

Strategic Environmental Assessment

Guidance for Practitioners



SEA Topic: Biodiversity

Countryside Council for Wales



Foreword

This Guidance Note forms one of a series which covers six of the topics which need to be taken into account when undertaking Strategic Environmental Assessment (SEA) of plans and programmes. The topics covered are:

- Air
- Biodiversity
- Cultural Heritage
- Landscape
- Soil
- Water

CCW will also be producing guidance on climate change for internal use and in the specific context of Wales and CCW's remit, whilst guidance on the 'Material Assets' topic is under discussion with the DCLG and the other SEA consultation bodies.

Guidance Notes on the SEA 'Topics of Population' and 'Human Health' have not been produced as these topics are largely outside the remit of CCW.

The aim of the Guidance Notes is to highlight the key topic related issues that need to be considered by practitioners who are carrying out or providing input into SEA. The notes have been written in non-technical language in order that they are accessible to a wide audience.

The Guidance Notes have been produced for CCW by the Centre for Sustainability (C4S) with specialist input from environmental consultants ADAS for some of the topics. They have been written in consultation with the Environment Agency (Wales) and Cadw, the Welsh Assembly Government's historic environment service.

It is intended that the Notes will be updated periodically in order that they remain current and relevant, taking into account changes in legislation, guidance and baseline trends.

The authors would like to thank officers from CCW, the Environment Agency and Cadw for the topic specific input they have provided in the preparation of the Guidance Notes. They would also like to acknowledge the contributions provided by officers from DCLG and WAG in relation to the generic text and document structure, and to officers from local authorities for providing input from their perspective as potential users of the guidance.

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Purpose and Structure of the SEA Topic Guidance Notes

This is one in a series of guidance notes from the Countryside Council for Wales (CCW) on topics to be covered in Strategic Environmental Assessment (SEA) under the SEA Regulations for Wales¹ which implement the European Directive on SEA². The aim of these notes is to provide guidance to Welsh **Responsible Authorities** (the authorities by which, or on whose behalf the SEA is prepared) and others conducting SEA of plans and programmes, how issues related to certain SEA topics can be considered in the SEA of plans and programmes. These Guidance Notes also aim to help Responsible Authorities provide robust and sound reports which will enable CCW to comment and advise during the SEA process.

CCW provides information and advice related to the Habitats Directive and Regulations, and to protected species, designated sites including Sites of Special Scientific Interest (SSSIs) (including geological SSSIs), National Nature Reserves (NNR), Special Areas of Conservation (SAC) and candidate SACs, Special Protection Areas (SPA) and proposed SPAs.

Consultation in the SEA Process

CCW, Cadw and the Environment Agency (EA), have been designated as statutory '**Consultation Bodies**' in Wales in relation to the SEA Directive, and must be consulted at a number of stages during the SEA process (adapted from *The Practical Guide*):

- **Screening** – Determining whether a plan or programme requires SEA (NB: this is only required in a small number of cases);
- **Scoping** – Deciding on the scope, extent and level of detail of the information that must be included within the Environmental Report;
- **Reporting** – During full public consultation on the draft plan or programme and the Environmental Report; and

The advice that the Consultation Bodies aim to provide during periods of consultation is detailed in the '*Consultation Bodies' Services and Standards for Responsible Authorities in Wales*' (Environmental Agency *et al*, 2005).

NB: Where a plan or programme is likely to have significant effects on the environment in another Member State of the European Union, the SEA Directive requires that transboundary consultation should take place.

Annex 1(f) of the SEA Directive outlines the environmental topics that should be covered by the SEA process wherever relevant. These include Air, Biodiversity, Climate Change, Cultural Heritage, Human Health, Landscape, Material Assets, Population, Soil and Water. CCW is the statutory body responsible for advising on countryside, access, landscape and wildlife conservation in Wales. As regards SEA, CCW is primarily responsible for providing SEA consultation feedback and information on Biodiversity (including flora and fauna), Landscape and some aspects of Cultural Heritage issues, but also has an interest in the Soil, Water, Air, Climate Change and Material Assets topics.

Particular reference has been made to the requirements of "The SEA Regulations for the implementation of the Directive in Wales" and to the "Practical Guide to the SEA Directive" produced by ODPM³, the Administrations in Wales, Scotland and Northern Ireland (referred to hereafter as *The Practical Guide*). This guidance note uses the SEA process as set out in *The Practical Guide* as a framework for the topic-related guidance (see Figure 1).

¹ The SEA Regulations for the implementation of the Directive, 'Welsh Statutory Instrument 2004 No. 1656 (W.170): *The Environmental Assessment of Plans and Programmes (Wales) Regulations 2004*'.

² 'Directive 2001/42/EC of the European Parliament and of the Council on the Assessment of the Effects of Certain Plans and Programmes of the Environment' (June, 2001)

³ ODPM, the Office of the Deputy Prime Minister, was superseded by DCLG, the Department for Communities and Local Government, in May 2006

Link to the Environment Strategy for Wales

The Environment Strategy for Wales was published in May 2006 and includes a series of procedural and environmental 'outcomes' which the Welsh Assembly Government aims to achieve in the period up to 2026. Many of the Environment Strategy 'outcomes' are closely linked to the SEA topics and they have indicators which will be used to measure progress towards achieving the 'outcomes'.

The Strategy is supported by an Action Plan that provides details of the actions that will be taken to deliver the Strategy. This Action Plan includes milestones and responsibilities. It is also accompanied by a policy map which identifies the various influencing factors that will help in successful implementation of the Strategy. One of the contributory tools that is listed is Strategic Environmental Assessment.

Environmental Strategy outcomes which are linked to the SEA topics include:

- Climate change (outcomes 7 & 8); Material assets (waste) (9, 10, 11 & 39);
- Material assets (resources) (12, 17 & 18); Water (13, 14, 15, 31, 32, 35 & 36);
- Soil (16); Biodiversity (19, 20, 21 & 22); Landscape (23); Cultural heritage (26);
- Air quality (33); Human health (37 & 38).

NB: There are also other outcomes which cut across more than one SEA topic.

The 'outcomes' from the Strategy could be used when developing objectives for the plan that is subject to SEA.

Where appropriate the Indicators that are included in the Strategy should be considered for incorporation into the SEA assessment and monitoring frameworks.

Environment Strategy outcomes and indicators relating to the Biodiversity topic can be seen in Table 6.

