CYNGOR CEFN GWLAD CYMRU
COUNTRYSIDE COUNCIL FOR WALES

CORE MANAGEMENT PLAN
INCLUDING CONSERVATION OBJECTIVES

FOR

RHOS LLAWR CWRT SAC (SPECIAL AREA OF CONSERVATION)

Version: **13**

Date: **15 April 2008**

Approved by: Tracey Lovering

More detailed maps of management units can be provided on request.
A Welsh version of all or part of this document can be made available on request.

Cyngor Cefn Gwlad Cymru
Countryside Council for Wales

NATURA 2000

Ramsar

Llywodraeth Cynulliad Cymru
Welsh Assembly Government
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CONTENTS

PREFACE

This document provides the main elements of CCW's management plan for the site named. It sets out what needs to be achieved on the site, the results of monitoring and advice on the action required. This document is made available through CCW's web site and may be revised in response to changing circumstances or new information. This is a technical document that supplements summary information on the web site.

One of the key functions of this document is to provide CCW's statement of the Conservation Objectives for the relevant Natura 2000 site. This is required to implement the Conservation (Natural Habitats, &c.) Regulations 1994, as amended (Section 4). As a matter of Welsh Assembly Government Policy, the provisions of those regulations are also to be applied to Ramsar sites in Wales.

1. VISION FOR THE SITE

This is a descriptive overview of what needs to be achieved for conservation on the site. It brings together and summarises the Conservation Objectives (part 4) into a single, integrated statement about the site.

Rhos Llawr Cwrt Special Area of Conservation (SAC) will continue to be a rhos pasture site. Rhos pastures are a mixture of different grassland communities and on this site marshy grassland, neutral grassland, acid grassland and wet heath will be present as a complex patchwork. Rhos pasture will also be found outside the SAC boundary within the National Nature Reserve (NNR). Most of the SAC sits within this NNR. The rhos pasture both within and outside the SAC will be essential to support the special range of communities and species found here.

The marshy grassland will extend throughout most of the site and will be wet underfoot for most of the year. The sward will be open with a mixture of short turf and tussocks of both rush and purple moor grass. There will be little leaf litter on the ground amongst the tussocks. Part of the sward will be dominated by rushes, mainly soft rush and sharp-flowered rush, and contain whorled caraway, greater bird's-foot trefoil and wefts of marsh bedstraw with occasional northern marsh orchids. Elsewhere, the sward will be dominated by purple moor-grass and contain a variety of sedges, tormentil, cross-leaved heath, heath-spotted orchid and in the wetter parts, tall plants of angelica. Fine grasses such as crested dog's tail, sweet vernal grass and common bent with plants such as knapweed and birds foot trefoil will be common on the small knolls of neutral grassland found mainly in Waun Hadau and Dan y Bryn. Areas of acid grassland will have sheep's fescue, heath bedstraw, tormentil and betony. Devil's bit scabious, the foodplant of the marsh fritillary butterfly, will be abundant in all fields. A series of springs will maintain a network of flushes in the marshy grassland and wet heath on the valley slopes. Scrubby vegetation, such as gorse and willow, will be confined to hedges. All the external boundaries and many of the internal field boundaries will have thick well-developed hedges of native trees and shrubs. Signs of agricultural modification, such as perennial rye-grass or white clover will be minimal.

A visitor walking through the pasture on a sunny day in early June will see hundreds of marsh fritillary butterfly adults nectaring on flowering herbs and laying eggs on devil's bit scabious. The butterfly, which requires a mixture of open short swards and tussocky vegetation to provide shelter, will breed throughout the site. In early spring and late summer the caterpillars will be seen in every field within the SAC and some of the adjacent National Nature Reserve fields, feeding in silken webs on devil's bit scabious.

In old peat cuttings and low-lying ground in Gorslas, Waen Dan, Waen Wen and Cors y Clettwr, slender green feather moss will be widespread and visible as green 'cushions' amongst the purple moor grass. This moss favours areas that are wet throughout the year and at Rhos Llawr Cwrt, springs, flushes, old peat cuttings and new excavations dug specifically for this species, will provide suitable habitat.

A controlled cattle grazing programme will maintain the rhos pasture habitat in a suitable condition to support the wide range of plant and animal species found here.

2. SITE DESCRIPTION

2.1 Area and Designations Covered by this Plan

Grid references: main western block: SN 410497 Eastern block (Cors y Clettwr) SN 421495

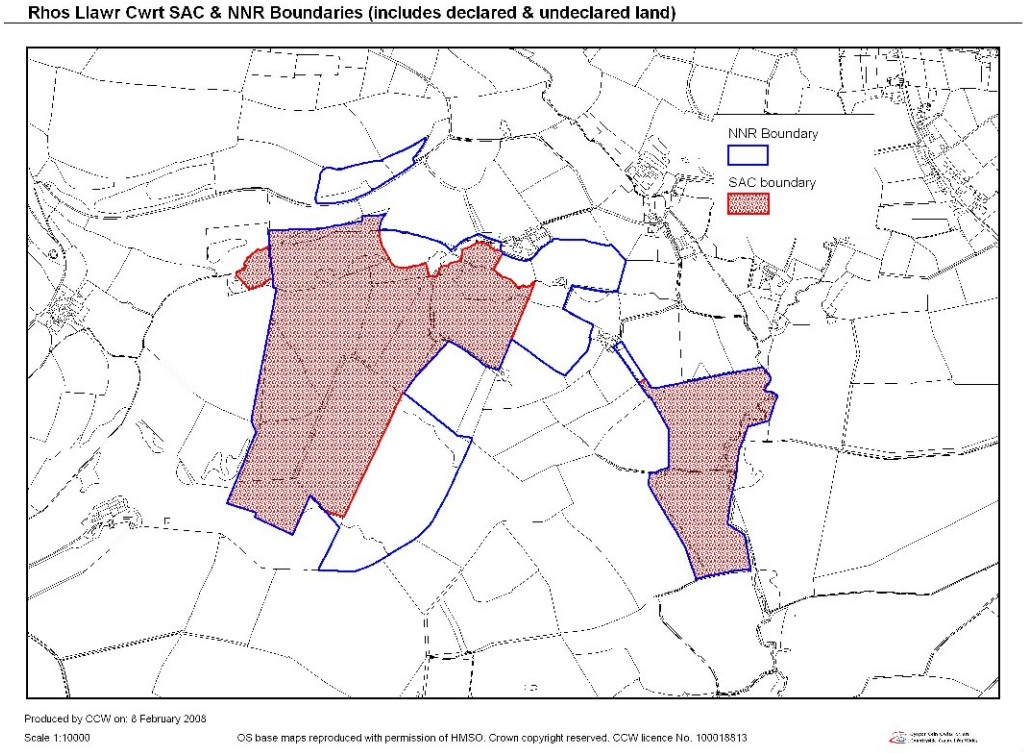
Unitary authority: Ceredigion

Area (hectares): 45.8

Designations covered: Rhos Llawr Cwrt Special Area of Conservation (SAC) is notified as a single Site of Special Scientific Interest (SSSI). Rhos Llawr Cwrt National Nature Reserve includes most of the SAC and extends beyond the boundaries into the agriculturally modified farmland.

