CYNGOR CEFN GWLAD CYMRU
COUNTRYSIDE COUNCIL FOR WALES

CORE MANAGEMENT PLAN
INCLUDING CONSERVATION OBJECTIVES

FOR

LLYN DINAM SPECIAL AREA FOR CONSERVATION
LLYNNAU Y FALI SITE OF SPECIAL SCIENTIFIC INTEREST

Version: 1.0

Date: March 2008

Approved by: Mike Willis

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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PREFACE

This document provides the main elements of CCW's management plan for the sites named. It sets out what needs to be achieved on the sites, 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 sites. 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.

The site should continue to support a clear-water aquatic plant community characterised by a wide variety of pondweeds, while the lakes persist. Reedswamp and fen should support, amongst other things, marsh fern, while providing suitable habitat for breeding and wintering wildfowl and other wetland birds. The mixture of lakes, ponds, ditches and other water habitats; together with the reedbeds, marshland, scrub and wet grassland, should display the process of natural succession from open water to marshy grassland.

2. SITE DESCRIPTION

2.1 Area and Designations Covered by this Plan

Grid references: SH310774 (SAC)
SH310770 (SSSI)

Unitary authority: Isle of Anglesey County Council

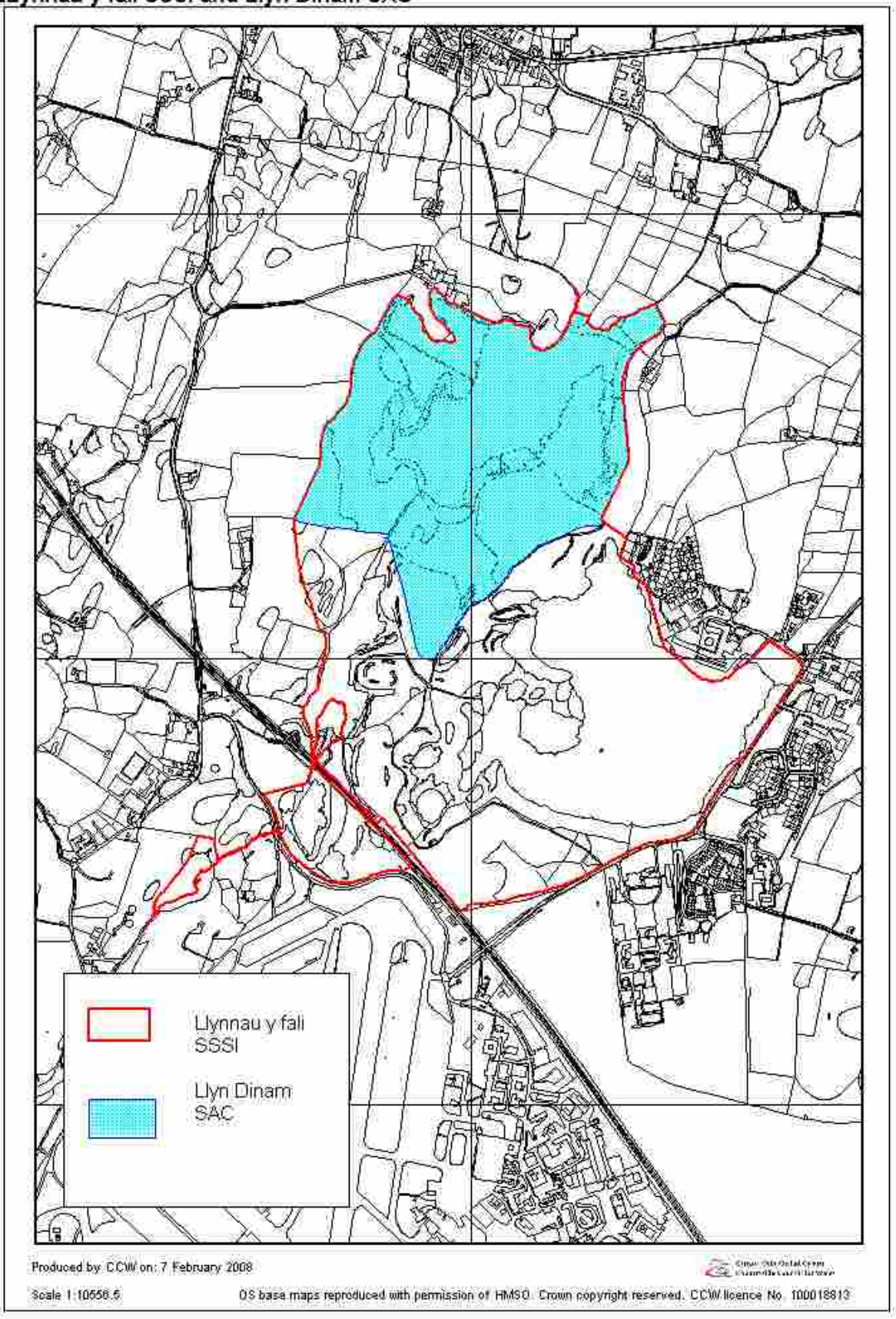
Area (hectares): 100.8 (Llynnau y fali SSSI)
36.54 (Llyn Dinam SAC)

