BS 8583:2015

BSI Standards Publication

Biodiversity – Guidance for businesses on managing the risks and opportunities

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Published by BSI Standards Limited 2015

ISBN 978 0 580 82959 8

ICS 13.020.01; 91.020

The following BSI references relate to the work on this document:
Committee reference BDY/1
Draft for comment 14/30282814 DC

Publication history

First published February 2015

Amendments issued since publication

Date	Text affected

Contents

Summary of pages

This document comprises a front cover, an inside front cover, pages i to ii, pages 1 to 78, an inside back cover and a back cover.

Foreword

Publishing information

This British Standard is published by BSI Standards Limited, under licence from The British Standards Institution, and came into effect on 28 February 2015. It was prepared by Technical Committee BDY/1, *Biodiversity management*. A list of organizations represented on this committee can be obtained on request to its secretary.

Use of this document

As a guide, this British Standard takes the form of guidance and recommendations. It should not be quoted as if it were a specification or a code of practice and claims of compliance cannot be made to it.

Presentational conventions

The guidance in this standard is presented in roman (i.e. upright) type. Any recommendations are expressed in sentences in which the principal auxiliary verb is "should".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

Introduction

The sustainability of a business depends on the natural resources that support it, many of which are underpinned, directly or indirectly, by biodiversity (the variety of life on earth, i.e. the different animals, plants and micro-organisms, their genes and the ecosystems of which they are part).

Biodiversity in the UK and globally faces a wide range of threats, which can present challenges to businesses, for example in ensuring the security of their supply chains. However, there are also many opportunities for businesses to enhance biodiversity which can, in turn, benefit them, for example by enhancing their reputation. Early consideration of biodiversity can bring unforeseen business rewards.

There are already guides in existence that address mechanisms for indirectly benefiting biodiversity such as by addressing climate change and carbon emissions. There are also numerous guides specifically directed towards development or redevelopment of land and the steps that have to be undertaken to protect and, where possible, enhance biodiversity as a result of new developments and planning permissions.

This British Standard, however, aims to give guidance to businesses of all types and sizes on how they can incorporate biodiversity considerations into their day-to-day management systems to protect and enhance biodiversity through their regular operations in a way that contributes to business continuity.

1 Scope

This British Standard gives guidance for businesses on managing business risks and realizing opportunities in relation to biodiversity. It provides advice for businesses on how to co-exist with biodiversity in a mutually beneficial way, which can constitute one of the environmental aspects identified in their environmental management system, or can be addressed within their wider management systems or processes.

The standard gives guidance on biodiversity in relation to the following three areas:

- management of premises and facilities;
- management of day-to-day business operations;
- management of the supply chain.

The standard is applicable to businesses of all types and sizes. It is primarily intended for UK businesses, including those with an international supply chain, but can also be used by businesses outside the UK.

The standard sets out a four-step process for businesses to follow to enable them to make biodiversity improvements.

The standard does not give detailed advice regarding protected species and sites and it does not give detailed guidance on the information that has to be provided in a planning application. The standard also does not give detailed guidance for businesses heavily involved in land management or development, although some guidance is given in Clause 4.

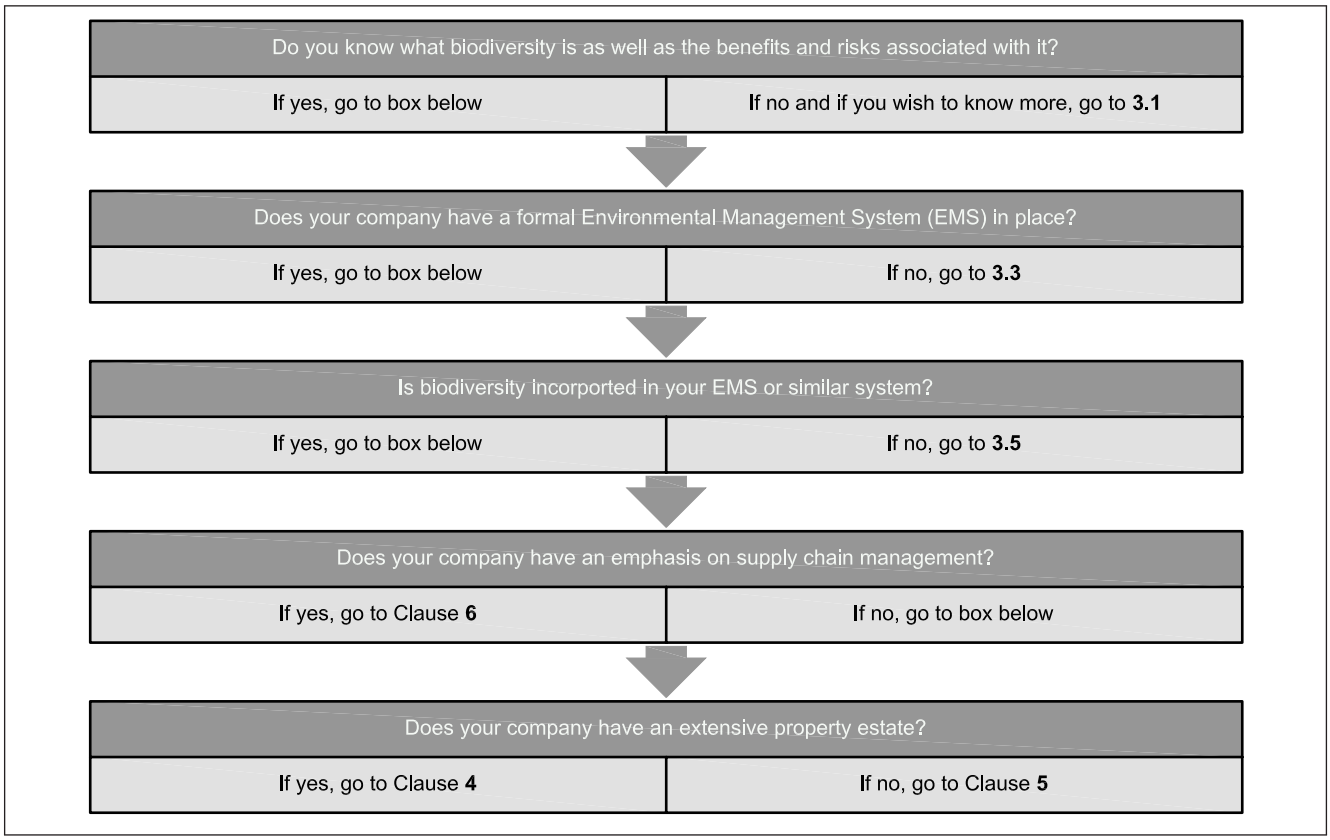
NOTE 1 Detailed information on biodiversity in relation to planning applications is given in BS 42020.

*NOTE 2 It is recognized that, for many businesses (e.g. retail and wholesale), their supply-chain might be the only aspect of normal business operations that could affect biodiversity. For these businesses, Clause **5** on incorporation of biodiversity considerations into management of standard operations is likely to be of less relevance than it might be for other types of business such as those concerned with financial investment, property/development, engineering and construction or rail. Clause **4** on incorporation of biodiversity into land and premises management systems, is likely to be of relevance to any business that operates from premises and this Clause also provides advice on landscape-scale biodiversity improvements that can be delivered by businesses in partnership with other organizations.*

NOTE 3 A list of conservation organizations is given in Annex A.

A flow chart giving guidance on the use of the standard is given in Figure 1.

Figure 1 **Guidance on use of BS 8583**



2 Terms and definitions

For the purposes of this British Standard, the following terms and definitions apply.

2.1 biodiversity

variability among living organisms, including terrestrial, marine and other aquatic ecosystems and ecological complexes of which they are a part

[SOURCE: UN Convention on biological diversity [1], modified]

NOTE This includes diversity within species, between species and of ecosystems.

2.2 biodiversity action plan
plan setting out how a country, business, operation or organization intends to act to preserve and enhance biodiversity

NOTE In the UK many local authorities or counties have produced biodiversity action plans, as have a number of businesses.

2.3 biodiversity audit
assessment of the effectiveness of the actions set out in the biodiversity action plan in reducing the impact of the business on biodiversity

2.4 biodiversity review
assessment and measurement of the impact the business has on biodiversity and the steps it could take to reduce its impact and enhance biodiversity

2.5 ecologist
person who has relevant training, skills and experience to undertake surveys of, and provide advice regarding, habitats, species and the environment

2.6 ecosystem
natural system consisting of all interacting plants, animals and other organisms and all the physical factors in the environment

2.7 ecosystem services
benefits to people, including businesses, provided by ecosystems

[UN Millennium ecosystem assessment 2005 [2] , modified]

2.8 ecological impact assessment
process of identifying, quantifying and evaluating the potential impacts of defined actions on ecosystems or their components, and usually performed as one element of environmental impact assessment

[SOURCE: BS 42020:2013, **3.11**]

2.9 environmental management system
part of the management system used to manage environmental aspects, conform to compliance obligations and address risk associated with threats and opportunities

[SOURCE: BS EN ISO 14001:2004, **3.8**]

2.10 habitat
natural home or environment of an animal, plant or other living organism

2.11 hard estate
those parts of an organization's landholdings which are not vegetated, such as buildings and paved ground

2.12 high conservation value area (HCVA)
natural area with environmental, socioeconomic, biodiversity or landscape value

NOTE This is an internationally recognized term.

2.13 invasive species
plants or animals, which can be native species but are often non-native to the UK, which have adverse impacts on the environment

> **EXAMPLE** Invasive species can be poisonous, affect water flows or physically damage buildings, infrastructure, waterways or other species of commercial or natural interest.

NOTE Many (although not all) invasive species are listed in Schedule 9 of the Wildlife and Countryside Act 1981 (as amended) [3].

2.14 natural capital
elements of nature that produce value (directly and indirectly) to people, such as the stock of forests, rivers, land, minerals and oceans

NOTE Natural capital underpins all other types of capital (man-made, human and social) and is the foundation on which our economy, society and prosperity is built.

2.15 soft estate
those parts of an organization's landholdings which are vegetated, such as a pond or meadow

2.16 species
group of living organisms consisting of similar individuals capable of exchanging genes or interbreeding

2.17 sustainability
achievement of an enduring social, environmental and economic balance

2.18 sustainable sourcing
sourcing materials or services in a way that achieves an enduring social, environmental and economic balance

3 Biodiversity and its relevance to business

3.1 Biodiversity background

Biodiversity underpins the functioning of ecosystems which are complex and dynamic assemblies of the living environment (e.g. plants, animals, microscopic communities) and the non-living environment (e.g. soil, air, water). Very often, the more diverse an ecosystem, the more resilient it is and the more services it can provide. If an ecosystem is altered or reduced (i.e. by altering its biodiversity components) then the dynamic of this ecosystem will be changed and the services it provides can be changed or cease altogether. As such, ecosystem services are considered in this standard as part of the services offered by biodiversity (see Box 1), however the valuation of ecosystem services (or natural capital evaluation) is not covered.

Several studies were conducted worldwide to assess trends in biodiversity and ecosystem services. The results showed that:

- the majority of ecosystem services have been degraded whilst the pressures humans place on them have increased (Millennium Ecosystem Assessment [2] 2005 and TEEB 2010 [4]); and,
- it is estimated that the cost of this loss is likely to be 7% of the world gross domestic product (GDP) by 2015 (ACCA, Fauna and Flora international, and KPMG 2012 [5]).

The UK is a signatory of the Convention of Biodiversity and following the recommendations of the Lawton report [6], the government published the Natural Environment White Paper [7] and Biodiversity 2020 [8]. Biodiversity 2020 sets out how European and national biodiversity commitment will be implemented.

Conservation of biodiversity not only requires the protection and enhancement of scarce species and habitats, but also those more common habitats and species, in order to maintain the delivery of ecosystem services. A business that maximizes the extent to which it safeguards biodiversity resources in the present is likely to be more resilient to future changes.

Box 1: Ecosystem services and natural capital evaluation

The following environmental evaluation tools are of particular business relevance in relation to ecosystem services. The methods and tools required to allow businesses to adopt natural capital accounting and to develop Payments for Ecosystem Services (PES) schemes are still developing, although progress is being made.

Natural capital accounting. Tools are currently being developed that allow governments and businesses to measure both stocks of natural capital (e.g. areas of woodland) and the flows from that capital (e.g. the ecosystem services obtained from woodlands) and how their actions can affect these stocks and flows positively or negatively. Natural capital accounting can help secure business operations by increasing their short and long term sustainability and reduce future risks to supply chains. If properly measured and managed the living aspects of natural capital can continue to provide ecosystem services and benefits indefinitely.

Payments for ecosystem services. The basic idea behind PES schemes is that those who provide ecosystem services should be paid for doing so, just as if they were being paid for any other service. PES schemes involve payments to the managers of land or other natural resources (the sellers) in exchange for the provision of specified ecosystem services, either to maintain existing services or to go above and beyond what would normally occur. Payments are made by the beneficiaries of the services in question (e.g. reduced flood risk, clean water, recreational access), by individuals, communities, businesses or governments (the buyers). PES schemes offer the potential to deliver sustained ecosystem services to a wide range of business sectors and provide an opportunity for those businesses that control land or other natural resources to receive payments for increases in ecosystem services.

Information on tools and resources for businesses to assess ecosystem services are given in the following publications:

National Ecosystem Assessment and National Ecosystem Assessment follow on: The UK National Ecosystem Assessment (UK NEA) [9] was the first analysis of the UK's natural environment in terms of the benefits it provides to society and continuing economic prosperity. The NEA-Follow-On (NEAFO) [9] provides further details of the cultural and economic value of nature and a variety of accounting and decision support tools for use by government, business and the voluntary sector seeking to understand the value of the natural environment and the impacts of their decisions.

BSR (Business for Social Responsibility) Measuring and Managing Corporate Performance on Ecosystem Services [10]: This report has been developed to assist business people who want to know more about ecosystem services and is intended to help corporate decision-makers understand and assess the current ecosystem services tools available. It offers a view of the full suite of current tools, and highlights the opportunities and challenges for their use in the private sector.

Eco4Biz. This report [11] provides a structured overview of existing ecosystem service and biodiversity tools and approaches that are publicly available for use by businesses. The aim is to help companies make better-informed decisions about which tool they could apply when assessing and managing their ecosystem impacts and dependencies in order to ultimately lower risk and enable companies to be more competitive over time.

Guide to Corporate Ecosystem Valuation [12]. This guide is to help companies in the process of valuing ecosystems and their services.

The Corporate Ecosystem Services Review (ESR) [13]: The ESR is a structured methodology for corporate managers to proactively develop strategies for managing business risks and opportunities arising from their company's dependence and impact on ecosystems. It sets out the five steps for performing a review, an analytical framework, case examples, and helpful suggestions for each step.

3.2 Biodiversity and business opportunities

All businesses are in some way reliant on the services provided by the environment and ecosystems. Business reliance on biodiversity can be direct (e.g. food production, the pharmaceutical and the cosmetics industries which rely directly on naturally sourced products) or indirect (e.g. the financial investment sector which benefits from investing in land that is managed to enhanced biodiversity and delivers returns in the long term). For many businesses their principal interaction with biodiversity is through their premises and their supply chain. All businesses also rely on more general ecosystem services (e.g. clean water supply and decomposition of waste), the disruption of which can have a disproportionately large impact on the quality and resilience of the supply chain.

Improving consideration of biodiversity in one's business management could provide unexpected direct and indirect company benefits such as the following.

- **Supply of resources**. Natural resources derived from ecosystems provide the basis for a wide range of commercial products including food, paper, textiles and colorants. The services provided by ecosystems, such as water and nutrient cycling, are also often essential for production and processing. For example, as reported in the 2020 Challenge for Scotland's Biodiversity [14], the value of insect pollination services in Scotland is estimated at £43 million per year. Improving consideration of biodiversity can preserve the diversity of resources and ensure a continuing supply, avoiding the need to develop replacement resources as each is exhaustively exploited, and maintaining the continuity of the business.
- **Access to markets.** Some consumers are showing increased preference for products that are created using sustainably and ethically sourced materials and methods. For example, according the 2010 TEEB for Business report [4] global sales of Forest Stewardship Council certified "sustainable" forest products quadrupled between 2005 and 2007, whilst between 2008 and 2009 the global market for certified "sustainable" fish products grew by over 50%, achieving a retail value of US$1,500,000,000. According to a 2010 UNEP-WCMC report [15] the potential size of global markets for agricultural and fisheries products that are certified environmentally sustainable is estimated at US$200,000 million by 2050.
- **New markets**. New sectors are also emerging to address unavoidable impacts on biodiversity (e.g. offsetting and conservation banking), whilst lucrative opportunities might also be found in sectors as diverse as bio-prospecting (the search for new compounds, genes and organisms in the wild) and ecotourism.

- **Access to finance and insurance.** Financial institutions are making greater demands on businesses to reduce their environmental impact, including on biodiversity. For instance the International Finance Corporation (IFC) Performance Standard 6 [16] required client projects to "maintain the benefits from ecosystem services" in late 2012. Also, as of October 2013, 78 financial institutions have adopted the Equator Climate change mitigation and climate change adaptation principles [17], a risk management framework, adopted by financial institutions, for determining, assessing and managing environmental and social risk in projects.
- **Cost savings.** Taking steps to conserve and enhance biodiversity can result in cost savings to businesses; for example managing farmland in a manner that benefits biodiversity can also result in reduced usage of fertilizer and pesticides and an associated reduction in costs.
- **Brand and reputation.** With increased access to information on the products they purchase, consumers are able to keep informed of the activities of companies more easily than ever before. This has resulted in increased scrutiny of company activities, with bad publicity leading to declining sales and reduced shareholder confidence. The 2010 report from UNEP-WCMC [15] notes that investors appear to reward companies with long-term visions, with green companies on the Dow Jones Sustainability Index emerging in a stronger position from the recent financial crisis than their peers. A track record of caring for the environment, including biodiversity, can also help to give an edge to businesses seeking to attract and retain talent. This is considered to be particularly the case in competitive graduate markets where candidates might actively screen out companies with poor environmental records.
- **Licence to operate.** A company's ability to access land and other natural resources is increasingly affected by its track record of environmental issues. By adopting best practices on biodiversity and wider environmental and social issues companies are more likely to establish good relationships with governments and local communities, thus improving their chances of being granted a licence to operate in a particular area.
- **Attraction and retention of quality staff**. Businesses which demonstrably care for the environment are more likely to attract and retain high quality staff. This increases competitive advantage and reduces the costs associated with staff turnover. In the Tees Valley, a highly industrialized area which is also recognized as being internationally important for migratory birds and other wildlife, the Industry & Nature Conservation Association (INCA) was established to balance the needs of economic development and environmental conservation.
- **Climate change mitigation, adaptation and resilience**. Businesses' ability to produce goods or services might be challenged by climate change impacts on their supply chain. To protect and enhance biodiversity is to protect and enhance ecosystem services and the more resilient an ecosystem is, the more likely it is that it will be able to cope with climate change and thus continue to provide services required by a business supply chain. As it is highly likely that climate change will impact on businesses, a business with a supply change which has invested in mitigation and/or adaptation measures (which can include biodiversity protection and enhancement) is more competitive than one which is not prepared.
- **Green Infrastructure (GI).** GI is a network of important green and blue spaces and other environmental features. When GI is well managed, it brings environmental benefits and can act as a catalyst to economic growth by attracting business investment, tourism, improving environmental services capacities which in turn provide employment, health benefits and food production.

In addition to benefits and opportunities of considering biodiversity, there are also the risks of not doing so. Whilst the services provided by ecosystem have often been considered to be free according to traditional thinking, this is changing in the face of growing threats to biodiversity. Increasingly, individuals, communities, governments and businesses are realising that the current high rate of biodiversity loss poses a threat to both the economy and wider human wellbeing. A business impact on biodiversity might not always be direct and/or immediate. One example would be the formation of acid rain as a result of emissions into the atmosphere, which crosses borders, causing impacts on biodiversity. Impacts might range from the loss of trees and forests to the acidification of water bodies, which in turn impacts businesses through the loss of revenue from forestry, fisheries and tourism.

By assessing dependencies and impacts on biodiversity, businesses can identify currently hidden risks and opportunities and react to them appropriately.

3.3 What is meant by "businesses" in the context of this British Standard?

The reference to businesses in this standard is deliberately inclusive. This standard is aimed as much at businesses without a formal environmental management system (such as in accordance with BS EN ISO 14001) or company biodiversity action plan as those that have these tools. In this standard businesses are grouped into a series of typologies and the guidance given is divided according to which of the business typologies it is most applicable to. The typologies are as follows:

- food, drink and horticultural production businesses (e.g. agriculture; fisheries and plant importation and propagation);
- extractive businesses (e.g. oil, gas, mining and minerals, forestry);
- utilities (e.g. water companies, power companies);
- environmental businesses (e.g. recycling and waste management);
- manufacturing businesses (e.g. heavy industry, lighter industry such as chemical manufacture, food processors);
- development and construction businesses (including infrastructure construction e.g. roads);
- transport operation businesses (e.g. distribution, rail and shipping);
- retail and service focused businesses (including tourism and finance).

Different types of business can encounter various types of biodiversity risks and opportunities which might not necessarily be obvious. Examples are given in Annex B. These are not intended to be comprehensive lists.

3.4 What is meant by a "management system"?

For the purposes of this standard, management systems are defined broadly as: the structure, processes and resources needed to establish an organization's policy and objectives, and to achieve those objectives. In its broadest terms a management system is a series of procedures and protocols that are employed to deliver a business outcome. This could be specific to a particular area of a business's operation, such human resources, or it could be a more general centralized decision making, review and monitoring process.

3.5 Incorporation of biodiversity considerations into management systems

There are three broad management system streams into which consideration of biodiversity can be incorporated, either as part of a business's formal environmental management system (if they have one) or as part of other less formal management systems. These three streams are as follows.

- *Management of premises and facilities*. There are risks to biodiversity in premises and facilities management if due regard is not given to habitats on the site, to wildlife that might be using them and to the impacts that the presence and use of the site have on habitats, wildlife and ecosystems on the site and in the wider landscape. There can also be opportunities for businesses to benefit biodiversity by:
    - changing premises management practices (although the decision to do this needs to be carefully weighed against the long-term risks of encouraging protected species onto the site);
    - incorporating a mechanism within the management system to recognise when opportunities exist for the protection and/or enhancement of biodiversity, including habitats and wildlife;
    - becoming involved in biodiversity improvements throughout their wider community even when the potential of their own premises and facilities for biodiversity enhancement is limited.
    - consulting with all stakeholders on all biodiversity initiatives.
- *Management of day-to-day business operations, other than the supply chain*. Depending on the nature of the business, the day-to-day operations of that business might raise both potential risks to biodiversity and also opportunities to enhance biodiversity (examples of these are given in Annex B). Company management systems can be used to ensure that consideration of biodiversity is built into those operations.
- *Management of the supply chain*. While the business might not have a direct impact on biodiversity, the supply chain on which that business depends might have a considerable impact. Also there might be considerable opportunities for the business to take positive steps in supporting businesses with a positive biodiversity focus through the management of supply chain procurement.