The Environment Strategy can be found at:

<http://new.wales.gov.uk/topics/environmentcountryside/epq/Envstratforwales/?lang=en>



STAGE A: Setting the context and objectives, establishing the baseline and deciding the scope	A1: Identifying other relevant plans, programmes, and environmental protection objectives
	A2: Collecting baseline information
	A3: Identifying environmental problems
	A4: Developing SEA Objectives
	A5: Consulting on the scope of SEA
STAGE B: Developing and refining alternatives and assessing effects	B1: Testing the plan or programme objectives against the SEA objectives
	B2: Developing strategic alternatives
	B3: Predicting the effects of the draft plan or programme, including alternatives
	B4: Evaluating the effects of the draft plan or programme, including alternatives
	B5: Considering ways of mitigating adverse effects
	B6: Proposing measures to monitor the environmental effects of plan or programme implementation
STAGE C: Preparing the Environmental Report	C1: Preparing the Environmental Report
STAGE D: Consulting on the draft plan or programme and the Environmental Report	D1: Consulting on the draft plan or programme and the Environmental Report
	D2: Assessing significant changes
	D3: Decision making and providing information
STAGE E: Monitoring implementation of the plan or programme	E1: Developing aims and methods for monitoring
	E2: Responding to adverse effects

Figure 1: SEA Process and Stages (Adapted from *The Practical Guide*)

This Guidance Note focuses primarily on the topic specific advice at SEA Stages A, B and E and is supplementary to guidance on the SEA stages as set out in *The Practical Guide*.

Responsible Authorities should refer to *The Practical Guide* at all stages of undertaking SEA for Plans and Programmes, which sets out the SEA Directive legal requirements, procedures and methods.

See also *References and Further Reading* at the end of this note, for more topic specific information.

Biodiversity in the context of the CCW Remit

Biodiversity is one of the principal SEA policy issues for CCW. CCW is also the principal information provider and advisor for this topic along with the National Biodiversity Network and Local Record Centres.

Background to the Topic: Biodiversity



'Biodiversity' refers to the variety and abundance of life on Earth. It includes all species of plants and animals and the natural systems that support them. Biodiversity is a core component of sustainable development, underpinning economic development and prosperity, and has an important role to play in developing locally distinctive and sustainable communities.

The viability and productivity of soils, waters, the climate and other life support systems depends upon the interactions between complex groups of species and their environment. Biodiversity is hugely important in its own right and we have international responsibilities and national and local systems in place to protect and enhance it. It plays a key role in underpinning our quality of life and giving a 'sense of place'.

Biodiversity offers opportunities for tourism, economic development, health promotion, community development and social cohesion. Conservation of biodiversity is vital to our response to climate change and in the delivery of key ecosystem services such as food, flood management, pollination and the provision of clean air and water. Conserving biodiversity includes restoring and enhancing species populations and habitats as well as offering them protection.

The UK's commitment to the conservation of biodiversity is delivered through the UK Biodiversity Action Plan 1994 which is made up of a series of plans to target action for particular vulnerable species and habitats. The UK Biodiversity Action Plan contains detailed information on species, habitats and LBAPs. This can be accessed at <http://www.ukbap.org.uk/default.aspx>.

Local Biodiversity Action Plans (LBAPs) are key strategies dedicated to the delivery of biodiversity conservation at the local level. Nearly all the Local Authorities in Wales contribute as key partners to the development and implementation of LBAPs appropriate to their area.



LBAP Partnerships ensure that biodiversity is integrated into local plans and policies. LBAP Partnerships also have access to a wealth of useful information and local expertise through their role in developing LBAPs and through links to Local Biodiversity Record Centres which hold valuable data on local wildlife.



In Wales, the Wales Biodiversity Partnership leads on the implementation of the Wales Biodiversity Framework, updated in March 2007 (WBP, 2007). See the reference section at the end of this document for the relevant URL.

The list of UK BAP priority species was reviewed recently and a revised list proposed in a June 2007 report (BRIG, 2007). In addition, the Welsh Assembly Government has published a *Trunk Road Estate Biodiversity Action Plan*, aimed specifically at those responsible for the roads and motorway network in Wales, and consideration of related biodiversity issues (WAG, 2004).

The RSPB publication 'Biodiversity and SEA Guidance for Practitioners' (RSPB *et al*, 2004) lists areas with high biodiversity as those that:

- Act as a corridor, link-habitat or 'steppingstone';
- Act as a buffer or play an important part in maintaining environmental quality or critical ecosystem processes;
- Have important seasonal uses or are critical for migration;
- Support habitats, species populations, ecosystems that are vulnerable, threatened throughout their range and slow to recover;
- Support particularly large or continuous areas of semi-natural habitat;
- Support semi-natural habitats that take a long time to develop characteristic biodiversity, e.g. semi-natural ancient woodlands;
- Support biodiversity for which mitigation is difficult or its effectiveness unproven; and
- Are currently poor in biodiversity but have potential to meet BAP targets.



Geodiversity: Geodiversity has been included in the biodiversity remit for the purpose of this topic paper. Geodiversity is the variety of rocks, fossils, minerals, landforms and soils, along with the natural processes that shape the landscape. The immense value of the rocks and landscape in Wales is recognised by CCW. Geological Conservation Review (GCR) sites are statutory sites identified by the nature conservation agencies as having national or international importance for geology, or geomorphology. GCR sites range from sea-cliffs or large caves, to small outcrops of rock and limestone pavements. The reasons that the conservation of geological heritage is important include:

- To protect sites of regional or global significance, fulfilling international obligations;
- To improve understanding of the natural world, and for the enjoyment of a wider interested public; and
- To protect a network of significant sites which provide field facilities for education and training.

CCW is responsible for designating GCR sites in Wales as Sites of Special Scientific Interest (SSSIs).



Approximately 80% of GCR sites have been notified as SSSIs and it is proposed that the remainder will be scheduled over the coming years. Geological SSSIs are legally protected like their biological counterparts.

Other important geological sites may be designated at regional or local level. There are two main types of local designation. Firstly, in areas where Regional Important Geodiversity Sites (RIGS) groups exist, important sites may be designated as RIGS. Secondly, where RIGS groups do not exist geological sites may be designated as SINCs (Sites of Interest for Nature Conservation).

A variety of sites are protected in order to conserve important habitats, species and geology. An overview of these protected sites is provided in Table 1 below.