Detailed maps of the designated sites are available through CCW's web site:
http://www.ccw.gov.uk/interactive-maps/protected-areas-map.aspx

A summary map showing the coverage of this document is shown below:



2.2 Outline Description

The SAC contains an extensive area of unimproved wet grassland vegetation known locally as rhos pasture, together with smaller areas of fen, flush, wet heath and dry improved neutral and acid grassland. Periglacial features known as pingos are present and contain basin mires in different stages of development. The site is of national importance for its flora and associated invertebrate fauna. Numerous grass, sedge and rush species occur in the rhos pasture, together with a wide range of flowering plants, including northern marsh orchid, heath spotted orchid, sneezewort, heath milkwort, and bitter vetch. The bog flora within the pingo depressions includes hair's tail cotton grass, bogbean, bog asphodel, cross-leaved

heath, and several species of bog mosses. The nationally rare slender green feather moss is found in flushes and old peat cuttings. The reserve supports one of the most important marsh fritillary populations in Britain, with an estimated 10,000 adults emerging in peak years. A number of other scarce insects occur, including the scarlet tiger moth and small red damselfly. A pony and cattle grazing regime is central to the management programme, which is directed at maintaining the plant communities and populations of invertebrates.

The majority of the SAC lies within Rhos Llawr Cwrt NNR, which is owned and managed by the Countryside Council for Wales. Only 0.65 hectares of the SAC is outside of the NNR. The NNR is 65.76 hectares in size, which is approximately 20 hectares larger than the SAC. Much of the 20 hectares was formerly rhos pasture but was drained and reseeded for agriculture in the 1970's and 1980's. Management by CCW (1992 – 2008) has achieved partial recovery of a rhos habitat on some of this improved land and much of the remainder has potential for reversion to rhos pasture.

2.3 Outline of Past and Current Management

Rhos Llawr Cwrt and Cors y Clettwr, as part of the upper Clettwr catchment, are remnants of the 'red bog' described by Stephens (1957) in her pioneer study of the otter. This study indicates that the site lies in a formerly large valley complex of unimproved wetland. According to some of the previous owners, the area was used mainly as rough grazing for ponies and cattle. This grazing was extensive - most of the upper Clettwr has only been enclosed since the middle of the twentieth century.

The First Edition of the one-inch Ordnance Survey map records a building 'Penbont' at NGR SN413500. This building, now long collapsed, was probably associated with Llawrcwrt Farm that also appears on the first edition one-inch map. An old hand drawn map, now in the possession of the current owners of Llawrcwrt Farm, names the main area of Rhos Llawr Cwrt as Waen hadu - the seed field. It is possible that part of this rhos pasture was once cultivated for black oats, which were commonly grown elsewhere in Dyfed.
Burning may have been used to control scrub development, but there is no supporting documentation. There is evidence (exposures on site) that parts of Cors y Clettwr were cut for peat but there are no rights of turbary.

Grazing for agricultural purposes with cattle, sheep and occasionally horses, continued after enclosure right up to 1979 when the site was first notified as an SSSI (38.5ha.) with extensions in 1984, 1987 and 1995.

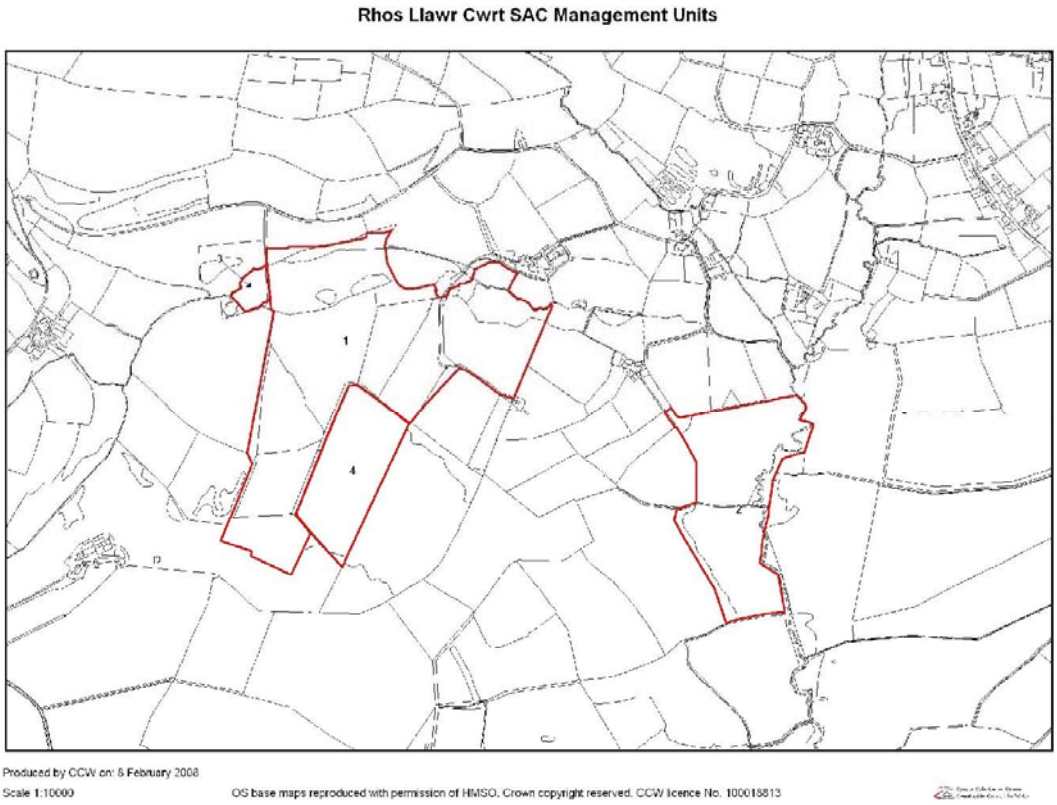
An agricultural open ditch system was established during the 1970's as an attempt to drain the site. Part of Unit 1(see section 2.4), a field of c. 2.4 ha was ploughed and reseeded during the 1980's. All of Unit 4 was ploughed, limed and reseeded in 1990/91, but no comprehensive land drainage was installed. These are the only 2 fields in the SAC that have been significantly agriculturally modified.