Designations covered:
Llyn Dinam Special Area of Conservation (forms part of SSSI)
Llynnau y fali Site of Special Scientific Interest

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:

LLynnau y fali SSSI and Llyn Dinam SAC



2.2 Outline Description

Llynnau y fali comprises a complex of lakes and associated habitats adjacent to RAF Valley in western Anglesey with very small catchments – that of Llyn Penrhyn is 43 ha (Allot et al 1994). Llyn Dinam is the northernmost of the lakes and the least impacted by human activity. The important features of the site include standing water habitats and aquatic plants found therein, reedswamp, marsh fern and breeding and overwintering birds. Other habitats such as unimproved grassland, ditches and rock outcrops contribute to the overall interest.

This diversity of habitats supports a wide range of other species including eleven species of dragonfly and damselfly, including the hairy dragonfly (*Brachytron pratense)* and the variable damselfly (*Coenagrion pulchelum)* and water beetles (*Gyrinus* spp.) including the rare *G. suffriana* and the nationally scarce species *G. paykulli.* These too are a key component of the special interest of the site. Bittern were last recorded breeding in the mid 1980s and still use the site to overwinter.

2.3 Outline of Past and Current Management

In 1940-41, when RAF Valley was constructed, peaty soils were excavated from nearby areas and spread along the edges of the runways in an attempt to minimise sandblow. Llynnau Tacan and Treflesg appear to date from this period. Earlier maps show this area to be rough grazing, contiguous with Tywyn Trewan common. Llyn Penrhyn and Llyn Dinam are long established lakes.

Much of SSSI, including much of Llyn Dinam SAC, is an RSPB reserve which was first established in 1986, although there have been further acquisitions since then. Some parts of the reserve are grazed by farm livestock and there is public access for birdwatching and quiet enjoyment. RSPB's management aims to maintain and enhance existing areas of habitat, particularly for wetland birds and waterfowl with special attention to its potential for breeding bittern, which last bred here in 1986. Remainder of the SSSI is farmland, grazed with sheep and/or horses or has no known owner and is unmanaged. The site is adjacent to RAF Valley and a number of NATO standard landing lights are positioned within the SSSI. The RSPB have undertaken substantial habitat management in the swamp and reedbed habitat fringing the lakes to remove willow scrub, lower reedbed bed levels and create a network of channels to increase water margins suitable for feeding and breeding bittern. Rough grazing within the RSPB holding is managed by winter cattle grazing

Part of the site (under Glan Gors farm) was covered by an ESA management agreement for 10 years; this has now lapsed.

The RAF Valley station has its own sewage treatment plant which discharges directly into Llyn Penrhyn, but up until 1994 the treatment was only secondary (to standard BoD levels), resulting in highly enriched effluent and over the years large volumes of phosphates had been discharged into the lake system. Extreme readings of total phosphorus >3000µg/l were recorded at this time in Llyn Penrhyn lake water. In May 1994 the sewage treatment plant was upgraded and phosphate stripping equipment was installed in order to reduce the nutrient inputs to the lake to <2.5mg/l (2500µg/l)TP as measured in the discharge. In 2003 sewers serving part of the housing stock were diverted to mains sewerage.

