and parrot's feather. These species are able to grow rapidly, taking up available habitat and smothering other plants. These plants should be removed as soon as they are observed. Some native species such as duckweed species are also able to take over in this way, but such growths are usually exacerbated by increased nutrients in the water.

Changes to the use of surrounding land can alter the amount of water reaching the pond, often resulting in the pond drying out. Ponds may be particularly vulnerable where large volumes of groundwater are abstracted nearby.

### Rivers and streams

Rivers and streams naturally provide a diversity of habitats for plants and animals, including invertebrates. Some of these habitats are directly connected with the physical form of the channel and its banks; others are created by the vegetation which the river's form supports. Despite their varied character, there are some management principles that apply to all rivers and streams.

The river's natural structure and form should be maintained. This will support a natural flow regime and avoid the creation of artificial barriers to the passage of migratory fish and other animals, such as otters. Where artificial modifications have occurred (such as weirs, embankments, straightening and dredging), the restoration of natural channel profiles and dynamics is desirable where appropriate. Any new infrastructure, should be carefully designed to avoid the constriction of the river or blockage of its floodplain. Opportunities should be taken to create additional riparian areas where flooding is acceptable, in order to reconnect the river with its floodplain.

Management should maintain the natural flow regime of the river or stream, including natural erosion and sedimentation processes. Abstraction levels should be managed to protect the characteristic flow regime, including seasonal base flows and flushing flows. Compensation flows are generally not an acceptable alternative to reducing abstraction, and river transfers may also have an undesirable effect on river ecology.

Bank-side vegetation should be allowed to develop, allowing characteristic plants to flourish as well as benefiting those animals that spend part of their life-cycle out of the water. A mix of trees, bushes, tall and short fen and grass is desirable and can be encouraged by careful management. Associated habitats, such as oxbow lakes, areas of marshland and floodplain woodland, can all be very important for invertebrates and should be considered integral with the river system.

The characteristic aquatic plant communities should be allowed to flourish, including fringing emergent vegetation and beds of submerged plants. Any cutting of vegetation should aim to leave at least 50% of the channel vegetated, comprising an active marginal fringe and a mosaic of submerged and floating beds that are allowed to flower and set seed.

Of particular importance for invertebrates are exposed riverine sediments, which include sand and shingle bars or spits as well as eroding banks and river cliffs. These features tend to shift and move over time and management should aim to ensure that a similar proportion of exposed sediment is maintained within any given stretch of the river. The invertebrate communities are sensitive to excessive shade, compaction by grazing livestock and mechanical activity and management should aim to keep most areas of exposed sediment free from these impacts. Where appropriate, any coarse woody debris within the river channel should be left in situ. As well as providing a valuable habitat for certain invertebrate species, it can also promote the deposition of river shingles behind the debris and can generally increase in-channel structures, which are of benefit for invertebrates.

The maintenance of good water and sediment quality are essential to maintaining a healthy river system. Management should minimise pollution of the river from point and diffuse sources, including discharges effluent, and run-off from agriculture, forestry and urban land. Effluents entering the river directly or indirectly should be treated to reduce the levels of phosphorus to concentrations that will not lead to a proliferation of algae or the disappearance of characteristic plants and animals. Organic pollution should also be controlled to avoid de-oxygenation of the water or any toxic effects on aquatic animals and plants. Siltation of the river bed can smother and infill coarse gravels, which can affect fish spawning success and the establishment of submerged

plants, as well as having an impact on invertebrates. Riparian areas and the wider catchment need to be managed sensitively to avoid excessive run-off of soil particles and nutrients into the river.

### Neutral grassland

Neutral grassland generally requires active management if it is to retain its conservation interest. In order to maintain a species-rich sward, each year's growth of vegetation must be removed. Otherwise the sward becomes progressively dominated by tall and vigorous grasses which, together with an associated build up of dead plant matter, suppress less vigorous species and reduce the botanical diversity of the site. In other situations management may need to produce a more open but structurally diverse sward containing an uneven patchwork of short and long vegetation structure to allow a range of different plants and animals to flourish. Occasionally on a few damp grasslands where the structure of the vegetation is more tussocky periods of relaxed management may be beneficial to certain invertebrate species.