Rhos Llawr Cwrt was declared a National Nature Reserve (38.31ha.) in September 1986 with undeclared extensions in 1989, 1992 and 1997. The NNR includes the major part of the SAC plus further improved grassland fields. Since NNR declaration, the site has been managed principally by a cattle grazing programme. Other conservation management within the SAC has included the establishment of shelterbelts for the marsh fritillary, scrub management and mowing/removal of cut vegetation. Mowing/removal of cut vegetation is part of a programme of management in Unit 4 to revert the improved sward to a rhos pasture community.

2.4 Management Units

The plan area has been divided into management units to enable practical communication about features, objectives, and management. This will also allow us to differentiate between the different designations where necessary. In this plan the management units have been based on tenure, location and land management requirements.

A map showing the management units referred to in this plan is shown below.



The following table confirms the relationships between the management units and the designations covered:

Unit number	SAC	SSSI	CCW owned	NNR
Rhos Llawr Cwrt				
1	✔	✔	✔	✔
2	✔	✔	✔	✔
3	✔	✔		
4	✔	✔	✔	✔

Units 1 and 2 are sub-divided into a number of fields (see map above).

3. THE SPECIAL FEATURES

3.1 Confirmation of Special Features

Designated feature	***Relationships, nomenclature etc***	***Conservation Objective in part 4***
SAC features		
Annex II species that are a primary reason for selection of the site **Feature 1. Marsh fritillary butterfly *Euphydryas* (*Eurodryas, Hypodryas*) *aurinia*** ***EU Species Code: 1065***		1
Annex II species that are a present as a qualifying feature but not a primary reason for site selection **Feature 2. Slender Green Feather Moss Drepanocladus (Hamatocaulis) vernicosus** ***EU Species Code:*** **1393**		2
SPA features		
Not applicable		
Ramsar features		
Not applicable		
SSSI features		
Feature 3. Marshy Grassland		3
Feature 4. Dry Neutral Grassland		4
Feature 5. Acid Grassland		5

3.2 Special Features and Management Units

This section sets out the relationship between the special features and each management unit. This is intended to provide a clear statement about what each unit should be managed for, taking into account the varied needs of the different special features. All special features are allocated to one of seven classes in each management unit. These classes are:

Key Features

KH - a 'Key Habitat' in the management unit, i.e. the habitat that is the main driver of management and focus of monitoring effort, perhaps because of the dependence of a key species (see KS below). There will usually only be one Key Habitat in a unit but there can be more, especially with large units.

KS – a 'Key Species' in the management unit, often driving both the selection and management of a Key Habitat.

Geo – an earth science feature that is the main driver of management and focus of monitoring effort in a unit.

Other Features

Sym - habitats, species and earth science features that are of importance in a unit but are not the main drivers of management or focus of monitoring. These features will benefit from management for the key feature(s) identified in the unit. These may be classed as 'Sym' features because:

a) they are present in the unit but may be of less conservation importance than the key feature; and/or

b) they are present in the unit but in small areas/numbers, with the bulk of the feature in other units of the site; and/or
c) their requirements are broader than and compatible with the management needs of the key feature(s), e.g. a mobile species that uses large parts of the site and surrounding areas.

Nm - an infrequently used category where features are at risk of decline within a unit as a result of meeting the management needs of the key feature(s), i.e. under Negative Management. These cases will usually be compensated for by management elsewhere in the plan, and can be used where minor occurrences of a feature would otherwise lead to apparent conflict with another key feature in a unit.

Mn - Management units that are essential for the management of features elsewhere on a site e.g. livestock over-wintering area included within designation boundaries, buffer zones around water bodies, etc.

x – Features not known to be present in the management unit.

The table below sets out the relationship between the special features and management units identified in this plan:

Rhos Llawr Cwrt	**Management unit**			
	Unit 1	**Unit 2**	**Unit 3**	**Unit 4**
SAC	✔	✔	✔	✔
SSSI	✔	✔	✔	✔
NNR/CCW owned	✔	✔		✔
SAC features				
1. Marsh fritillary butterfly	**KS**	**KS**	**KS**	**KS**
2. Slender Green Feather Moss	**KS**	**KS**	**x**	**x**
SSSI features				
3. Marshy grassland	**Sym**	**Sym**	**Sym**	**Sym**
4. Dry neutral grassland	**Sym**	**x**	**x**	**x**
5. Acid grassland	**Sym**	**x**	**x**	**x**

The Marsh Fritillary butterfly is a key species driving the management of all units. This includes unit 4 which currently (2008) does not support the butterfly. Slender green feather moss also drives the management of units 1 and 2, these being the only units which have suitable flushes and uprisings of calcareous groundwater required by this species. An open sward structure maintained by controlled grazing is a requirement of both species. Marshy grassland, neutral grassland and acid grassland are present as a complex mosaic in unit 1, the largest unit, providing the main habitat for marsh fritillary. Marshy grassland also occurs in the other 3 units where it supports or may in future support both marsh fritillary and slender green feather moss.

4. CONSERVATION OBJECTIVES

Background to Conservation Objectives:

a. Outline of the legal context and purpose of conservation objectives.

Conservation objectives are required by the 1992 'Habitats' Directive (92/43/EEC). The aim of the Habitats Directives is the maintenance, or where appropriate the restoration of the 'favourable conservation status' of habitats and species features for which SACs and SPAs are designated (see Box 1).

In the broadest terms, 'favourable conservation status' means a feature is in satisfactory condition and all the things needed to keep it that way are in place for the foreseeable future. CCW considers that the concept of favourable conservation status provides a practical and legally robust basis for conservation objectives for Natura 2000 and Ramsar sites.

Box 1
Favourable conservation status as defined in Articles 1(e) and 1(i) of the Habitats Directive

"The conservation status of a natural habitat is the sum of the influences acting on it and its typical species that may affect its long-term natural distribution, structure and functions as well as the long term survival of its typical species. The conservation status of a natural habitat will be taken as favourable when:

- Its natural range and areas it covers within that range are stable or increasing, and
- The specific structure and functions which are necessary for its long-term maintenance exist and are likely to continue to exist for the foreseeable future, and
- The conservation status of its typical species is favourable.