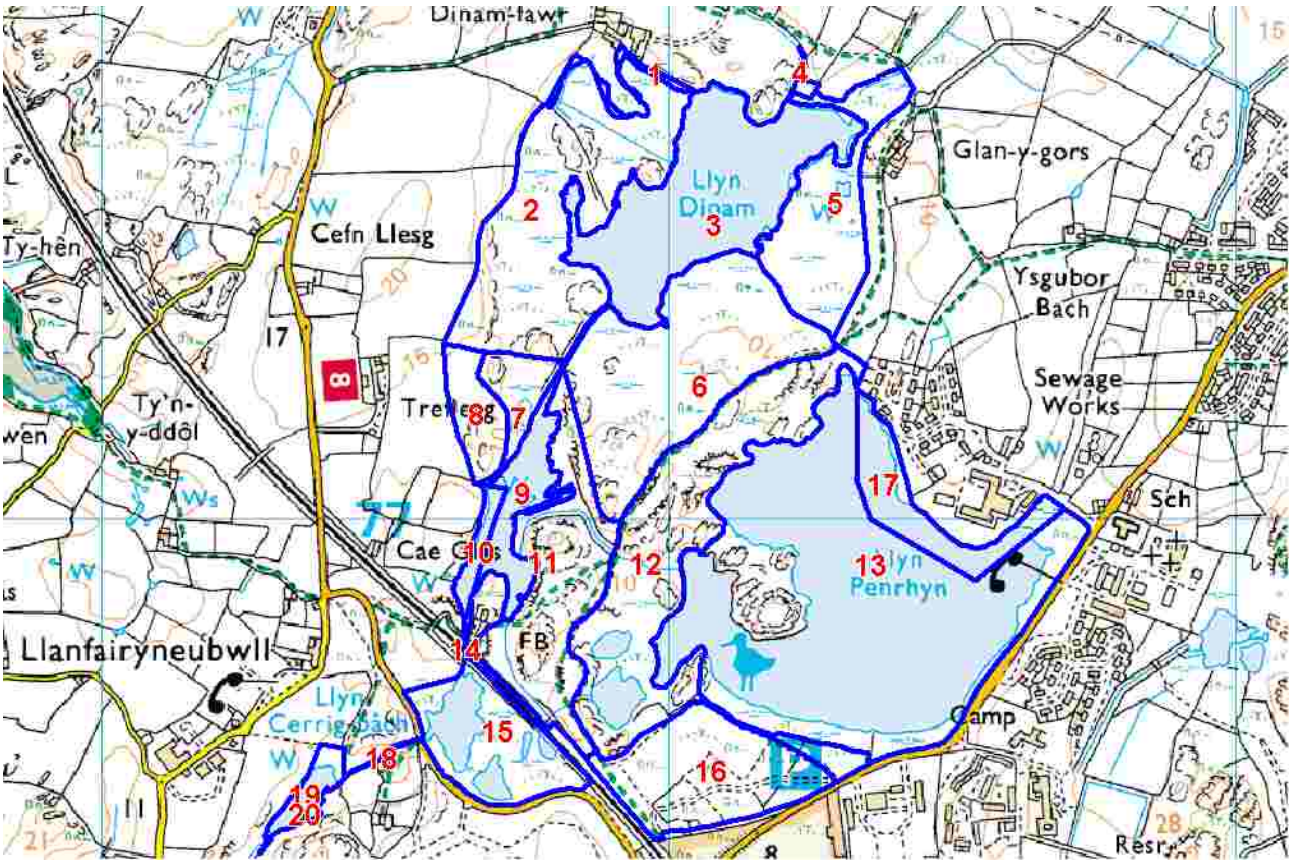
Llyn Tacan is fished by Holyhead and District Angling Society and parts of Llyn Penrhyn by RAF Angling Society, though this latter right has not been exercised in recent years and surveys have shown a very impoverished fish fauna in Llyn Penrhyn.

Windsurfing/sailing is permitted under agreement with RAF Valley during August and September in eastern part of Llyn Penrhyn, but rarely exercised.