The above objectives are achieved by either grazing the sward as pasture or cutting it for hay. Generally fields with a history of management as pasture should continue to be managed as pasture, as is the case with the neutral grasslands in the Mid Cornwall Moors. Switching from one form of management to another can have significant effects on the conservation interest.

Grazing usually takes place at times between late spring and early autumn, but the precise timing and intensity will depend on local conditions and requirements, such as the need to avoid trampling ground-nesting birds, but should aim to keep a relatively open sward without causing excessive poaching. Cattle are often the preferred stock on the wetter pastures, being relatively tolerant of wet conditions and able to control tall grasses and rank vegetation. Cattle also tend to produce a rather uneven, structurally diverse sward. Heavy poaching should be avoided but light trampling can be beneficial in breaking down leaf litter and providing areas for seed germination. On those tussockier damp stands of vegetation grazing may be relaxed in some years or the stand managed on rotation avoiding grazing the whole sward in one go.

For some damper pastures, regular and careful maintenance of surface drainage, including ditches and small drains can be essential to prevent adverse changes in the plant species composition of the sward. Deepening of surface drainage should be avoided. Any surrounding, well-managed hedgerows may considerably add to the habitat in providing shelter for invertebrates

On some sites controlled winter burning on some of the rougher grassland or the topping of rush-dominated fields can be a useful supplement to grazing in maintaining an open and diverse sward. An element of managed scrub, both within and fringing a field can be of importance to birds and invertebrates, as can a surrounding hedge. Occasional dressings of lime and farm-yard manure may be acceptable on some neutral grasslands.

### Geology

The geological interests at this site are finite and irreplaceable. The main management principles are to conserve the resource in the long-term, while permitting scientific usage, which often involves collecting specimens. Balancing these two principles is the key to long-term positive management. Where there is any doubt, caution should be applied before removing or allowing any material to be removed.

Sites with a unique or finite geological resource are particularly sensitive because they are often small and the important interest features are typically restricted in volume. In addition to specimen collecting, any activity which conceals or requires removal of part or all of the geological interest features can cause irreparable damage or destruction.

Vegetation management, involving removal of large trees and scrub, may be required to recreate or maintain exposure of the geological features. In some cases, removal of rock debris and loose material from faces may be required.

**Date Notified: 23 February 2017**



## ***Annex 3***

### **List of operations requiring Natural England's consent**

This is a legal document on which you have a right to make objections or representations, as explained in part 3 of this notification document.



## Operations requiring Natural England's consent

### Wildlife and Countryside Act 1981 Section 28 (4)(b) as substituted by Schedule 9 to the Countryside and Rights of Way Act 2000

The operations listed below may damage the features of interest of **Mid Cornwall Moors SSSI**. Before any of these operations are undertaken you must consult Natural England, and may require our consent.

It is usually possible to carry out some of these operations in certain ways, or at specific times of year, or on certain parts of the SSSI, without damaging the features of interest. If you wish to carry out any of these activities please contact your Natural England Area Team who will give you advice and where appropriate issue a consent. Please help us by using the 'notice form' (provided at notification and available on request) to ask us for consent to carry out these operations.

In certain circumstances it will not be possible to consent these operations, because they would damage the features of interest. Where possible the Area Team will suggest alternative ways in which you may proceed, which would enable a consent to be issued. To proceed without Natural England's consent may constitute an offence. If consent is refused, or conditions attached to it, which are not acceptable to you, you will be provided with details of how you may appeal to the Secretary of State.