The conservation status of a species is the sum of the influences acting on the species that may affect the long-term distribution and abundance of its populations. The conservation status will be taken as 'favourable' when:

- population dynamics data on the species indicate that it is maintaining itself on a long-term basis as a viable component of its natural habitats, and
- the natural range of the species is neither being reduced nor is likely to be reduced for the foreseeable future, and
- There is, and will probably continue to be, a sufficiently large habitat to maintain its populations on a long-term basis."

Achieving these objectives requires appropriate management and the control of factors that may cause deterioration of habitats or significant disturbance to species.

As well as the overall function of communication, Conservation objectives have a number of specific roles:

- Conservation planning and management.

  The conservation objectives guide management of sites, to maintain or restore the habitats and species in favourable condition.

- Assessing plans and projects.

  Article 6(3) of the 'Habitats' Directive requires appropriate assessment of proposed plans and projects against a site's conservation objectives. Subject to certain exceptions, plans or projects may not proceed unless it is established that they will not adversely affect the integrity of sites. This role for testing plans and projects also applies to the review of existing decisions and consents.

- Monitoring and reporting.

  The conservation objectives provide the basis for assessing the condition of a feature and the status of factors that affect it. CCW uses 'performance indicators' within the conservation objectives, as the basis for monitoring and reporting. Performance indicators are selected to provide useful information about the condition of a feature and the factors that affect it.

The conservation objectives in this document reflect CCW's current information and understanding of the site and its features and their importance in an international context. The conservation objectives are subject to review by CCW in light of new knowledge.

b. Format of the conservation objectives

There is one conservation objective for each feature listed in part 3. Each conservation objective is a composite statement representing a site-specific description of what is considered to be the favourable conservation status of the feature. These statements apply to a whole feature as it occurs within the whole plan area, although section 3.2 sets out their relevance to individual management units.

Each conservation objective consists of the following two elements:

1. Vision for the feature
2. Performance indicators

As a result of the general practice developed and agreed within the UK Conservation Agencies, conservation objectives include performance indicators, the selection of which should be informed by JNCC guidance on Common Standards Monitoring[1].

There is a critical need for clarity over the role of performance indicators within the conservation objectives. **A conservation objective, because it includes the vision for the feature, has meaning and substance independently of the performance indicators, and is more than the sum of the performance indicators**. The performance indicators are simply what make the conservation objectives measurable, and are thus part of, not a substitute for, the conservation objectives. Any feature attribute identified in the performance indicators should be represented in the vision for the feature, but not all elements of the vision for the feature will necessarily have corresponding performance indicators.

As well as describing the aspirations for the condition of the feature, the Vision section of each conservation objective contains a statement that the factors necessary to maintain those desired conditions are under control. Subject to technical, practical and resource constraints, factors which have an important influence on the condition of the feature are identified in the performance indicators.

[1] Web link: http://www.jncc.gov.uk/page-2199

4.1 Conservation Objective for Feature 1: Marsh Fritillary butterfly Euphydryas (Eurodryas, Hypodryas) aurinia EU Species Code: 1065

Vision for feature 1

- The SAC will continue to support a nationally important population of the marsh fritillary butterfly. Although, numbers of adult butterflies and larvae will fluctuate annually in response to a parasitic wasp and weather conditions, the population will be robust, resilient and viable in the long term.
- During peak years, a visitor taking a walk through the site on a sunny day in June will see several hundreds of adult butterflies. In these years the caterpillars, feeding communally in silken webs on their food plant devil's bit scabious, will be found in their thousands throughout the SAC.
- The SAC population will be the core of the Rhos Llawr Cwrt marsh fritillary metapopulation. The metapopulation will consist of the SAC population, plus populations breeding on land outside the SAC, within the Rhos Llawr Cwrt National Nature Reserve and elsewhere in the immediate vicinity (research indicates that a marsh fritillary metapopulation requires at least 50 hectares of available habitat to be viable in the long term).
- The population will breed throughout all 4 SAC units, where it will be a key species driving the management of each unit.
- Rosettes of devil's bit scabious will be both very numerous and widespread throughout the SAC, growing amongst a short turf of grasses, sedges and flowering herbs with scattered tussocks of purple moor grass and rushes providing shelter for the caterpillars in wet weather. This colourful wet grassland mosaic will extend throughout all the management units and some of the NNR fields outside the SAC and other non-designated areas nearby.
- Dense mixed hedges of hawthorn, hazel, mountain ash and other locally native species will grow around the external and internal boundaries and offer vital shelter to the breeding adult butterflies during poor weather in what is otherwise a very exposed landscape with little shelter**.**
- All factors affecting the achievement of the foregoing conditions will be under control.

Performance indicators for Feature 1

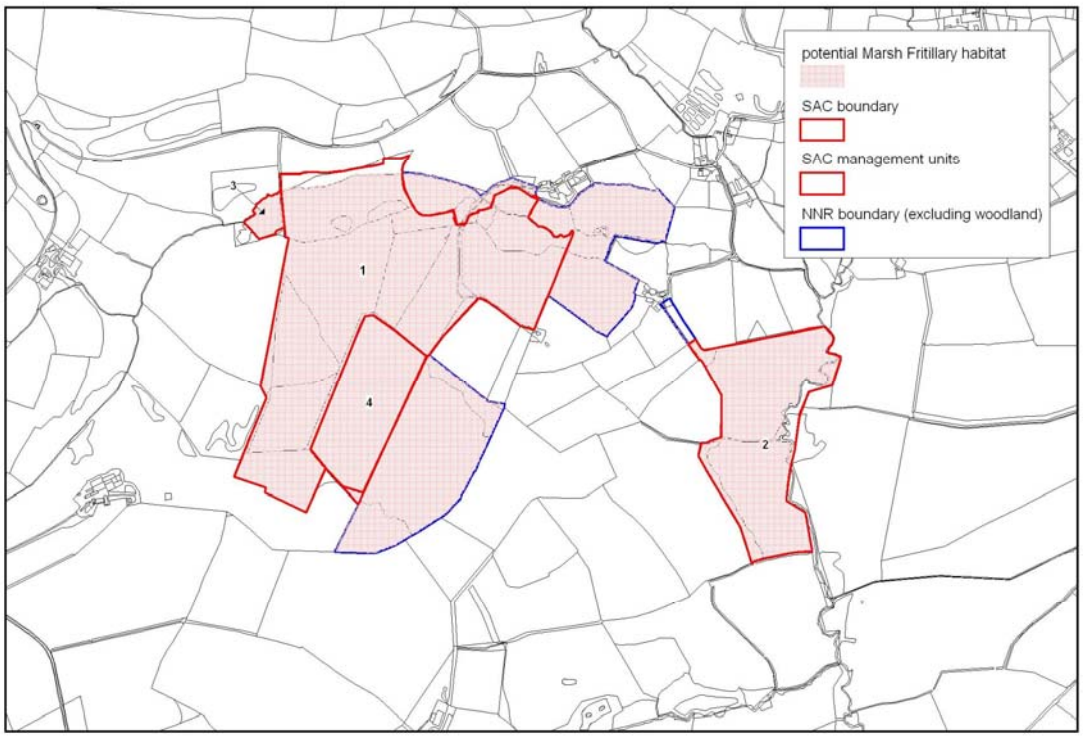
The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators.