Table 1: Overview of Protected Sites (CCW, 2007; NAW, 2006a)

Statutory Designations		Description
Wetlands of International Importance (Ramsar sites)		These wetlands are of key importance to the survival of many wetland plants and animals. Ramsar sites are also designated as SSSIs. <i>There are currently 10 Ramsar sites in Wales.</i>
NATURA 2000 Sites	Special Areas of Conservation (SACs)	SACs are also designated as SSSIs, and therefore their management will often be achieved through SSSI management agreements and plans. They help to maintain the variety of wildlife by protecting vulnerable habitats and the plants and animals that they support. <i>There are currently 90 SACs in Wales.</i>
	Special Protection Areas (SPAs)	SPAs are established to conserve the habitats of two categories of birds; species that are rare and vulnerable, and some migratory species. SPAs are also designated as SSSIs. <i>There are currently 20 SPAs in Wales.</i>
Sites of Special Scientific Interest (SSSIs)		SSSIs are sites that are important to the nation's natural heritage. <i>There are currently 1,019 SSSIs in Wales.</i>
National Nature Reserves (NNRs)		NNR provide example of wildlife habitats and geological features. <i>There are currently 67 NNRs in Wales.</i>
Marine Nature Reserves (MNRs)		MNR designation is to conserve especially important marine habitats and wildlife, and other features along the shore or on the seabed. <i>There is currently one MNR at Skomer.</i>
Local Nature Reserves (LNRs)		LNRs are areas where the land has natural features of special interest to the local area. <i>There are currently 62 LNRs in Wales.</i>
Non-Statutory Designations		Description
Sites of Importance for Nature Conservation (SINC)		Designations applied to the most important non-statutory nature conservation sites (i.e. below SSSI standard, though of county level standard). In parts of Wales these are referred to as County Wildlife Sites or simply Wildlife Sites.
UNESCO Geopark		Geoparks are territories encompassing one or more sites of scientific importance, not only for geological reasons, but also by virtue of their archaeological, ecological or cultural value. <i>Wales currently has one Geopark; Forest Fawr, Brecon Beacons (a Geopark is currently proposed for Anglesey).</i>
Regionally Important Geodiversity Sites (RIGS)		Important places for geology and geomorphology outside statutorily protected land such as SSSIs. In South and South West Wales there are no RIGS designations, although those areas that would be classed as RIGS are designated SINC.
RSPB Reserves		RSPB reserves are vital for the success of many rare species. <i>There are currently 11 RSPB reserves in Wales.</i>

Whilst the most important areas for biodiversity are covered by these designations, it is important that the biodiversity value of non-designated areas is also understood and recognised. The Local Biodiversity Action Plan for an area should provide the relevant information on the habitats and species which are of local importance, and the local wildlife trust and/or Local Biological Records Centre are likely to be key partners/consultees when developing an understanding of the baseline situation.

Marine biodiversity is another area of importance that may need to be taken into account when developing certain plans or programmes. The 'UKSeaMap' project (JNCC, 2006a) provides a broad picture of the underwater landscape around the coast of the UK, producing a map of the sea that shows 44 large-scale marine landscapes. This links into another project on the 'Mapping of European Seabed Habitats' which aims to provide seabed habitat maps for north-west Europe (MESH, 2007).



Actions to conserve and enhance the geodiversity of a particular area are set out in Local Geodiversity Action Plans (LGAPs). The key aims of LGAPs are to:

- Identify, conserve and enhance the best sites that represent the geological history of an area in a scientific, educational, recreational and cultural setting;
- Promote geological sites and make geoconservation relevant to people;
- Provide a local geodiversity audit (auditing sites and skills); and
- Influence local planning policy.

National guidelines of geological conservation inform the development of LGAPs, and nationally designated sites (such as SSSIs) and regionally/locally important ones (such as RIGS) are brought together into a common framework. The Anglesey LGAP is the first of its kind in Wales (Geomon, undated).

Habitats Regulations Assessment

Responsible Authorities should be aware that whilst undertaking SEA on plans or programmes, they may also be required to undertake an Appropriate Assessment (AA). This will be the case if the plan or programme is likely to have a significant effect on a Natura 2000 site. The wider process of Habitats Regulations Assessment (HRA) should be used to determine whether AA will be required. Guidance on both HRA and the more detailed AA is being produced by the Welsh Assembly Government as an Annex to TAN5 – Nature Conservation and Planning.

Stage A: Setting the context and objectives, establishing the baseline and deciding on the scope

A1: Identifying other relevant plans, programmes and environmental protection objectives

Table 2 below lists relevant plans, programmes, policies and legislation that should be taken into account in relation to SEA work on the Biodiversity topic and Table 3 provides an example of a review of one document. It should be noted that the list below is not definitive as legislation and guidelines are subject to change.

Table 2: Potential plans, programmes, objectives, policies and legislation to be taken into consideration for the Biodiversity Topic

<i>International</i>
<ul style="list-style-type: none"> • Ramsar Convention on Wetlands of International Importance especially as wildfowl habitat (1971) • Bonn Convention on the Conservation of Migratory Species of Wild Animals (1979) • Bern Convention on the Conservation of European Wildlife and Natural Habitats (1979) • The Convention on Biological Diversity, Rio de Janeiro (1992) • The Cartagena Protocol on Biosafety (2000) • EU Directive on the Conservation of Wild Birds (79/409/EEC) • EU Habitats Directive (92/43/EEC) • EU Biodiversity Strategy (EU, 1998) • Gothenburg European Council Declaration 2001 • Halting the Loss of Biodiversity by 2010 – and Beyond: Sustaining Ecosystem Services for Human Well-being (EC, 2006)

National
<ul style="list-style-type: none"> • Wildlife and Countryside Act 1981 (as amended) • Protection of Badgers Act (1992) • Hedgerow Regulations (1997) • Air Quality (Limit Value) Regulations (2003) • Natural Environment and Rural Communities Act (2006) • Countryside Rights of Way Act (2000) • UK Biodiversity Action Plan (UK BAP, Defra, 1994) • The UK Forestry Standard – The Government’s Approach to Sustainable Forestry (2004) • Environment Strategy for Wales (2006) • Welsh Water Biodiversity Overview (2004) • Future Biodiversity Action in Wales, The Wales Biodiversity Group (May 2002) • Farming for the Future (2001) • Woodland Trust – Space for Nature (2002) • Woodlands for Wales (Forestry Commission, 2001) • Agri-Environmental Scheme Policy (Tir Gofal) (1999) • Forestry Commission Wales Corporate Plan 2005/6 – 2007/8 • TAN 5: Nature Conservation and Planning (1996) • Consultation on the Draft Revised Technical Advice Note 5 ‘Nature Conservation and Planning’ (2006) • TAN 10: Tree Preservation Orders (1997) • CCW Priority Habitats of Wales (2003) • CCW Corporate Plan 2005-2008 – Working Together to Create a Better Wales (July 2004) • Earth Science Conservation in Great Britain – A Strategy (Nature Conservancy Council 1990)
Regional/Local
<ul style="list-style-type: none"> • Local Biodiversity Action Plans • Local Geodiversity Action Plans

Table 3: Example of review of other relevant plans, programmes, objectives etc

Ramsar Convention on wetlands of international importance especially as waterfowl habitat (1971)	
<p>The Ramsar Convention provides a framework for the conservation of wetlands and their resources. To-date 146 parties have signed the convention with 1469 wetland sites, totalling 128.9 million hectares, designated for inclusion in the Ramsar List of Wetlands of International Importance. Mission Statement: "The Convention's mission is the conservation and wise use of all wetlands through local, regional and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world"</p>	
Objectives, requirements and targets	Implications for the Plan or Programme
<p>Contracting Parties make a commitment to:</p> <ul style="list-style-type: none"> • Designate at least one site that meets the Ramsar criteria for inclusion in the List of Wetlands of International Importance • Protect the ecological character of listed sites • Include wetland conservation within their national land-use planning • Establish nature reserves on wetlands and promote wetland training • Consult with other Contracting Parties about the implementation of the Convention 	<p>To support this convention the plan, policy or programme should aim to reduce its impacts on wetlands and enhance and restore wetland habitats where possible.</p>

Informal consultation, with statutory consultees (referred to here as ‘Consultation Bodies’) and non-statutory consultees, is also a useful tool for identifying relevant plans, programmes, objectives etc (see Stage A5 for more information on consultation).