NOTE Information on statutory designated sites and non-statutory designated sites is given in Annex C.

This British Standard is divided into separate clauses covering each of those three broad sections. Clause **4** covers management of premises and facilities , Clause **5** covers day-to-day operations, and Clause **6** covers the supply chain.

4 Incorporation of biodiversity into land and premises management systems

4.1 General

Most businesses have premises that are either owned or leased, and these premises are likely to be governed by a management system. Premises management presents opportunities to seek to improve biodiversity on a local scale through a wide range of measures from the simple to the elaborate. This Clause is applicable to all business typologies.

Many companies with large landholdings, particularly substantial soft estates, are likely to be familiar with the potential biodiversity interest of their land and how to manage it effectively. However, an equal number might focus on maintaining a tidy estate (for example, closely mown lawns or use of pesticides/insecticides/fertilizers to maintain a highly manicured appearance) at the expense of some easily delivered positive outcomes for biodiversity. Other businesses not associated with development, the extractive or construction industries or businesses whose green estate consists essentially of formal landscaping, might not be aware of the biodiversity enhancement possibilities available. If biodiversity consideration can be incorporated into formal estate/premises management, the delivery of biodiversity benefits can become second nature to the company.

4.2 Estate management systems and biodiversity

An increasing number of businesses are seeking formal certification of their environmental management systems for conformity to BS EN ISO 14001 or the European Eco-Management and Audit Scheme (EMAS). While many components of environmental delivery are incorporated in this certification system, biodiversity improvements are often not included, not least because many organizations do not recognize the opportunities to protect and enhance biodiversity available to them, assuming that this is only achievable where large landholdings are involved. The ability of a company to show that it has a formal system to identify opportunities for biodiversity protection and enhancement alongside the other aspects of its environmental management system, and to deliver such protection and enhancements effectively, could aid certification.

The ideal position would be for biodiversity to become so enshrined in the estate/premises management process that all major decisions about estate management, or reviews of estate management protocols, would include consideration of the question "have opportunities to enhance biodiversity been considered?". The recommended situation would be for estate management protocols to be reviewed on an annual basis to identify any measures that might be limiting biodiversity or opportunities for including improvements.

It is possible for companies to seek certification for their biodiversity protection, restoration and enhancement work. The Wildlife Trusts offer their Biodiversity Benchmark for a Living Landscape System which essentially applies the environmental management system audit principles to biodiversity management.

Changes in land management do not need to be extensive in order to achieve a positive benefit to biodiversity. Relatively minor changes can have a substantial effect; for example, replanting gaps in hedgerows can be of considerable value in creating dispersal routes for small animals.

4.3 Devising a biodiversity action plan

Another efficient and focused way to enable the incorporation of biodiversity into facilities/estates management is to develop a biodiversity action plan. This can then be updated and monitored on a regular basis to track progress. The action plan could be site-specific (i.e. a separate plan for every site the company owns or leases) or could be general to the businesses premises as a whole. This latter approach would be particularly appropriate where premises are very similar across the company and are managed in a very similar manner. The business could also devise a nested approach with an overarching biodiversity strategy setting out overall policy, leading into "daughter" biodiversity action plans for each site or area.

A company biodiversity action plan does not need to be elaborate or lengthy. However, there are certain basic requirements that should be met, which are as follows.

- It should summarize the existing biodiversity of one or more parcels of land.

- It should identify conservation priorities (for example, drawing upon species lists in the county biodiversity action plan or upon the site's geographic context).
- It should identify measures that can be implemented to either minimize any existing harm that might unwittingly be occurring or enhance the biodiversity of the site for a reasonable cost.
- It should set out a reasonable management protocol that can be easily followed by the estate's management team, including the identification of responsibilities. It should identify appropriate monitoring protocols and frequencies at which effectiveness can be evaluated. This last point is crucial and would tie in to regular (5 to 10 year) updates of the plan.

There are three considerations in devising a company biodiversity action plan that are particularly important to successful delivery, as follows.

- The objectives being set have to be achievable and not so aspirational that they are unrealistic.
- The management prescriptions have to be set out with sufficient clarity that a non-ecologist can follow them without difficulty (even if they do not fully appreciate the science behind the requirements).
- It is important to understand the implications a particular habitat feature might have in the long-run for the business and the constraints it might itself pose on the business. For example, if a business is enhancing its premises and attracts a European protected species (such as the great crested newt) this could place constraints on some future operations. Forward planning is required to avoid any future conflicts. The two most well-known European protected species are great crested newts and bats. The full list and relevant legislation are available on the websites of the Statutory Nature Conservation Organizations (SNCO)s.

Some land management recommendations aimed at improving biodiversity can be complex (for example, the cutting of certain land parcels in certain phases at certain times). The plan should aim to set out explicitly a step-by-step process to be followed and should, wherever possible, use illustrations to maximize clarity.

4.4 Step one: The biodiversity review

In deciding which opportunities exist to incorporate enhancements to biodiversity into landholdings, the first stage is to undertake a biodiversity review of the landholdings. The process of doing this review should be similar to that outlined in **5.3** concerning incorporation of biodiversity considerations into day-to-day company operations. There are many ways to enhance the biodiversity of a building or site aside from specifically targeting protected species.

The recommended structure for the report is as follows:

- scope of commission and purpose of report;
- methodology used in the assessment;
- results of the extended phase 1 habitat survey (see **5.9.3**) including potential for protected species; and
- discussion of any parts of the site(s) where current management measures are potentially damaging to biodiversity and any parts where biodiversity value can be improved.

4.5 Step two: Identifying biodiversity opportunities

Following the biodiversity review, the ecologist should formulate an initial suite of recommendations for alterations to existing management practices, or any enhancements that could be delivered. These should be sufficiently detailed that they can be adequately costed. For example, rather than stating "install bat boxes" they should specify the number and model of bat boxes in addition to providing information on the potential sources from which such boxes can be purchased. For some sites, the range of potential biodiversity improvements that can be delivered will be inherently limited. However, in situations where a wider range of options could be available, it might be useful for the facilities manager to provide the ecologist with a guideline budget available for delivering any enhancements. The ecologist can then base his or her recommendations on that budget.

It should be noted that habitats and species do not have to be scarce in order to have biodiversity value. Relatively widespread habitats such as hedgerows, scrub, arable land managed with relatively little fertilizer or pesticide, and lightly-mown or grazed grassland can all have considerable biodiversity value and are perfectly valid targets for conservation.

For any landholding there is likely to be a range of measures that can be delivered simply and with low financial investment, and others that could ultimately achieve a greater benefit but which are more involved and can be considered more long-term higher investment wins for biodiversity. These latter would be more appropriate incorporated as part of an overall large-scale redevelopment of a premises or overhaul of management, rather than providing improvements to a few small sites. Examples are given in Annex D.

Companies do not need to own extensive landholdings in order to take biodiversity into consideration on their premises. Even premises that consist entirely of hard estate in the town centre, or city centre buildings with no obvious greenery, can be adapted to provide ecological value. Key species for which buildings can be enhanced include bats, nesting birds and insects. Buildings can also be used as a basis to think laterally about creating areas of habitat that might be small in themselves but if replicated on many buildings across a larger area could make an appreciable cumulative contribution. Examples of these include green walls and green roofs.

Even in built up areas with few parks or similar open spaces nearby, activity of bat species which have partially adapted to an urban environment, such as soprano pipistrelle (*Pipistrellus pygmaeus*), can be important as they travel between good quality sites. A building in such an area can be improved for wildlife simply through ensuring that places are provided for bats to roost during the day. This can be achieved as simply as by erecting bat boxes. Examples of possible enhancements to a company's hard estate are given in Annex D.

4.6 Step three: Selecting appropriate biodiversity opportunities

The selection of appropriate opportunities for delivery of biodiversity enhancements will be dictated by a range of considerations, such as:

- relative ease and feasibility of creation of the enhancement;
- cost;
- relative ecological rarity or value of the habitats or species that would benefit;
- appropriateness within a landscape context.

Obtaining accurate costings is an essential stage in a biodiversity action plan. It is strongly recommended that costings for the implementation of the plan incorporate the whole-life cost of any enhancements. The whole-life cost involves not only the cost of creating the enhancement, but also the annual cost of maintaining it and, if it is a feature that will decay over time – such as a bird box – the cost of replacing it.

There are grants available for land managers and farmers (for example via the Natural England website at http://www.naturalengland.org.uk/ourwork/farming/csf/default.aspx [viewed 2015-02-09] or the Scottish Natural Heritage website at http://www.snh.gov.uk/funding/our-grants/ [viewed 2015-02-09]) to assist with the delivery of particular biodiversity enhancements. Available schemes and initiatives include the following.

- *Catchment sensitive farming*. This encourages best practices for tackling diffuse water pollution from agriculture. It is delivered by a partnership between Natural England, the Environment Agency and Defra.
- *Conservation and enhancement scheme*. Under this scheme discretionary payments are available to fund the costs of management for nature conservation on land of outstanding scientific interest, and to ensure that the land is in a favourable condition.
- *Environmental stewardship*. There are different agri-environment schemes for each part of the UK.
- *Soils for profit (S4P) project*. The soils for profit project provides farmers in the South West of the UK with advice and access to grants to improve the efficiency of their soil, manure and nutrient management.
- *Local biodiversity initiatives and partnerships.* There are 48 Local Voluntary Nature Partnerships in England, which include a wide range of businesses aiming to help bring about improvements in their local natural environment, whilst also benefiting the local economy and the people who live in the local area. The opportunity to input into such partnerships is likely to be particularly valuable to businesses which have limited opportunities to directly enhance biodiversity on their land holdings, by enabling them to contribute to the bigger picture in their area for instance in joining up fragmented habitats or providing important wildlife corridors. Such partnerships can also provide advice regarding the enhancement of biodiversity which businesses can draw upon to determine the best way for them to contribute to biodiversity. In England, the overall purpose of a Local Nature Partnership is to:
    - drive positive change in the local natural environment, taking a strategic view of the challenges and opportunities involved, and identifying ways to manage it as a system for the benefit of nature, people and the economy;
    - contribute to achieving the government's national environmental objectives locally, including the identification of local ecological networks, alongside addressing local priorities;
    - become local champions influencing decision-making relating to the natural environment and its value to social and economic outcomes, in particular, through working closely with health and wellbeing boards and local authorities.

It is important that the landholding is not considered in isolation. Opportunities available to enhance biodiversity can be identified best through the consideration of a site in its geographical context. In recent years improvements to enhance biodiversity have increasingly been targeted at landscape-scale conservation, recognizing that many wildlife habitats are on a landscape scale, particularly those of highly mobile species such as birds, insects and bats. Factoring biodiversity considerations into land and estate management systems should therefore focus on providing improved corridors and connections for the movement of these highly mobile species across the landscape, which can produce a large ecological benefit despite the relatively modest nature of the enhancements on site. For example, replanting gaps in hedgerows or planting double rows of hedgerows separated by a few metres can provide wildlife corridors across the landscape at a relatively low cost, particularly if those hedgerows are allowed to grow thick and tall. An example is given in Case study 10 (see Annex E).

4.7 Step four: Implementing the biodiversity action plan

Once a suite of costed recommendations has been devised that are clearly understood by the facilities management department of the company, it is important that these are placed within a clear management framework for delivery. Failure to accomplish this can result in the recommendations simply being filed for future reference. The management framework for delivery needs to include an explicit programme detailing what activities are to be delivered, where and when, and what is to trigger their implementation. The management burden associated with delivering biodiversity enhancements does not need to be large and could result in a reduction in land management costs.

Technical decisions regarding extensive changes to estate management should be made in conjunction with an ecologist.

Many businesses do not have the resources to contract an ecologist regularly. One low cost, or no net-cost, way to accommodate this could be to identify local partners and stakeholder organizations with the time and resources to assist, with whom the work can be undertaken. This would be beneficial to local community relationships and encourage local groups to work collaboratively with the business. In the longer term it would also be possible to derive educational benefits from this through association with local schools. The local stakeholders should involve a mixture of willing and available local wildlife groups (such as the local Wildlife Trust, Local Nature Partnership or conservation volunteers) who might also be able to assist the company with identifying suitable local conservation priorities from the local biodiversity action plan. The participating groups could also involve local residents assisting with implementation, management and monitoring. Company employees might also be willing to be involved in implementing and maintaining the biodiversity initiatives, which can in turn assist with corporate social responsibility, team building and employee awareness raising regarding the value and benefits of biodiversity.

4.8 Step five: Monitoring delivery of the biodiversity action plan

There should preferably also be a framework for monitoring delivery of the biodiversity action plan. Companies often start out applying more biodiversity-friendly management measures with the best intentions but, owing to a lack of monitoring of delivery and effectiveness, the measures are either not implemented correctly or not implemented at all.

The monitoring strategy does not need to be elaborate or very time consuming but needs to be targeted at identifying the progress of biodiversity development against a set of measurable criteria that meet the SMART requirements (Specific, Measurable, Attainable, Relevant and Time-bound). Examples of such criteria include:

- monitoring of the development of a newly sown wildflower meadow to record the establishment and survival of desirable species over a specified period. Some measure of the abundance of key species that would indicate either positive or negative meadow development could also be devised;
- extent of control of invasive species over a five year period;
- extent of native tree survival over a five year period;
- evidence of colonization of log piles and refuges by target wildlife, assessed annually;
- extent of use of bat boxes, bird boxes and insect boxes. For bat boxes this would include consideration of both the number of species of bat and the number of individuals using the box.

  NOTE As soon a bat box is occupied by bats it becomes a roost and as such it is protected under the Conservation of Habitat and Species Regulations 2010 as amended [18], and this bat box can only be checked by a licenced bat worker. However, monitoring of bat emergence or signs of bat box use, such as droppings below the box, can be undertaken by anybody.

The delivery and monitoring of the biodiversity action plan could in turn link to annual biodiversity reporting into the company environmental management system. Clearly, monitoring of this type would have to be undertaken by ecologist but could be undertaken at relatively infrequent intervals, such as once every five years, or could be undertaken more frequently for the first few years following the change of management practice, with monitoring at less frequent intervals as time progresses.

Resources might not allow for the regular appointment of an ecologist to carry out checks and monitoring, in which case a simpler monitoring regime undertaken by the facilities management department itself might be more appropriate. This would relate simply to at least annual checks that the management prescriptions were being followed and that any specific features installed as part of the change in management practices were in good condition. Alternatively, a well-established partnership with a local wildlife group would enable a valuable monitoring regime to be established without the company itself taking on the duty.

4.9 Case studies

Case studies 11 to 14 (see Annex E) give examples of businesses that have incorporated biodiversity considerations into their estate and premises management, or encouraged employees to participate actively in wider biodiversity conservation initiatives in their local community.

5 Delivering biodiversity benefits through management of day-to-day operations

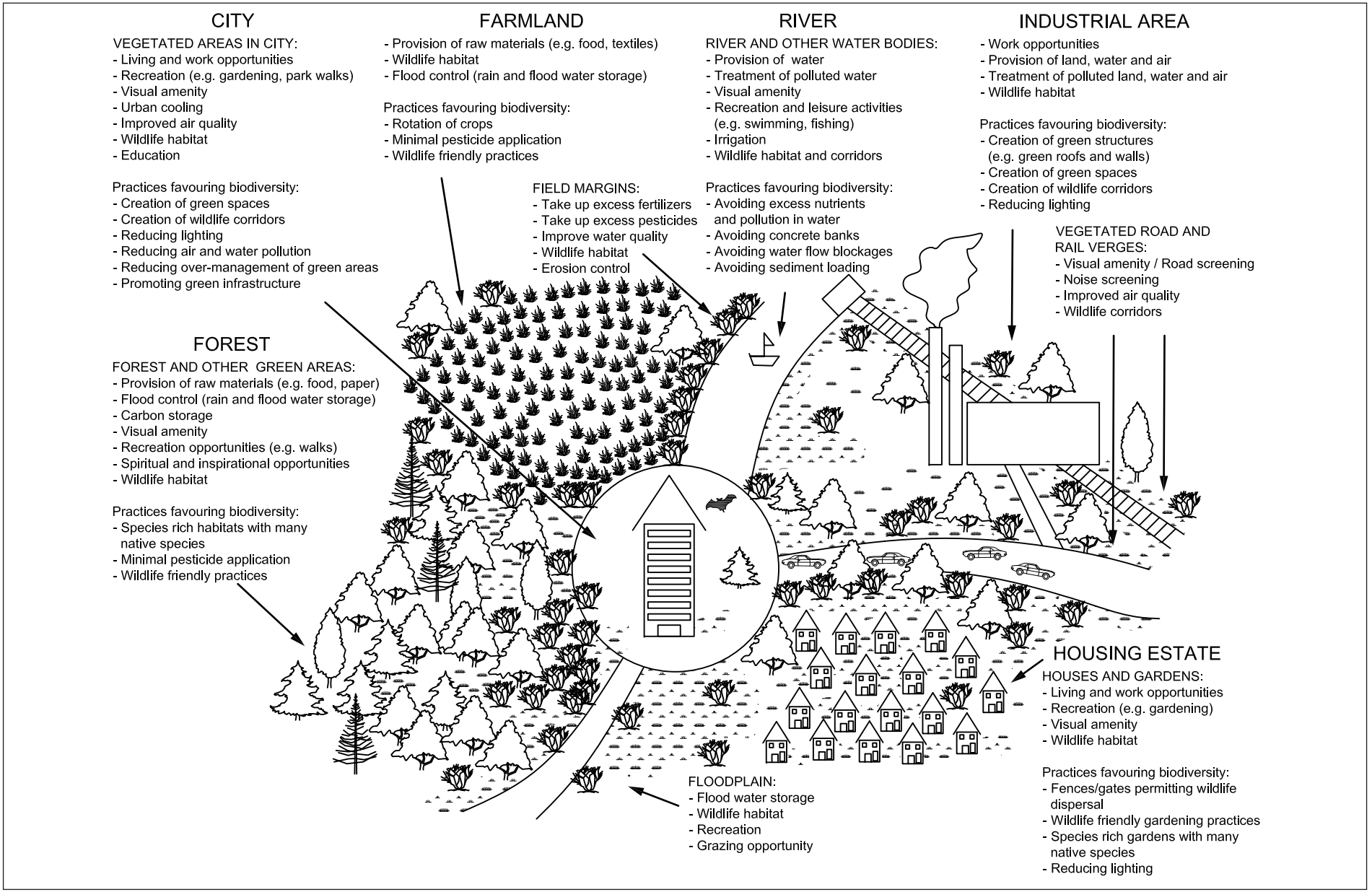
5.1 General

A key mechanism through which businesses can incorporate biodiversity into their management systems is through ensuring that the potential impact on, and awareness of benefits from, biodiversity are factored into day-to-day operations. This Clause covers how businesses can evaluate the extent to which their decision making and general operations already take account of biodiversity and how that can be improved through incorporation into existing management systems.

Many business typologies might already accommodate this where their business directly affects the land and natural environment. For those businesses it is recommended that they ensure that the simple four step approach discussed in this Clause is utilized and that any further opportunities to factor biodiversity considerations into company management systems are identified and realized.

Figure 2 illustrates examples of some possible biodiversity benefits and enhancement measures according to the habitats that businesses are likely to be located in proximity to.

Figure 2 **Examples of possible biodiversity benefits and enhancement measures**



5.2 The five step process

The five step process described below is based on the BS EN ISO 14001 management cycle "Plan-Do-Check-Act" with the additional initial assessment when implementing the process for the first time. It has been designed to provide businesses with and without an Environmental Management System (EMS) with the tools necessary to assess their relationship with biodiversity, which possible opportunities biodiversity presents, and identify how biodiversity opportunities can be integrated and managed in day-to-day activities. For businesses with an EMS, the five step process should be easy to integrate into the main body of the EMS while for a business without an EMS, the five step process can be undertaken on its own and integrated into an EMS at a later stage if the business chooses to do so.

This process is a core process that can be followed by any business no matter its typology, size or location. The five step process is a general tool. Businesses are encouraged to implement it keeping in mind the particular nature of their own business. Examples of how some businesses have incorporated the process are presented in Annex E, and Defra guidance on biodiversity (2007) [4] can also be consulted for more information on why and how the public authority was advised to implement their biodiversity duty.

The five steps are as follows.

- Step 1: Assess the opportunities.
- Step 2: Plan (prioritize opportunities).
- Step 3: Do [implement a biodiversity action plan (BAP)].
- Step 4: Check (monitor and report on the BAP).
- Step 5: Act (carry out further actions as required).

This is illustrated in Figure 3.

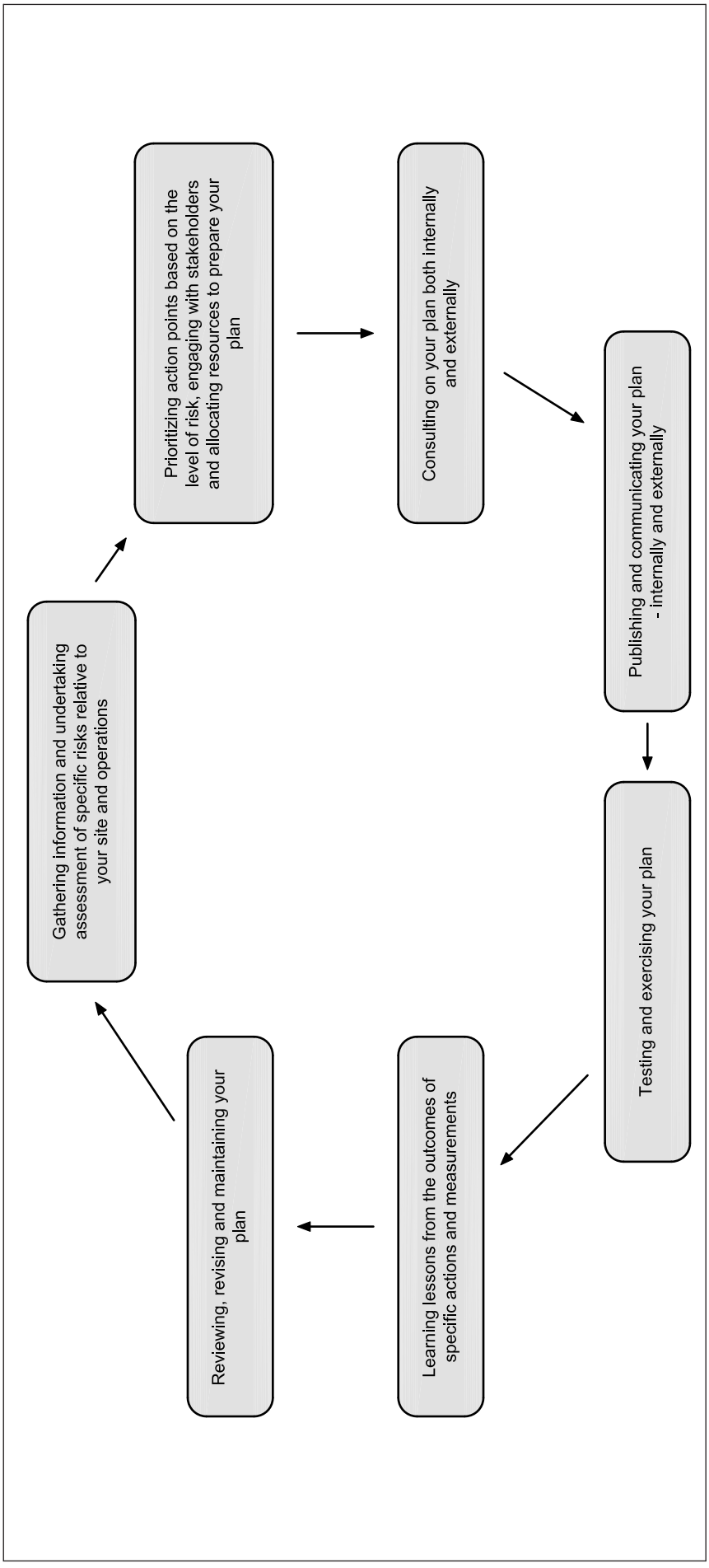


Figure 3 **The planning cycle**

5.3 Step one: Assess the opportunities

Businesses should establish the current status of the organization and how it currently manages its biodiversity risks and opportunities. This baseline review should include:

- an examination of the business's current practice and capacity which includes reviewing its activities, location and existing connection to biodiversity;
- assessing how each sector of the business is working in relation to other sectors in the business;
- determining if there have been any initiatives in the business to promote biodiversity in the past; and
- determining the level of technical expertise available within the business to understand and deliver on biodiversity related opportunities.