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 ownership and tenure boundaries in most areas with some reference to 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 LLYN DINAM	SSSI LLYNNAU Y FALI
1	✔	✔
2	✔	✔
3	✔	✔
4	✔	✔
5	✔	✔
6	✔	✔
7		✔
8		✔
9		✔
10		✔
11		✔

12		✔
13		✔
15		✔
16		✔
17		✔
18		✔
19		✔

3. THE SPECIAL FEATURES

3.1 Confirmation of Special Features

Designated feature	***Relationships, nomenclature etc***	***Conservation Objective in part 4***
SAC features		
1. Annex I habitats that are a primary reason for selection of this site: 3150 Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation	Generally referred to as Natural eutrophic lakes throughout this document. SSSI features "standing water" (2 and 8) are addressed by same objective.	1
SPA features		
Not applicable		
Ramsar features		
Not applicable		
SSSI features		
NOTIFIED FEATURES		
2. Standing water - eutrophic	See feature 1	1
3. Fen topogenous mires in valleys basins and flood plains	Fringing fen around Llyn Dinam	tba
4. Swamp	Fringing reedswamp around lakes	tba
5. Vascular plant assemblage	Aquatic and swamp spp	tba
6. Marsh fern *Thelypteris palustris*		tba
7. Shoveler *Anas clypeata* (winter)		tba
ADDITIONAL QUALIFYING BUT NOT NOTIFIED FEATURES		
8. Standing water Marl/high alkalinity	See feature 1	1
9. Shoveler *Anas clypeata*; breeding		tba
10. Gadwall *Anas strepera*; breeding		tba
11. Pochard *Aythya farina*; breeding		tba
12. Tufted duck *Aythya fuligula*; breeding		tba
13. Breeding bird assemblage of open waters and their margins		tba

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 tables below set out the relationship between the special features and management units identified in this plan:

✔

LLYN DINAM	**Management Unit**									
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**
SAC	✔	✔	✔	✔	✔	✔				
SSSI	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
NNR/CCW owned										
SAC features										
1. Natural eutrophic lake		**Sym**	**KH**							
SSSI features (NOTIFIED)										
2. Standing water - eutrophic			**KH**						**KH**	**KH**
3. Fen topogenous mires in valleys basins and flood plains		**Sym**								
4. Swamp		**KH**			**Sym**		**KH**	**Sym**	**Sym**	**Sym**

5. Vascular plant assemblage			**KS**						**Sym**	**Sym**
6. Marsh fern *Thelypteris palustris*		**Sym**				**KS?**				
7. Shoveler *Anas clypeata*; winter)			**Sym**						**Sym**	**Sym**
SSSI features (QUALIFYING BUT NOT NOTIFIED)										
8. Standing water Marl/high alkalinity			**KH**						**KH**	**KH**
9. Shoveler *Anas clypeata*; breeding			**Sym**						**Sym**	**Sym**
10. Gadwall *Anas strepera*; breeding			**Sym**						**Sym**	**Sym**
11. Pochard *Aythya farina*; breeding			**Sym**						**Sym**	**Sym**
12. Tufted duck *Aythya fuligula*; breeding			**Sym**						**Sym**	**Sym**
13. Breeding bird assemblage of open waters and their margins		**Sym /KS**	**Sym**	**KS**	**KS**			**KS**	**Sym**	**Sym**
No features present	**X**			**X**						

LLYN DINAM	**Management Unit**									
	11	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**
SAC	✔	✔	✔	✔	✔					
SSSI	✔	✔	✔	✔	✔	✔	✔	✔	✔	✔
NNR/CCW owned										
SAC features										
1. Natural eutrophic lake										
SSSI features (NOTIFIED)										
2. Standing water - eutrophic		**Sym**	**KH**	**Sym**	**KH**	**Sym**	**KH**	**Sym**	**KH**	**KH**
3. Fen topogenous mires in valleys basins and flood plains	**KH**	**KH**	**Sym**	**Sym**	**KH**	**KH**	**Sym**			**Sym**
4. Swamp	**KH**	**KH**	**Sym**	**Sym**	**KH**		**Sym**			**Sym**
5. Vascular plant assemblage			**KS**		**Sym**		**KS**		**Sym**	**KS**
6. Marsh fern *Thelypteris palustris*	**Sym**	**Sym**								
7. Shoveler *Anas clypeata*; winter		**Sym**	**Sym**		**Sym**		**Sym**		**Sym**	**Sym**
SSSI features (QUALIFYING BUT NOT NOTIFIED)										
8. Standing water Marl/high alkalinity		**Sym**	**Sym**		**Sym**		**Sym**		**Sym**	**Sym**
9. Shoveler *Anas clypeata*; breeding		**Sym**	**Sym**		**Sym**		**Sym**		**Sym**	**Sym**