A2: Collecting Baseline Information

Box 1 below describes some potential sources of baseline data for the Biodiversity topic.

Box 2 provides some key facts and figures about this topic. Once again, consultation bodies and non-statutory consultees may be good sources of data.

Box 1: Relevant and Appropriate Sources of Baseline Data – Biodiversity

Information/data on designated Biodiversity/Geodiversity sites (including condition):

- Countryside Council for Wales (CCW): www.ccw.gov.uk (SSSIs, NNR, SAC, Ramsar sites, SPA, SPA)
- LANDMAP (CCW): www.ccw.gov.uk/landmap (habitat and geological mapping)
- Environment Agency: www.environment-agency.gov.uk
- Joint Nature Conservation Committee: <http://www.jncc.gov.uk/>

Regional Biodiversity/Geodiversity data:

- North Wales Local Records Centre (NWLRC): www.nwlr.org.uk
- West Wales Biodiversity Information Centre: www.wwbic.org.uk
- Biodiversity Information Service for Powys and Brecon Beacons National Park: www.b-i-s.org
- South East Wales Biodiversity Records Centre (SEWBRc): www.sewbrec.org.uk
- Wildlife Trust: www.wildlifetrusts.org/ (links to Welsh Wildlife Trusts)

Local biodiversity data:

- Local Biodiversity Action Plan partners: <http://biodiversitywales.org.uk/default.htm>;

Box 2: Wales Biodiversity Facts and Figures

- In 2003, 29% of the area covered by SSSIs was in favourable condition, 18% unfavourable but recovering, and 52% in unfavourable and declining condition (JNCC, 2006b).
- In 2006, a Rapid Review assessed that 33% of SSSI sites were in favourable condition and 68% in unfavourable condition. In addition, 72% of earth science features were assessed as in favourable condition (CCW, 2006).
- Of the SAC features monitored in Wales by August 2005 (which included just over 50% of all terrestrial and freshwater features), 61% of SAC species features and 80% of SAC habitat features were reported as being in unfavourable condition (WAG, 2006).
- About one third of SPA features (all of which are bird species or assemblages of bird species) had been monitored by August 2005, with 86% of features reported as being in favourable condition and 14% in unfavourable condition (WAG, 2006).
- There are 37 priority habitats and 184 priority species in Wales. The latest status information (2002) indicated that 30% of the habitats and 22% of the species had a status of 'stable or increasing', whilst in contrast 46% of habitats and 18% of species had a 'declining' status (Jones *et al*, 2003).
- In 2004 there were 4,810km⁴ of salmonid⁴ river and 60ha of cyprinid⁵ designated river in Wales. Of these waters 7% failed to meet the required standards in 2004 (DEFRA, 2004a).

⁴ Family of fish which includes salmon and trout

⁵ Family of fish which includes, carp, tench, roach, rudd and dace.

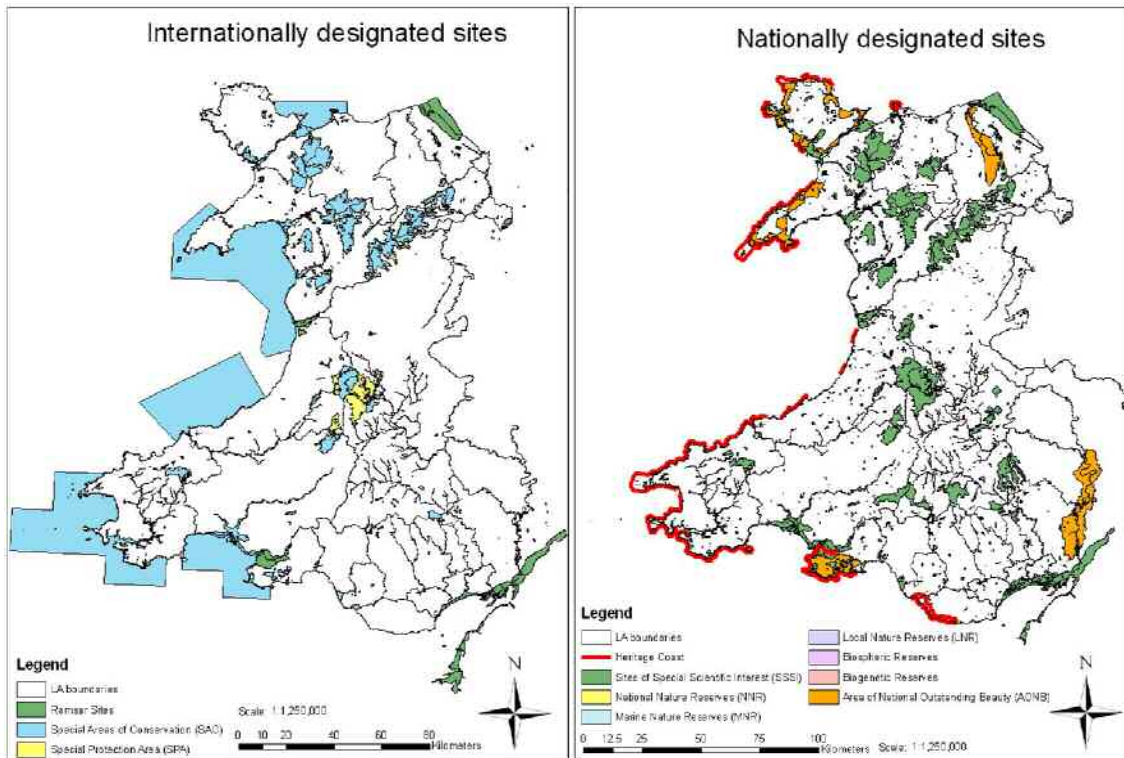


Figure 2: Internationally and Nationally designated areas in Wales

(Source: Adapted from CCW and ONS data)

A3: Identifying Environmental Issues and Opportunities

Environmental issues and opportunities are identified following the work undertaken in stages A1 and A2 and stage A3 often benefits from stakeholder workshops. Table 4 provides examples of various Biodiversity issues in Wales and their trends, based on available baseline information.