Gaps in knowledge should be identified and where possible rectified (e.g. by bringing someone into the business to help with the process or by training someone in the business).

Based on the information obtained from the baseline condition assessment above, the business should identify areas of opportunity to enhance biodiversity. Biodiversity enhancement could be targeted at sectors where improving biodiversity also benefits the business, for example through changes in practices, implementing new practices or strengthening existing practices.

This assessment is also an opportunity for the business to uncover previously overlooked opportunities, and can also help to highlight possible business continuity risks and help in reducing those risks.

Many types of businesses could have an opportunity to enhance biodiversity in the course of their day-to-day operations even through interacting with biodiversity is not necessarily an obvious part of their operations. Both direct and indirect impacts on biodiversity and risks and opportunities for businesses should be considered.

Opportunities for businesses can be found at any point of the life-cycle of a product or service. To ascertain these, the following questions should be asked where relevant.

- *Extraction stage*. Is the sourcing of raw material impacting on biodiversity? In what way? Is there an opportunity for the business to be more efficient in its extraction process to benefit biodiversity and benefit its stakeholders?
- *Packaging of raw materials*. How are the raw materials packed? Is re-usable or bio-degradable packaging being used? What happens to the packaging after use? Is there an opportunity for the business to reduce/change its packaging in a way that would be beneficial to biodiversity and provide cost savings to the business?
- *Transport of raw materials.* How far and how is the raw material transported? Would changing the mode of transport or source of material help the business to reach some of its climate change targets and also benefit biodiversity?
- *Production process*. How efficient is the production process in terms of energy, water and materials? Could it be made more efficient to reduce costs and benefit biodiversity?
- *Packaging of product*. How is the product packed? Is re-usable or biodegradable packaging being used? What happens to the packaging after

use? Is there an opportunity for the business to reduce/change its packaging in a way that would be beneficial to biodiversity and provide cost savings to the business?

- *Transport of product*. How far is the product being transported? Would changing the mode of transport or source of material help the business reach some of its climate change targets and also benefit biodiversity?
- *Marketing/selling of product.* Does the marketing/selling of the product have an effect on biodiversity? Could marketing which shows the changes the business has made to improve biodiversity help the business reach new markets?
- *Management of premises*. How does the management of the premises, including use of energy, water, etc. and the disposal of waste, affect biodiversity? Could management of premises be made greener to help the business reduce costs and also benefit biodiversity?
- *Employee training.* Are employees aware of biodiversity and the effects the business can have on it? Does the employee induction package mention the environment and biodiversity? Are employees taking part in training/team building exercises to increase their environmental awareness? Would implementing those activities help the business to retain/motive/attract employees to work for the business?
- *Business environmental schemes*. Is the business involved in "green" or carbon reduction schemes such as the cycle-to-work scheme? If so, are the schemes being advertised and are they successful with the employees?

The need to involve an ecologist, environmental scientist, environmental or sustainability manager, wildlife charity or any other person with an environmental background at this stage will depend on the type, size, location, complexity and ecological/environmental knowledge of the business and employees. Many types of businesses could have an impact in the course of their day to day operation even though interacting with biodiversity is not necessarily an obvious part of their operations. Both direct and indirect impacts on biodiversity and risks and opportunities for businesses should be considered.

5.4 Step two: Plan (prioritize opportunities)

Step two is based on the information collected in step one. Once a business has established opportunities to benefit biodiversity and possibly itself in the process, it will need to prioritize opportunities. Prioritization of opportunities should consider the following.

- **Biodiversity enhancement**s. Biodiversity enhancement measures are any measures taken to improve a habitat quality or size and/or the numbers of a species. Quick-wins for biodiversity enhancement can be very easy to implement as an early stage demonstration, but should be considered as a first step towards more long-term commitment (e.g. by installing a bird, bat, insect or bug box on a tree or building in a suitable location). Every measure taken to enhance biodiversity (such as enhancing potential for use by protected species) needs to include long-term consideration and planning to avoid later conflict in use. Those measures should also be well thought out and take into consideration the requirements of the habitats/species at which they are aimed, or they are unlikely to bring the desired results (e.g. a bird or bat box might never be used if the box is put in an unfavourable environment, for example too close to the ground or in a location that is too cold or too hot).
- **Mitigation hierarchy**. There are several versions of the mitigation hierarchy, which is a tool to manage impacts on biodiversity. According to the mitigation hierarchy, when a biodiversity risk or impact has been identified, efforts should be made to do the following, in the order shown.

a) Prevent or avoid risks or impacts. This is done by taking measures to avoid creating impacts from the start of a project, through the careful spatial and/or temporal placement of the project (e.g. by installing security lights that do not shine on bat feeding habitats, or commuting routes or roost entry points). Avoiding potential negative biodiversity impacts requires biodiversity to be considered at an early stage in the lifetime of a project and could be the easiest, cheapest and most effective way of reducing impacts.

b) Reduce, mitigate or minimise the risk or impact. This is done by taking measures to reduce the duration, intensity and/or extent of impacts that cannot be completely avoided. Project designs or methods used to carry out the projects can also be amended to reduce negative impact.

c) *Repair, reinstate or restore biodiversity, following the end of the project, to compensate for the adverse effects the project, product or operation has had on biodiversity*. This is done when it is not possible to completely avoid or reduce impacts. This should compensate for what has been lost/degraded by re-creating it on site. Repair, reinstate and restore are sometimes under the umbrella of mitigation.

d) *Compensate for the loss of or permanent damage to biodiversity*. Any residual impacts should then be either compensated onsite or offsite. The latest compensation mechanism introduced in the UK is biodiversity offsetting, which aims to achieve no net loss of biodiversity. This last step is relatively new in the UK but has been developed for several years in some other countries. Biodiversity offsetting should only be considered when avoiding, minimizing and restoring are not enough to secure no net loss of biodiversity and some residual impacts are still happening. Biodiversity offsetting measures should be designed and implemented to achieve measurable conservation outcomes and achieve a net positive biodiversity impact. Biodiversity offsetting is based on the concept that loss of habitats should be compensated for by creating new ones off site or by helping to restore deteriorating habitats. In both cases, the amount of land that needs to be set aside to compensate for the residual impacts is generally larger than that on the original site as there is a risk associated with the creation of new habitats. Natural England has developed an offsetting matrix which can be used to estimate the type and amount of land required to offset residual impacts on the site. Biodiversity offsetting schemes should aim to create better quality habitats than those that are being lost and those new habitats should be safeguarded forever. Creation of offsets should be additional to current biodiversity management practices. Losses and gains to biodiversity through offsetting should be quantified in such a way that they are comparable so positive gains can be measured clearly.

NOTE If offsetting is not sufficient, other forms of compensation might be needed.

- **Level and timing of impact.** Examine the business's impact on biodiversity. Consideration of the level of impact should include which habitats and species are impacted (rarity, conservation status etc.) and the timing of the impact (based on the life-cycle of the species/habitats and their susceptibility to impact).
- **Level of risk.** Which biodiversity impact poses the highest risk to the business? For example, there might be large operational risks posed by disruptions to the supply of a particular product or service or there might be sectors of the business that particularly expose it to reputational risk.
- **Potential opportunities**. The following actions should be taken.

- Identify and strike a balance between quick wins (possible low benefits, low cost strategy), long-term wins (possible high benefits, high cost strategy) and the business's long term plan to ensure that biodiversity measures implemented now fit with the business's development plans. Quick wins are important as they yield early results which will help to build the business case for further action.
- Identify the ease of implementing alternative practices/changing practices/making changes at the business level and the availability and cost of new technology to replace old equipment.
- Identify if reducing impacts on biodiversity also fits with other business commitments (e.g. check the business's environmental management system policy and objectives or the business's pledge to cut carbon emissions).
- Identify the potential benefits to the business, including public relations and potential for future accreditation.

The prioritization exercise should take into consideration all of the aspects, and help direct available resources in the most efficient manner. The business should ideally tackle the biggest opportunities and impacts identified first.

The potential impact on biodiversity of forthcoming projects should be compared using the same prioritization system. Projects/products with a neutral or positive impact should be given precedence over projects/products with a negative impact. Projects/products with a negative biodiversity impact should be considered as presenting risks to the business and should be considered in more detail using the mitigation hierarchy.

5.5 Step three: Do [implement a biodiversity action plan (BAP)]

Once impacts and opportunities have been prioritized, a biodiversity action plan should be drafted and implemented. The biodiversity action plan should state:

- the aim of the program (e.g. reducing the business's impact on biodiversity);
- the biodiversity targets (e.g. reducing impact A by X%, by year Y);
- the biodiversity action plan;
- the way the program will be communicated to the business stakeholders (e.g. internal email, newsletter, posters);
- the way the new policies will be integrated into day-to-day procedures;
- the program monitoring and review schedule.

Biodiversity action plans should be developed for those projects/products/activities which have a negative impact on biodiversity. BAPs can also be developed for projects/products/activities which already have a positive impact on biodiversity but which might not be a priority.

It is not possible to provide detailed advice regarding BAPs within this standard. A business might wish to implement BAPs that are specific to the business and to its specific biodiversity impacts. The example in **5.8** is provided to illustrate what could be mentioned in a BAP looking at reducing security light spillage on a hedgerow but it should be re-assessed by each business which encounters this particular impact. When considering which BAP to implement, not only the immediate benefit should be considered but also the possibility of a future conflict of interest between the biodiversity encouraged on the site and the business's development plans.

5.6 Step four: Check (monitor and report on the BAP)

Step four is a very important step as it gives feedback to the business as to how efficient the BAP has been, and if the business's impacts on biodiversity have been reduced. For businesses with an environmental management system (e.g. to BS EN ISO 14001) in place, recording the results of the implementation and monitoring of the BAP might be necessary to comply with the management system requirements. All BAPs should be monitored and the monitoring criteria should be SMART (Specific, Measureable, Attainable, Relevant and Time-bound), as outlined in **5.8**.

The whole process should be documented in a report with all the projects/products/activities listed, together with their assessments and scores, and with their BAP and monitoring results.

5.7 Step five: Act (carry out further actions as required)

Based on the results of the monitoring and review reports and audit, the business will be able to see how well it has achieved its targets, reflect on any difficulties encountered and decide if any further actions are required. If a BAP has not been fully successfully implemented, corrective actions or additional steps should be implemented. If a BAP has been fully and successfully implemented, the business can either look at further actions that might benefit biodiversity as part of the same BAP, or look at another biodiversity opportunity which had not been considered previously. This step leads back to step two where the business prioritizes its opportunities and decides on what to implement next.

If a business is left with negative biodiversity impacts on site that cannot be avoided or mitigated, the business could choose, as an additional measure, to sponsor biodiversity enhancement somewhere else (preferably locally). Where such compensatory measures are sufficiently measureable and appropriate, and where they create benefits (ideally for the same habitat as was impacted) such that losses are fully compensated for, they can be referred to as biodiversity offsetting. Biodiversity offsetting should be considered as a last resort.

5.8 Example of the five-step process

The following example illustrates how the five step process works.

Step one: A business has identified that security lighting at night is spilling onto a hedgerow by the site boundary. This is likely to deter many nocturnal animals from using this hedgerow for moving about as the light renders them more visible to possible predators. The business has identified this as an opportunity to reduce its impact on biodiversity but also as an opportunity for the business to be more efficient with security lighting.

Step two: The business decided that reducing the effect of lighting was a high priority as the business premises are located closely adjacent to two woodlands and the hedgerow provides habitat connectivity and is likely to be used by species to travel between the woodlands. Reducing this impact was also deemed to be a fairly easy and inexpensive opportunity which could also benefit the business by enabling it to reduce its carbon emissions.

Step three: The business decided that the aim of the biodiversity program was to promote biodiversity in the locality by providing a local wildlife corridor along its site boundary. To achieve this aim, the business looked at:

- how it will be achieved (e.g. changing the location of the security light and/or power/colour of the security light bulbs);
- over what time scale it will be achieved (e.g. when the bulbs need replacing but before the end of the month/year);

- how the enhancement will be paid for or will it pay for itself by generating cost savings (e.g. through savings in day-to-day maintenance expenditure, by obtaining a grant or by using new lights that are more energy efficient and so reduce energy bills);
- what the criteria are for evaluating the success of the enhancement (e.g. has the security light been repositioned or have the light bulbs been changed?);
- possible faults and corrective actions (e.g. if the security light was not pointing in the right direction and was directly illuminating the hedgerow, the corrective action would be to re-align the security light to point in the right direction so that it was not directly illuminating the hedgerow);
- how the enhancement will be reported to the management (e.g. an email to the person in charge of the BAP to say that the measures were implemented, with the date and possibly pictures and invoices);
- training (e.g. a memo to everybody working on the night shift giving the reason for the current security light position and which light bulbs need to be used, also a record of this information to be passed to new staff);
- audit frequency (e.g. every year).

The business also decided to involve its employees and therefore emailed them about the changes and asked them if they had any other suggestions.

Step four: Examples are provided to illustrate each criterion.

- **Specific**. Targets should be sufficiently specific that adherence can be properly evaluated (e.g. specifically reduction of light spillage onto the hedgerow by the site boundary, and not generally improving consideration of biodiversity on the site).
- **Measureable**. Targets should be measureable in order to make it possible to judge whether they are being met (e.g. the light spillage reduction is to be X% by the end of the month/year).
- **Attainable**. Targets should be realistically attainable (e.g. removing all light spillage onto the hedgerow might not be possible if the premises is a warehouse open until 8 pm all the year round).
- **Relevant**. Targets should be relevant to the objectives the business is seeking to achieve (e.g. if the business objective is to create a grassland strip along the hedgerow to provide small mammals with cover to travel between sites but the BAP's target is to reduce light spillage, the objective and the target do not match).
- **Time-bound**. Targets should have a defined period over which progress is to be measured (e.g. BAP first action is to be completed by month/year, BAP second action is to be completed by month/year and audit is to be carried out every year).

Step five: The business found that some of its employees did not understand why the measures were needed and how the changes would benefit wildlife. As a result, security light timings were not always respected and the business decided to carry out a team activity exercise to show them the importance of keeping the timing of the security light as set out in the BAP. The business also decided to plant additional bush and tree species where there were gaps in the hedgerow.

Businesses can also implement biodiversity measures indirectly. For example, as part of its energy saving measures, a business has insulated its premises using local sheep's wool insulation material and bitumen felt. By using sheep's wool instead of fibreglass, the business is reducing the amount of sheep's wool going to landfill, helping the local economy (and possibly the local wildlife associated with sheep farming), using a biodegradable material and avoiding carbon emissions associated with the manufacture of fibreglass. By using bitumen felt rather than breathable roofing membranes, the business could reduce the risk of bats getting tangled in the breathable roofing membranes, as discussed by Waring et al., 2013 [19]

5.9 Businesses involved in land management and land development

5.9.1 General

For businesses involved with land management and land development (food and drink production businesses, extractive businesses, utilities, environmental businesses and development and construction businesses) incorporation of biodiversity considerations into standard operations is a particularly important matter.

The potential opportunities available to enhance biodiversity are large compared to other business typologies owing to the direct interaction such businesses have with large areas of countryside. Many of these opportunities are associated with the delivery of protection and enhancement measures across the business estate; these are discussed in more detail in Clause **4**, concerning incorporation of biodiversity considerations into land and premises management systems. However, some case study examples of the manner in which biodiversity enhancement is incorporated into the day-to-day operation of these businesses are provided in Annex E.

To achieve the high water quality and biological quality standard set for UK rivers through the EU Water Framework Directive [20], a series of River Basin Management Plans has been devised for England and Wales by the Environment Agency. Corresponding plans for Scotland have been drawn up by the Scottish Environment Protection Agency, for Northern Ireland by the Northern Ireland Environment Agency. These plans require the collaboration of a wide range of stakeholders in order to achieve their targets, which include the achievement of good ecological status by a set date and to ensure that there is no deterioration.

Case study 5 (see Annex E) provides an example of how a business can benefit (through remediation cost reduction) and also enhance the biodiversity of the local area (through the creation of extensive good quality habitat of high value for wildlife).

5.9.2 A biodiversity review for businesses involved in land management

The four step process outlined in **5.4** to **5.7** applies to businesses involved in land management as much as to other businesses. However, it is likely that it would be easier for those businesses to carry out a biodiversity review as most of their impacts on biodiversity are direct impacts that could already be considered in their day to day operations. A useful starting point for those businesses would be to undertake an extended phase 1 habitat survey which is an assessment of habitats on site and the protected species likely to be using those habitats. Extended phase 1 habitat surveys should be undertaken by professional ecologists (in-house or consultants) as they have more experience of this type of survey and would be able to recommend appropriate further surveys and biodiversity enhancement measures suited to the site. An extended phase 1 habitat survey comprises a data search, walking the site, mapping of the habitats recorded on site and preparation of a report. However, it is possible for any business to carry out a partial desk-based data search themselves to get an idea of what is in the vicinity of their site. The internet sites that can be accessed free of charge to carry out the data search include, but are not limited to the following:

- Natural England maintained MAGIC (Multi-Agency Geographic Information System) maps [21](http://www.naturalengland.org.uk/publications/maps/magicfeature.aspx);
- Natural England National Character Area [22]

5.9.3 Brief guidance for businesses undertaking land development

Some biodiversity improvement measures might require the business to contact the local authority. Where a development proposal is likely to affect biodiversity, the Local Planning Authority (LPA) will require sufficient information to be provided with the planning application to determine exactly:

- what habitats and species of importance are present (sometimes further surveys and technical assistance might be required to determine this);
- how they are likely to be affected; and
- what mitigation measures are proposed to address predicted impacts.

In order to assist applicants to identify when biodiversity might be an issue, many local planning authorities prepare "local lists" (often known as local validation requirements) to identify the circumstances when particular information on biodiversity is to be submitted with the application. Such lists can normally be found in the planning section of the Council's web site.

In the majority of cases, the required information should be either documented in an Extended Phase 1 Habitat Survey or in an Ecological Impact Assessment (EcIA) for larger projects. BS 42020 provides a full specification for how address biodiversity throughout all stages of the planning and development process, from initial project conception through planning consent, to construction and handover to the client.

It is advisable to liaise with the planning authority at the pre-application stage to discuss what biodiversity issues should be considered and how they may be addressed. This can avoid unceccesary costs and delays at a later stage, where biodiversity has not been adequately taken into account in a development proposal.

All habitats and species surveys (which sometimes need to be carried out by a licenced agent), should be undertaken by an ecologist to ensure best practices are followed and the survey results, assessment of impacts and recommendations for mitigation are robust and likely to be accepted by the LPA.

A summary of relevant legislation, national planning policy and protected species advice for these can be found in the Biodiversity Planning Toolkit [23]; or

The SNCOs offering guidance include:

- Natural England (NE);
- Department of the Environment Northern Ireland (DoENI);
- Scottish Natural Heritage (SNH);
- Natural Resources Wales (NRW).

Examples of guidance documents relevant to land management are given Annex F.

6 Enhancing consideration of biodiversity in supply chain management systems

6.1 General

A business is unlikely to function successfully without support from a diverse set of external stakeholders. One such group of stakeholders is the group that makes up the supply chain of a business, i.e. those stakeholders that supply the materials, energy, goods and services to meet the demands generated by business operations. These stakeholders all have their own impacts on biodiversity as a result of their activities. This Clause examines how the opportunities (and risks) related to these impacts can be identified, managed and monitored by a business. It is applicable to all business typologies including those with an international supply chain.

Introducing initiatives and practices to achieve improvements in biodiversity through the supply chain can ensure both an overall net benefit to biodiversity and a reciprocal benefit to the business. The benefit to the business could come through more secure long-term business continuity (since the biodiversity and ecosystem services that support the supply chain are less likely to be over-exploited and disrupted), through reputational benefits and potentially through achievement of cost savings by using more sustainable resources.

Conversely, there are adverse effects of failing to consider biodiversity impacts in the supply chain. Whatling et al. 2010 [24], state that the cumulative impact of extended supply chain operations is considered to be a major contributory factor to national and global declines in biodiversity and ecosystems services. These losses are currently accelerating at an unsustainable rate. In 2010 The World Economic Forum [25] reported that whilst those companies that are directly reliant on natural resources will be affected by these losses most acutely, the consequences will affect the supply chains and so the potential for growth of companies across most industry sectors.

Although a business is likely to face some level of biodiversity related risk through its supply chain, it is also likely to have considerable opportunity to instigate change and to benefit from such changes. Actions can include the setting of targets and the provision of support to suppliers in addressing their impacts, or the screening of suppliers. The additional costs of such activities can often be outweighed by access to new opportunities (e.g. growing ethical markets). As an example, a description is given in Box 2 of how action to maximize biodiversity through sustainable agricultural practices can benefit companies across the supply chain.

Box 2: Agricultural opportunities

- As noted by the Natural Value Initiative, 2010 [26] the production of food, fibre and energy though agricultural production is highly reliant on biodiversity. For example, natural predators are required to keep down pests, and many insects provide vital pollination services. Therefore, agricultural systems that are not highly modified environments can increase pollinator numbers, produce more stable growing conditions and result in associated economic benefits. For example, according to a Living With Environmental Change (LWEC) case study [27] the complete loss of insect pollinators could cost up to £440m per year in the UK (around 13% of the UK's income from farming). Therefore, introducing farming practices that encourage and increase the abundance of insect pollinators could result in large financial benefits, and contribute to long-term security and persistence of the industry.