10. Gadwall *Anas strepera*; breeding		**Sym**	**Sym**		**Sym**		**Sym**		**Sym**	**Sym**
11. Pochard *Aythya farina*; breeding		**Sym**	**Sym**		**Sym**		**Sym**		**Sym**	**Sym**
12. Tufted duck *Aythya fuligula*; breeding		**Sym**	**Sym**		**Sym**		**Sym**		**Sym**	**Sym**
13. Breeding bird assemblage of open waters and their margins		**Sym**	**Sym**		**Sym**	**Sym**	**Sym**		**Sym**	**Sym**
No features present										

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."

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

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

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.

4.1 Conservation Objective for Feature 1: Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation (includes SSSI features: Standing water – eutrophic & Standing water – marl/high alkalinity)

The feature on this site:

Llyn Penrhyn, Llyn Dinam and Llyn Cerrig Bach are shallow lakes characterised by relatively high nutrient levels and resulting high productivity. Llyn Dinam is the least impacted and is the only lake notified as SAC on this site. Llyn Penrhyn has suffered artificial enrichment, but remains a clear water lake with a macrophyte flora and fauna, albeit an impoverished one. Llyn Treflesg and Llyn Tacan are relatively recently created lakes, but share many of the characteristic species of the more mature lakes. Units 3, 9, 10, 13, 15, 17, 19 and 20 all include open water.

Vision for feature 1

The vision for this feature is for it to be in a favourable conservation status, where all of the following conditions are satisfied:

- There is no loss of area other than that due to natural processes (succession).
- The aquatic plant community is typical of this lake type in terms of composition and structure.
- Plants indicating very high nutrient levels and/or excessive silt loads are not dominant
- Invasive non-native water plants do not threaten to out-compete the native flora.
- Invasive non-native fauna do not threaten the native flora and/or fauna.
- Bird species listed as SSSI features continue to be present at ≥1% of UK populations
- The nutrient, pH and dissolved oxygen levels are typical for a lake of this type and there is no excessive growth of cyanobacteria or green algae.
- Chlorophyll α values are low, and sufficient to allow Llyn Dinam and Llyn Penrhyn to be passed as 'Good' or better for a 'high alkalinity shallow lake' using Water Framework Directive classification methods. http://www.wfduk.org/management_info/News/UKCLASSPUB/
- The fringing swamp and mire vegetation is maintained.
- All factors affecting the achievement of these conditions are under control.

Performance indicators for Feature 1, 2 & 8

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		
Attributes	**Objectives**	**Limits**
Natural range and area on the site	There should be no loss of open water other than due to natural processes.	Upper limit: None Lower limit: 36 ha unless losses are due to natural succession
		Upper limit: None