Performance indicators for feature condition		
Attribute	***Attribute rationale and other comments***	***Specified limits***
A1. Abundance of larval webs	Population size is one of two attributes that may be used as a performance indicator for this species. Other attributes of quality such as productivity and sex ratio are difficult and time -consuming to measure. In relation to determination of population size, it is most appropriate to consider the larval stage. Eggs are difficult to find and for this reason alone, abundance cannot be systematically evaluated. Data collected on adult butterflies cannot always be relied on to indicate population size because of observer difficulties related to the mobility of the butterflies.	*Upper limit*: not required *Lower limit*: one year in six, the number of larval webs is 200 webs per hectare of **good condition** habitat within the SAC
A2. Distribution of larval webs	Wide distribution of larval webs across available habitat is important, promoting population viability. Populations restricted to small areas eg. a single field are more susceptible to impacts such as fire, over-grazing, pollution etc. Wide distribution also promotes larger population size.	*Upper limit*: not required *Lower limit*: one year in six, larval webs occur in every field in each of the 4 SAC units: Unit 1: 8 fields Unit 2: 2 fields Unit 1: 1 field Unit 4: 1 field AND, in 3 fields outside the SAC within the NNR.
Performance indicators for factors affecting the feature		
Factor	***Factor rationale and other comments***	***Operational Limits***
F1. Extent and quality of marsh fritillary habitat	Research indicates that the marsh fritillary requires at least 50 ha. of **available habitat** for a metapopulation to be viable in the long term.	*Upper limit*: not required *Lower limit*: Within the SAC boundary, there is 43 ha. of **available habitat** AND there is a further 7 ha of **available habitat** outside the SAC within the NNR.

	On marshy grassland type habitats, marsh fritillary larvae will only feed on devil's-bit scabious; the abundance of this food plant is directly related to the survivability of larvae. Sward height also affects survivability of larvae. Very short swards are unsuitable, as they provide no refuge for larvae in cold wet weather. Tall rank swards are unsuitable because they do not support vigorous populations of the larval food plant, devil's-bit scabious and they do not provide basking opportunities for larvae. All larvae must bask in the sun to raise body temperature to allow feeding activity.	The SAC has a core of unmodified habitat plus some areas of agriculturally modified habitat that is currently unsuitable but could become suitable through reversion management. Total habitat within the SAC is still below 50 ha. and so the lower limit is an expression of the maximum **available habitat** achievable within the SAC and NNR. The likely distribution by unit is: Unit 1: 26.0 ha Unit 2: 10.5 ha Unit 3: 0.5 ha Unit 4: 6.0 ha. Included in the **available habitat** should be at least 10 ha. of **good condition habitat;** this will be in the SAC. See map below this table.
F2. Shelterbelts	The species is particularly vulnerable to wet and windy conditions during the adult flight period when mating occurs. Shelterbelts and hedges reduce the impact of inclement weather.	*Upper limit*: not required *Lower limit*: all management unit boundaries should have hedges or shelterbelts. Note: shelterbelts should have gaps to allow free movement of adults and larvae between fields.

Site-specific habitat definitions	
Good condition habitat	Grassland where for at least 80% of sample points the vegetation is within the range 12-25cm and *Succisa pratensis* is present within a 1m radius. Scrub >0.5m tall cover no more than 10% of the area
Suitable condition habitat	Stands of grassland where *Succisa pratensis* is present at lower frequencies but still widely distributed (>5% of sampling points) throughout the habitat patch and in which scrub (>0.5 metre tall) covers no more than 25% of area. Alternatively, *Succisa* may be present at high density in close-cropped swards.
Available habitat	Available habitat is the total of **Good Condition habitat** and **Suitable condition habitat**.

Rhos Llawr Cwrt - all actual & potential Marsh Fritillary available habitat



Produced by CCW on: 8 February 2008

Scale 1:10000

4.2 Conservation Objective for Feature 2: Slender Green Feather Moss Drepanocladus (Hamatocaulis) vernicosus EU Species Code: 1393

Vision for feature 2

- Slender green feather moss will be common across the Bwdram and Clettwr valley bottoms, with more than five populations of plants, appearing as groups of uniform dark green 'patches' scattered amongst the marshy grassland and fen vegetation communities.
- The populations of moss will grow in a series of flushes, old peat cuttings and shallow excavations, where ground conditions are wet throughout the year, the water table being at, or near the surface. This habitat will have an open, relatively short sward and scrub will be confined to hedge banks on old field boundaries.
- Groundwater across the valley bottom will range from slightly acid to slightly basic.
- Associated site-specific herbs, grasses and sedges will grow in close proximity to the moss populations. These plants share the habitat requirements of the moss; they include Lesser Spearwort, Sharp-flowered Rush, Purple Moor Grass, Star Sedge, Carnation Sedge, Devil's- bit Scabious, Lesser Skullcap, Large Birdsfoot Trefoil, Bogbean, Common marsh-bedstraw, Common Cotton Sedge, Bottle Sedge, Common Sedge, Common Yellow Sedge, Velvet Bent and Flea Sedge.
- The site will continue to be summer-grazed by cattle; this will maintain the short open sward conditions favoured by the moss.
- All factors affecting the achievement of the foregoing conditions will be under control.

NOTE: Conservation objectives for SSSI features to be developed.

Performance indicators for Feature 2 are provided below.

Performance indicators for Feature 2

The performance indicators are part of the conservation objective, not a substitute for it. Assessment of plans and projects must be based on the entire conservation objective, not just the performance indicators.