- The World Economic Forum report *Biodiversity and Business Risk* [25] notes that the entire supply chain can be affected in the following ways.
- Producers stand to either increase income or establish more consistent turnover, directly from increased and more consistent crop yields if initiatives are introduced to benefit pollinators.
- Processing companies would in turn benefit from uninterrupted supply and reduced input prices.
- Retailers could potentially pass on price reductions to consumers or increase their profits, and be able to devote resources that might otherwise be associated with responding to campaigns by pressure groups on damaging products, to more productive avenues.

Moreover, organizations with risks associated with agriculture's impact on biodiversity embedded in their supply chain can also find that other indirect opportunities exist for them to improve performance and to potentially grow their business. For example, there are multiple industry initiatives which promote sustainable agriculture, such as "roundtables" on sustainable palm oil, soy, coffee and sugar. Membership of such bodies and improved performance on biodiversity issues more generally can allow business to benefit from the quickly growing demand for certified sustainable agricultural goods, including increased brand value and product differentiation.

6.2 Building a framework for action

6.2.1 General

The diversity of businesses and supply chains means that the identification, management, and monitoring of supply chain opportunity and risk in relation to biodiversity requires a tailored response which is particular to the business operation and the possibilities available.

The framework for action set out here can form the basis for such an approach and should enable a business to:

- explore the supply chain and biodiversity related opportunities (and risks where appropriate) relevant to the business (steps 1 to 3);
- create the policies, procedures and capacity needed to act upon identified opportunities and risks (step 4); and
- monitor the changes made in order to ensure that they are effective, and that continual further improvements are made (step 5).

The framework is based on five practical steps as follows.

- Step 1: Assessing the opportunities.
- Step 2: Prioritization
- Step 3: Supplier assessment
- Step 4: Initiating action.
- Step 5: Monitoring and reporting.

These steps draw on and expand upon the framework set out in the Business Community Marketplace Report, 2009 [28], and can be further adapted according to the particular needs of the individual business. In order to provide guidance each step has been broken down into a series of action points.

6.2.2 Step one: Assessing the opportunities

6.2.2.1 General

This activity should include:

- establishing a baseline (see **6.2.2.2**);
- identifying the resultant opportunity (see **6.2.2.3**).

6.2.2.2 Establishing a baseline

The essential first action is to establish the baseline situation for each business, i.e. the current status of the organization in terms of its ability to take advantage of opportunities (and conversely, manage its exposure to risk). The baseline review should include examining current practice and capacity including and understanding of:

- the structure of the supply chain, the organizations (and groups of organizations) involved in it, their locations, their operations and existing connections to biodiversity;
- what each of the businesses is presently spending in each purchase category (e.g. timber) and with each supplier within that category;
- the flow of materials and information that are currently required in order to bring goods or services to market;
- the level of technical expertise within the organization to understand and deliver on biodiversity related opportunities.

Any gaps in knowledge should be identified and, where possible, filled. The company should consider whether external support might be required or whether capacity could be strengthened through training (as advised in the World Economic Forum report, 2010 [25]).

Box 3 details how alliances can be built to aid the development of effective and long lasting strategies to improve consideration of biodiversity in supply chain management.

Box 3: Building partnerships to boost capacity

Early in the development of any strategy to address the biodiversity opportunities of improved supply chain management, organizations should examine both their in-house capacity and the external parties that might boost this capacity. The International Finance Corporation Guide to Biodiversity for the Private Sector, 2006 [29] notes that many companies have insufficient expertise in-house to manage the biodiversity issues they face alone. At the same time, the collective importance of biodiversity preservation and enhancement to businesses and society at large means that a collaborative approach is favourable. As a result, it is often wise for companies to seek out partnerships with conservation non-governmental organizations (NGOs), government agencies, local communities, civil society groups, academia, business competitors and other industry sectors.

Partnership arrangements are likely to have numerous benefits, including the following.
Access to expertise on biodiversity issues. Specialist organizations such as conservation NGOs, environmentally focused government departments, and academic institutions can help to address shortfalls in skills. It might be cost-effective to allow such bodies to undertake certain tasks, such as monitoring. In addition, such partnerships can help to increase the transparency and credibility of a business's efforts to tackle biodiversity issues.
Improved risk assessment and needs analysis. Consultation with external bodies can help to test and refine the assumptions made internally about risks and responsibilities, and can help to clarify the roles of various actors (e.g. local communities, other businesses). Outside input from stakeholders can be crucial in understanding how supply chain operations affect biodiversity and the beneficiaries of ecosystem services. This is particularly important where supply chain impacts are occurring in distant areas.

Many types of partnership can potentially be formed to address biodiversity matters in the supply chain, each with their own set of benefits. For example, private sector partnerships can provide a useful basis for identifying sector-specific biodiversity opportunities, such as through the creation of common industry standards that create a level playing field in the delivery of biodiversity improvements, plus a means of sharing good practice (e.g. the Global Mining Initiative). Meanwhile, partnerships with civil society organizations can provide access to skills and capacity building.

6.2.2.3 Identifying opportunities

The information gathered in accordance with **6.2.2.2** can be used to identify areas of opportunity to further enhance consideration of biodiversity in the supply chain, particularly where improving consideration of biodiversity will in turn benefit the business.

Once a map of the supply chain has been drawn up and analysed, the next step is to carry out an assessment of the opportunities available to enhance biodiversity through alterations to supply-chain management (or reinforcement of existing good practice. These can form a useful starting point for the assessment, although these lists should be adapted and expanded as appropriate (e.g. each company might wish to develop its own sub-categories).

Embedding biodiversity in the supply chain has the potential to benefit the business in a number of ways, just as failure to do so can jeopardise business continuity. Using the work undertaken by the World Economic Forum, 2010 [25] The Natural Value Initiative, 2010 [26], and Whatling et al., 2009 [30] as a basis, these opportunities and risks to business can be broken down broadly into the categories listed in Box 5. These categories can help to guide initial thinking about the opportunities and risks that are relevant to the individual business supply chain.

During the course of the assessment it might become apparent that the business supply chain is particularly associated with certain types of opportunity. It might also emerge that certain supply chain stages or categories of goods have a particular risk profiles. It is important that the company fully considers how its operations and supply chain influences exposure to risk across the supply chain, and what potential exists to seize opportunities. Defra has published guidelines for business on how to measure and report on biodiversity [8].

Box 4 sets out in further detail some of the factors that should be considered when conducting the assessment.

Box 4: Factors influencing levels of biodiversity opportunity and risk

The importance of a particular supply chain biodiversity opportunity to a business will vary according to several factors. It is important that these factors are considered when establishing the baseline around which the supply chain management plan will be built. The following list of factors is based upon work by The Natural Value Initiative, 2010 [26] and Whatling et al., 2009 [30] and is intended to provide a starting point for further discussion:

- **Business drivers.** It is crucial that careful thought is given to why a responsible approach to the supply chain management of biodiversity considerations is important to (and material to) the company; for instance whether the approach is primarily being driven by a desire to anticipate future regulatory requirements, by a desire for cost savings, or whether the company seeks to attain greater security of supply and business continuity through supply chain reform.
- **Size and complexity.** The opportunities presented to the company can vary according to the size and complexity of the supply chain. For example a company with many thousands of suppliers might find understanding and managing supply chain impacts challenging, but at the same time a diverse supply chain might present more opportunities. On the other hand, a company with a less diverse supply chain might find particular biodiversity opportunities clearly emerge (e.g. due to reliance on a specific crop such as soy bean where opportunities for more sustainable biodiversity-oriented production are considerable).
- **Brand visibility and consumer preference.** Those organizations with a strong brand focus, or those that are consumer focused (e.g. retailers) tend to attract greater attention from campaign groups in comparison to less visible organizations and brands. Businesses seeking competitive advantage on the basis of their "green" credentials can benefit considerably by avoiding inconsistencies in policy and practice with regard to accounting for biodiversity.

- **Nature and location of operations**. Those companies with a direct involvement or a high degree of influence and reliance upon "on-the-ground" natural resource management (e.g. agriculture) can have the greatest opportunity to obtain both reputational and operational benefits. This is particularly likely to be the case in areas of high biodiversity importance, or where the use of ecosystem services by a supplier might otherwise be unsustainable. They could also stand to gain directly from changes in practice (e.g. higher yields as a result of increased pollinator numbers).

6.2.3 Step two: Prioritization

It is likely that the company will not have the resources or capacity to address all of the biodiversity related opportunities identified as a result of Step one. If this is the case a prioritization exercise might help direct available resources in the most efficient manner. During this exercise the company should set out to tackle the biggest (and/or most cost-effectively achieved) opportunities identified, as they relate to the key business drivers. This step is particularly important for those companies with long and extended supply chains, where the possibility of addressing all opportunities available is especially unlikely.

Aspects to consider when prioritizing areas for action should include the following.

- **Level of impact.** Examine the performance of suppliers on biodiversity issues and their size and target efforts where both the spending on a product or service and the likely biodiversity impact of a supplier are high. Further advice on assessing levels of supplier impact on biodiversity is provided in Box 5.
- **Level of risk.** Which suppliers or groups of suppliers pose the highest risk to the company. For example, there might be large "operational risks" posed by disruptions to the supply of a particular product or service or there might be sections of the supply chain that particularly expose the company to reputational risk.
- **Ability to influence.** Identify areas where the greatest opportunity for influence exists, i.e. those suppliers with which the company deals directly, and those which involve the largest contracts.
- **Potential opportunities.** Identify "quick wins" i.e. where business opportunities lie in terms of managing impacts on biodiversity. Early results will help to build the business case for further action.

Box 5: Gathering information on supplier biodiversity opportunities

Assessing the level of impact (positive and negative) that suppliers have on biodiversity, and the opportunities available for improved impact, is likely to be a key consideration during

prioritization exercises. The results of assessments of biodiversity impact can also provide a useful baseline for the setting of targets and the monitoring of progress. However, gathering the information required can prove challenging. According to guidance from the Global Reporting Initiative, 2007 [31] the collection of biodiversity related information involves a number of considerations. These are outlined below.

Gathering data on, and managing, the indirect impacts on biodiversity caused by a company's supply chain is generally more difficult than is the case with the direct impacts caused by the company itself. Given this difficulty, it might be appropriate to focus monitoring on those types of production that are known to pose a significant risk to, or opportunity to enhance biodiversity and those areas of production which already have a high value (or potential value) to biodiversity.

Identifying types of production that pose a significant opportunity or risk
Certain types of economic activity involve a greater opportunity to enhance biodiversity than others. For instance, palm oil production is often (although not always) associated with the loss of biodiversity rich tropical forests and therefore presents considerable opportunities to enhance biodiversity if this is factored into the supply chain. It is therefore worthwhile to rank the activities of supply chain partners according to their likely degree of positive and negative impact on biodiversity. Examples of some potential biodiversity impacts of types of business are shown in Annex B. Information is also available online, for instance through TEEB for Business, 2012 [32] which sets out broad business impacts and dependencies on biodiversity and ecosystem services by sector. Expert advice, for example from conservation NGOs, might also be a useful source of guidance.

Identifying areas of high biodiversity value
As well as considering the likely impact on biodiversity of a particular supply chain process, it is also important to establish the biodiversity value (or potential/former biodiversity value) of the area in which the suppliers operate and in which their impacts are felt. Areas that have a high current biodiversity value, or which have the greatest potential for improved biodiversity value, might be most appropriate to target. It is important to bear in mind that the impact a supplier has on biodiversity can extend beyond its operational area (e.g. pollutants might spread by air or water). The value of an area in terms of its biodiversity is dependent on factors including:

- how modified the biodiversity in the area is, for instance, the area might be made up of pristine forests or productive forestry plantations;
- the variety of species in the area and their abundance;
- the ecosystem services that the biodiversity in the area provides.
  It should be noted that ecosystems do not necessarily remain stable over time. Certain species might only be present intermittently, for instance as a result of migration. As such, the disappearance of a species might not necessarily indicate significant change in an area's biodiversity value. Assessments of biodiversity value therefore need to take change over time into account during any assessment. Given the dynamic nature of ecosystems, the diversity of ecosystems in which supply chain partners are likely to operate, and the lack of simple tools to collect information on biodiversity value, a full assessment of biodiversity value is likely to require expert and local advice.

6.2.4 Step three: Supplier assessment

In order to implement the key areas identified for further action, it will be necessary to gather more information on the suppliers to be engaged with. This action builds upon the baseline information established during Step one and can utilise a wide range of methods, including:

- face-to-face visits;
- questionnaires;
- audit visits;

- desk-based research.

An example of the type of research that can be undertaken and its application is detailed in Case study 6 (see Annex E) , which focuses on a large supermarket's approach to the management of palm oil related risk in its supply chain.

The extent of the supplier analysis should be proportionate to the size and influence of the organization, as well as the estimated risks associated with the products and services being procured. The enquiry could include the following.

- **Positions.** For example, what is the supplier's current policy towards biodiversity? Is the supplier party to any agreements on addressing biodiversity issues?
- **Processes.** For example, what environmental management systems does the supplier have in place? Do they conduct biodiversity reviews?
- **Performance.** For example, what does the supplier do to monitor its impacts on biodiversity? Do they have figures available on their impacts and progress in mitigating them?

NOTE Guidance on risk-based supply-chain analysis is given in BS 8903.

6.2.5 Step four: Initiating action (Implementing relevant policies and procedures)

6.2.5.1 General

The initiating company is now in the position to introduce supply-chain alterations to secure opportunities related to biodiversity. It is recommended that the following actions are taken:

- developing relevant policies and procedures (see **6.2.5.2**);
- setting targets (see **6.2.5.3**);
- communicating the policy change (see **6.2.5.4**);
- integrating new policies into procurement procedures (see **6.2.5.5**);
- building capacity to deliver change (see **6.2.5.6**).

6.2.5.2 Developing appropriate policies

Any new policy should clearly communicate to both the procurement team and external suppliers what is expected of them. This can be in the form of a standalone document, or can be incorporated into an existing environmental management system. Regardless of format, a good supply chain policy should include the following.

- **Statement of intent.** The policy should clearly set out its purpose.
- **Core principles.** The policy should make reference to internationally recognized agreements on biodiversity, such as the Convention on Biological Diversity (CBD).
- **Expected standards.** The policy should make it clear what is expected of those subject to it.
- **Management and monitoring.** The policy should detail how performance will be monitored and managed and how this information will feed into decision making (e.g. contract renewals).
- **Guidance notes.** The policy should be accompanied by guidance notes to suppliers and other users, so allowing the easy communication of its requirements.

Depending on the size of the company and the opportunities associated with its supply chain, it might be appropriate to develop multiple policies. Such an approach might involve the creation of an overarching policy setting out general principles and procedures on biodiversity, accompanied by more specific sub-policies. These sub-policies could relate to particular areas of major opportunity. For example, separate sub-policies might address the differing issues surrounding palm oil and timber procurement.

It can be of value to review how competitors and other leading companies are responding to the biodiversity risks and opportunities to which they are subject. There might be potential to forge alliances with other businesses seeking to bring about action in their supply chains on similar issues to achieve a net greater benefit and establish a level playing field. Some examples of existing partnerships and working groups are listed in Annex A.

6.2.5.3 Setting targets for delivery

Targets should be mutually agreed between the company and the supplier in question and should include clear timescales and procedures for dealing with non-compliance. It is important to consider at this stage how progress against the targets will be assessed. Further information on the selection of progress indicators, and the monitoring of process more generally, are provided in Step five (see **6.2.6**).

Where minimum standards are already being met by suppliers it might be desirable to set further targets in order to ensure that continual improvement is achieved. Regular reviews of performance should be undertaken to enable changes to be tracked and new targets to be established.

6.2.5.4 Communication

Once developed, it is important that the policy is communicated clearly to both the suppliers and the internal staff who will be affected by its provisions. Any communication should clearly state:

- how the policies will affect procurement decisions;
- what action will be taken should a supplier fail to comply with the policy;
- what incentives would exist for those suppliers that achieved the greatest degree of compliance.

It might be useful during the launch of the policy to run workshops or webinars to provide a forum for discussion.

Procedures and materials should also be developed for communicating the policy to new suppliers and staff in the future.

6.2.5.5 Integrating policies into the procurement processes

In addition to setting targets for addressing biodiversity impacts with existing suppliers, an effective way to improve supplier performance is to integrate such standards into the tendering system. This will allow the selection of suppliers based upon their current performance and procedures, making it much easier to achieve the company's biodiversity related objectives in the future.

A key means to establishing supplier performance on biodiversity issues during the procurement process is to ask for information at the pre-tender stage. At this stage a pre-qualification questionnaire can be used which can ask questions relevant to the opportunities identified with the product or service. Important things to cover when generating such a questionnaire include the following.

- **Measurement.** A uniform system of measurement is necessary in order to compare responses.

- **Evidence**. The questionnaire should state clearly what supporting evidence is required.
- **Simplicity.** The questionnaire should be understandable to non-technical audiences.

Information should be sought on possible industry initiatives that could make the pre-tender process more uniform, and so more open to smaller suppliers. Following on from the pre-tender process, it might be worthwhile to consider how targets relating to biodiversity can be incorporated into supplier contracts.

6.2.5.6 Building capacity internally and externally

When setting targets for suppliers it is important to consider their capacity to make the required improvements. A failure to make targets proportional to capacity and to support suppliers in building their capacity where required is likely to lead to little gain for biodiversity and a decline in relations with the suppliers in question. Knowledge exchanges through webinars, workshops, training sessions and guidance documents could help in this respect. In addition, facilitating collaboration between suppliers on particular issues could help to spread the costs associated with achieving improvement (e.g. through the pooling of expertise).

It is also important to consider how the procuring company's internal capacity can be strengthened. Assessment of the knowledge and capabilities of procurement staff in terms of biodiversity opportunity is a key first step in this regard. For instance, it might be the case that the business implications of delivering particular biodiversity improvements are not fully understood. Where such gaps are identified it will be necessary to provide training focused on addressing these.

6.2.6 Step five: Monitoring and reporting

It is important to monitor the effectiveness of any policy change. In this way it will be possible to identify good and poor performance and respond appropriately. Accurate monitoring will also allow the procuring company to clearly communicate the progress made. Such reporting is important in confirming the company's "green credentials" in the eyes of stakeholders and customers.

In order to achieve continual improvements in supplier performance on biodiversity, change should be monitored over time. Monitoring of action on biodiversity can serve three key purposes for a business as follows.

- It enables the procuring business to determine whether suppliers are meeting minimum standards and whether action should be taken. Where performance is not in line with targets it is generally best to try and work collaboratively with a supplier to raise standards. In areas where there is non-compliance, improvement plans should be negotiated and agreed, including appropriate timescales for change. Training and knowledge-exchange should be provided where possible.
- It allows the procuring business to drive continual improvements by recognizing when targets are being met. This can allow opportunities for further action to be identified and targets renegotiated in order to raise standards.
- It provides useful evidence for reporting. Robust evidence can help to ensure that the procuring business is credible when it comes to its biodiversity commitments.

The monitoring process adopted will depend heavily on the nature of the company operations and the types of biodiversity opportunity embedded in the supply chain. Nonetheless, some key principles can be identified, which are as follows.

- **Use appropriate indicators.** The procuring business should ensure that the indicators used to assess performance are suitable to the task at hand (e.g. size of supplier, scale of impact). A discussion of process based and procedure based indicators is given in Box 6.
- **Adopt appropriate timescales.** The procuring business should consider the times at which information will be requested and ensure that change can be adequately tracked over time without resulting in the overburdening of suppliers.
- **Encourage collaborative development**. The procuring business should work with suppliers in developing monitoring processes, ensuring that dialogue is kept open. For example, visits to a supplier's site might help to clarify what monitoring processes will work best for their operation.
- **Focus on transparency and fairness.** The procuring business should be clear on how the results of monitoring will be used in reporting and to assess performance, including what the response will be if bad practice occurs.
- **Obtain external input.** It can be useful to consult with other businesses, NGOs, government bodies, and local stakeholders when selecting monitoring processes. This might allow the development of collaborative monitoring schemes, thus increasing capacity and reducing costs.

Box 6: Performance based and process based indicators

As outlined in the guidance from Global Reporting Initiative, 2007 [31] and The Natural Value Initiative, 2010 [26], the types of indicators that can be used to monitor the effectiveness of suppliers' actions can be broken broadly into two types: performance based indicators and process based indicators.

Performance based indicators can be used to establish directly the impact that is occurring as a result of an activity.

For example, to establish the performance of an agricultural producer, a business could monitor changes in the species inhabiting the area of their operation over time, or could examine the quantity of certain habitat types lost to production or gained though restoration works.

The use of such indicators can provide detailed information on the effects of suppliers' operations. However, these indicators might require the collection of detailed and technical ecological data. This might prove burdensome where supply chains are long or suppliers are small. In such cases, process based indicators might be a suitable choice. In this case, production processes known to have a significant impact on biodiversity are monitored for change, rather than attempting to monitor the change in the biodiversity impact directly.

For example, reports could give details of the supplier's use of tools or programmes that are known to increase biodiversity (e.g. biodiversity action plans), or the business could require disclosure of the percentage of raw materials that are produced in accordance with internationally recognized standards.

A combined approach might be preferred in some instances. This involves the strategic use of performance based indicators to subsequently select the process based indicators that are to be monitored in future. For instance, performance based indicators could be used to compare various agricultural techniques on a selection of farms, with the best performing for biodiversity and productivity and then targeted for increased use across the supply chain. Stakeholder input, such as from NGOs, can support the choice of indicators. The Global Reporting Initiative, 2007 [31] sets out indicators for the reporting of business impact on biodiversity that could provide a useful starting point for developing indicators focused on specific supply chain issues. These indicators include the following.

- "Location and size of land owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas";
- "Strategies, current actions, and future plans for managing impacts on biodiversity"; and
- "Number of International Union for Conservation of Nature (IUCN) Red List species and national conservation list species with habitats in areas affected by operations, by level of extinction risk".

Case study 7 (see Annex E) sets out how a large coffee company monitored the progress of its sustainable coffee production program in order to ensure it receives a sustainable supply of coffee beans.

Once the information on progress has been collected from all relevant suppliers and analysed it might be appropriate to report the findings both internally and externally. Internal reporting can help to share good practice and encourage participation in improving supply chain performance. External reporting can confer multiple benefits, including:

- establishment of "green credentials" which can be used to differentiate a company's products or services and increase brand value;
- gaining public and investor trust by being open regarding impacts on biodiversity, the steps being taken to address them, and levels of progress; and
- providing an open forum for debate over the methods being used to target, facilitate, and monitor change, so allowing for continual improvement.