<b>Standard reference number</b>	<b>Type of operation</b>
----------------------------------	--------------------------

- |      |  |
|------|--|
| 1.   | Cultivation, including ploughing, rotovating, harrowing and re-seeding.  |
| 2.   | Grazing and alterations to the grazing regime (including type of stock, intensity or seasonal pattern of grazing).   |
| 3.   | Stock feeding and alterations to stock feeding practice.   |
| 4.   | Mowing or cutting vegetation and alterations to the mowing or cutting regime (such as from haymaking to silage).   |
| 5.   | Application of manure, slurry, silage liquor, fertilisers and lime.  |
| 6.   | Application of pesticides, including herbicides (weedkillers) whether terrestrial or aquatic, and veterinary products.   |
| 7.   | Dumping, spreading or discharging of any materials.  |
| 8.   | Burning and alterations to the pattern or frequency of burning.  |
| 9.   | The release into the site of any wild, feral, captive-bred or domestic animal, plant, seed or micro-organism (including genetically modified organisms).   |
| 10.  | The killing, injuring, taking or removal of any wild animal (including dead animals or parts thereof), or their eggs and nests, including pest control and disturbing them in their places of shelter.                     |
| 11.  | Destruction, displacement, removal or cutting of any plant or plant remains, including tree, shrub, herb, hedge, dead or decaying wood, moss, liverwort, lichen, fungal fruiting body, leaf-mould, turf or peat.           |
| 12.  | Tree and/or woodland management and alterations to tree and/or woodland management (including planting, felling, pruning and tree surgery, thinning, coppicing, changes in species composition, removal of fallen timber). |
| 13a. | Draining (including moor-gripping, the use of mole, tile, tunnel or other artificial drains).  |

<b>Standard reference number</b>	<b>Type of operation</b>
13b.	Modification to the structure of water courses (rivers, streams, springs, ditches and drains), including their banks and beds, as by re-alignment, regrading, damming or dredging.
13c.	Management of aquatic and bank vegetation for drainage purposes.
14.	Alterations to water levels and tables and water utilisation (including irrigation, storage and abstraction from existing water bodies and through boreholes). Also the modification of current drainage operations (e.g. through the installation of new pumps).
15.	Infilling or digging of ditches, drains, ponds, pools, marshes, pits or shafts.
16a.	Freshwater fishery production and/or management, including sporting fishing and angling, and alterations to freshwater fishery production and/or management.
20.	Extraction of minerals including peat, hard rock, shingle, sand and gravel, topsoil, subsoil and spoil.
21.	Destruction, construction, removal, rerouting, or regrading of roads, tracks, walls, fences, hardstands, banks, ditches or other earthworks, including soil and soft rock exposures or the laying, maintenance or removal of pipelines and cables, above or below ground.
22.	Storage of materials.
23.	Erection of permanent or temporary structures or the undertaking of engineering works, including drilling.
24a.	Modification of natural or man-made features and clearance of boulders, large stones, loose rock, scree.
24b.	Battering, buttressing or grading of geological exposures and cuttings (rock and soil) and infilling of pits and quarries.
25.	Removal of geological specimens, including rock samples, minerals and fossils.
26.	Use of vehicles or craft other than on made up roads and tracks.
27.	Recreational or other activities likely to damage or disturb the features of special interest.
28a.	Game and waterfowl management and hunting practices and alterations to game and waterfowl management and hunting practice.

### **Notes**

- i. This is a list of operations appearing to Natural England to be likely to damage the special features of the SSSI, as required under section 28 (4) (b) of the Wildlife and Countryside Act 1981 (as amended).
- ii. Where an operation has been granted a consent, licence or permission from another authority, separate consent will not be required from Natural England. However, other authorities are required to consult Natural England before such consents, licences or permissions are issued.
- iii. Any reference to 'animal' in this list shall be taken to include any mammal, reptile, amphibian, bird, fish, or invertebrate.

Date notified: 23 February 2017

National Grid reference: SW948598

## ***Annex 4***

### **Map(s) showing the land notified**

This is a legal document on which you have a legal right to make objections or representations, as explained in part 3 of this notification document.



**Insert boundary maps below starting from page 35 (remove this page, replacing with maps)  
– A3 portrait format in colour**

Mid Cornwall Moors Summary extension map x 1  
Mid Cornwall Moors Detail extension and deletion maps x 11  
Goss & Tregoss Moors denotification detail maps x 2  
Brenay Common denotification detail map x 1  
Red Moor denotification detail map x 1