Table 4: Examples of Biodiversity Issues in Wales

Biodiversity Issue	Description
Condition of Sites of Special Scientific Interest (SSSIs)	In 2003, 29% of the area covered by SSSIs was in favourable condition. However, 18% of SSSIs were in an 'unfavourable but recovering' condition and 52% in 'unfavourable and declining' condition (JNCC, 2006b).
Condition of Special Areas of Conservation (SACs)	Of the SAC features monitored in Wales by August 2005 (which included just over 50% of all terrestrial and freshwater features), 61% of SAC species features and 80% of SAC habitat features were reported as being in unfavourable condition (WAG, 2006).
Status of BAP priority habitats and priority species	In 2002, 30% of the habitats and 22% of the species had a status of 'stable or increasing', whilst in contrast 46% of habitats and 18% of species had a 'declining' (Jones <i>et al</i> , 2003).
Wild bird populations (indication of biodiversity)	Breeding birds of farmland habitats were less abundant in 2004 than in 1994, whereas woodland birds were more abundant. Urban bird species have increased significantly (by approximately one third) (NAW, 2006a).
Standards for salmonid and cyprinid waters	There were 4,810km of salmonid river and 60ha of cyprinid designated rivers in Wales in 2004. Of these waters, 7% failed to meet the required standards (UKBAP, 2004).
Habitats exceeding critical loads for acidification	The percentage of sensitive habitats exceeding critical loads for acidic deposition was 18.6% in 2001-2003 compared with 89.9% in 1995-1997 in Wales (NAW, 2006a).
Habitats exceeding critical loads for eutrophication	The percentage of sensitive habitats in Wales where eutrophying pollutants exceeded critical loads was 87.4% in 2001-2003, compared with 94.5% in 1995-1997 (NAW, 2006a).

Table 5 below is a non-exhaustive list of potential Biodiversity-related environmental issues that plan-makers may identify in the preparation of various plans and programmes.

Table 5: Potential Biodiversity-Related Environmental Issues and Opportunities

Type of Plan or Programme	Environmental Issues and Opportunities
Transport	<ul style="list-style-type: none"> • Land-take as a result of transport infrastructure implementation can lead to the loss of and fragmentation of habitats. • The presence of people and vehicles associated with transport can create disturbances for local wildlife. • Transport and travel can also affect biodiversity through secondary impacts of air pollution and climate change. Run-off from roads and new infrastructure can affect water or hydrological regimes. • Wildlife mortality through 'roadkill'. • Disturbance to fauna resulting from noise and artificial light. • Spatial conflicts exist between port developments and important nature conservation areas which are often associated with estuarine environments. • Impacts of introducing alien species via ship's ballast tanks and through inappropriate highway planting. • Pollution impacts from anti-fouling chemicals and from accidental spillages. • Impacts of dredging on sediments and hydrodynamics of estuaries. • Increased air transport as major contributor to climate change can lead to widespread consequent impacts on species and habitats.
Development/Spatial	<ul style="list-style-type: none"> • Land-take as a result of new development can lead to the loss of and fragmentation of habitats. • Human activity and the presence of people associated with new development can create disturbances for local wildlife. • New development and processes associated with it can have secondary impacts on biodiversity, including air pollution and climate change. • Development changes can affect water or hydrological regimes, and soil composition. • Development on flood plain can result in a reduction in the flood plain capacity, potential affecting the integrity of Natura 2000 and other biodiversity-important sites. • Brownfield sites can have significant biodiversity importance which will need to be taken into account. • Impacts of flood defence schemes on coastal habitats (habitat loss and damage). • Areas can be designated for enjoyment of the outdoors, through increased access to woodlands, wildlife sites and green/open spaces. • New development may encourage biodiversity and habitat fragmentation. • Opportunities exist to increase habitat and species connectivity at landscape scale, rather than dealing with smaller sites.
Agricultural/Forestry/Rural	<ul style="list-style-type: none"> • Agriculture can lead to the loss of or fragmentation of habitats. This could be through intensification and may include loss of unimproved habitats, removal of hedgerows. • Reduction in species diversity as a result of agricultural intensification. • Agricultural processes can affect water or hydrological regimes (e.g. through phosphate and nitrate pollution, eutrophication, siltation, drainage and abstraction) and soil composition. • Organic wastes, ammonia emissions and pesticide use are all likely to impact on biodiversity. • Introduction of non-native species. • Overgrazing or under grazing. • Livestock trampling causing vegetation damage. • Changes from spring sown to autumn sown cereals lead to loss of winter habitat for birds. • Some agriculture or rural practices can enhance wider biodiversity quality through economic and socially valuable activities (e.g. grazing,

	coppicing, nature reserves).
Minerals	<ul style="list-style-type: none"> Habitat loss and/or habitat creation from minerals extraction activities. Secondary impacts of noise, dust, traffic, and waste disposal. Changes to hydrological regimes and landform. Impacts on geodiversity from quarrying and extraction. Issues relate to loss of geological features but also opportunities e.g. improving exposures.
Energy and Industry	<ul style="list-style-type: none"> There are impacts of power lines and wind turbines on birds (e.g. from collisions). Effects of cooling water outlets on aquatic systems. The use of SUDs can provide improved habitats for wildlife. Large industrial sites can provide opportunities for habitat creation and enhancement
Fisheries	<ul style="list-style-type: none"> Over-exploitation of marine fauna. Affects on non-target species killed as 'incidental catch'. Indirect damage caused through fisheries activities (e.g. damage to the sea bed, impacts of debris and litter from fishing operations). Management of riverine fisheries provides opportunities for enhancing habitats and water quality.
Tourism & Recreation	<ul style="list-style-type: none"> Disturbance to fauna (e.g. ground nesting, over-wintering and breeding birds). Damage to vegetation and soil caused by trampling and vehicles. Pollution and disturbance caused by motorised water sports and off-road vehicles. Opportunities exist for the development of geotourism.
Water	<ul style="list-style-type: none"> Loss and damage to habitats through abstraction, drainage and pollution. Changes to water quality (e.g. through nutrient eutrophication). Effects of flooding. Opportunities for wetland creation.

A4: Developing SEA Objectives

SEA Objectives are not a legal requirement but are a useful way of analysing the environmental affects of a plan or programme. Table 6 and Table 7 below describe some possible biodiversity-related outcomes, objectives, sub-objectives and indicators. Those in Table 6 have been taken from the Wales Environment Strategy, with Table 7 providing a wider range which could be used in sector or area specific SEAs.