Case study 8 (see Annex E) details how a large retailer has worked to achieve positive biodiversity related supply chain impacts and how it reports on its progress in order to obtain benefits such as those listed above. Examples of good practice in terms of reporting include:

- making the supply chain policy freely available on a company website, with staff and stakeholders directed to it and encouraged to examine and comment on it;
- providing details of the chosen approach to managing supply chain impacts, the targets set, and the key performance indicators chosen;
- making public the results of monitoring activities, the steps that have been taken to resolve problems that have been identified, and future targets in the light of progress;
- avoiding generalizations, with specific data being provided together with information on the context in which the data was collected (whilst taking account of confidentiality);

- reporting problems as well as successes, so building the trust of stakeholders through transparency and accountability; and
- ensuring that progress is communicated clearly, making use of a variety of appropriate media sources to target stakeholders and customers.

6.3 Further options: Certification and eco-labelling

For some businesses a useful (and relatively simple and cost-effective) first step into improving consideration of biodiversity in supply chain management is to consider the opportunities available to source and/or produce products that have been approved by a certification scheme (i.e. those that carry an eco-label). The KMPG Certification and Biodiversity Report, 2012 [5] notes that certification schemes range from those that certify commodities such as coffee, forest products and palm oil, to those that certify broader sustainability criteria across different production processes. Such schemes demonstrate that a commodity has met certain environmental standards. Eco-labels can then be attached to products to advertise that environmental standards have been met.

Certification schemes can be a good option for those organizations that are smaller in size or which are currently without the resources to bring about supply chain reform themselves. The established nature of such schemes, which set out clearly the steps that have to be taken by businesses in order to have their operations or products certified, often makes them relatively cost-effective options. In addition, goods carrying particular eco-labels can be sourced with the confidence that they have been produced in line with rigorous criteria and are being monitored by a third party.

An example of how a certification scheme can provide assurance that a product has been sustainably sourced in a manner that protects biodiversity is shown in Case study 9 (see Annex E). This scheme is well regarded and is endorsed by a number of prominent NGOs and social stakeholders. It is important that the reputation of certification schemes is investigated by businesses before they involve themselves to ensure they are well-managed.

Some examples of the certification schemes available to business are given in Annex G, together with further sources of information related to supply chain management more generally.

Annex A (informative)

Conservation organizations

The following is a list of some conservation organizations in the UK and worldwide.

NOTE This list is not intended to be exhaustive.

Amphibian and Reptile Conservation

A national wildlife charity committed to conserving amphibians and reptiles and saving the disappearing habitats on which they depend.

Bat Conservation Trust

A non-governmental organization devoted to the conservation of bats and the landscapes on which they rely.

British Trust for Ornithology

An independent charitable research institute aiming at using evidence of change in wildlife populations, particularly birds, to inform the public, opinion-formers and environmental policy- and decision-makers.

Buglife

An organisation devoted to the conservation of all invertebrates, and which is actively working to save Britain's rarest "little animals".

Butterfly Conservation

An organization which aims to conserve butterflies, moths and the environment.

Environment Agency

An executive non-departmental public body which works to create better places for people and wildlife, and supports sustainable development. It also has duties to protect species dependent on the water environment, to further conservation and promote environmental best practice

Fauna and Flora International (FFI)

An international non-governmental conservation organisation that has, for the past 20 years, worked in direct partnership with a range of businesses to support their efforts to better conserve biodiversity.

Forest Stewardship Council (FSC)

A global, not-for-profit organization dedicated to the promotion of responsible forest management worldwide.

Forestry Commission

The government department responsible for protecting, expanding and promoting the sustainable management of woodlands and increasing their value to society and the environment

International Union for the Conservation of Nature (IUCN)

International conservation organization which seeks to influence, encourage and assist societies throughout the world to conserve the integrity and diversity of nature and to ensure that any use of natural resources is equitable and ecologically sustainable.

Joint Nature Conservation Committee (JNCC)

The committee responsible for coordinating the activities of the SNCOs over UK-wide ecological issues.

Natural England

The statutory nature conservation organization for England.

Natural Resources Wales

The statutory nature conservation organization for Wales. This organization is a result of a merger between the Environment Agency and the Countryside Council for Wales.

Northern Ireland Environment Agency

The statutory nature conservation organization for Northern Ireland.

People's Trust for Endangered Species

An organization which aims to protect wildlife in Britain and around the world by bringing the most threatened species back from the brink of extinction.

Royal Society for the Protection of Birds

A nature conservation charity which aims to inspire everyone to give nature a home by protecting threatened birds and wildlife.

Scottish Environment Protection Agency

An environmental regulator whose main role is to protect the environment and human health by regulating and monitoring activities that can cause pollution in Scotland. It has a similar role to the Environment Agency.

Scottish Natural Heritage (SNH)

The statutory nature conservation organization for Scotland which deals with wildlife issues.

The Wildlife Trusts

A people-powered environmental organization working for nature's recovery on land and at sea.

United Nations Educational, Scientific and Cultural Organization (UNESCO)

Organization of the United Nations which seeks to build peace, eradicate poverty, achieve sustainable development and achieve intercultural dialogue through education, the sciences, culture, and communication.

World Wide Fund for Nature (WWF)

An international non-governmental organization working on issues regarding the conservation, research and restoration of the environment.

Annex B (informative)

Illustrative examples of potential biodiversity risks and opportunities associated with a range of business sectors

Table B.1 to Table B.6 give examples of the ways in which various business sectors can interact both positively and negatively with biodiversity. It is intended to aid businesses in understanding the range and potential for interactions with biodiversity even though these might not be obvious. It is not an exhaustive list and does not constitute recommendations for actions to be taken or measures to be implemented. An ecologist should be consulted before any decisions are made regarding changes to management systems that might affect biodiversity, as not all actions will be appropriate in all circumstances.

Table B.1 **Examples of potential risks to and opportunities to benefit biodiversity – Food, drink and horticultural production businesses**

Potential risks to biodiversity	Potential opportunities to benefit biodiversity	Potential benefits to the business from steps to improve biodiversity
Excessive nutrient inputs to rivers and surrounding land caused by fertiliser runoff. This in turn can lead to increased growth of less desirable competitive species, reduced plant diversity and (on surrounding land) damage to pollinator populations (such as bees) due to reduced diversity of food plants. Direct reduction in pollinator populations caused by pesticide application.	Reduction in agrochemical usage or changes in timing of application potentially resulting in increased plant diversity and increased pollinator populations. Ensuring suppliers are part of sustainable production certification schemes where these exist (e.g. whether certified as sustainable by the Roundtable on Sustainable Palm Oil). Introduction of hives.	Increase in pollinator populations which can lead to higher crop yields and improved value for money.
Reduction in genetic diversity. For example, most crops planted around the UK have a narrow genetic base.	Reduction in use of herbicide potentially resulting in an increase in genetic diversity beyond the crop through increased survival of genetically different populations and leading to a reduction in pest/disease incidence.	Cost savings due to less need to apply pesticides as a result of a wider genetic base increasing pest and disease resistance of crops.
Potential for direct habitat loss if agricultural or fisheries management is undertaken in a way that is not compatible with wildlife. For example grass cutting at too frequent intervals or excessive weed removal from ponds to improve fishing could damage habitat function and diversity.	Change in land management regime e.g. less frequent grass-cutting or pond weed removal and creation of untreated headlands in fields, resulting in better habitat structure for wildlife and more flowering plants.	Potential reduction in land maintenance costs.
	Leaving arable stubble over winter as a food source for birds	Potential reduction in land maintenance costs.
	Constructing wetlands and field ponds.	Improved field drainage without elaborate artificial drainage. Natural features where livestock can drink.
Introduction of predatory fish and other species that would normally not be present and which might prey on vulnerable species.	Avoidance of the introduction of competitive species that could disrupt the local ecosystem.	Reduced land maintenance costs. Maintaining an unnatural ecosystem often entails greater costs as natural processes are disrupted.
Inadvertent harm to animals; for example, hedgehogs and other animals can fall through cattle grids and into steep-sided ponds and die.	Installing simple structures (wildlife ladders) in cattle grids and steep-sided ponds that will allow trapped animals to climb out.	Reputational benefit.

Table B.2 **Examples of potential risks to and opportunities to benefit biodiversity – Extractive businesses**

Potential risks to biodiversity	Potential opportunities to benefit biodiversity	Potential benefits to the business from steps to improve biodiversity
Direct habitat loss and potential habitat fragmentation due to removal of all surface habitats or their replacement by more economically valuable but less diverse habitats.	Considerable opportunity to restore former workings to new landforms and also provide new wildlife corridors. For example, some of the most valuable wetlands in the UK were once mineral workings.	Beneficial use of landholdings following the end of their productive life. Considerable opportunities for positive publicity and community interaction. Vegetating redundant mineral workings can (depending on circumstances) stabilize them and reduce runoff and pollution thus reducing land management and remediation costs.
Disturbance of wildlife by minerals extraction and processing. Negative effects on biodiversity caused by alterations and disruptions to local water flows and supplies (rivers, lakes, etc.)	Planning, zoning and timing minerals extraction and processing in sensitive areas to avoid disturbance of wildlife.	Cost savings through less need for mitigation measures and moving of wildlife to new sites.

Table B.3 **Example of potential risks to and opportunities to benefit biodiversity – Utility companies** *(1 of 2)*

Potential risks to biodiversity	Potential opportunities to benefit biodiversity	Potential benefits to the business from steps to improve biodiversity
Rivers being subjected to excessive abstraction resulting in drought and habitat loss, oxygen starvation and other negative effects on river wildlife.	Development of alternative sources for water supply to avoid excessive abstraction. Development of techniques to improve efficiency of water use and reduce water wastage.	More predictable water supply resulting in more sustainable river wildlife populations and long-term security of water supply. Cost savings and reduction in overheads associated with water consumptions.
Fish being drawn into water intakes from rivers.	Installation of grills to prevent fish being drawn into intakes.	Cost saving on maintenance through avoiding fish being drawn into intakes.
Planting of habitats as part of water filtration.	Creation by a water company of reedbeds for water filtration providing habitat for a wide range of invertebrates, birds and mammals.	Reduction in water treatment costs by taking advantage of the natural filtration functions of the reedbeds.
Discharge of heated water into natural systems resulting in loss of diversity as species fail to adapt to increased water temperature.	Use of combined heat and power systems to capture waste heat for subsequent use and avoid its discharge into the environment.	Cost savings through reduction in heating costs.

Table B.3 **Example of potential risks to and opportunities to benefit biodiversity – Utility companies** *(2 of 2)*

Potential risks to biodiversity	Potential opportunities to benefit biodiversity	Potential benefits to the business from steps to improve biodiversity
Stack emissions from power stations leading to deposition of pollutants on habitats causing loss of habitat quality, toxicity and nutrient. enrichment all of which can lead to loss of biodiversity	Incorporation of scrubbing technology on stacks, thus reducing emissions.	Achievement of sustainability targets and positive publicity for so doing.

Table B.4 **Example of potential risks to and opportunities to benefit biodiversity – Environmental businesses**

Potential risks to biodiversity	Potential opportunities to benefit biodiversity	Potential benefits to the business from steps to improve biodiversity
Direct habitat loss as a result of removal of surface habitats to make way for waste infrastructure (landfill sites, incinerators, sorting stations etc.).	Directing waste away from landfill. Restoring landfill sites to habitats of biodiversity value rather than solely to agriculture or amenity use provides extensive areas of green space that fulfil both human needs and biodiversity space and connectivity requirements.	More sustainable operations and cost benefits compared to other types of restoration. Considerable opportunities for positive publicity and community interaction in restoring former landfill sites to ecologically beneficial use.
Stack emissions from waste facilities leading to deposition of pollutants on surrounding habitat, causing loss of habitat quality, toxicity, and nutrient enrichment, all of which can lead to loss of diversity.	Incorporation of scrubbing technology on stacks thus reducing emissions.	Achievement of sustainability targets and positive publicity for so doing.
Regular intensive management of grasslands and other habitats on green estates to keep a neat appearance, but which reduces the wildlife value.	Incorporating specific habitats and habitat management more beneficial to biodiversity into landholdings (green estate and built estate) to deliver improvements to biodiversity that can interlink at a landscape scale.	Positive publicity and community interaction. Achievement of company sustainability targets and certification. Vegetated roofs can provide insulation and reduce the need for drainage from roof areas thereby achieving cost savings. Reduced estate management costs.

Table B.5 **Examples of potential risks to and opportunities to benefit biodiversity – Manufacturing businesses**

Potential risks to biodiversity	Potential opportunities to benefit biodiversity	Potential benefits to the business from steps to improve biodiversity
Obtaining necessary commodities or products from natural sources that might be unsustainable (e.g. squalene from shark liver for cosmetic and pharmaceutical production) leading to loss of populations, species, habitats and genetic diversity.	Opportunities as part of supply chain to employ sustainable sourcing of commodities and materials, such as plant-based squalene.	Positive publicity and community interaction in addition to potential cost savings and a more consistent and longer term supply of commodities and materials. The wider the range of biodiversity the greater the potential for natural sources of future pharmaceuticals. Improved investor profile as a result of more responsible, transparent supply chain management
Regular intensive management of grasslands and other habitats on green estates to keep a neat appearance, but which reduces the wildlife value.	Incorporating specific habitats and habitat management more beneficial to biodiversity into landholdings (green estate and built estate) to deliver improvements to biodiversity that can interlink at a landscape scale.	Positive publicity and community interaction. Achievement of company sustainability targets and certification. Vegetated roofs can provide insulation and reduce the need for drainage from roof areas thereby achieving cost savings. Reduced estate management costs.

Table B.6 **Examples of potential risks to and opportunities to benefit biodiversity – Development and construction businesses**

Potential risks to biodiversity	Potential opportunities to benefit biodiversity	Potential benefits to the business from steps to improve biodiversity
Unsustainable supply chain, for example through using peat-based products in planting and landscaping around new construction.	Use of peat-free compost in landscaping thereby achieving a more sustainable supply chain.	Positive publicity and community interaction. Achievement of company sustainability targets and certification. Vegetated roofs can provide insulation and reduce the need for drainage from roof areas thereby achieving cost savings. Reduced estate management costs.
Habitat loss and fragmentation.	Considerable opportunities in landholdings (green estate and built estate) to deliver improvements to biodiversity that can interlink at a landscape scale.	

Table B.7 **Examples of potential risks to and opportunities to benefit biodiversity – Transport operation businesses**

Potential risks to biodiversity	Potential opportunities to benefit biodiversity	Potential benefits to the business from steps to improve biodiversity
Management of premises that could support bats or other protected species in a way that is not compatible with the presence of those species.	Incorporating opportunities for protected or otherwise notable species to live in premises, e.g. providing bat boxes or green roofs. Altering premises management to improve habitat value for protected species. *NOTE Railways can provide valuable wildlife habitat and corridors.*	Positive publicity and community interaction. Achievement of company sustainability targets and certification. Vegetated roofs can provide insulation and reduce the need for drainage from roof areas thereby achieving cost savings. Reduced estate management costs.
Loss of biodiversity as a result of development of new facilities on land with existing biodiversity value.	Taking biodiversity considerations into account in designing new facilities to select sites with low biodiversity value.	Cost savings through less need for mitigation measures and moving of wildlife to new sites.
Unsustainable supply chain resulting in a loss of scarce species or habitat damage.	Moving to softwood rather than hardwood in pallets for shipping and distribution, therefore reducing impacts on more vulnerable species and transferring to more sustainable sourcing.	Positive publicity and community interaction in addition to potential cost savings and a more consistent and longer term supply of materials.

Table B.8 **Examples of potential risks to and opportunities to benefit biodiversity – Retail and service focused businesses** *(1 of 2)*

Potential risks to biodiversity	Potential opportunities to benefit biodiversity	Potential benefits to the business from steps to improve biodiversity
Adverse effects of the supply chain on biodiversity	Contributing to the protection of marine and forest biodiversity by adoption of accredited supply systems such as those accredited by the FSC (Forestry Stewardship Council) and the MSC (Marine Stewardship Council)	Having a sustainable and secure supply of products and services. Improved brand reputation through having accredited suppliers. Access to a wider customer base, leading to improved profits.

Table B.8 **Examples of potential risks to and opportunities to benefit biodiversity – Retail and service focused businesses** *(2 of 2)*

Potential risks to biodiversity	Potential opportunities to benefit biodiversity	Potential benefits to the business from steps to improve biodiversity
Financial investment in businesses that do not adequately consider biodiversity impacts in their management systems e.g. unsustainable soy bean production.	Financial investment in businesses that recognise and seek to deliver on-going improvements to biodiversity from their operations, e.g. using more sustainable and traditional farming practices where appropriate, rather than intensive single species cropping involving deforestation.	Positive publicity and community interaction. Achievement of company sustainability targets and certification. Vegetated roofs can provide insulation and reduce the need for drainage from roof areas thereby achieving cost savings. Reduced estate management costs.
Management of premises that might support bats or other protected species in a way that is not compatible with the presence of those species.	Incorporating opportunities for protected or otherwise notable species to live in premises e.g. providing bat boxes or green roofs.	
Disturbance of wildlife by leisure craft and activities.	Planning and zoning leisure activities in sensitive areas to avoid disturbance of wildlife.	Cost savings through less need for mitigation measures and moving of wildlife to new sites.

Annex C (informative) Wildlife sites in the UK and policy initiatives to conserve biodiversity

C.1 General

Businesses of all types have a responsibility to protect biodiversity, particularly with regard to those species and sites that are protected by law. The requirement to safeguard legally protected species applies to all businesses and landowners. A range of legislative instruments have been devised to protect some of the rarest species and habitats in the UK. Listing of legislation regarding protected species is outside the scope of this standard. However, this Annex gives a summary of the network and hierarchy of protected and important wildlife sites in the UK. Although these wildlife sites denote habitats and species of particular importance, it is important that adequate conservation and enhancement of biodiversity across the UK is not confined to designated wildlife sites.

C.2 Statutory designated sites

C.2.1 Hierarchy of protected sites

There is a hierarchy of protected areas/sites of biodiversity value in the United Kingdom which businesses need to be aware of in order to understand the legal obligations placed upon them by the presence of these sites on their land. Information on these sites is given in **C.2.2** to **C.2.5**.

C.2.2 Special Areas of Conservation (SAC), Special Protection Areas (SPAs) and Ramsar sites

These are the sites that receive the highest standard of protection in the UK. SACs and SPAs are designated in accordance with the EU Habitats Directive [33] and the EU Birds Directive [34], respectively. It is an offence for a plan or project to result in an adverse effect on the integrity of these sites. Ramsar sites are designated in accordance with the Ramsar Convention and denote wetlands of international importance. The designation does not confer specific legal protection in itself but these sites usually receive protection through other designations that might apply to the same area of land, such as Site of Special Scientific Interest.

C.2.3 Sites of Special Scientific Interest (SSSIs) [Areas of Special Scientific Interest (ASSIs) in Northern Ireland]

The SSSI/ASSI designation (which includes some flagship sites) is the principal mechanism for legally protecting areas of land of biodiversity value in the UK. The designation is applied to areas of international wildlife value but is also extensively applied to areas of land that are not of international importance in themselves but are of national importance, representing as they do, key areas of habitat or key populations of species that are nationally scarce or declining.

The SSSI/ASSI designation is also used to protect areas of national geological importance. The owners of such sites are required by law to enter into management agreements with the relevant Statutory Nature Conservation Organization to protect the interest of the site. For each SSSI the Statutory Nature Conservation Organization will produce a list of potentially damaging operations which may not be undertaken on the site without the consent of the relevant agencies. While landowners ought to be aware of whether they own a SSSI, the protection afforded to SSSIs is not only of relevance to the site owner/manager. Any operation, even if undertaken outside the SSSI, which could result in an adverse effect on the SSSI will be prohibited unless agreed to by the Statutory Nature Conservation Organization. Without such agreement, prosecution could result. It is therefore essential for businesses to be aware of whether there is a SSSI within the vicinity of their landholdings and whether any of their premises management or site management might actually result in an adverse effect on the SSSI.

C.2.4 Marine Conservation Zones (Marine Protected Areas in Scotland)

These are a recent designation that is made by central government on the advice of the country conservation agencies. It is intended to reflect the fact that SSSIs have traditionally not covered marine areas and that marine areas of national importance were not subject to the same standard of designation and protection as terrestrial and freshwater environments.

C.2.5 Local Nature Reserves

The statutory basis for Local Nature Reserves (LNRs) is provided through the National Parks and Access to the Countryside Act 1949 [35], which is the same legislation that provides for the designation of National Parks in England such as the Peak District and the South Downs National Parks. Although LNRs are statutory wildlife sites (in that their designation is enabled by law) they are a lower tier of designation than SSSIs and do not receive the same legal protection. LNRs are not designated by the Statutory Nature Conservation Organization directly but are designated by County Councils and Unitary Authorities in consultation with the relevant country conservation organization. The LNR designation provides no automatic legal protection for the site, but the local authority has the right to introduce byelaws protecting the LNR from certain activities. Many LNRs are open to the public and are owned or managed by the local authority. Unlike SSSIs, LNRs are often designated for their general wildlife assemblage rather than for a particular species or habitat.

C.2.6 Areas of Outstanding Natural Beauty

These are areas designated for their distinctive character and natural beauty so outstanding that it is in the national interest to safeguard them. There are 33 in England and Wales and 8 in Northern Ireland.

C.3 Non-statutory wildlife sites

In addition to legal protection for statutory wildlife sites in the United Kingdom there are a series of non-statutory wildlife sites that have a range of names and which are designated by the relevant local authority or conservation organizations acting as landowners. They generally represent areas of value in a local context but have no legal protection (although they might contain species that are legally protected such as bats and great crested newts). Although such sites are not protected by law, they often receive a degree of protection through local planning policy. Local authorities in the UK are required to produce plans setting out how they envisage housing and commercial development in the district or borough progressing over the course of the subsequent few decades. The documents that set this out are known as Local Plans or Core Strategies and they (or an associated document) often also include a series of general policies that are intended to guide and manage development over the course of the plan period. Such documents often include one or more policies that proposed developments are expected to comply with and these often include "no net harm to local wildlife sites" without appropriate compensatory provision, unless the benefits outweigh the harm, or similar provisions. However, such policies are only relevant in a development context and local authority forward planning plays no part in governing how private landowners manage their properties. The most common terms used for these sites are as follows.

- **Important Bird Areas.** This term is used to refer to sites that are considered to be of key importance for bird life, and these sites are identified by BirdLife International and the UK partner RSPB (Royal Society for the Protection of Birds). They confer no formal protection in either law or policy but would represent a material consideration in any development proposal.
- **County Wildlife Sites**. This term is often used to refer to sites that are designated by the county council or unitary authority and represent a network of key sites within the county that are not of sufficient quality to justify Local Nature Reserve designation.
- **Sites of Importance for Nature Conservation/Sites of Nature Conservation Importance.** This term and the slightly different alternative term are most often used to denote sites of some value in a very local context, such as road verges that have relatively high botanical diversity. The

recommendation for areas to be designated is often made in consultation with the local Wildlife Trust and sometimes other wildlife groups.