Performance indicators for feature condition		
Attribute	***Attribute rationale and other comments***	***Specified limits***
A1. Extent - number of populations	Individual plants of Slender Green Feather moss are physically small, very difficult to locate and very susceptible to localised habitat change/damage. Populations (see definition below) are easier to locate, more robust and are therefore the most pragmatic unit to consider as an attribute of extent.	*Upper limit*: none set, but restricted by suitable habitat *Lower limit*: 7 populations
A2 Extent – ground cover of individual populations	Size i.e. The ground cover of a population is related to the viability of a population.	*Upper limit*: none set *Lower limit*: at least 5 populations must each have ground cover in excess of 0.2 square metres
A3. Distribution of populations	Whilst it is clearly desirable for this spp. to have the widest distribution over the SAC, availability of suitable habitat probably limits occurrence to 2 units.	*Upper limit*: none set *Lower limit*: at least 4 populations in unit 1 and at least 3 populations in unit 2.
Performance indicators for factors affecting the feature		
NOTE: The requirement is for there to be at least 7 **populations**, so limits for factors 1 – 5 must be met at a minimum of 7 mapped locations in units 1 and 2. These locations may be where the moss is present or where the habitat is being managed to encourage the development of a population.		
Factor	***Factor rationale and other comments***	***Operational Limits***
F1. Habitat suitability – sward height	Slender Green Feather Moss requires open conditions where there is not excessive shading or other competition from vascular plants (usually achieved through grazing).	*Lower limit* – none set *Upper limit* – 25 cm
F2. Surface water pH	This species favours slightly acid to slightly base-rich conditions in the range pH 6.0 – 7.4, with greatest cover occurring where values are pH 6.8 – 7.0. Limits are set to reflect the middle of this range.	*Lower limit* – pH 6.4 *Upper limit* – pH 7.2

F3. Water levels	Research indicates that the species favours situations where the water table is at or near to the substrate surface throughout the year.	At all population sites, water levels must be within +/- 5cm from the surface throughout the year.
F4. Vascular associates	There are a number of vascular species commonly found growing in close proximity to the moss. The presence of these site-specific associates may be taken as indicating that conditions e.g. water chemistry, soils, are suitable for the moss.	At least 4 of the following vascular associates are present from each of group a) and b): a) Lesser spearwort, Sharp-flowered rush,Purple moor grass, Star sedge, Carnation sedge. b) Devil's- bit scabious, Lesser skullcap, Large bird's-foot trefoil, Bogbean, Common marsh-bedstraw, Common cotton-grass, Bottle sedge, Common sedge, Common yellow sedge, Velvet bent, Flea sedge
F5. Status of *Rhytidiadelphus squarrosus*	The presence of abundant *R. squarrosus* indicates that the ground is too dry for at least part of the year for Slender green feather moss.	*Upper limit* - Domin value 4 *Lower limit* – none set
Site-specific habitat definitions		
Colony	A localised grouping of plants within a small area of uniform habitat, occupying less than 0.5 sq metres – a sub unit of a population	
Population	At least 4 colonies occurring within a discreet area no greater than 100 sq. metres.	

5. ASSESSMENT OF CONSERVATION STATUS AND MANAGEMENT REQUIREMENTS

This part of the document provides:

- A summary of the assessment of the conservation status of each feature.
- A summary of the management issues that need to be addressed to maintain or restore each feature.

5.1 Conservation Status and Management Requirements of Feature 1: Marsh Fritillary butterfly Euphydryas (Eurodryas, Hypodryas) aurinia EU Species Code: 1065

Conservation Status of Feature 1

That part of the SAC within the NNR, has a long history of marsh fritillary study and data has been collected since 1984. Much of this data was collected for surveillance purposes and since 1993 for monitoring against an NNR based objective for the butterfly. Unfortunately, the objective is not entirely compatible with the SAC objective, but nevertheless the data provides an important insight into the historical condition of the population. The SAC was formally monitored by Karen Wilkinson CCW SAC Monitoring Officer in 2005.

The Condition of Feature 1 was assessed as Unfavourable: no change (2005).

Abundance of larval webs: Larval web data collected from the NNR is based on a series of 53 transects, all located in unit 1; historically this unit has supported the core of the butterfly population. Annual counts of webs were made on the transects and an annual index was calculated from this data (Marsh Fritillary Monitoring at Rhos Llawr Cwrt 1984 – 2007, David Woolley). Field survey has determined that indexes over 50 equate to more than 200 webs per ha. within the area the transects are located. This area contains **good condition habitat** (2005 SAC Monitoring Report). Web indexes for the period 2000 to 2007 were:

Year	2000	2001	2002	2003	2004	2005	2006	2007
Web index	164	58	77	12	12	44	60	28

Analysis of all data collected since 1984, indicates that the butterfly population as indicated by the web index and surveillance of adults (ITE butterfly transect) fluctuates within a 6 year cycle, with web index peaks remaining above 50.

Distribution of larval webs: To date (January 2008) webs have only been found in 2 units:

Unit 1 – all 8 fields (last instance of all 8 fields was 2002)
Unit 2 – 2 fields (last instance 2006)

No larval webs have ever been found in the improved fields of the NNR outside the SAC although solitary larvae have been found in Unit 4.

Conservation Status of Feature: Unfavourable: no change 2005

Extent and quality of marsh fritillary habitat: In 2005, data collected indicated that there was 7.2 ha of **good condition habitat** and 15.9 ha of **available habitat** within the SAC. There was no available habitat within the NNR outside the SAC boundary.

Shelterbelts
In 2006, approx. 75% of management unit boundaries had shelterbelts.

Management Requirements of Feature 1

The main thrust of management must be to maintain and extend the habitat of the marsh fritillary within the SAC and outside the SAC boundary within the NNR. There is no other **available habitat** in the surrounding landscape within 2 km of the SAC.

- Maintenance of existing **available habitat** will be achieved by a controlled cattle grazing programme where the stocking rate is 0.2 – 0.4 lu/ha/annum. This stocking rate will not control scrub development and this will be achieved by cutting and application of herbicide to cut stumps. Increasing the quality of **suitable condition habitat** to **good condition habitat** will require selective control of stands of soft rush and purple moor grass by mowing. Encouraging cattle to graze within ranker stands of vegetation can be achieved by mowing corridors into these stands and removing the cut material.