		Lower limit: Llyn Dinam 9.7 ha unless losses are due to natural successional processes
Aquatic plant community composition	Plant community should be typical of a natural eutrophic lake. Algae that indicate excessive nutrient levels should not be abundant.	Upper limits*:* Benthic and filamentous algal cover less than 10% AND No excessive/persistent blooms blooms of blue-green or planktonic green algae AND *Ceratophyllum demersum* should be no more than frequent. Lower limits*:* typical species of submerged aquatic plants should all be present. *Elatine hydropiper, P pectinatus, Eleocharis acicularis, Myriophyllum spicatum, Callitriche hermaphroditica,* and *Chara spp.* and one broad-leaved *Potamogeton* species
Plant community structure	Characteristic vegetations zones, including submerged and floating plant beds, tall emergent vegetation and transitions to damp terrestrial habitats, should be present.	Upper limits*:* N/A Lower limits*:* Submerged plant beds present to a depth of at least 2m AND: Floating-leaved plant beds present in Llyn Penrhyn and Llyn Dinam and at least two of the other lakes AND: A zone of emergent vegetation, including reed swamp, around most of the lake margins.
Non-native invasive species	Non-native invasive species compete aggressively with native plants and animals and cause major changes to the ecosystem. They should not be present in quantities which impact adversely on natural communities	Upper limits*:* Occasional *Azolla filiculoides* and *Elodea canadensis* Lower limit: none AND No other invasive non-native species, such as Australian swamp stonecrop, floating pennywort, curly waterweed, parrot's-feather, signal crayfish and zebra mussel, are present in the lake. Lower limit*:* None
Bird species	The lakes should continue to support ≥1% of the UK breeding population of shoveler, gadwall, tufted duck and pochard and ≥1% of UK over-wintering shoveler.	Upper limit: None Lower limit: Shoveler: 16 prs Pochard: 14 prs Gadwall: 10 prs Tufted duck: 34 prs Or 1% of UK population
	Breeding bird assemblage of lowland open	Lower limit:

	waters and their margins should continue to reach threshold	Breeding bird index 38.5

Performance indicators for factors affecting the feature		
Factor	***Factor rationale and other comments***	***Operational Limits***
Water quality	Water quality is characteristic of high alkalinity shallow lakes Sources of nutrients are mostly external to SSSI; eutrophication is one of the greatest threats to freshwater sites but can only be tackled by initiatives extending beyond the SSSI.	Upper limit: pH 9 Lower limit pH 7 AND Upper limit: Alkalinity 2500µeq/l Lower limit: Alkalinity 1500µeq/l AND Upper limit: Dissolved oxygen n/a Lower limit: Dissolved oxygen 5mg/l AND Upper limit: peak annual total phosphorus 50µg/l Lower limit: None
Livestock grazing	Grazing is essential to maintain marshy grassland and fen communities in good condition but excessive poaching of lake shores leads to high levels of suspended sediment in the water column and thus to loss of plant species. Summer grazing will eradicate reedswamp (*Phragmites*).	Upper limit: Occasional poaching of 5% of lake shore Lower limit: None
Recreational disturbance	The lakes are subject to a variety of recreational disturbance – occasional fishing, windsurfing, birdwatching and walking. None of these are a problem per se but some restrictions may be needed.	Fishing: No intensification No introduction of fishing to additional lakes No stocking of fish No live bait Windsurfing: restrict to small area of Llyn Penrhyn No intensification (numbers or frequency) Birdwatching: …..
Water quantity	Water levels fluctuate slightly throughout the year, but greater fluctuations risk exposing shoreline, desiccating or drowning swamp vegetation and influencing water chemistry. No actions should be taken which extend the range of fluctuation beyond that which is established.	Upper level: Agreed upper level of Llyn Penrhyn 7.17mAOD (winter) Lower level: to be determined

4.2 Conservation Objective for Feature 4 : swamp

The feature on this site:

There are extensive areas of swamp dominated by *Phragmites australis* to the west of Llyn Dinam together with marginal swamp around much of the perimeter of Llynnau Dinam, Penrhyn, Treflesg and Llyn Cerrig Bach. It is generally fairly species poor but includes stands of *Thelypteris thelypteroides* in Units 2, 6, 11 and 12.

Vision for feature 4

TBA.

Performance indicators for Feature 4

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

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: Natural eutrophic lakes with *Magnopotamion* or *Hydrocharition*-type vegetation (includes SSSI features: Standing water – eutrophic & Standing water – marl/high alkalinity)

Conservation Status of Feature 1

Llyn Dinam is unfavourable largely because broadleaved *Potamogeton* species are absent and because the Mean Annual Total Phosphorous level exceeds the limit for this type of lake at 58 µg/l based on data from 2003 –2005. (Ref Site Condition Assessments of Welsh SAC and SSSI standing water features, Burgess, Goldsmith & Hatton-Ellis 2006). However, it was concluded that the nutrient status of Llyn Dinam was moving towards favourable condition, although continued action to reduce catchment inputs will be needed to maintain this trend.