- **Sites of Metropolitan Importance for Nature Conservation**. This is a term used in the Greater London area and refers to sites of ecological value in a London context that are designated by the Mayor of London, such as the River Thames.
- **Sites of Borough Importance for Nature Conservation**. This is also a term used in the Greater London area and refers to the key sites of ecological value within a particular borough, but which are not of sufficiently high interest to be regarded as part of the suite of most important sites in London. This designation is conferred by the Borough Council rather than by the Mayor of London.

In addition to the above there are many private nature reserves, such as those owned by the National Trust, the Wildlife Trusts, the RSPB and the Woodland Trust, which offer public access but have a primary focus on biodiversity conservation.

C.4 Landscape level designations

Implementing biodiversity action plans often requires working at a landscape scale. Natural England, working with local partners, has developed a number of landscape scale designations. The following are some examples.

- Biodiversity Opportunity Areas. These identify the most important areas for biodiversity within a locality.
- Nature Improvement Areas. These are areas designated for enhancement of wildlife, creating better connected habitats at the landscape scale as well as providing a place for people to enjoy wildlife.

C.5 Protected species

The Habitats Regulations [36] provide the framework for strict protection of European protected species.

National legislation also provides the statutory protection for species at a domestic level, including provisions for licensing otherwise illegal activities.

In addition to species protected by statutory legislation, other species of principal importance for the purpose of conserving biodiversity (i.e. the list "priority species") have been identified by relevant national legislation.

C.6 Additional policy mechanisms

In addition to using the legal protection and the designation of particular areas of land to achieve the conservation of biodiversity, there are various policy mechanisms that have been developed to ensure the protection of wildlife as habitats and species by identifying them as conservation priorities. These include the following, although this is not intended to be a comprehensive list.

- The UK Post-2010 Biodiversity Framework [37]. This sets the framework of priorities for UK-level work for the Convention on Biological Diversity [1]. This UK Biodiversity Framework is designed to identify the activities needed to drive and complement country strategies, in pursuit of the Aichi targets [37].
- Priority species and habitats under the Natural Environment and Rural Communities Act, 2006 [38] and Nature Conservation (Scotland) Act 2004 [39]. The Natural Environment and Rural Communities Act 2006 [40], Section 41 (for England) and Section 42 (for Wales), and Section 2 of the Nature Conservation (Scotland) Act 2004 [40], have led to the preparation of lists of priority habitats and species that are considered

to be of principal importance for the conservation of biodiversity in the UK. These lists are the basis for much conservation work undertaken in the UK and for many biodiversity action plans.

- Country Biodiversity Strategies. The country-level biodiversity strategies replace the UK Biodiversity Action Plan. In England, Biodiversity 2020: A Strategy for England's Wildlife and Ecosystem Services [8] was published in 2011. Its intent is to halt overall biodiversity loss, support healthy well-functioning ecosystems, and establish coherent ecological networks, with more and better places for nature for the benefit of wildlife and people. The Northern Ireland Biodiversity Strategy was published in 2002, with a goal to have the highest quality environment in the UK, with conservation of biological diversity fully integrated into policy making, in order to support the health of Northern Ireland's citizens, its wildlife and its economy. The equivalent strategy for Scotland is Scotland's Biodiversity: It's in Your Hands [40] published in 2004. This 25-year strategy aims to conserve and enhance biodiversity in Scotland, and covers species and habitats, people, integration and co-ordination, landscapes and ecosystems and knowledge. The Wales Biodiversity Framework [41] proposed changes to the governance and delivery of the management and regulation of the environment in Wales, based on the ecosystem approach, with a strong focus on sustainable land and marine management.
- Local Biodiversity Action Plans. Local Biodiversity Action Plans identify the local priorities within a given county, London borough or other unitary authority area with regard to species and habitats that are particularly identified for targeting of conservation efforts. These documents are of particular relevance to businesses seeking to understand the biodiversity priorities of their local area. The Local Nature Partnership takes over the LBAPs and (see **5.6**) can be contacted for information about biodiversity at a local level. Natural England also has a list of National Character Areas which contains local information.

Annex D (informative) Examples of biodiversity enhancements that could be delivered through facilities and premises management

D.1 General

This Annex contains some ideas and examples concerning enhancements that could be delivered to business premises and facilities to enhance biodiversity. It is not an exhaustive list and does not constitute recommendations. The measures listed in this Annex might not be appropriate in all circumstances depending on site-specific issues and an ecologist should be consulted before any biodiversity enhancements are implemented. It is also important that the full implications of implementing any biodiversity enhancements are considered; for example, attracting bats or other legally protected species might not be appropriate if the area in question could be subject to future development, as the presence of these species could constrain how the estate can be used.

D.2 Soft estates

D.2.1 Low investment wins

Some examples of low investment wins are provided in the following list.

- **Relaxing the vegetation-cutting regime**. The biodiversity interest of a site can often be enhanced by relaxing the vegetation-cutting regime. In many areas grass is cut on a weekly or fortnightly basis in order to look "tidy" but for many habitats this can severely limit the interest of the sward, particular

as a result of restricting botanical diversity and by limiting the usage of the sward by wildlife, through providing minimal cover and foraging potential. Simply relaxing the cutting regime to once every few months or, preferably, once or twice a year (such as in the early spring and again in the autumn), will be sufficient to allow the vegetation to grow and diversify, providing habitat for a range of small mammals, invertebrates (e.g. butterflies and grasshoppers), birds and perhaps even reptiles and amphibians, while also removing the annual growth of vegetation which would otherwise remain as "thatch" and could become untidy and ultimately suppress botanical diversity. Businesses are often concerned that infrequent cutting can make a site look "untidy", but if the vegetation has the right mix of wildflowers and is cut immediately after flowering to avoid a large amount of standing dead flowers it can be very attractive. Alternatively this approach can be deployed on areas away from the formal entrances to the site. It might be advisable for local residents to be informed as to why the option of "benign neglect" is being chosen, in order to avoid adverse comment.

- **Intensifying the vegetation-cutting regime**. Conversely, some areas of land are managed infrequently, often because they are considered to have limited value to the business and it is therefore considered that it does not make financial sense to maintain the land, or because there is a view taken that being "wild" is synonymous with "unmanaged" and therefore a positive outcome for the land. However, in order to maintain or maximize its biodiversity value, most areas of land require some form of management, otherwise the vegetation will gradually become more and more choked and ultimately be replaced by scrub of limited ecological value. This is particularly the case for open habitats such as grassland, heathland and open water bodies such as ditches and ponds, but even woodlands require some human intervention to maintain their ecological value. If economics is the main consideration behind avoiding or minimizing management then other aspects should be taken into account, for example the following.
  - The "bad press" value of an entirely unmanaged parcel of land should not be underestimated; if local residents regard an area of land as having been abandoned complaints to the local authority can result.
  - If an area of land is known to be of value for particular habitats and species, then the business can be criticized by local conservation groups and the local authority for allowing it to decline. For example, if a watercourse on a business's land is occupied by water voles, excessive management can result in the vole population abandoning the area, but inadequate management can have the same effect. Water voles are a scarce and legally protected species and if they abandon an area then the landowner can be criticized for poor stewardship of his landholding.
  - It might be possible for the management of the land to actually produce some economic benefit that could offset (at least partially) the cost of management. An area of grassland could be managed by a grazier who gets the opportunity to obtain fodder for his animals, while an area of woodland could be managed in return for a quantity of timber products. A reedbed could be managed in return for the cut reeds being supplied for thatching.
- **Collecting cuttings and retaining them on site to compost**. One simple way in which the biodiversity value of a parcel of land can be improved is through retaining cuttings; this is also a financially beneficial option because it reduces the need to dispose of cuttings off-site. Cuttings should not be left strewn across the vegetation as this can both smother young plants and add nutrient enrichment to the soil as it decays (which will indirectly exclude many native wildflowers). Cuttings can however be collected and

moved to a compost heap within the site. This can provide a useful warm habitat for wildlife, and grass snakes are often found nesting in such locations.

- **Relaxing tree management regime**. Where areas of trees or woodland are present on a land-holding, it is often the case that trees are pruned and managed to ensure a healthy condition and any evidence of rot or poor health is removed. However, provided it is safe to do so, allowing a certain number of trees to decay can result in the development of cavities and rot holes than can be of particular value for wildlife such as invertebrates, birds and bats. Recent research has also highlighted the value of deadwood for birds, such as the crested tit (*Paris cristatus)* which nests in well-decayed snags and stumps greater than 30 cm in diameter. Other species such as wryneck (*Jynx torquilla*) nest in old woodpecker holes and snags, and capercaillie (*Tetrao urogallus*) roost in large dead branches. A non-intervention approach can therefore result in both an increase in biodiversity value and a reduction in management costs.
- **Changing the pesticide or fertiliser regime**. Although ornamental gardens and lawns often require large amounts of pesticide and fertiliser to keep them verdant and tidy, one can often increase the biodiversity value of an area simply by reducing or stopping use of pesticides or artificial fertilizers, shifting to non-chemical methods of pest control or using slow-release fertilisers. Many of the characteristic wildflowers of species-rich meadows are adversely affected by addition of artificial nutrients. The addition of fertiliser will encourage grasses and more competitive species at the expense of wildflowers that have evolved to live in an environment that is not artificially enriched, and the wildflowers will be smothered and excluded. If net productivity of plant biomass is the sole object then applications of fertiliser or pesticide are required, but in many locations they are applied unnecessarily.
- **Replacing non-native plants, or native ornamental plants, with some non-ornamental native plant species**. It might be possible to materially improve the ecological value of an area through the limited planting of particular plant species, for example in borders. The planting of native plant species, rather than imported ornamental species, can result in an improvement of biodiversity value in itself since native plant species often have a greater range of wildlife associated with them, acquired over millennia in a way than non-native species do not. There are numerous suppliers that sell native species which can be purchased as plugs or as grown-on young plants for a relatively modest price. If certain species are planted they can materially enhance the value of an area for particular groups of animals; for example the planting of night-flowering species, such as the night-flowering catchfly, can attract moths and potentially also bats which feed upon them.
- **Installing bat, bird and insect boxes on trees**. A simple and cost-effective way to improve biodiversity opportunities on any site is to install bat, bird or insect boxes. These provide habitat opportunities for nesting and roosting and can be purchased for a few tens of pounds from a range of suppliers. They have to be installed appropriately but simple guidance on installation could be included in the biodiversity action plan. Bird boxes tend to decay over time and require replacing; there is also a small management requirement in that they need to be emptied of nesting material at the end of every season to retain their value. Bat and insect boxes however rarely require either management (particularly if "self-cleaning" bat boxes are obtained, see Note) or replacement. Even areas that might look unpromising for bats and birds can reveal a surprisingly high level of usage if appropriate nesting and roosting opportunities are made available. Urban areas with relatively little

vegetation can still support high populations of some bat species (such as pipistrelle and noctule) as they are attracted to hunt for insects around street lighting, as they are able to tolerate lighting, unlike most other bat species. If trees are not available, it might be possible to install some bird boxes on freestanding poles. Swift boxes can be installed on buildings in very urban settings. Nesting pads on flat roofs for species such as oyster catchers can also be included.

NOTE Self-cleaning bat boxes have a slot at the bottom to allow the animals' droppings to fall through.

- **Creating log piles and refuges**. Rockeries, log piles and other collections of block materials can provide a diverse habitat for wildlife which can live in the niches and crevices within the material. If the piles can be covered with a loose layer of soil or turf, this can increase the value even further. This type of habitat enhancement is an ideal way of reusing demolition or construction materials on site. Further guidance on creating refuges for reptiles and amphibians is provided in Natural England's *Great crested newt mitigation guidelines* [42].
- **Changing the lighting around the site**. The increasing use of powerful nocturnal lighting over the past century has considerably affected the behaviour and distribution of wildlife in the United Kingdom, particularly nocturnal species. The effect of artificial lighting on bats is well documented (see www.bats.org.uk/pages/bats_and_lighting.html [viewed 2015-02-09]), and there is also evidence for effects on some nocturnal birds such as nightjars and for a range of invertebrates. Artificial lighting close to trees or the eaves of buildings that might be used as bat roosts can result in a perception of daylight by the bats even after dusk and can therefore result in them emerging to forage later in the evening. This can result in inadequate foraging time being available before they have to return to their roosts at dawn, which can affect the survival of the population. By ensuring that lighting affects the minimum areas that have to be illuminated and only for the periods required, it is possible to significantly improve the biodiversity value of a piece of land. No artificial lighting should fall directly on a bat roost. If nocturnal illumination is required in surrounding areas, incorporating a timer that reduces the illuminated period to when it is required and that avoids an hour around dusk and dawn can be helpful.

D.2.2 Longer-term investment wins

Longer-term wins are more site-specific and therefore cannot be easily summarized in generic form, but some examples include the following.

- **Creating a pond**. Even a relatively small pond can have considerable biodiversity value and can also constitute an area that is attractive to employees and provide an attractive setting for the business. Ponds should not be designed generically but should be tailored to the particular site. However, there are some broad considerations that should be followed; these are set out in a variety of sources such as the Pond Conservation website (http://www.pondconservation.org [viewed 2015-02-09]). This charity has produced a Pond Creation Toolkit. Ponds and other water bodies can also function as part of sustainable urban drainage schemes (SUDS) if they have sufficient capacity to take water drained from an area of hard standing when it rains. Features whose primary capacity is for SUDS are often dry for a large part of the year but can still provide ecological value during both their wet and dry periods.
- **Reseeding a nutrient enriched area or an area with poor species diversity.** If the resources are available, it is possible to deplete the nutrients in existing vegetation by continual harvesting without the addition of further

nutrients. Nutrient depletion can however be achieved more rapidly through stripping the topsoil layer from the field. The soil below the top layers will have a lower nutrient status (with arable fields owing to the way in which fertiliser is ploughed into the soil, the top 500 mm or more might need removing to strip off the most nutrient enriched layer) and if an appropriate seedbed can be created this can provide a good basis on which to sow and establish a more wildflower rich habitat. Stripping off the topsoil will also remove much of the existing seedbank (the source from which the existing vegetation re-establishes itself every year) and will therefore ensure that any wildflowers that are subsequently sown are less likely to be out-competed by more aggressive species that are already established in the soil. This scale of intervention can be complex and expensive and is best undertaken in consultation with an ecologist. However, the biodiversity gain that can be achieved is considerable.

- **Tree planting.** Replacing non-native ornamental tree species with native species can also increase the biodiversity value of a site. Native tree species have evolved with a wide range of other species in the United Kingdom, including a range of lichens, fungi and invertebrates and are therefore likely to support a more diverse range of wildlife than non-native species. Some non-native plants such as butterfly-bush are very attractive to some groups of animals but could support a lower overall diversity of animal species.

In addition to opportunities for biodiversity enhancement on land there are also opportunities in the riverside or coastal environment. Guidance documents such as the Environment Agency document *Estuary Edges* [33] set out a range of enhancements and improvements that could be delivered on the edges of the coast or a watercourse, for example:

- removing hard structures that define the edges of a river or coastal section, thus enabling a more natural bank to be achieved. This will enable colonization by plant species and by animal species that might be present in the area, such as white-clawed crayfish or water voles, and which might not otherwise colonise;
- removing redundant structures that impede the natural flow of a watercourse;
- re-profiling the banks of a watercourse to provide a berm at the waterline which can be colonized by aquatic plants and provide considerable value for aquatic wildlife;
- creating greater habitat complexity through simple measures such as the installation of timber revetments on the river wall which can be colonized by plants and by aquatic invertebrates;

If the budget allows, areas of former floodplain could be restored to a flooded environment through the removal of flood defences, or backwaters to the river could be created through the excavation of additional channels parallel to the main channel.

D.3 Hard estates

NOTE As with landholdings, improvements can be divided into quick wins and longer-term wins.

D.3.1 Low investment wins

Some examples of low investment wins are provided in the following list.

- **Installing bird boxes**. A wide range of bird boxes are available; these range from boxes suitable for large birds such as peregrine falcons to those suitable for smaller birds such as wrens. An ecologist can advise on the most suitable types of box for particular areas. It might be appropriate to target

a relatively uncommon species, but otherwise installing general bird boxes can still provide a significant benefit. Bird boxes do carry a certain maintenance liability as they have to be cleaned out each year and will eventually decay.

- **Installing bat boxes**. Bat boxes are structures that can be purchased commercially and which are intended to mimic the naturally occurring temperature and humidity-stable crevices and cavities in which bats normally choose to spend the day, emerging at night to hunt. There are a range of bat boxes available and the best choice of bat box will depend upon the type of roost that is being created and the species of bat that are known to be in the local area. Moreover, bat boxes have to be installed correctly in order to be effective. Expert assistance should therefore be sought when selecting and installing the boxes. Advice can be obtained from the local bat group, local Wildlife Trust or The Bat Conservation Trust and from ecologists. Bat boxes can be relatively inexpensive but can appreciably add to the roost resource of an area. Bat boxes constructed from woodcrete (a mixture of wood shavings and concrete) will persist un-decayed for a considerable period of time and if "self-cleaning" bat boxes are obtained (see Note) then there is no maintenance requirement. If the building is being redeveloped it is also possible to obtain bat boxes that can be built into the fabric of the walls of the building, known as bat bricks.

  NOTE Self-cleaning bat boxes have a slot at the bottom to allow the animals' droppings to fall through. As bats often deposit droppings as they leave their roost all bat provision is best installed away from doors and windows and other sensitive areas.

- **Installing insect boxes**. It is now possible to purchase ready-made insect boxes of a wide range of types that can be easily fitted to buildings in much the same way as bat and bird boxes.

- **Installing a trellis with native climbers**. Even something as simple as installing a trellis with native species of climbing plant, or those that have a known attraction or benefit to local fauna, such as honeysuckle, can provide a definite benefit for wildlife, providing a source of food and also a source of shelter among the stems and branches of the climber and between the climber and the outer wall of the building. Native climbers do not require frequent pruning or watering, unlike many ornamental climbers, and are likely to receive adequate water through rainfall alone.

There are misconceptions concerning some of these biodiversity enhancements that can deter businesses from installing them. For example, businesses involved in food production, or with warehouses storing perishable produce or other products, might believe that attracting wildlife such as bats to live in and around their buildings is not hygienic or compatible with the maintenance of their produce in good condition. Bat boxes are best installed on the outside of the building or in a part of the building separated from the area in use, although in most cases bats remain away from the living space or usable space of the building, confining themselves to small niches and crevices around the eaves and in the roof cavities. In the vast majority of circumstances they leave very little evidence of their presence and do not create a hygiene problem.

D.3.2 Longer-term investment wins

The principal longer-term biodiversity win available with buildings is to create a so-called "green roof". This practice, common in continental Europe and increasingly applied in the UK, is based on recognition that the roofs of buildings provide extensive areas that could be used for providing vegetated areas for which there is insufficient space at ground level. The practice has therefore emerged to cover otherwise bare roofs with turf or a soil-based substrate and either plant them or allow them to be colonized naturally. The monitoring of these features has shown that biodiversity can be found in unexpected places including at the top of tall buildings. Canary Wharf in London has a green roof which is high above ground level yet has a locally significant biodiversity value. In fact, the Canary Wharf estate claims to have the highest concentration of green roofs in the UK.

Only certain types of building are appropriate for a green roof. The installation of even a fairly simple green roof involves the creation of an additional load equivalent to that of a layer of ballast that is traditionally laid on flat roofs. An office building or retail premises with a flat roof is likely to be able to support such a structure, but traditional single-skinned corrugated metal warehouses and depots are unlikely to be able to support a green roof without additional strengthening which is likely to make the enterprise uneconomic.

However, even owners of those premises do not necessarily have to abandon the idea of having a green roof entirely. The principle of a green roof, the creation of vegetation on a level artificial surface that would not otherwise support it, can be transferred to other features such as the tops of walls or other areas of hard standing.

Green roofs can range from intensive features that can have a considerable depth of turf on the roof (some green roofs can even include trees) to those which are intended to mimic a typical "wasteland" vegetation environment (such environments having high biodiversity value in an urban area) and which involve a relatively thin (100 mm to 200 mm) depth of soil forming material which is allowed to vegetate naturally. These latter types of vegetated roofs, often called "brown roofs" to distinguish them from the more intensive roofs that involve a depth of turf, are particularly appropriate for urban environments where such wasteland or brownfield habitats were traditionally found, but which are increasingly uncommon at ground level due to the pace of redevelopment since the 1950s. The advantage of such "brown roofs" is that they are simpler to create than more intensive turf roofs and can be used as a way of disposing of clean well-draining building rubble (typically with a gravel/soil base and some larger fragments of 50 mm to 100 mm) and other similar materials; actual topsoil is not required for such roofs and should indeed be avoided since commercially obtained topsoil is often nutrient-rich and has an existing seedbank, whereas wasteland vegetation is often representative of more nutrient poor environments.

A brown roof should be designed to mimic an urban wasteland environment, with a shallow average depth of substrate which preferably is not laid evenly across the roof but contoured and profiled to provide a gently undulating surface with small hummocks and hollows. While wasteland vegetation can be unsightly, this is not an issue above ground level. Watering is not required, but in addition to ensuring that the roof is strong enough to support the wet weight of the substrate it is imperative that good drainage layers are installed between the growing medium and the actual roof of the building which are not susceptible to root penetration. In terms of roof strength, the typical non-intensive brown roof designed to mimic wasteland typically has wet weight

similar to the ballast that is often found on the stronger types of flat roof. Therefore many types of flat roofed building, other than simple single-skinned warehouses and sheds, can support this type of roof. A small parapet wall is required around the edge of the roof to prevent the substrate from falling onto the ground below, just as with normal ballast. Such roofs often require minimal maintenance compared to intensive turf roofs; depending on the objectives, periodic removal (every three or four years) of shrubs at the early stages of their development is all that is required, although if resources permit then limited raking and disturbance of the vegetation and soil in some parts of the site on an annual or biennial basis will help to open up new niches for plants to colonise.

While stonecrop (*Sedum*) based roofs are widely available commercially and are relatively cheap and simple to install, their biodiversity value can be more limited than other types of vegetated roof owing to their limited botanical diversity and in particular their very limited uniformly very low growing structure.

In addition to their biodiversity value, vegetated roofs, whether brown roofs or more intensive turf roofs, can also provide a significant insulation benefit for the building. More information on vegetated roofs is available at the Living Roofs website (http://www.livingroofs.org).

Annex E (informative)

Case studies

This Annex gives a series of case studies illustrating how various businesses from a range of sectors are considering biodiversity in the management of their operations.

Case study 1: A global pharmaceutical business

One global pharmaceutical business's environmental management policy stipulates that its business activities should take biodiversity into account. Once this policy was established, the company surveyed its initiatives on biodiversity and its use of natural resources. The company also assessed the relationship between its business activities and biodiversity and identified issues through an analysis of the company's risks and opportunities. As a result of this, the company devised the following key objectives related to biodiversity.