- Extension of **available habitat** will be achieved by reversion of the agricultural improved grasslands in unit 4 and in the improved grasslands outside the SAC, within the NNR. Management will focus on nutrient depletion by cutting and removal of biomass, blocking of agricultural drains and grazing at 0.4 – 0.8 lu/ha/annum. Stock movement between unimproved and improved swards, facilitates the introduction of seed from marshy grassland plants into the improved swards. Introduction of devils bit scabious into improved swards by transplanting may be required.

- Management requirements by unit at January 2008, annual operations unless otherwise stated:

  Unit 1 - cattle grazing at 0.2 – 0.4 lu/ha/annum, scrub control, selective mowing

  Unit 2 - cattle grazing at 0.2 – 0.4 lu/ha/annum, scrub control, selective mowing

  Unit 3 - cattle grazing at 0.2 – 0.4 lu/ha/annum, scrub control, selective mowing

  Unit 4 - annual biomass removal until 2011, cattle grazing at 0.4 – 0.8 lu/ha/annum, scrub control

  Improved fields outside SAC within NNR - annual biomass removal until 2011, cattle grazing at 0.4 – 0.8 lu/ha/annum, scrub control

5.2 Conservation Status and Management Requirements of Feature 2: Slender Green Feather Moss Drepanocladus (Hamatocaulis) vernicosus EU Species Code: 1393

Conservation Status of Feature 1

Conservation Status of Feature: Unfavourable: unclassified 2004

In 2003, Richard Williams (contractor to CCW), carried out a baseline survey of the status of Slender green feather moss. Appropriate habitats in units 1 and 2 were searched and two populations, one in each of these Units were identified. The only other occurrence of the moss was a single small colony, also in unit 2. In 2004, Tracey Lovering, CCW SAC Monitoring Officer, carried out a survey of the vascular associates of the populations identified in 2003 and reassessed the ground cover of the populations. Monitoring of feature 2 was also carried out following Performance Indicators developed by Tracey Lovering following guidance from Alan Hale (CCW Lower Plant Ecologist and Sam Bosanquet (CCW Phase II Surveyor), Richard Williams (Williams, 2003) and David Wheeler (CCW Regional Reserves Manager). The Common Standards Monitoring Guidance for this feature is not yet available.

The assessment found that only one of the populations had a total ground cover exceeding 0.2 square metres. No sward height data was collected. Surface water pH at the site of both populations was within the 6.2 – 7.0 range. Ground water was at the surface (data was collected during March). Sufficient desirable vascular associates were present and *Rhytidiadelphus squarrosus* was absent or sparse. **The Condition of Feature 2 was assessed as Unfavourable: unclassified (2004).**

Management Requirements of Feature 2

Management requirements fall into two basic categories, that which is necessary to maintain existing populations of the moss and that which is necessary to establish new populations.

- Maintenance of existing populations: The main management action is to maintain a controlled cattle grazing programme at 0.2 – 0.4 lu/ha/annum. If this does not achieve open sward conditions in the appropriate locations, selective cutting and removal of cut material will be required. Providing other evidence of habitat quality is positive, no other action is necessary. If habitat quality deteriorates (low water table etc.), further actions will be required.

- Increase in number of populations: At least 5 new populations need to be established to achieve Favourable Condition. This will be achieved by intensive management of selected locations where the moss is absent but the existing habitat is broadly suitable. At these locations, it may be necessary to dig shallow excavations to provide appropriate water table conditions. If all factors are in place and the moss does not become established by natural processes within c. 3 years, it will be necessary to introduce live material that has been grown –on artificially from stock taken from the SAC. This operation will require licensing.

- Management requirements by unit, annual operations unless otherwise stated

  Unit 1 - cattle grazing at 0.2 – 0.4 lu/ha/annum, scrub control, selective cutting:

  2008 - survey unit, map suitable habitat sites; minimum of 5 to be selected
  2008 – commence appropriate maintenance in suitable habitat including digging of excavations if necessary.

  Unit 2 - cattle grazing at 0.2 – 0.4 lu/ha/annum, scrub control, selective cutting:

  2008 - survey unit, map suitable habitat sites; minimum of 5 to be selected
  2008 – commence appropriate maintenance in suitable habitat including digging of excavations if necessary.

  Unit 3 - no management action required.

  Unit 4 - no management action required.

6. ACTION PLAN: SUMMARY

This section takes the management requirements outlined in Section 5 a stage further, assessing the specific management actions required on each management unit. This information is a summary of that held in CCW's Actions Database for sites, and the database will be used by CCW and partner organisations to plan future work to meet the Wales Environment Strategy targets for sites.

Unit Number	CCW Database Number	Unit Name	Summary of Conservation Management Issues	Action needed?
1	001054	Unit 1	There are no conservation management issues relating directly to this unit. All conservation management actions required for the unit will continue to be undertaken by CCW as part of the NNR work programme. This also applies to conservation management outside the SAC boundary within the NNR. On land in private ownership outside the SAC and NNR boundary, management for the marsh fritillary SAC feature will be required to revert agriculturally improved wet grassland to rhos pasture type habitat.	Yes
2	001055	Unit 2	There are no conservation management issues relating directly to this unit. All conservation management actions required for the unit will continue to be undertaken by CCW as part of the NNR work programme. This also applies to conservation management outside the SAC boundary within the NNR. On land in private ownership outside the SAC and NNR boundary, management for the marsh fritillary SAC feature will be required to revert agriculturally improved wet grassland to rhos pasture type habitat.	Yes
3	001056	Unit 3	There are no conservation management issues relating directly to this unit. All conservation management actions required for the unit will continue to be undertaken through an existing CCW management agreement. Conservation management required outside the SAC boundary within the NNR will be carried out through the NNR work programme. On land in private ownership outside the SAC and NNR boundary, management for the marsh fritillary SAC feature will be required to revert agriculturally improved wet grassland to rhos pasture type habitat.	Yes
4	001057	Unit 4	There are no conservation management issues relating directly to this unit. All conservation management actions required for the unit will continue to be undertaken by CCW as part of the NNR work programme. This also applies to conservation management outside the SAC boundary within the NNR. On land in private ownership outside the SAC and NNR boundary, management for the marsh fritillary SAC feature will be required to revert agriculturally improved wet grassland to rhos pasture type habitat.	Yes

7. GLOSSARY

This glossary defines the some of the terms used in this **Core Management Plan**. Some of the definitions are based on definitions contained in other documents, including legislation and other publications of CCW and the UK nature conservation agencies. None of these definitions is legally definitive.