Llyn Penrhyn is in unfavourable declining condition (ref: Burgess et. al 2006) with a mean annual Total Phosphate level of 425µg/l. Major management will be required to prevent further inputs of phosphorous, but recovery will be slow due to residual phosphorous retained in the sediments and this lake's very long residence time.

Management Requirements of Feature 1

Reduction of nutrients

- The major factor affecting Llynnau y fali is nutrient levels. It is essential to reduce inputs in the catchment to limit inputs to the lake. Phosphate stripping has already been installed on the RAF

Valley sewage treatment works; however, phosphate levels are still extremely high in Llyn Penrhyn, Levels are also above the target level on Llyn Dinam (SAC). Although hydrological connections between Llyn Penrhyn and Llyn Dinam are unclear, the presence of such a high source of P adjacent to the SAC is a significant risk. Diversion of the sewage outfall around (or isolation from) the SSSI may be required to achieve SSSI feature target.

- Other sources of inputs to the lakes may be point sources such as septic tanks and non-point sources such as spreading of fertiliser or abattoir waste on farmland or aerial deposition. Inputs may be tackled through catchment management (including Nitrate Sensitive Zone designation), agri-environment schemes and careful assessment of any proposals for new developments that may discharge nutrients.

- Bird populations, particularly those feeding off site but returning to roost, may also be responsible for input of nutrients, and populations of larger species such as Canada geese should be monitored. If numbers become excessive management may be required.

Water levels

- No abstraction.
- No lowering of levels of discharge streams or structures in them.
- Inflow streams and outflows should not be subject to any modification without assessment of likely effects.

Fish populations/angling

- No introductions of new bottom-feeding fish species. These tend to stir up bottom sediments, and release nutrients into the water column.
- Limit numbers of zooplanktonivorous fish to prevent a phytoplankton dominated system developing. Currently poor water quality may be limiting natural recruitment, so no action is required. However, improvements in water (oxygen) quality may enable better recruitment of fish populations and paradoxically lead to a decline in zooplankton and increase in algal blooms.
- No introduction of angling to lakes not currently fished.
- No live-bait.

Grazing

- Limit grazing of lake margins to prevent poaching, dunging and bank erosion all of which will have adverse impacts on water quality through input of nutrients and sediment to the water column.
- Grazing by zoo-plankton (and predation of zoo-plankton by fish) may also require intervention (bio-manipulation).

Recreational use

- No expansion of zone used for windsurfing or increase in intensity or season. There are obvious impacts on bird numbers and disturbance to bottom sediments from inexperienced users!
- No recreational use which could lead to increased disturbance, nutrient input or turbidity of water, e.g. power-boating.

Invasive species:

- Water fern *Azolla filiculoides* is present at low levels in Llyn Dinam. Other invasive aquatic species are present on Anglesey and could threaten the integrity of the site. They can be spread on boots, machinery, fishing tackle and by wildfowl.

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 SAC 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	000006	Dinam fawr	Narrow fringe of farmland adjacent to lake. Need to ensure no negative impact on quality of water reaching the lake.	Yes
2	000007	West of Llyn Dinam	Area of swamp. RSPB has carried out willow clearance and created ditches within the reeds to increase suitability for bittern.	No
3	000008	Llyn Dinam	Main issue is water quality; possible causes include agriculture and small point sources in catchment. Invasive plant *Azolla* is present at low levels	Yes
4	000010	Tros Lon, north of Llyn Dinam	Small area of low lying marshy grassland. Need to ensure that no adverse impacts on adjacent Llyn Dinam through fertiliser run-off or excessive poaching.	Yes
5	000011	Glan Gors	Marshy grassland needs appropriate (low) grazing regime with low inputs to prevent nutrient enrichment of the adjacent Llyn Dinam.	Yes
6	000012	South of Llyn Dinam	Management presently favourable.	No

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.

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

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 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]

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

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.

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**.

8. REFERENCES

Burgess A., Goldsmith B., & Hatton-Ellis T (2006) Site Condition Assessments of Welsh SAC and SSSI standing water features. CCW Contract Science Report No. 705 *(available on request)*