Table 6: Wales Environment Strategy Outcomes and Indicators: Biodiversity

Environmental Strategy Outcomes	Indicators
The loss of biodiversity has been halted and we can see a definite recovery in the number, range and genetic diversity of species, including those species that need very specific conditions to survive	<ul style="list-style-type: none"> Trends in key Biodiversity Action Plan species and habitats Trends in wild birds population index Indicators to illustrate range and genetic diversity to be developed
The wider environment is more favourable to biodiversity through appropriate management, reduced habitat fragmentation and increased extent and interconnectivity of habitats	<ul style="list-style-type: none"> Proportion of land under agri-environment agreement or which is organic or which is in conversion to organic Proportion of woodland that is certified Additional indicators to be identified following completion of research into biodiversity indicators
Sites of international, Welsh and local importance are in favourable condition to support the species and habitats for which they have been identified	<ul style="list-style-type: none"> Percent of sites (of various types) in favourable condition

<p>Our seas will be clean and support healthy ecosystems that are biologically diverse and productive and managed sustainably</p>	<ul style="list-style-type: none"> • Indicators, including coastal zone indicators, to be reviewed in the light of the Marine Bill • Number of Marine Stewardship Council certified sustainable fisheries in Welsh waters • Number of fisheries assessed by ICES and Sea Fisheries Committees to be in safe biological condition – based on stock assessments, fish catches and catch per unit effort • Input of hazardous substances to the marine environment • Additional indicators to be identified following completion of UK and CCW research on marine ecosystems and work to investigate possibility of developing a seabird indicator
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Table 7: Examples of SEA Objectives/Sub-Objectives and Indicators for Biodiversity

Example Objectives (in bold) and Sub-Objectives (in italics)	Example Indicators
<i>Protection of biodiversity/ geodiversity</i>	
To protect the integrity of European, proposed European and listed Ramsar sites, and to conserve or, where not at a favourable conservation status, enhance their interest features	<ul style="list-style-type: none"> • % of features (of various types) in favourable condition, including both land and marine based (WAG, 2006) • Favourable condition of internationally and nationally important sites • Reported condition of nationally important wildlife sites • Site integrity based on condition of designated features of interest.
Meet SPA , SAC and Ramsar objectives Achieve favourable condition on internationally and nationally important wildlife sites	<ul style="list-style-type: none"> • % of sites (of various types) in favourable condition, including both land and marine based (WAG, 2006) • Reported condition of nationally important wildlife sites • Site integrity based on condition of designated features of interest.
To avoid damage or fragmentation of designated sites, habitats and protected species and encourage their enhancement	<ul style="list-style-type: none"> • Status of BAP priority species; • Status of BAP priority habitats; • Achievement against national and local BAP targets • Proportion of woodland that is certified (WAG, 2006) • Proportion of land under agri-environment agreement or which is in conversion to organic (WAG, 2006) • The population of wild birds (all species, birds of farmed habitats, woodland birds, urban and other birds) • Reported level of damage to designated sites
Meet UK/regional/local BAP objectives	<ul style="list-style-type: none"> • Achievement of BAP objectives and Targets (UK and country specific/regional/local)
Maintain or enhance BAP habitats and species in line with UK/regional/local BAP targets	<ul style="list-style-type: none"> • Achievement of BAP objectives and Targets (UK and country specific/regional/local)
Maintain local biodiversity	<ul style="list-style-type: none"> • Number and area of SINCs and LNR within the plan area (number and hectares)
Restore the full range of characteristic habitats and species to viable levels Safeguard genetic resources by protecting species populations, and the habitats and ecological processes on which they depend	<ul style="list-style-type: none"> • Number of characteristic rare species and priority habitats • Area and quality of habitat managed in relation to range-size requirements • Area of land actively managed for nature conservation • Achievement of river quality objectives
To protect and enhance designated geological sites and wider geodiversity	<ul style="list-style-type: none"> • % of sites (of various types) in favourable condition, including both land and marine based (WAG, 2006) • Number of local geodiversity action plans developed • Achievement of local geodiversity action plan targets

<i>Increasing biodiversity / biodiversity gain</i>	
To encourage innovative methods of producing biodiversity gain in urban and rural areas	<ul style="list-style-type: none"> Number of development schemes which design in urban biodiversity areas. Use of CCW's greenspace toolkit⁶
Contribute to sustainable development e.g. reverse the long term decline in farmland birds	<ul style="list-style-type: none"> National headline indicators, e.g. populations of farmland birds.
Enhance biodiversity in the wider countryside	<ul style="list-style-type: none"> The population of wild birds (all species, birds of farmed habitats, woodland birds, urban and other birds)
Strengthen regional biodiversity	<ul style="list-style-type: none"> Active partnerships and mechanisms for information gathering and sharing established
<i>Access to biodiversity/geodiversity</i>	
Encourage and enable people to access and appreciate Wales' wildlife and wild places.	<ul style="list-style-type: none"> Number of visitors to nature reserves
To protect, enhance and create appropriate wildlife habitats and wider biodiversity in urban and rural areas;	<ul style="list-style-type: none"> % of sites (of various types) in favourable condition, including both land and marine based (WAG, 2006) Number of urban parks and green spaces with a Green Flag Award Number of local authorities using or have used the CCW green space toolkit
To encourage and enable people to access and appreciate Wales' geodiversity	<ul style="list-style-type: none"> Number of visitors to geoparks Number of jobs created by geotourism

Link to Welsh Assembly Government Sustainable Development (SD) Indicators

As part of its commitment to achieving sustainable development the Welsh Assembly Government has developed a series of indicators which will be used to measure progress towards that commitment⁷.

Some of these indicators may not be suitable for many SEAs, particularly those for plans at a local level, as they are fairly 'broad-brush' and will not be able to either be measured at a local level, or respond to the policies and measures included within individual plans and programmes. Nevertheless they should be considered for inclusion wherever appropriate.

NB: a revised set of indicators is currently being developed and some of these are likely to be more appropriate for incorporation into SEAs.

Other indicators reported by the Welsh Assembly Government at a national level include those in the Environment Strategy (WAG, 2006) and those from the Key Environment Statistics Indicators.

WAG reports each year on its suite of sustainable development indicators, some of which include environmental indicators. It also reports separately on progress in implementing its Environment Strategy using a number of ES indicators, some of which overlap with its suite of SD Indicators. These reporting mechanisms provide useful data which can be used to inform SEA scoping and environmental reports. They also help to form a framework against which environmental indicators for the plan or programme can be developed.

⁶ The Accessible Natural Greenspace Toolkit is designed to help local authorities plan and improve natural green areas for people in their communities. It can be obtained by contacting CCW.