1) *Ensure that all business activities protect biodiversity*. Continue to reduce the effects on biodiversity of all company operations, particularly in order to avoid pollution-related biodiversity damage.
2) *Protect ecosystem services*. Utilize, and obtain benefit from, ecosystem services while also ensuring that they are not disrupted or degraded by company activities.
3) *Utilize genetically modified organisms appropriately*. Continue to use genetically modified organisms in drug development but do so responsibly to ensure that they do not adversely affect the environment.
4) *Communicate understanding of the importance of biodiversity*. Develop initiatives for ensuring that both employees and stakeholders are better informed about the role of biodiversity in our business and the effects that our business can have on the environment.

The next step would be for the company to develop these into SMART targets (Specific, Measurable, Attainable, Relevant, Time-bound). The benefit to the business of these initiatives is likely to be positive reputation and improved access to finance and markets through that reputational gain. However, the company is likely also to benefit from long-term security of resources (through reduced pollution and more sustainable utilization of ecosystems) and therefore potential cost-savings through avoiding a need to develop replacement resources.

Case study 2: A financial investment business

A large financial investment business published a set of criteria that would guide their investments (such as pension fund investments) to more environmentally and biodiversity friendly businesses.

The criteria are applied to investments the business considers have a high biodiversity risk particularly in sectors such as agriculture, fisheries, construction and construction materials, electricity generation, forestry, mining, and oil and gas extraction. Companies in high risk sectors are required to satisfy the criteria in order to be approved by the investment business. For example, the criteria relating to companies and institutions whose operations might involve loss of natural habitats are as follows.

1) The company or institution adheres to the International Union for the Conservation of Nature (IUCN) guidelines for Protected Area Management Categories.
2) The company or institution does not develop activities in categories I-IV of the IUCN, the United Nations Educational, Scientific and Cultural Organization (UNESCO) World Heritage Convention [44] or the Ramsar Convention on Wetlands of International Importance [45].
3) The company or institution restores the original ecosystem after terminating its activities in an area.
4) The company or institution is not involved in the draining of wetlands to reuse the land for agriculture or construction.
5) If the company or institution uses wood from ancient forests, it solely uses Forestry Stewardship Council (FSC)-approved wood.
6) The company or institution respects High Conservation Value Areas (HCVA) by only cultivating palm oil and soy in accordance with sustainable industry codes of practice and only using second-generation biofuels (woody crops or agricultural waste).

The extent to which the biodiversity policy is implemented is monitored by the investment business. The investment business also subscribes to the Equator Principles, which are investment guidelines to ensure that the financed projects are developed in a manner that is socially responsible and reflects sound environmental management practices. Further information on the Equator Principles is available at (www.equator-principles.com [viewed 2015-02-09]).

The benefits for the investment business (and therefore for those other businesses which have funds, e.g. pension funds, entrusted to the investment business) is that land is managed in a sustainable biodiversity-conscious manner that continues to generate the profits needed to drive the fund in the long-term. The risk for companies not managing their effects on biodiversity appropriately is therefore that investment capital is either harder or more expensive to obtain.

NOTE Restoring an ecosystem to its original state might not always be possible (for example restoration of ancient woodland is not possible, while restoration of amenity grassland is feasible).

Case study 3: A large extractive industries business

A large extractive industries business issued their UK biodiversity strategy covering a ten year period. The biodiversity strategy was produced in partnership with independent conservation organizations; minerals extraction often produces large water bodies which can then be ecologically restored to a variety of habitats and enhanced to achieve major benefits for wetland biodiversity. As part of their strategy the company made the following series of key commitments.

a) Enhancing biodiversity gains of their existing operations, and planning to create more biodiversity opportunities in line with UK priorities.

b) Developing a system to report, monitor and review biodiversity actions.

c) Ensure that UK employees and of the general public are aware of the intimate relationship between the extractive industries and biodiversity conservation and its ecosystem services.

d) Obtain public and industry recognition of the company's biodiversity achievements.

The company also committed to regular monitoring of progress with their commitments and to producing a series of key performance indicators that are reported in their annual sustainability report. The strategy also included a programme for delivery of each of the four commitments.

The targets the company set for itself included the following.

1) To create and maintain a specified area of scarce habitats by 2012, with this target significantly increased every five years for the next decade.

2) To produce site BAPs and management plans for 50% of their highest value sites in the first few years of their strategy and for all of them by the mid-point of their ten year strategy.

3) To deliver restoration plans for the future creation of a specific area of UK BAP priority habitats in total by the end of their strategy period.

4) To identify biodiversity flagship sites within each business region and to produce significant community biodiversity achievements in partnership with conservation organizations by a specified date.

5) To develop an employee volunteer initiative to work on biodiversity projects, with at least 5% of employees volunteering by a specified date.

6) Provide employees with opportunities to gain training in and knowledge of biodiversity on minerals sites, particularly targeting their site managers.

The company could derive a range of benefits from these measures including reputational gain, improved employee enthusiasm (and potentially health), potential new markets and investment sources (since some consumers and investment bodies use positive biodiversity actions as assessment criteria) and potential direct financial benefits from simplified land management and reduced long-term management costs. It is also possible that the company could achieve longer-term financial benefits through the submission of some net new habitat into habitat banking schemes, assuming that those habitats had not already been used to compensate for the company's own impacts.

Case study 4: A medium-sized ice cream business

A combined ice-cream manufacturer and distributor with extensive farmland has strong environmental policies and the company has produced an environmental management system which incorporates biodiversity considerations, opportunities and initiatives into their farming practices to ensure that they are delivered alongside, and contribute to, company performance.

The farm is managed to provide habitats for wildlife, encourage native species, and provide the community with accessible paths through the countryside. Specific projects and practices include:

- planting extensive areas of deciduous trees;
- creating grassland margins and headlands around fields which provide both valuable habitat and create wildlife corridors;
- creating wetlands which have increased local biodiversity and proven attractive to people from the local area;
- controlling agrochemical (fertiliser and pesticide) applications and accepting a controlled degree of pest damage to crops.

These practices have proven to be of benefit to the business as well as to biodiversity. For example the grass headlands on the fields have not only increased populations of deer and hares but have also drawn pests away from the main crop. There is also a marketing advantage to the sustainable farm management being undertaken. Employee attitudes regarding wildlife have also altered positively as a result of the implementation of biodiversity improvement measures.

Case study 5: A land development company

A small development company was undertaking a large development that resulted in the generation of a large amount of contaminated spoil that required remediation. Following remediation the spoil was used to create a new landscape feature of both recreational interest and ecological value. Following the creation of the landscape feature some leachate was still produced from the base of the structure and the development company therefore devised a natural filtration system consisting of a number of large wetlands and reedbeds which not only cleaned the water before it was discharged to the local river system but also provided extensive areas of wildlife habitat. This provided considerable cost benefits to the company by reducing remediation costs and also gained considerable positive public relations in addition to benefiting biodiversity.

Case study 6: A large supermarket's approach to gathering information on palm oil impacts

Palm oil production can result in large scale biodiversity loss and is increasingly a source of reputational risk for retail businesses in the food sector. Building biodiversity consideration into supplier requirements, therefore, also presents considerable opportunities for enhancing biodiversity, which can in turn benefit the business both indirectly through reputation improvements but also directly through securing long-term supply of materials. One large supermarket has developed a tailored means of gathering information on suppliers connected with this commodity in order to realise the opportunities presented to their business by more sustainable and biodiversity positive palm oil production. Questionnaires, internally known as "trackers", are used to identify and prioritize areas for improvement. These questionnaires are completed by a third party consultant who researches palm oil product producers and highlight any opportunities for improvement. Information recorded includes certification status (i.e. whether certified as "sustainable" by the Roundtable on Sustainable Palm Oil), percentage of a product composed of palm oil, produce weight, and supplier location.

Case study 7: A large coffee company

In order to stabilize its supply of high quality coffee, a large coffee company created a program to promote sustainable agricultural techniques amongst its suppliers. This included discouraging the unnecessary use of fertilisers, encouraging integrated pest management strategies and promoting the use of shade coffee to better protect crops from soil erosion. In turn the company seeks to benefit through reputational improvement (and thus potentially improved access to markets and investment funds), positive community relationships and cost-savings. In order to monitor progress the company:

uses the independent Rainforest Alliance Sustainable Agriculture Network to verify that farms are implementing more sustainable biodiversity-positive methods, thereby decreasing their impacts;

provides a self-assessment tool to its farmers covering quality, environmental, social and economic indicators. Training in the use of the tool is also provided;

uses a team of specialists in agricultural production and agrochemical usage to analyse the collected data and assess the performance of farms involved in the scheme. Remedial measures are identified for those farms that do not meet necessary standards.

Case study 8: A large retailer

Retail companies can often be targeted by campaign groups on the basis of their high visibility and the often significant impact on biodiversity that can be traced through their large supply chains. For instance, recent high-profile campaigns have targeted unsustainable practices in relation to palm oil production and fisheries. This high degree of exposure to consumer pressure means that action to address supply chain impacts can confer a competitive advantage.

One large retailer established a multi-year corporate responsibility programme in order to improve the biodiversity credibility of the sector and the business opportunities associated with action on biodiversity issues. This programme sets out to ensure that beneficial supply chain impacts on biodiversity are achieved by:

- setting out quantitative and time-bound commitments on biodiversity and ecosystem services;
- producing risk assessments on high risk product areas such as fish, palm oil and timber, with further assessments in progress for cotton and water;
- creating positive improvement standards for producers, including requirements for responsible pesticide use, biodiversity management and action planning, and organic produce;
- developing a set of simple indicators in partnership with leading environmental and farming organizations;
- engaging with sustainable supply chain initiatives in various supply chain areas, including forestry (through the Forest Stewardship Council) and fisheries (through the Marine Stewardship Council)

Communicating progress in a clear and transparent manner is a key part of the company's supply chain strategy. This includes regular communication with the World Wide Fund for Nature (WWF), who are consulted on the plan's progress. In addition, contact with wider stakeholder groups is pursued, through progress meetings. All of these engagement activities and the actions taken by the company are communicated through the corporate social responsibility report that is produced by the company.

Case study 9: Forest Stewardship Council (FSC) certification scheme

A proportion of timber available on the market is sourced from areas that are destructively or illegally logged. In response to this issue the Forest Stewardship Council, 2007 [46] certification scheme assesses the logging industry's impact in forested areas, including its environmental and social effects. Their system of forest certification and product labelling allows timber merchants and customers to identify wood from well-managed forests. Wood from such forests is accompanied by a clearly recognizable logo which allows consumers to immediately associate the product with responsible production.
To gain this logo loggers and forestry owners have to demonstrate that they comply with FSC regulations which require that:

- forests are logged in a responsible manner;
- free and informed consent of the traditional landowners is obtained;

the rights of forest workers and forest communities are respected; and endangered species and their habitats are conserved.
According to Greenpeace [47], a vital element of the FSC system is the chain of custody. The FSC monitoring system ensures that any timber with the FSC logo can be traced along the supply chain, from the forest where it was felled through to builder's merchants or furniture shops. Documentary evidence ensures that every stage in the journey is tracked, so allowing for full traceability.
Given the rigorous approach to certification set out in the FSC standards and the high levels of monitoring and traceability, the labels are regarded as a benchmark for sustainable forest products. This has led to several major retailers committing to stocking FSC-certified products. In addition, rail companies in the UK utilize thousands of softwood and hardwood sleepers every year in its network management. Examination of the potential biodiversity impacts of their supply chain on forests generally and hardwood forests in particular has led to them introducing policies to ensure all timber products come through FSC approved supply chains.

Case study 10. A haulage business

A small haulage business is situated between two blocks of woodland. The facilities management department of the company identified an opportunity to achieve some positive publicity in the local press through incorporating some cost-effective biodiversity enhancements into their premises. A local ecologist was hired to undertake a biodiversity audit of the site and produce a short site-specific biodiversity action plan which was incorporated into the facilities management operations of the company. The site of the haulage business consists primarily of large corrugated metal sheds and expanses of hard standing. There were few opportunities within much of this site to provide vegetated habitats. However, there was a closely-managed cypress hedgerow with a series of gaps of between four and five metres at the back of the distribution centre which originally was brightly illuminated by site lighting. An opportunity therefore existed to thicken the hedgerow by planting a double line of native tree and shrub species, replanting the gaps in the hedgerow and installing shields on the outside lighting to direct the light onto the site, providing enough illumination for security but reducing illumination of the hedgerow to a minimum. The opportunity could also be taken to attach some bat boxes and bird boxes to the trees within the hedgerow once the trees were suitably mature.

The ecologist made this recommendation in the management plan and provided the details of the species and number of trees and shrubs to be planted, the specification of the bat and bird boxes and specialist advice on limiting the ecological effects of the lighting. The ecologist also identified when the works to improve the hedgerow should be undertaken, trees that should be retained and some simple management prescriptions. The facilities management department obtained quotes for implementing this work and subsequent discussions with the ecologist took place to ensure a cost-effective solution. The facilities management team ensured that the delivery and management of these measures was incorporated into their site management plan.

After five years the ecologist was asked to return to do some limited monitoring of the feature. The relatively modest amendments were identified to have had a disproportionate effect by improving connectivity between the two blocks of woodland and enhancing their value for enabling landscape-scale movement of wildlife.

Case study 11: A water company biodiversity action plan

A water company's biodiversity action plan involves the delivery of the overall objective to manage the company's land and water holdings to ensure conservation and, where possible, enhancement of plants and animals. The following actions were identified for delivery of the company-wide biodiversity action plan.

- *Biodiversity audit*

  Collate and review information about the wildlife at each property. Sources of information will include other organizations, as well as company records.

  Complete phase 1 habitat surveys on each of our properties.

  Carry out further research and surveys where there are gaps in important information.

  Encourage the recording of biodiversity on company property by local wildlife groups and non-governmental organizations.

- *Identifying biodiversity opportunities*

  Evaluate the current and potential biodiversity value of each property.

  Evaluate the biodiversity resource represented by the company's entire landholding.

  Identify biodiversity objectives and opportunities for each property using national and local biodiversity action plans as a guide.

  Identify strategic biodiversity objectives for all of the company's sites.

- *Selecting appropriate opportunities*

  Create a comprehensive database and geographical information system for managing biodiversity information about company properties and selecting appropriate opportunities on which to focus conservation actions.

  Establish a procedure for company properties that is easily accessible to all our departments and which will identify those sites where biodiversity considerations are particularly important.

- *Implementing the biodiversity action plan*

  Develop simple ways of managing sites that share similar qualities.

  Develop and implement plans to manage each property.

  Encourage employee engagement in the protection and enhancement of the natural environment.

Encourage statutory and voluntary nature conservation bodies to provide support and assistance in managing conservation on our properties.

Increase the number of properties that are managed with local wildlife trusts and other voluntary bodies.

- *Monitoring delivery of the biodiversity action plan*

  Identify and implement a feasible approach for monitoring biodiversity on each property.

Case study 12. A series of biodiversity action plans produced for a company managing a chain of campsites

A company managing a chain of campsites issued a company-wide biodiversity action plan. The company commissioned a series of biodiversity reviews of each of their sites. By the time the biodiversity action plan was produced many of their sites had been assessed by experienced ecologists. The assessment also involved a questionnaire sent to each site manager to ascertain the presence of known habitats or other conservation interest, how the areas were managed and the extent to which local residents and conservation groups were involved. Finally, the assessment involved scrutiny of the presence/location of conservation designations and a data search to obtain existing information on the presence of priority habitats or species on or near each site.

Following from the company-wide assessment, a series of overall objectives was set, with priorities for conservation being driven by the results of the assessment and the relative scarcity or ecological value of the habitats present on the company estate. Ecological value was judged through scrutiny of local and national biodiversity action plans, presence of legally protected wildlife and other sources of information on wildlife rarity. A series of twenty habitat or species-specific biodiversity action plans were prepared. Each biodiversity action plan contained a series of management and monitoring recommendations and was associated with measurable targets to determine success. On each site at which one or more of the habitats or species covered by a biodiversity action plan was present, the requirements of that plan are being implemented to ensure biodiversity value is enhanced. It was also recommended that the company appoint a biodiversity action plan officer to coordinate overall delivery of the objectives of the plan.

Case study 13: A large retailer

A large retailer opened a new store that included a range of environmentally positive measures, including wood of which comes from FSC certified sources, lighting consisting solely of light emitting diodes and the recycling of 100% of the waste from construction. In particular, the project incorporated a green roof and green walls, these being vegetated features on roofspaces and other hard areas that would otherwise have minimal biodiversity value.

This initiative stemmed from a company commitment to introduce biodiversity action plans and biodiversity reviews for major store building projects, the aim being to create new stores with a net positive biodiversity impact. Associated with this, the company produced a guide for all staff involved in store development which is to be consulted at the commencement of each construction project. This provides guidelines on to how new premises can be constructed to include biodiversity enhancements including green roofs, green walls, bat boxes and ponds. One of the key measures for delivering such enhancements from design to implementation is to appoint a biodiversity champion at the concept design stage to undertake an ecological survey, generate an action plan to guide implementation of identified initiatives and then transfer this to the main contractor during the construction stage to ensure implementation.

Case study 14: A technology manufacturing business

A technology manufacturing business has incorporated biodiversity into their overall environmental programme on their main site. Only approximately half of their main site is used for operational purposes. The company has therefore sought to improve biodiversity, by planting almost 2 000 trees across several hectares of non-operational land and is managing it as a local wildlife site. The company worked with the British Trust for Conservation Volunteers to devise a management strategy for the site which encompasses a range of measures including hedge laying, grass cutting, path maintenance and creation of habitat piles from brash and branch cuttings. The company has also worked closely with the Local Biodiversity Partnership and through that partnership invested in the delivery of local landscape-scale habitat enhancement projects. The company is also represented on the local Green Business Network (GBN), a group of local companies, local authority representatives and specialists, who have a mandate to promote environmental awareness and action within the community.

Annex F (informative) Examples of biodiversity-related guidance produced for a range of business typologies and sectors

Examples of biodiversity related guidance are listed in Table F.1.

Table F.1 **Examples of biodiversity related guidance** *(1 of 3)*

Business typology	**Industry guidance on biodiversity**
Food, drink and horticultural production businesses	Natural England has produced a range of guidance notes specifically for the agricultural sector including guidance on managing moles, badgers, rats and bullfinches. The RSPB has also produced guidance including a range of case studies available on their website: http://netsquareddemo.com/rspb_farmwildlife/case_studies.aspx [viewed 2015-02-09] Further guidance for businesses who want to act on biodiversity is given in: http://www.bitc.org.uk/our-resources/report/biodiversity-and-your-business [viewed 2015-02-09]

Table F.1 **Examples of biodiversity related guidance** *(2 of 3)*

Business typology	**Industry guidance on biodiversity**
Extractive businesses	The Minerals Industry Research Organization has also produced guidance through their Sustainable Aggregates Information Gateway, including: • *Creating environmental improvements through biodiversity* [48] • *The influence of aggregate quarrying in floodplains on flood risk and biodiversity* [49] The Quarry Products Association of Northern Ireland (QPANI) has produced several items of guidance, including: • *A Strategy to Conserve and Enhance Biodiversity and Geodiversity for the Aggregates and Quarry Products Industry in Northern Ireland* [50] Pond Conservation has produced: • *Pond Creation Toolkit for the Aggregate Extraction Industry* [51] The European Commission has produced guidance relevant to this sector: • *Undertaking New Non-Energy Extractive Activities in Accordance with Natura 2000 Requirements* [52] The RSPB and Natural England have produced the Nature After Minerals website http://afterminerals.com [viewed 2015-02-09] Natural England has published guidance including: • *Good nature conservation practice in the minerals industry* (ENRR160) [53]
Development and construction businesses	The Construction Industry Research and Information Association (CIRIA) has published a range of guides including: • *Delivering biodiversity benefits through green infrastructure* [54]. • *Working with wildlife: guidance for the construction industry* [55] • *Building greener. Guidance on the use of green roofs, green walls and complementary features on buildings* [56] • *Habitat translocation – a best practice guide* [57] • *Wildlife fencing design guide* [58] The Department for Transport has produced the *Design Manual for Roads and Bridges* [50], which is the industry standard. Volume 10, Section 4 of the guidance relates specifically to highways and bridge design in relation to nature conservation and includes specific guidance regarding badgers, bats, otters, dormice, amphibians and reptiles Additional guidance documents are: • *Designing for biodiversity*. A technical guide [60] • *Landscape and urban design for bats and biodiversity* [61]
Utility Companies	The International association of Oil and Gas Producers has produced: • *Guide to developing biodiversity action plans for the oil and gas sector guide to developing biodiversity action plans for the oil and gas sector* [62] • *International association of Oil and Gas Producers, Ecosystem services guidance: Biodiversity and ecosystem services guide*, 2011 [63] The National Grid has guidance and case studies on Enhancing Ecosystems available on its website (http://www2.nationalgrid.com/responsibility/Connecting-for-tomorrow/Preserving-for-the-future/enhancing-ecosystems/) [viewed 2015-02-09]

Table F.1 **Examples of biodiversity related guidance** *(3 of 3)*

Business typology	Industry guidance on biodiversity
Environmental Businesses	For waste management businesses there is specific guidance within the UNEP Guidance [64]. Biffa and Biodiversity (http://www.biffa.co.uk/assets/files/Publications/biodiversity.pdf) [viewed 2015-02-09]) Extractive business sources from http://www.icmm.com/publications [viewed 2015-02-09] for example; ICMM, 2010, Mining and Biodiversity Good Practice [65] ICMM, 2004, Integrating Mining and Biodiversity Conservation [66] The Cross Sector Biodiversity Initiative: http://www.icmm.com/csbi [viewed 2015-02-09]

In addition to these industry-specific guidance documents, there are also general guides that businesses involved in land management should be particularly aware of as they are specifically aimed at businesses and organizations undertaking development activities. The list below is provided as an indicative list and is far from being exhaustive.

Further guidance for the planning and development sectors can be found on the Biodiversity Planning Toolkit web site at: http://www.biodiversityplanningtoolkit.com/default.asp [viewed 2015-02-09]

Defra has produced several pieces of guidance including the following.

- *Draft guidance on the Habitats Directive and its implications: The Habitats and Wild Birds Directives in England and its seas: Core guidance for developers, regulators and land/marine managers* [67]
- *Biodiversity offsetting pilots guidance for developers* [68]

Natural England has produced a range of general guidance documents including the following:

- *Standing advice on protected species* [69];
- *Wildflower meadows: How to create one in your garden* [70];
- *The hedgerow management cycle and scale* [71];
- *Green roofs: Their existing status and potential for conserving biodiversity in urban areas* [72];
- *Water voles: The law in practice* [73];
- Water voles and development: Licensing policy [74];
- Badgers and development: A guide to best practice and licensing [75].