Action A recognisable and individually described act, undertaking or **project** of any kind, specified in section 6 of a **Core Management Plan** or **Management Plan**, as being required for the **conservation management** of a site.

Attribute A quantifiable and monitorable characteristic of a **feature** that, in combination with other such attributes, describes its **condition**.

Common Standards Monitoring A set of principles developed jointly by the UK conservation agencies to help ensure a consistent approach to **monitoring** and reporting on the **features** of sites designated for nature conservation, supported by guidance on identification of **attributes** and monitoring methodologies.

Condition A description of the state of a feature in terms of qualities or **attributes** that are relevant in a nature conservation context. For example the condition of a habitat usually includes its extent and species composition and might also include aspects of its ecological functioning, spatial distribution and so on. The condition of a species population usually includes its total size and might also include its age structure, productivity, relationship to other populations and spatial distribution. Aspects of the habitat(s) on which a species population depends may also be considered as attributes of its condition.

Condition assessment The process of characterising the **condition** of a **feature** with particular reference to whether the aspirations for its condition, as expressed in its **conservation objective**, are being met.

Condition categories The **condition** of **feature** can be categorised, following **condition assessment** as one of the following[2]:

Favourable: maintained;
Favourable: recovered;
Favourable: un-classified
Unfavourable: recovering;
Unfavourable: no change;
Unfavourable: declining;
Unfavourable: un-classified
Partially destroyed;
Destroyed.

Conservation management Acts or undertaking of all kinds, including but not necessarily limited to **actions,** taken with the aim of achieving the **conservation objectives** of a site. Conservation management includes the taking of statutory and non-statutory measures, it can include the acts of any party and it may take place outside site boundaries as well as within

[2] See JNCC guidance on Common Standards Monitoring http://www.jncc.gov.uk/page-2272

sites. Conservation management may also be embedded within other frameworks for land/sea management carried out for purposes other than achieving the conservation objectives.

Conservation objective The expression of the desired **conservation status** of a **feature,** expressed as a **vision for the feature** and a series of **performance indicators**. The conservation objective for a feature is thus a composite statement, and each feature has one conservation objective.

Conservation status A description of the state of a **feature** that comprises both its **condition** and the state of the **factors** affecting or likely to affect it. Conservation status is thus a characterisation of both the current state of a feature and its future prospects.

Conservation status assessment The process of characterising the **conservation status** of a **feature** with particular reference to whether the aspirations for it, as expressed in its **conservation objective**, are being met. The results of conservation status assessment can be summarised either as 'favourable' (i.e. conservation objectives are met) or unfavourable (i.e. conservation objectives are not met). However the value of conservation status assessment in terms of supporting decisions about **conservation management**, lies mainly in the details of the assessment of feature **condition**, **factors** and trend information derived from comparisons between current and previous conservation status assessments and condition assessments.

Core Management Plan A CCW document containing the conservation objectives for a site and a summary of other information contained in a full site **Management Plan**.

Factor Anything that has influenced, is influencing or may influence the **condition** of a **feature**. Factors can be natural processes, human activities or effects arising from natural process or human activities, They can be positive or negative in terms of their influence on features, and they can arise within a site or from outside the site. Physical, socio-economic or legal constraints on **conservation management** can also be considered as factors.

Favourable condition See **condition** and **condition assessment**

Favourable conservation status See **conservation status** and **conservation status assessment.**[3]

Feature The species population, habitat type or other entity for which a site is designated. The ecological or geological interest which justifies the designation of a site and which is the focus of conservation management.

Integrity See **site integrity**

Key Feature The habitat or species population within a **management unit** that is the primary focus of **conservation management** and **monitoring** in that unit.

[3] A full definition of favourable conservation status is given in Section 4.

Management Plan The full expression of a designated site's legal status, **vision**, **features**, **conservation objectives**, **performance indicators** and management requirements. A complete management plan may not reside in a single document, but may be contained in a number of documents (including in particular **the Core Management Plan**) and sets of electronically stored information.

Management Unit An area within a site, defined according to one or more of a range of criteria, such as topography, location of **features**, tenure, patterns of land/sea use. The key characteristic of management units is to reflect the spatial scale at which **conservation management** and **monitoring** can be most effectively organised. They are used as the primary basis for differentiating priorities for conservation management and monitoring in different parts of a site, and for facilitating communication with those responsible for management of different parts of a site.

Monitoring An intermittent (regular or irregular) series of observations in time, carried out to show the extent of compliance with a formulated standard or degree of deviation from an expected norm. In **Common Standards Monitoring**, the formulated standard is the quantified expression of favourable **condition** based on **attributes**.

Operational limits The levels or values within which a **factor** is considered to be acceptable in terms of its influence on a **feature**. A factor may have both upper and lower operational limits, or only an upper limit or lower limit. For some factors an upper limit may be zero.

Performance indicators The **attributes** and their associated **specified limits**, together with **factors** and their associated **operational limits,** which provide the standard against which information from **monitoring** and other sources is used to determine the degree to which the **conservation objectives** for a **feature** are being met. Performance indicators are part of, not the same as, conservation objectives. See also **vision for the feature**.

Plan or project **Project:** Any form of construction work, installation, development or other intervention in the environment, the carrying out or continuance of which is subject to a decision by any public body or statutory undertaker.
Plan: a document prepared or adopted by a public body or statutory undertaker, intended to influence decisions on the carrying out of **projects.** Decisions on plans and projects which affect Natura 2000 and Ramsar sites are subject to specific legal and policy procedures.

Site integrity The coherence of a site's ecological structure and function, across its whole area, that enables it to sustain the habitat, complex of habitats and/or the levels of populations of the species for which it is designated.

Site Management Statement (SMS) The document containing CCW's views about the management of a site issued as part of the legal notification of an SSSI under section 28(4) of the Wildlife and Countryside Act 1981, as substituted.

Special Feature See **feature**.

Specified limit The levels or values for an **attribute** which define the degree to which the attribute can fluctuate without creating cause for concern about the **condition** of the **feature**. The range within the limits corresponds to favourable, the

range outside the limits corresponds to unfavourable. Attributes may have lower specified limits, upper specified limits, or both.

Unit See **management unit.**

Vision for the feature The expression, within a **conservation objective**, of the aspirations for the **feature** concerned. See also **performance indicators.**

Vision Statement The statement conveying an impression of the whole site in the state that is intended to be the product of its **conservation management.** A ‘pen portrait’ outlining the **conditions** that should prevail when all the **conservation objectives** are met. A description of the site as it would be when all the **features** are in **favourable condition**.

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