⁷ Sustainable Development Indicators for Wales can be found at:
<http://new.wales.gov.uk/topics/statistics/headlines/sustain-2007/?lang=en>

A5: Consulting on the Scope of SEA

In addition to the three statutory Consultation Bodies (CCW, Cadw and EA) there are other organisations or bodies who could be consulted on the scope of the SEA, and on the Environmental Report. For the Biodiversity topic, these may include:

- Wales Biodiversity Partnership;
- British Trust for Conservation Volunteers Cymru (BTCV Cymru);
- Forestry Commission Wales (FC Wales);
- Farming and Rural Conservation Agency (FRCA);
- Wildlife Trusts;
- National Botanic Garden of Wales;
- Wales Wildlife and Countryside Link;
- Royal Society for the Protection of Birds (RSPB);
- Association of Local Government Ecologists (ALGE); and
- Regionally Important Geological and Geomorphological Site (RIGS) Groups.

Stage B: Developing and Refining Alternatives and Assessing Effects

The Practical Guide provides guidance for undertaking SEA Stages B1 (Testing the plan or programme objectives against the SEA objectives), B2 (Developing strategic alternatives) and B3 (Predicting the effects of the draft plan or programme, including alternatives). This note provides no topic specific guidance for these stages.

B4: Evaluating the effects of the draft plan or programme, including alternatives

At Stage B4 the significance of the environmental effects forecast in Stage B3 is evaluated. Part of this concerns the interrelationship of the biodiversity topic with other SEA topics and Table 8 below describes some of these interrelationships.

Table 8: Interrelationships with other SEA topics

SEA Topic	Interrelationship with Biodiversity and Geodiversity Topic
Air quality	Reductions in local air quality can affect vegetation growth. At a regional level, acid deposition can lead to the degradation of the terrestrial environment. Geodiversity resources are associated with release of radon gas.
Climatic Factors	Climate change may affect biodiversity through a change of habitats and change in species distribution. Certain species may not find changed climate to be favourable – northward migration may not be possible if corridors do not exist, leading to loss of species. Sea level rise will affect coastal geology.
Landscape	Where landscape and geodiversity assets are protected, biodiversity, species and habitats also gain protection benefits.
Soil	A wealth of organisms and species are contained within soils, and perform functions that are vital for healthy soils and for the habitats and uses that depend on them. Sustainable soil use is required to preserve and restore the functions of soil organisms to support agriculture, environmental protection and nature conservation.
Material assets	Extraction of minerals and aggregates could adversely affect designated and non-designated habitats and species and geodiversity. Restoration and after-use of mineral sites present opportunities for large-scale habitat creation. The unimproved grassland habitats that exist alongside road and rail networks can be of high biodiversity value. Reservoirs offer opportunities for habitat creation if appropriately designed and managed. Introduction and operation of other material assets (e.g. waste disposal sites, pipelines, and powerlines) can have adverse

	affects on biodiversity, although these too can provide habitat opportunities.
Health	Access to natural green space and green space in urban environments can help to improve life expectancy and decrease health complaints. It is increasingly recognised that a favourable environment can encourage people to exercise, providing psychological and social benefits that may also increase the motivation to exercise (Bird, 2004).
Population	Creating access to the transport system or key services/opportunities may negatively affect biodiversity through destruction or fragmentation of habitats. However, access may also be aimed at green/open space and biodiversity/geodiversity, creating a wider understanding amongst the population.
Water	The quality and quantity of Wales' water resources, waterways and coastlines are closely inter-related to the habitats and species that they support.

Stage C: Preparing the Environmental Report

Refer to *The Practical Guide* for details relating to SEA Stage C.

Stage D: Consulting on the Draft Plan or Programme and the Environmental Report

Refer to *The Practical Guide* for details relating to SEA Stage D.

Stage E: Monitoring Implementation of the Plan or Programme

Whilst generic guidance on SEA Stage E is provided in *The Practical Guide*, some topic specific information of relevance to Stage A2 is provided below.

NB: many of the examples provided could be used not just when responding to adverse effects, but also to enhance the environmental outcomes of a plan from the outset.

E2: Responding to Adverse Effects

Plans can be used to deliver responses to adverse effects identified during SEA in a variety of ways. Specific examples of responses relevant to the Biodiversity topic include:

- Ensure strategic decisions take into account the needs of areas designated for their biodiversity and geodiversity value;
- Encourage wider biodiversity by identifying strategic opportunities for habitat creation and enhancement at a regional level;
- Investigate the opportunities for win-win solutions where there are potential conflicts between economic/social and biodiversity/geodiversity aims;
- Where appropriate, consider strategic mitigation responses to provide a few large areas of new or improved habitat, rather than dealing with mitigation at a larger number of smaller sites;
- Promote contact between nature and the local community (e.g. through the protection and enhancement of urban green spaces⁸, parks and allotments, local nature reserves);

⁸ See RCEP (2007) *The Urban Environment*.

- Take into account the need to reduce land take and habitat fragmentation;
- Investigate opportunities to designate and manage an increased number of Local Nature Reserves;
- Ensure appropriate levels of protection are provided for designated habitats and species, including the introduction of buffer zones where appropriate;
- Encourage the maintenance or creation of wildlife corridors and/or stepping stones which will enable the migration of species;
- Encourage improved access to nature conservation sites and interpretation of their features of interest;
- Consider the need for geological conservation as well as interpretation and management of geological sites;
- Take into account the objectives and targets of Local Biodiversity Action Plans and Local Geodiversity Action Plans;
- Encourage the management of areas such as roadside verges and railway track-sides for wildlife;
- Encourage the creation of wetland features such as holding ponds and marshes around new and modified drainage schemes;
- Consider how a plan can help to feed into large scale habitat restoration (RSPB, 2001);
- Encourage the take up of the Tir Gofal programme;

References and Further Reading

SEA and Generic References:

- ODPM, Scottish Executive, Welsh Assembly Government and Department of the Environment in Northern Ireland (2005) *A Practical Guide to the Strategic Environmental Assessment Directive*, TSO, UK.
- NAW (2006) *Local Development Plan Manual*, National Assembly for Wales, UK.
- DfT (2004) *Strategic Environmental Assessment for Local Transport Plans*, TAG Unit 2.11, TSO, UK. Available at URL: www.webtag.org.uk/webdocuments/2_Project_Manager/11_SEA/
- ODPM (2005) *Sustainability Appraisal of Regional Spatial Strategies and Local Development Documents*, TSO, UK (Sustainability Appraisal includes SEA).
- Welsh Statutory Instrument 2004 No. 1656 (W.170): *The Environmental Assessment of Plans and Programmes (Wales) Regulations 2004*.
- Environment Agency (2007) *Web-based Advice on SEA and Good Practice*. Available at URL: <http://www.environment-agency.gov.uk/aboutus/512398/1504325/1504417/?version=1&lang=e>
- Environment Agency Wales, Welsh Assembly Government, Cadw, and CCW (2005) *Strategic Environmental Assessment: Consultation Bodies' Services and Standards for Responsible Authorities in Wales*. Available at URL: <http://www.cadw.wales.gov.uk/upload/resourcepool/WalesS&Senglish6943.pdf>
- Countryside Agency, English Heritage, English Nature and Environment Agency (2005) *Environmental Quality in Spatial Planning*. Available at URL: http://www.english-heritage.org.uk/upload/pdf/Envir_Quality.pdf#search=%22environmental%20quality%20in%20spatial%20planning%22