Scottish Natural Heritage provides a range of guidance as interactive web pages rather than publications. These are available at the following location: (http://www.snh.gov.uk/planning-and-development/advice-for-planners-and-developers/) [viewed 2015-02-09] and include guidance on birds and other protected species and protected sites.

The Environment Agency has also produced a range of biodiversity guides including the following.

- In partnership with Thames Estuary 2100, the Environment Agency produced the guide *Estuary edges: Ecological design guidance* [43] which is available on the Environment Agency website and provides advice to land-managers

and developers in estuary or intertidal environments as to how river walls and similar features can be redesigned and remodelled to be of greater value to wildlife.

- *Managing Japanese knotweed on development sites: The knotweed code of practice* (2006, updated 2013) [76]

The Greater London Authority has produced a guidance document entitled *Design for biodiversity* [60] which provides guidance as to how new developments and buildings can be designed to maximize their biodiversity value.

Green infrastructure references can be obtained from the following websites:

Natural England:
http://www.naturalengland.org.uk/ourwork/planningdevelopment/greeninfrastructure/

Forestry Commission:
http://www.forestry.gov.uk/pdf/urgp_benefits_of_green_infrastructure.pdf/$file/urgp_benefits_of_green_infrastructure.pdf

Wildlife Trust:
http://www.wildlifetrusts.org/sites/default/files/Green-Infrastructure-Guide-TCPA-TheWildlifeTrusts_0.pdf

RTPI:
http://www.rtpi.org.uk/media/499964/rtpi_gi_task_group_briefing_final.pdf

The following are additional sources of guidance.

BITC and Natural England, *Biodiversity and your Business*, http://www.bitc.org.uk/ourresources/report/biodiversity-and-your-business 2014.

Campaign for the Farmed Environment, http://www.cfeonline.org.uk/home/

Annex G Further sources of information related to supply chain management

There are many sources of information available online which provide further information on the identification and management of biodiversity risks as they relate to business. The following are some examples.

- **Portal for Responsible Supply Chain Management.** This portal provides a menu of useful tools and information to support practitioners in developing their own approach to corporate social responsibility in the supply chain. It provides easy access to key standards and international initiatives related to human rights, labour, environment, health and safety, and ethics. Details online at: http://www.csr-supplychain.org/about
- **The Global Reporting Initiative.** This is a not-for-profit organization that promotes economic, environmental and social sustainability. It provides all types of companies and organizations with a comprehensive sustainability reporting framework that is widely used around the world. Details online at: www.globalreporting.org
- **The International Social and Environmental Certification and Labelling Alliance**. This is a global non-governmental organization focused on defining and communicating what good practice looks like for sustainability standards. It provides a gateway into a number of relevant environmental standards systems. Details online at: http://www.isealalliance.org
- **Round Table on Sustainable Palm Oil**. This is a global, multi-stakeholder initiative on sustainable palm oil. Members and participants in its activities come from many different backgrounds and include environmental NGOs,

banks and investors, growers, processors, manufacturers and retailers of palm oil products. Details online at: http://www.rspo.org/

- **Forestry Stewardship Council**. This is a global, not-for-profit organization dedicated to the promotion of responsible forest management worldwide. They seek to define best practices for forestry that address social and environmental issues, and to enable businesses and consumers to make informed choices about forest products they buy. Details online at: https://ic.fsc.org/
- **Marine Stewardship Council:** The MSC is a leading certification and ecolabelling program for sustainable seafood. They have developed standards for sustainable fishing and seafood traceability with experts in the sector and seek to increase the availability of certified sustainable seafood. Details online at: http://www.msc.org
- **Round Table on Responsible Soy Association.** This provides stakeholders and interested parties, producers, social organizations and business and industry, with the opportunity to jointly develop global solutions leading to responsible soy production. Details online at: http://www.responsiblesoy.org/
- **Integrated Biodiversity Assessment Tool (IBAT)**. IBAT for business is an innovative tool designed to facilitate access to accurate and up-to-date biodiversity information to support critical business decisions. The tool is the result of a conservation partnership including BirdLife International, Conservation International, International Union for Conservation of Nature, and the UNEP World Conservation Monitoring Centre. Details online at: https://www.ibatforbusiness.org/login
- **High Conservation Value Assessments**. The High Conservation Value (HCV) approach is an important tool for responsible land management and responsible sourcing, and a keystone component of major voluntary sustainability standards schemes. The HCV Resource Network brings together organizations and individuals who use the HCV approach, including suppliers and buyers. Details online at: http://www.hcvnetwork.org/

Bibliography

Standards publications

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 8903, *Principles and framework for procuring sustainably – Guide*

BS 42020:2013, *Biodiversity – Code of practice for planning and development*

BS EN ISO 14001, *Environmental management systems – Requirements with guidance for use*

Other publications

[1] CONVENTION ON BIOLOGICAL DIVERSITY. *Text of the CBD*. 1992 [viewed 2015-02-04] <http://www.cbd.int/convention/text/>

[2] MILLENIUM ECOSYSTEM ASSESSMENT. *Ecosystems and Human well-being: Biodiversity Synthesis*. 2005 [viewed 2015-02-04] http://www.unep.org/maweb/documents/ document.354.aspx.pdf?bcsi_scan_AB11CAA0E2721250=1

[3] GREAT BRITAIN. Wildlife and Countryside Act 1981. London: HMSO

[4] TEEB. *The Economics of Ecosystems and Biodiversity: Mainstreaming the Economics of Nature: A synthesis of the approach, conclusions and recommendations of TEEB.* 2010 [viewed 2015-02-04] <http://www.unep.org/pdf/LinkClick.pdf>

[5] KMPG. *Certification and biodiversity: Exploring improvements in the effectiveness of certification schemes on biodiversity*. 2012. [viewed 2015-02-04] <http://www.business biodiversity.eu/global/download/%7BSAMMZCEXJE 2202012103438 OHYJGOPLCV%7D.pdf>

[6] DEFRA. *Making space for Nature: A review of England's wildlife sites and ecological network* 2010. London: The Stationery Office

[7] DEFRA. *The Natural Choice: Securing the value of nature* 2011. London: The Stationery Office

[8] DEFRA. *Biodiversity 2020: A strategy for England's Wildlife and Ecosystem Services* 2011. London: The Stationery Office

[9] UNEP. *UK National Ecosystem Assessment* 2011. London: UNEP

[10] BSR. *Measuring and Managing Corporate Performance on Ecosystem Services* 2013. London: BSR

[11] WBCSD. Eco4Biz: *Ecosystem services and biodiversity tools to support business decision-making* 2013. [viewed 2015-02-04] < http://www.wbcsd.org/eco4biz2013.aspx>

[12] WBCSD. *Guide to corporate ecosystem valuation* 2011. [viewed 2015-02-04] <http://www.wbcsd.org/pages/edocument/ edocumentdetails.aspx?id=104&nosearchcontextkey=true>

[13] WORLD RESOURCES INSTITUTE. *The Corporate Ecosystem Services Review: Guidelines for Identifying Business Risks & Opportunities Arising from Ecosystem Change* 2008. [viewed 2015-02-04] < http://www.wri.org/publication/corporate-ecosystem-services-review>

[14] SCOTLAND. *2020 Challenge for Scotland's Biodiversity: A Strategy for the Conservation and Enhancement of Biodiversity in Scotland*. 2013. Edinburgh: The Stationery Office. ISBN: 978 1 78256 586 4

[15] UNEP WCMC. *Are you a green leader? Business and biodiversity: making the case for a lasting solution* 2010. [viewed 2015-02-04] <http://www.unepwcmc.org/medialibrary/2010/09/13/a26998c7/AreYouAGreenLeader.pdf>

[16] INTERNATIONAL FINANCE CORPORATION. *Performance Standard 6: Biodiversity Conservation and Sustainable Management of Living Natural Resources - Overview of Performance Standards on Environmental and Social Sustainability.* 2012. [viewed 2015-02-04] <http://www.ifc.org/wps/wcm/connect/bff0a28049a790d6b835faa8c6a8312a/PS6_English_2012.pdf?MOD=AJPERES>

[17] EQUATOR PRINCIPLES. The Equator Principles: A financial industry benchmark for determining, assessing and managing environmental and social risk in projects. 2013. [viewed 2015-02-04] <http://www.equatorprinciples.com/resources/equator_principles_III.pdf>

[18] GREAT BRITAIN. The Conservation of Habitats and Species Regulations. 2010 (as amended). London: The Stationery Office.

[19] WARING ET AL. Double jeopardy: The potential problems when bats interact with breathable roofing membranes in the United Kingdom 2013. [viewed 2015-02-05] <http://manuscript.sciknow.org/uploads/ae/pub/ae_1361785788.pdf>

[20] EUROPEAN COMMISSION. The EU Water Framework Directive (Directive 2000/60/EC). 2000. European Union.

[21] NATURAL ENGLAND. MAGIC (Multi Agency Geographic Information System) maps [viewed 2014-02-05] <http://webarchive.nationalarchives.gov.uk/20140605090108/http://www.naturalengland.org.uk/publications/maps/magicfeature.aspx>

[22] NATURAL ENGLAND. National character area. [viewed 2015-02-05] http://www.naturalengland.org.uk/publications/maps/magicfeature.aspx

[23] ALGE. Biodiversity planning toolkit 2011 [viewed 2015-02-05] <http://www.biodiversityplanningtoolkit.com/default.asp>

[24] WHATLING, DEREK R. et al. Corporate responsibility reporting of biodiversity in the supply chain. 2010. International journal of innovation and sustainable development, 5 (1), PP. 51 64

[25] WORLD ECONOMIC FORUM (prepared by PWC). Biodiversity and business risk - A Global Risks Network briefing. 2010 [viewed 2015-02-05] <http://www3.weforum.org/docs/WEF_AM10_PwC_Biodiversity_BriefingMaterial.pdf>

[26] THE NATURAL VALUE INITIATIVE. *Linking Shareholder and Natural Value: Managing Biodiversity and Ecosystem Services Risk in Companies with an Agricultural Supply Chain.* 2010 [viewed 2015-02-05] <http://www.unepfi.org/fileadmin/documents/linking_shareholder_natural_value.pdf>

[27] LIVING WITH ENVIRONMENTAL CHANGE. *Case study: Insect Pollinators Initiative. Undated*. [viewed 2015-02-05] <http://www.lwec.org.uk/sites/default/files/Insect%20Pollinators%20Case%20study_0.pdf>

[28] BUSINESS COMMUNITY MARKETPLACE. *How to Manage Your Supply Chains Responsibly.* 2009 [viewed 2015-02-05] <http://www.bitc.org.uk/our-resources/report/how-manage-your-supply-chains-responsibly>

[29] INTERNATIONAL FINANCE CORPORATION. *Guide to Biodiversity for the Private Sector* 2006. [viewed 2015-02-05] <http://www.ifc.org/wps/wcm/connect/f2e9f1804885559bb74cf76a6515bb18/Partnerships.pdf?MOD=AJPERES>

[30] WHATLING et al. *Call for Contributions to the TEEB Report Phase II. Outline D3 – Report for Business and Industry. Considering Biodiversity Risks and Opportunities in Company Supply Chains*. 2009. [viewed 2015-02-05] <http://teebforbusiness.earthmind.net/files/Considering_Biodiversity_Risks_and_Opportunities_in_Company_Supply_Chains.pdf>

[31] GLOBAL REPORTING INITIATIVE. Biodiversity: A GRI Reporting Resource.2007 [viewed 2015-02-05] <www.globalreporting.org>

[32] TEEB. *The Economics of Ecosystems and Biodiversity in Business and Enterprise* 2012*. Edited by Joshua Bishop*. London and New York: Earthscan.

[33] EUROPEAN COMMISSION. 92/43/EEC. EU Habitats Directive (92/43/EEC). Luxembourg: Office for Official Publications of the European Communities, 1992

[34] EUROPEAN COMMISSION. 2009/147/EC. EU Birds Directive. (2009/147/EC). Luxembourg: Office for Official Publications of the European Communities, 2009

[35] GREAT BRITAIN. National Parks and Access to the Countryside Act 1949. London: The Stationery Office

[36] GREAT BRITAIN. The Conservation of Habitats and Species Regulations. 2010 (as amended). London: The Stationery Office.

[37] CONVENTION ON BIOLOGICAL DIVERSITY*. Key Elements of the Strategic Plan 2011 2020, including Aichi Biodiversity Targets*. Undated. [viewed 2015-02-05] <http://www.cbd.int/sp/elements/>

[38] GREAT BRITAIN. The Natural Environment and Rural Communities Act. 2006. London: The Stationery Office.

[39] THE SCOTTISH GOVERNMENT. Scotland's Biodiversity: It's in Your Hands – A strategy for the Conservation and Enhancement of Biodiversity in Scotland. Edinburgh: The Scottish Government, 2004

[40] GREAT BRITAIN. *The Natural Environment and Rural Communities Act*. 2006. London: The Stationery Office.

[41] JNCC AND DEFRA (on behalf of the Four Countries' Biodiversity Group). *UK Post 2010 Biodiversity Framework.* 2012 [viewed 2015-02-05] <http://jncc.defra.gov.uk>

[42] NATURAL ENGLAND. Great crested newt mitigation guidelines. 2001.

[43] ENVIRONMENT AGENCY. Estuary edges: Ecological design guidance. [viewed 2015-02-05] <http://www.ecrr.org/Portals/27/Publications/Estuary%20Edges%20-%20design%20advice.pdf>

[44] UNESCO. The World Heritage Convention. 1972. [viewed 2015-02-09] <http://whc.unesco.org/EN/convention/>

[45] SECRETARIAT OF THE RAMSAR CONVENTION. The Ramsar Convention on Wetlands of International Importance. 1971. [viewed 2015-02-09] <http://www.ramsar.org/library>

[46] FOREST STEWARDSHIP COUNCIL. Strengthening Forest Conservation, Communities and Markets: The Global Strategy of The Forest Stewardship Council. 2007. [viewed 2015-02-09] <https://ic.fsc.org/global strategy.13.htm>

[47] GREENPEACE. Certification schemes. Undated. [viewed 2015-02-09] <http://www.greenpeace.org.uk/forests/certification schemes>

[48] DAVIES & WEIR. 2008. *Creating environmental improvements through biodiversity*. MIRO

[49] CAPITS SYMONDS. 2004. *The influence of aggregate quarrying in floodplains on flood risk and biodiversity.* MIRO

[50] QPANI. *A Strategy to Conserve and Enhance Biodiversity and Geodiversity for the Aggregates and Quarry Products Industry in Northern Ireland*

[51] POND CONSERVATION. Pond Creation Toolkit for the Aggregate Extraction Industry. Undated. [viewed 2015-02-09] http://www.freshwaterhabitats.org.uk/wordpress/wp-content/uploads/2013/09/toolkit-overview.pdf

[52] EUROPEAN COMMISSION. 2010. *Undertaking New Non Energy Extractive Activities in Accordance with Natura 2000 Requirements.* Luxembourg: Office for Official Publications of the European Communities

[53] NATURAL ENGLAND. ENRR160. *Good nature conservation practice in the minerals industry*. [viewed 2015-02-09] <http://publications.naturalengland.org.uk/publication/153017>

[54] CIRIA. 2011. *Delivering biodiversity benefits through green infrastructure*. CIRIA: London

[55] CIRIA. 2011. *Working with wildlife: guidance for the construction industry*. CIRIA: London

[56] CIRIA. 2007. *Building greener. Guidance on the use of green roofs, green walls and complementary features on buildings*. CIRIA: London

[57] CIRIA. 2003. *Habitat translocation – a best practice guide*. CIRIA: London

[58] CIRIA. 2006. *Wildlife fencing design guide*. CIRIA: London

[59] DEPARTMENT FOR TRANSPORT. *The design manual for roads and bridges (DMRB)*. [viewed 2015-02-09] <http://www.standardsforhighways.co.uk/dmrb/>

[60] RIBA. 2013. *Design for biodiversity: A technical guide for new and existing buildings (2nd edition)*. RIBA: London

[61] BAT CONSERVATION TRUST. Landscape and urban design for bats and biodiversity. [viewed 2012-02-09] <http://www.bats.org.uk/pages/landscapedesign.html>

[62] IPIECA. 2005. *Guide to developing biodiversity action plans for the oil and gas sector guide to developing biodiversity action plans for the oil and gas sector*. IPEICA

[63] IPIECA. 2011. *Ecosystem services guidance: Biodiversity and ecosystem services guide.* IPEICA

[64] UNEP. *Waste management, processing, and detoxification.* [viewed 2015-02-09] <http://www.unep.org/maweb/documents/document.315.aspx.pdf>

[65] ICMM. 2010. *Mining and biodiversity good practice*. ICMM

[66] ICMM. 2004. *Integrating mining and biodiversity conservation.* ICMM.

[67] DEFRA. 2012. *Draft guidance on the Habitats Directive and its implications: The Habitats and Wild Birds Directives in England and its seas: Core guidance for developers, regulators and land/marine managers*. London: The Stationery Office

[68] DEFRA. 2012. *Biodiversity offsetting pilots guidance for developers*. London: The Stationery Office

[69] NATURAL ENGLAND. *Standing advice for protected species.* [viewed 2015-02-09] <http://www.biodiversityplanningtoolkit.com/stylesheet.asp?file=212_natural_england_s_standing_advice>

[70] NATURAL ENGLAND. NE 32. *Wildflower meadows: How to create one in your garden* (NE32). 2007. [viewed 2015-02-09] <http://publications.naturalengland.org.uk/publication/30032>

[71] NATURAL ENGLAND. *The hedgerow management cycle & scale*. 2007. [viewed 2015-02-09] <http://publications.naturalengland.org.uk/publication/39004>

[72] NATURAL ENGLAND. *Green roofs: Their existing status and potential for conserving biodiversity in urban areas*. 2003. [viewed 2015-02-09] <http://publications.naturalengland.org.uk/publication/130019>

[73] NATURAL ENGLAND. *Water voles: The law in practice*. 2008 [viewed 2015-02-09] <http://publications.naturalengland.org.uk/publication/50006>

[74] NATURAL ENGLAND. *Water voles and development: licensing policy*. 2011. [viewed 2015-02-09] <http://publications.naturalengland.org.uk/publication/31013>

[75] NATURAL ENGLAND. *Badgers and development: a guide to best practice and licensing*. 2006. [viewed 2015-02-09] <http://publications.naturalengland.org.uk/publication/73034>

[76] ENVIRONMENT AGENCY. *Japanese knotweed: managing on development sites.* 2013. [viewed 2015-02-09] <https://www.gov.uk/government/publications/japanese-knotweed-managing-on-development-sites>

Further reading

Raingold, A. *Pricing the Priceless, the Business Case for Action on Biodiversity*. 2011. The Alldersgate Group. [viewed 2015-02-24] <http://www.aldersgategroup.org.uk/reports>

BUSINESS & BIODIVERSITY CAMPAIGN. *The Business Case for Biodiversity*. Undated. [viewed 2015-02-24] <http://www.business-biodiversity.eu/default.asp?Menue=17>

CEFIC. *Biodiversity & Ecosystem services: What are they all about? Report published on the European Chemical Industry*. 2011.

DEFRA. *Payments for Ecosystem Services: A Best Practice Guide*. 2013. [viewed 2015-02-24] <https://www.gov.uk/government/publications/payments-for-ecosystem-services-pes-best-practice-guide>

DEFRA. June 2013. *Environmental Reporting Guidelines: Including mandatory greenhouse gas emissions reporting guidance.* [viewed 2015-02-24] <https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/206392/pb13944-ENV-reporting-guidance.pdf>

DUKE, G. et al. Opportunities for UK Business that Value and/or Protect Nature's Services; Elaboration of Proposals for Potential Business Opportunities. Attachment 1 to Final Report to the Ecosystem Markets Task Force and Valuing Nature Network. 2012. GHK, London.

JNCC. *The Convention on Biological Diversity (CBD).* 2013. [viewed 2015-02-24] <http://jncc.defra.gov.uk/page-1365>

JNCC. *UK Conservation*. Undated. [viewed 2015-02-24]
<http://jncc.defra.gov.uk/page-5281>

NATURAL ENGLAND. *The Convention on Biological Diversity*. Undated. [viewed 2015-02-24]
<http://webarchive.nationalarchives.gov.uk/20140605090108/http://www.naturalengland.org.uk/ourwork/conservation/biodiversity/protectandmanage/convention.aspx>

OECD. *Business, Biodiversity and Ecosystem Services: Policy priorities for engaging business to improve the health of ecosystems and conserve biodiversity*. 2012. Paper prepared for the 28th Round Table on Sustainable Development. [viewed 2015-02-24
<http://www.oecd.org/sd-roundtable/papersandpublications/Business,%20Biodiversity%20and%20Ecosystem%20Services.pdf>

SECRETARIAT OF THE CONVENTION ON BIOLOGICAL DIVERSITY. *Global Platform on Business and Biodiversity*. Press brief. 2012. [viewed 2015-02-24]
<http://www.cbd.int/cop/cop-11/doc/cop-11-media-press-brief-business.pdf>

THE BUSINESS & BIODIVERSITY RESOURCE CENTRE. *The business case for taking action*. Undated. [viewed 2015-02-24]
<http://www.businessandbiodiversity.org/taking_action.html>

THE BUSINESS & BIODIVERSITY RESOURCE CENTRE. *Supply chain management*. Undated. [viewed 2015-02-24]
<http://www.businessandbiodiversity.org/action_chain.html>

THE NATURAL CAPITAL COMMITTEE *The State of Natural Capital: Towards a framework for measurement and valuation*. 2013. [viewed 2015-02-24]
<http://www.lwec.org.uk/publications/natural-capital-accounting>

TWO TOMORROWS GROUP LTD & BIOCENSUS LTD. Biodiversity and business. 2010.

UNEP FINANCE INITIATIVE. 2008. *Bloom or bust?: A Document of the UNEP FI Biodiversity & Ecosystem Services Work Stream*. [viewed 2015-02-24]
<http://www.unepfi.org/fileadmin/documents/bloom_or_bust_report.pdf>

UNIVERSITY OF CAMBRIDGE PROGRAMME FOR SUSTAINABILITY LEADERSHIP. *Business platforms*. Undated. [viewed 2015-02-24]
<http://www.cpsl.cam.ac.uk/Business-Platforms/About.aspx>

WENTWORTH, J. *Natural Capital Accounting*. Houses of Parliament, Parliamentary Office of Science and technology. Postnote 376, May 2011. [viewed 2015-02-24]
<http://www.lwec.org.uk/publications/natural-capital-accounting>

WORLD RESOURCES INSTITUTE. *Ecosystem Services and the new IFC Performance Standards*. 2011. [viewed 2015-02-24]
<http://www.wri.org/blog/ecosystem-services-and-new-ifc-performance-standards>

The International Finance Corporation's Performance Standard 6 (IFC PS6)

The Wildlife Trust. *Biodiversity Benchmark for a Living Landscape System*

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