Topic Specific References and Further Reading:

- Bird, W (2004) *Natural Fit: Can Green Space and Biodiversity Increase Levels of Physical Activity?* RSPB. UK
- BRIG (2007). *Biodiversity Reporting and Information Group: Report on the Species and Habitat Review: Report to the UK Biodiversity partnership*. Available at URL <http://www.ukbap.org.uk/bapgroupage.aspx?id=112>
- CCW (2006) CCW Website. Available at URL: <http://www.ccw.gov.uk/>
- Countryside Council for Wales – CCW (2006) "Rapid Review Update", Unpublished spreadsheets, compiled by Iwan Hughes, SSSI and Species Protection Team Leader, CCW.
- CCW (2007) *Current SSSIs in Wales*, Countryside Council for Wales, UK. Available at URL: <http://www.ccw.gov.uk/landscape--wildlife/protecting-our-landscape/special-landscapes--sites/protected-landscapes/sssis/current-sssis-in-wales.aspx>
- DEFRA (2004a) *Freshwater quality: Compliance with the EC Freshwater Fish Directive*, Available at URL: <http://www.defra.gov.uk/environment/statistics/inlwater/iwecfish.htm>
- DEFRA (2007) *Guidance for Public Authorities on Implementing the Biodiversity Duty*. Available at URL: <http://www.defra.gov.uk/wildlife-countryside/biodiversity/index.htm> or <http://www.biodiversitywales.org.uk/English/Library/default.aspx?pid=13>
- Geomon (undated). *Anglesey Geodiversity Project*, available at URL <http://www.geomon.org.uk/index.htm>
- JNCC (2006a). *Joint Nature Conservation Committee: The Mapping of Marine Seabed Landscapes and Water Column Features of UK Seas (UKSeaMap)*. Available at URL: <http://www.jncc.gov.uk/page-3918>;
- JNCC (2006b). *Common Standards Monitoring Report for Designated Sites: First Six Year Report*. Available at URL: <http://www.jncc.gov.uk/page-2217>
- Jones *et al* (eds) (2003) *Priority Habitats of Wales – A Technical Guide*, CCW, UK.
- MESH (2007) *Mapping European Seabed Habitats (MESH)*. Available at URL: <http://www.jncc.gov.uk/page-1542>
- NAW (2006a) *Key Environment Statistics for Wales 2006*, Statistical Directorate National Assembly for Wales, Cardiff. Available at URL: <http://new.wales.gov.uk/topics/statistics> (>Headlines, Releases and Bulletins > Environment)

- RSPB (2001) *Futurescapes: large-scale habitat restoration for wildlife and people*. The Royal Society for the Protection of Birds, Sandy, UK. Available at URL: <http://www.rspb.org.uk/ourwork/conservation/sites/futurescapes.asp>;
- RSPB *et al* (2004) *Strategic Environmental Assessment and Biodiversity: Guidance for Practitioners*, RSPB, UK. Available at URL <http://www.rspb.org.uk/ourwork/policy/planning/sea.asp>;
- UKBAP (2004) *UK Biodiversity Action Plan*. Available at URL: <http://www.ukbap.org.uk/>
- WAG (2004). *Welsh Assembly Government: Trunk Road Estate Biodiversity Action Plan 2004-2014*, WAG, UK. Available at URL: http://www.ukbap.org.uk/library/TREBAP_English.pdf
- WAG (2006). *Rural Development Plan for Wales 2007-2013 Consultation Draft*, WAG, UK. Available at URL: <http://new.wales.gov.uk/consultations> (>Closed Consultations >Environment and Countryside)
- WBP (2007). *Wales Biodiversity Framework*. Wales Biodiversity Partnership. Available at URL: <http://www.biodiversitywales.org.uk/admin/upload/docs/english/WBP%20Framework%20version%20013-06-07%20English.doc>.

Further Reading:

- English Nature (2002) *Sector Analysis: Inland Transport*. Available at URL: <http://www.english-nature.org.uk/about/sector/transport.htm>
- English Nature (2002) *Sector Analysis: Tourism, Recreation and Access*. Available at URL: <http://www.english-nature.org.uk/about/sector/rec.htm>
- English Nature (2002) *Sector Analysis: Water*. Available at URL: <http://www.english-nature.org.uk/about/sector/freshwater.htm>
- English Nature (2003) *Sector Analysis: Ports*. Available at URL: <http://www.english-nature.org.uk/about/sector/ports.htm>
- English Nature (2003) *Sector Analysis: Minerals*. Available at URL: <http://www.english-nature.org.uk/about/sector/minerals.htm>
- English Nature (2004) *Geology and biodiversity - making the links*. Available at URL: <http://www.english-nature.org.uk/pubs/publication/PDF/GeoandBioIft.pdf>
- English Nature (2004) *Sector Analysis: Agriculture*. Available at URL: <http://www.english-nature.org.uk/about/sector/agricultural.htm>
- English Nature (2004) *Sector Analysis: Construction and Development*. Available at URL: <http://www.english-nature.org.uk/about/sector/construction.htm>
- English Nature (2004) *Sector Analysis: Sea Fisheries*. Available at URL: <http://www.english-nature.org.uk/about/sector/seafisheries.htm>
- English Nature (2005) *Designing Sustainable Communities for People and Biodiversity*, English Nature, UK. Available at URL: <http://www.english-nature.org.uk/pubs/publication/PDF/SustainableComms.pdf>
- English Nature (2005) *Sector Analysis: Coastal Management*. Available at URL: <http://www.english-nature.org.uk/about/sector/coastal.htm>
- Royal Commission on Environmental Pollution (RCEP) (2007) *The Urban Environment*. Available at URL: <http://www.rcep.org.uk/urbanenvironment.htm>
- Stace, H & Larwood, JG (2006) *Natural foundations: geodiversity for people, places and nature*. Peterborough, English Nature. Available at URL: <http://www.english-nature.org.uk/pubs/publication/PDF/GeologySON.pdf>